Resource-Deficient Regions: The Specificity of State Support

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Abstract. *The success of Russia's socio-economic development heavily depends on resource availability, resource sufficiency, and resource diversity. Because economic resources (natural, human, capital, information, and material) represent a key barrier to regional social and economic development, the regional federal systems should take into account the effects of regional development drivers. This study aims to assess the level of economic development across economic regions in Russia regarding resource availability and develop state regulation measures to improve regional economic performance. For this, all regions were divided into groups by their gross regional product estimates. Factors reflecting economic performance were identified through factor analysis, and the cyclical nature of resources availability was discussed. The paper offers a resources availability model that allows determining the minimum amount of resources required for a region having a specific level of economic development to achieve the maximum economic performance possible in less time. In addition, the paper presents a state regulatory framework for a regional economy that integrates financial support measures, state projects and programs, and measures to modify the regulatory framework and the regulation of human resources. The proposed state regulation framework takes into account the full range of regional resources and makes it possible to choose the most effective tools with the view to meeting regional development goals.*

Keywords: Effectiveness, regional growth resource availability, regulation, state support.

JEL Codes: R10, R11, R15

1. Introduction

Ensuring resource security in the regions is a public relations effort and a process by which developed countries prevent excessive disparities in levels of the social and economic wellbeing of the regions. To ensure resource security, federal and regional authorities need to build favorable conditions, in particular through integration and cooperation between and within regions.

Modern Russia is characterized by scarcity of specific resources, on the one hand, and growing independence of economic regions, on the other hand. The natural resources deficit received a great deal of attention. Xinchun et al. (2017), for example, focused on water scarcity and measured the ratio of the total agricultural water footprint to water resources availability. The results showed a need for reducing the water load. Kolioussis et al. (2018) drew their attention to industrial clusters, the key drivers of regional development. Similar studies were done by Odhiambo (2017), da Silva et al. (2018), Murshed and Kaluarachchi (2018), and Soula et al. (2021).

At the same time, there is no comprehensive study of the regional resource potential and its effect on economic growth. Given the socio-economic differences between economic regions, the Russian government needs a special strategy for allocating resources to innovation and development projects. The majority of scholars focused on exploring separate instruments of state regulation of the regional economy (Skokov,

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2020). Analyzing market instruments, Tiutiunyk (2018) concentrated on financial tools, and Tamov et al. (2020) investigated the features of strategic development. It is worth noting that the state regulation strategy and tactics cannot appear out of thin air and require regular adjustments to meet social, economic, and organizational issues, most of which rely on state assistance (Abrosimova et al., 2021; Shohin et al., 2020). In this context, the key challenge is to develop methods and approaches for determining potentially favorable conditions for innovative resources generation and their application in regional economic development priority areas.

This study aims to assess the level of economic development across economic regions in Russia with regard to resources' availability and develop measures of state regulation to boost regions. The objectives of the study are to:

- determine the level of economic development across regions in Russia by looking at their GRPs (gross regional product);
- categorize economic regions by their levels of economic development;
- explore the supply of primary and secondary resources in the regions;
- substantiate the cyclical nature of resources generated in the region and the need for resource security measures;
- conduct a factor analysis with the view of exploring the relationship between economic growth and resources availability;
- develop instruments for state regulation to overcome natural resource scarcity across regions.

2. Methods

The level of regional economic development was evaluated through structuring, systematizing, and sorting statistical data on economic growth, i.e., via the gross regional product (GRP). The examined regions were divided into four groups according to their position in the GRP ranking.

Factors that affect the level of regional economic development were assessed by using socio-economic data from the Federal State Statistics Service (2019). In general, the present study distinguishes *seven factors* that shape the gross domestic product of a region (GRP). The influence of factors (independent variables) on the level of regional economic development (dependent variable) was identified through regression analysis.

The study hypothesizes that natural resources availability in a region undergoes fluctuations throughout different stages of regional development. This hypothesis was tested by modeling the law of regional development with the lifecycle method. There are eight region life cycle stages, each with its natural resources requirement. The present study proposes a number of state support measures to undertake in the event of resources scarcity at either of these stages.

The present study offers a mechanism of state influence to prevent resources scarcity in regions. The proposed model consists of three blocks: (1) factors that influence the development of state support measures; (2) a mechanism whereby external and internal factors influence the level of regional economic development; and (3) instruments and directions of state support to choose from depending on their availability and promises.

3. Results

The economic substance of the region is largely understood from the economic theory perspective. The underlying assumptions about the examined economic regions and the principles of economic activity in these regions in the context of division of labor align with the economic theory.

In this study, a territory is regarded as an integral part of regional assets, a relatively independent economic entity that has specific resource potential and unique regional interests. These characteristics of regional/local economy add to the geographical and legal interpretations that describe the territory as a market and a community, among other things. Therefore, the understanding of the notion of region can be expanded in terms of its adaptation to social, legal, and economic needs.

As an underlying element of the national economy, a region is a territorial unit of a country's economic space in which the economic reproduction process is carried out. Although different regions have distinguishing features, they all share the objective laws of economic reproduction. This is due to the fact that marketplaces represent the major portion of regional assets and act as holders of special regional interests. They serve to implement the principle of regional self-sufficiency in economic reproduction. At the same time, different regions have different levels of social and economic development, which means that they deal with different issues of economic reproduction.

The intensity of resource use also varies. The world's population has doubled since 1970, entailing a threefold increase in material resources and a twofold increase in GDP. During the same period, there was no long-term stability or decline in global resources consumption. The relationship between economic growth and the environment was not detected either. The extraction and processing of natural resources have intensified since 2000, accounting for approximately 90% of water footprint and biodiversity loss and for almost half of the climate impacts.

The scientific ground for reflecting the process of economic reproduction in the region involves various aspects of regional economic development. In this case, the focus can be on these resource categories: natural resources, territorial resources, political resources, economic resources, production resources, tangible resources, transport and infrastructure, social ethnicity, and nationality. Factors that affect economic potential in regions are:

- the quantity of resources: working-age population, skilled manpower, financial resources, and natural resources;
- the economic quality of resources: the size and sectoral composition of the regional economy, the cost of production assets, commodity market maturity, and level of income;
- infrastructure: communication and information networks, institutions and marketing organizations, including banks, stock exchanges, and insurance companies;
- innovation: R&D efforts, technology adoption, and operation of intellectual companies, R&D institutes, and corporate sponsorship funds;
- external influences: macroeconomic indicators and national development programs adapted with respect to regional economic and tax policies.

Among these factors, resources are the most important one. They represent an attribute and potential of the territory. Resources include non-temporal elements, such as labor, land, and capital, and resource potential is a basis for regional differentiation. The quantity and quality of resources, as well as resource efficiency, have a decisive impact on the pace of social and economic development in the region. Resources may come from within the region (internal resources) or from other regions (external resources). At the same

time, the character of any economic process and market crisis (cyclical fluctuations in stock prices and exchange rates) is cyclical.

Other factors can also be considered as external and internal changes in a business environment, where external changes are federal restrictions, and internal changes are infrastructure and innovation enterprises operating in the region, as well as local tax legislation and guarantees.

An important element in reproduction management is regional typology. There are many kinds of factors that can be used to generate a typology, each of which somewhat reflects a variety of issues that surround the regional reproduction process and the role it plays in overall production. Sharafutdinov et al. (2019) proposed to use an inclusive growth index to categorize economic regions. Trukhachev and Gromov (2016) differentiated rural areas depending on their levels of development. Mayorova et al. (2018) focused on trade activity. It appears that a choice of research methodology for regional differentiation of Russia depends on the researcher's objectives. The present study builds a typology of Russia's economic regions based on a criterion of GRP (Table 1). The aim is to identify the promising directions of the federal investment policy. The main idea of the economic zones theory in this context is that a proper regional division will enable effective governance and comprehensive development of regions.

Table 1: Regions of Russia by GDP, adapted from (Federal State Statistics Service, 2019)

Region	2015	2016	2017	2018	Mean deviation	Raking (by deviation)	Category (by the level of development)
Gross regional product (GRP)/Russian average					472876,4		
Ingushetia Republic	106955.7	109523.4	108843.3	112553.4	-360323	-76.1981	Depressed Regions
Chechen Republic	111705.4	120596.8	125493.1	133435.8	-339441	-71.7821	
Karachay-Cherkess Republic	144061.8	152814.8	162201.6	165358.9	-307518	-65.0313	
Kabardino-Balkarian Republic	139908.7	156849.6	159911.1	168192.1	-304684	-64.4321	
North Ossetia-Alania Republic	178921.1	177961.4	182432.4	185641.3	-287235	-60.7421	
Ivanovo region	174687.5	174276.9	181377.5	195994.9	-276882	-58.5526	
Dagestan Republic	189575.2	192454.1	193865.3	203272.3	-269604	-57.0137	
Crimea Republic	139873.3	171623.8	180925	204571.4	-268305	-56.7389	
Tyva Republic	150265.5	166415.7	185690.7	212874.5	-260002	-54.9831	
Buryatia Republic	206880.3	201615.4	204825.7	229836.9	-243040	-51.396	
Altai Republic	196639.2	204849.5	206394	231464.2	-241412	-51.0519	
Altai Krai	204933.1	211658.1	217765.1	234885.9	-237991	-50.3283	
Adygea Republic	187211.1	199777.9	219457.2	238773.8	-234103	-49.5061	
Chuvash Republic	203100.9	210771.7	223165.3	242634	-230242	-48.6898	
Kurgan region	207236	221200.3	232701.2	253573.7	-219303	-46.3763	
Stavropol Krai	221814.1	229360.5	236647.4	255726.3	-217150	-45.9211	
Pskov region	208464.5	225921.3	236986.4	259404.1	-213472	-45.1434	
Kirov region	216918	226392.1	238499.4	260282.7	-212594	-44.9576	
Mari El Republic	250039.3	231610.2	243096.4	260845.2	-212031	-44.8386	
Kalmykia Republic	185798.9	220662.8	257976.7	268920.1	-203956	-43.131	
Bryansk region	221080	229844.6	251085.7	272742.5	-200134	-42.3227	

Ulyanovsk region	241633.8	259138.2	266860	279959.2	-192917	-40.7965	
Kostroma region	245940.9	243346.4	258533	281568.6	-191308	-40.4562	
Republic of Mordovia	223161.1	249649	266917.6	284010.1	-188866	-39.9399	
Saratov region	251047.1	258970.2	270564.3	290611.6	-182265	-38.5439	
Penza region	253911	259365.9	274369.4	302304.4	-170572	-36.0712	
Trans-Baikal Krai	228215	256337.7	279814.3	305683.1	-167193	-35.3567	
Oryol region	273107.5	284385.8	286468	310357.1	-162519	-34.3682	
Vladimir region	262945.5	282603.6	298375.9	321078.9	-151798	-32.1009	
Tambov region	300289.9	284834.1	288147.3	323618.7	-149258	-31.5638	
Smolensk region	266927.2	275444.3	306413.8	330766	-142110	-30.0523	
Volgograd region	290186	293947.7	305597.8	338860.7	-134016	-28.3405	
Ryazan region	285257.8	296253.9	321083.3	342734.4	-130142	-27.5214	
Rostov region	280522	303222.9	320007.8	343408.7	-129468	-27.3788	
Tver region	251633.2	277929.2	300328.7	345919.1	-126957	-26.8479	
Jewish Autonomous Region	266405.8	278590.6	323376.9	346715.8	-126161	-26.6794	
Omsk region	312450.2	314593.5	33071.3	349165.7	-123711	-26.1613	
Amur region	343385.7	337302.1	338055.7	378318.7	-94557.7	-19.9963	
Kursk region	301242.5	323145.8	346101.2	385587.5	-87288.9	-18.4591	
Voronezh region	345566.8	350097.6	371924.5	404838.5	-68037.9	-14.3881	
Bashkortostan Republic	323367.4	328820.8	346902.2	412530	-60346.4	-12.7616	
Krasnodar Krai	352601.2	374677.7	398693.9	416760.2	-56116.2	-11.867	
Udmurt Republic	341391.7	350598.3	364572.4	417899.1	-54977.3	-11.6261	
Chelyabinsk region	345597.1	363023.3	386862.1	422950.8	-49925.6	-10.5579	
Nizhny Novgorod region	338304.4	356725.8	389339.4	424085.8	-48790.6	-10.3178	
Tula region	316248.5	345117.1	372264.9	428275.7	-44600.7	-9.43179	
Novgorod region	379255.5	396336.2	414521.2	434229.5	-38646.9	-8.17273	
Primorsky Krai	371595.6	383811.3	404747.6	437147.4	-35729	-7.55567	
Khakassia Republic	317763.6	365436.6	386039.4	438326	-34550.4	-7.30643	
Yaroslavl region	348375.7	371537	403037.8	443970.1	-28906.3	-6.11287	
Novosibirsk region	370895.7	377812.4	412480	448658.8	-24217.6	-5.12134	
Karelia Republic	335944.5	368250.2	403076.5	451436.4	-21440	-4.53395	
Kaluga region	336353.9	367867.8	410481.4	461023.2	-11853.2	-2.50662	
Kaliningrad region	359639.7	392825.3	421319.1	461596.7	-11279.7	-2.38534	
Kemerovo region	309904.3	318927.5	391741.4	462495.1	-10381.3	-2.19535	
Samara region	394135.9	396379	421777.2	473772.9	896.4975	0.189584	Lagging Regions
Vologda region	402652.1	402455.1	431059	497039.6	24163.2	5.109834	
Permsky Krai	403601.4	416203.6	453431.5	503818.3	30941.9	6.543337	
Lipetsk region	388074.7	418328.4	439070.1	506054.3	33177.9	7.016188	
Orenburg region	387881.4	384169.7	415322.4	507847.3	34970.9	7.395357	
Sverdlovsk region	421100.7	459812.1	492434.2	527158.5	54282.1	11.47913	
Khabarovsk region	445809.5	470346.9	487222.8	536377.5	63501.1	13.42869	
Tomsk region	438316.5	445485.9	473722.4	537512.2	64635.8	13.66865	
Astrakhan region	315996.9	340398.3	413087.7	544793.4	71917	15.20841	
Moscow region	437249.1	496848.6	506478.2	556413.9	83537.5	17.66582	
Belgorod region	447619.7	469921.6	506167.8	559184.2	86307.8	18.25166	
Irkutsk region	414986.5	442342.2	496425.7	580152.8	107276.4	22.68593	

Leningrad region	478065.2	513307.8	534595.6	603239.7	130363.3	27.56815	
Tatarstan Republic	483509.9	498606.1	550112.4	633708.5	160832.1	34.01144	
Murmansk region	525475.7	568975.6	585780.9	642705.6	169829.2	35.91408	
Arkhangelsk region	532533.7	581651.6	625656.4	712652.7	239776.3	50.70591	Catching-up Regions
Kamchatka Krai	553863.9	624774.2	640877	750407.7	277531.3	58.69003	
Krasnoyarsk Krai	582345.8	608083.3	660393.9	792980.5	320104.1	67.69297	
Komi Republic	613975	641525	680670.8	796759.7	323883.3	68.49217	
Sakha (Yakutia) Republic	780139.8	897460.4	951330	1123114	650237.4	137.5068	
Magadan Region	854561.5	1016643	1082848	1196690	723813.7	153.0661	High Development Regions
Chukotka Autonomous Okrug	1226152	1354368	1376275	1578496	1105620	233.8073	
Tyumen region	1626160	1651996	1897390	2370552	1897675	401.3047	
Sakhalin region	1716734	1536360	1573869	2407929	1935053	409.209	

A total of 79 economic regions were divided into these four groups by the level of economic development: *depressed regions* (where GRP exhibits negative deviation from the Russian average); *lagging regions* (where GRP deviates by 50% from the Russian average); *catching-up regions* (where GRP deviates by 50% to 150% from the Russian average); *high development regions* (where GRP deviates by 150% from the Russian average). High development and catching up regions, those with high and above-average levels of economic development, have distinct productive specializations, the highest industrial outputs, and a better quality of life. In contrast, the lagging regions, those with below-average levels of development, exhibit substantial asymmetry, yet they also show promise for growth and possess mechanisms of self-regulation and adaptation to market changes (Sorokina & Pyankova, 2019). Depressed regions, on the other hand, struggle with significant deficits in resources and thus cannot attract additional investments. To improve their economic situation, these regions seek state assistance and develop industries that can generate more profits in less time.

Each economic region is governed by the subsidiarity principle. Such regional type requires the coordination of municipalities using statistical research, economic analysis, forecasting, and monitoring operations. The level of resource security is inextricably linked to the cyclicity of economic development. In high development and catching-up regions, resource allocation is carried out in a manner that allows achieving a higher level of development. At the same time, the attraction of resources to the region cannot last forever because regions obey the laws of socio-economic development. Reviewing studies by Rau et al. (2018) and Kuklina and Lazareva (2017), we analyzed the process of regional development with respect to life cycle stages and the quantity of resources involved. The results are shown in Figure 1.

Fig. 1: Factors influencing regional economic development and measures of state regulation, developed by the authors.

Economic growth and economic development require resources, which are neither infinite nor totally interchangeable. This creates barriers to growth, and any intensification of production along with greater consumption may entail resource scarcity. Hence, the faster the region grows, the more likely it will run out of resources, especially if it represents a closed or semi-closed system. At the same time, resources cannot all be depleted at once — they will become limited at some point, and before the shortage can be considered critical, the amount of resources must be reduced to the point that exchangeable resources cannot be stabilized.

There is a minimum quantity of resources required for each region to function and develop effectively. The beginning of the economic cycle is characterized by the sufficient quantity and diversity of resources (Figure 1). The fourth stage of development is characterized by slower economic growth, a situation in which a region may face a challenge of excess resources if it does not rein in its appetite (Pyankova & Sorokina, 2019). Industries have resource requirements that align with their business operations. However, due to the fundamental limitations of the resource base, eventually, at some point in time, markets will be oversaturated with resources, and the region's growth rate will outstrip the growth rate of the resource base.

In general, the resource base fails to keep up with the pace of economic growth due to substantial inertia in technology adoption and greater time demands. The sixth and seventh stages of development provide opportunities to replenish the resources through international exchange, but this source is not always in place, especially when the level of economic development is high. When a region encounters a crisis, it can achieve balance by turning to neighboring regions and international parties, but if the crisis takes place on a global scale, this solution can no longer be an option. The eighth stage of development requires the unconditional state regulation of the regional economy in order to mitigate external threats to the regional resource reserves that may further weaken the economy.

From the discussion above, it appears that regional economic development is cyclical in nature and can be defined through the ratio of resources that fuel economic development. In other words, there is an optimal set of resources required for each region to run their economies without disruptions and achieve effective outcomes. To determine the content of this particular set of resources, the limit for resources in the region

was determined. In this study, the limit for resources refers to the limited range and quantity of resources available for a specific time-bound duration that allow achieving a higher level of development without critical side effects in the long term.

The resulting estimate of the region's resource availability can be considered as an objective outcome forecast for economic development and resource management operations. This approach focuses on the following variables (Table 2): GRP (dependent variable), employment-to-population (E-to-P) ratio, budgetary capacity, natural resource potential, the fixed assets volume, the number of public libraries, newspaper circulation (total papers per 1000 people), and broadcast coverage. These variables (factors) allow building a model to calculate the minimum volume of resources required for a region to be sustainable.

Table 2: Factors affecting resource availability in regions, developed by the authors

Factor	Description	Impact on Dependent Variable	Limitations
Gross Regional Product (GDP)	A dependent variable that measures the total market value of the goods and services produced by a regional economy during a specified period of time	Allows intensifying areas of improvement	The GRP estimate is also influenced by other factors that were not included in the present study.
Employment-to-Population (E-to-P) Ratio	An independent variable that measures the number of people employed against the total working-age population	Allows determining the extent to which the labor force affects the GRP value	More detailed analysis is needed to include the share of the self-employed population and employed volunteers.
Budgetary Capacity	An independent variable that measures the availability of financial resources in a region	Allows establishing whether there is budget depletion and identifying strategic directions for the budget overrun	Due to the increase in the number of resource-deficient regions, additional measures of financial and budgetary regulation are required.
Natural Resource Potential	An independent variable that measures the availability of natural (renewable and non-renewable) resources in a region	Allows identifying available natural resources, determining regional specialization, and detecting growth opportunities	An immediate response to changes in the natural resource potential is hardly possible.
Fixed Assets Volume	An independent variable that measures the availability of raw materials and industrial resources in a region	Allows establishing the relationship between economic growth and industrial waste utilization	The availability of waste utilization services heavily depends on the state regulatory policy. It is not possible to enhance waste utilization immediately.
Number of Public Libraries	Independent variable that measures the availability of information resources in a region	Allows measuring the level of information awareness among citizens, as well as the intensity and speed of information dissemination,	Public libraries demand state funding
Newspaper Circulation			Newspapers have low coverage

Broadcast Coverage		the completeness of the information provided, and information coverage	Media content undergoes filtering
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In real-life economic conditions, the relationship between the examined factors is typically non-linear. The easiest way to present data in this context is to apply a factorial polynomial to the approximated dependent variable. In this case, we assume that there is a linear relationship between the dependent variable and the independent variable. The polynomial model will thus have the following form:

$$Y = f(x) + \varphi \quad (1)$$

where: φ is a random variable that represents an external influence; $f(x)$ is a dependence function; x is the input or the independent variable; and Y is the output or the dependent variable.

Before building a model of state regulation, it is necessary to determine the limit on the quantity of resources required for each region to keep up. Another crucial step in state regulation modeling is the development of mechanisms to boost the effectiveness of entities that run their operations in those regions. For this, selecting a set of regulatory instruments should be based on regional specialization, territorial affiliation, primary resources availability, and their intensity. This technology is based on the analysis of primary and secondary resources that enable to foresee the region's capacity for self-development and identify strategic areas of development. Hence, it can be considered as a tool that helps to achieve more balanced regional development.

The GRP-based analysis revealed regions with varying levels of resource scarcity (Table 1). Of those, the following regions or federal subjects were selected for further analysis (Table 3): the Republic of Ingushetia, the Oryol region, the Kemerovo region, the Samara region, the Moscow region, the Murmansk region, the Arkhangelsk region, the Komi Republic, the Magadan region, the Chukotka Autonomous Okrug, and the Sakhalin region.

Table 3: Input data for regression analysis, adapted from (Federal State Statistics Service, 2019)

Region/Factor	GDP	E-to-P Ratio	Budgetary Capacity	Natural Resource Potential	Working Resource Reserve Volume	Number of Public Libraries	Newspaper Circulation	Broadcast Coverage
	Y	x1	x2	x3	x4	x5	x6	x7
Republic of Ingushetia	112553	53.7	19728.6	90.6	138700	1348	22	6
Oryol region	310357	55	14080.7	93	522013	6337	592	178.3
Kemerovo region	462495	56.1	21772	10.6	2738986	5043	623	488.2
Samara region	473772	61.5	21499.9	83.2	3479558	4313	1179	698.6
Moscow region	556414	65	51905	145.4	8981281	2692	506	1555.3
Murmansk region	642706	63.2	8955.6	200	2043500	7674	540	215.3
Arkhangelsk region	712653	56.2	19492.9	67.6	1392744	6869	2366	261

Komi Republic	796760	59.4	8869	136	3359325	7800	1097	198.4
Magadan region	1196690	69.7	9477.7	82.5	1168547	11838	327	33.4
Chukotka Autonomous Okrug	1578496	75.4	16259.5	59.8	190354	14614	123	5.9
Sakhalin region	2407929	65.8	5409.9	56.2	347962	6157	311	95.5

The results of polynomial regression analysis for each regional category are summarized in Table 4. These values dictate the priority areas of state regulation depending on the region's levels of development. It appears that X_2 (budgetary capacity) and X_4 (fixed assets volume) have the greatest impact on the level of regional economic development or GRP, denoted as Y . The high level of regional development is largely attributed to the generation of fixed assets.

Table 4: The results of regression analysis for each category of economic regions of Russia, developed by the author

Category	Regression
Depressed regions	$Y=576100,1+12,05 \cdot x_1-24,58 \cdot x_2-4402,13 \cdot x_3+0,15 \cdot x_4-127,96 \cdot x_5+225,66 \cdot x_6-233,66 \cdot x_7$
Lagging regions	$Y=515362,3+12,05 \cdot x_1-41,34 \cdot x_2-4402,13 \cdot x_3+0,24 \cdot x_4-127,96 \cdot x_5+225,66 \cdot x_6-233,66 \cdot x_7$
Catching-up regions	$Y=1841023+12,05 \cdot x_1-43,97 \cdot x_2-4402,13 \cdot x_3-0,19 \cdot x_4-127,96 \cdot x_5+225,66 \cdot x_6-233,66 \cdot x_7$
High development regions	$Y=576732,8+12,05 \cdot x_1-35,14 \cdot x_2-4402,13 \cdot x_3+5,26 \cdot x_4-127,96 \cdot x_5+225,66 \cdot x_6-233,66 \cdot x_7$

The framework of state regulation (Figure 2) should include measures aimed at enhancing budgetary and financial regulation, improving material structure, and promoting employment. The reason for undertaking these measures of state regulation may be a situation where a GRP deviates from the Russian average. The present study confirms that organizational changes undertaken to impact economic growth will be effective if they align with both the direction of regional development and regional specialization. The forms of state support for initiatives or projects launched in response to organizational changes, restructuration, expansion, and creation of new industries, can vary.

The financial regulation framework can involve these instruments of state support: sponsorship, interbudgetary transfers, grants, and subsidies, including equity funding, government guarantees, and budgeting loans. The framework for material structure improvement is aimed at balancing functional and spatial development and includes measures to harmonize legislation, stimulate joint territorial development, shape a competitive environment, reduce administrative barriers, and enhance regional self-regulation. Measures to influence employment seek to redistribute resources between sectors with different levels of employment, remove the dominance of rent-oriented behavior, reduce public-sector employment (with the view to promoting the efficient use of labor), enhance labor mobility, and improve immigration attractiveness.

Way to improve resource efficiency revolve around running state research programs, stimulating R&D in the manufacturing industry, consulting on demonstration projects, and instilling innovations. These measures will reduce resource intensity and production costs. However, a reduction of production costs has a proactive effect on increasing consumption, which will outweigh the costs in terms of resource efficiency. Moving from income and consumption taxes to resources taxes may help to counter this effect. Other

solutions may involve changing the technical standards and procurement policies. Measures undertaken to regulate the use of natural resources and land ecosystems are designed to avoid unreasonable impacts on the environment. Carbon taxes can help to prevent deforestation by forcing land users to refrain from releasing carbon emissions. Removing biofuel subsidies will entail the reduction of competition across the country and prevent the rise of food prices.

Fig. 2: The state regulation framework to minimize regional resource deficiency, developed by the author.

4. Discussions

Among other things, Russia's development strategy aims at the prevention of structural imbalances and economic harmonization across regions. For this, the concept of resource scarcity was introduced, which determines the process and mechanism of providing the region with resources with the view of achieving the highest efficiency possible.

There are many other indicators besides GRP to analyze regional economic performance. Nasir et al. (2017) measured the potential of local taxes as a source that boosts the original local income, affecting the society and neighboring areas. Zinovyeva et al. (2020) formulated and confirmed a hypothesis that during the

crisis, one should consider economic growth as a tool to manage and reach short-term goals rather than a goal in itself. The volume of innovation financing was regarded as a dependent variable.

The present state regulatory framework for the regional economy (Figure 2) is not limited to the proposed range of instruments and measures. Fabbri et al. (2020) developed a regional resource model in continuous time and identified approaches to counteract the overexploitation of resources through regulating the technological parameters of impact on exploitation. Basu et al. (2020) took microfinance in the household sector as a key instrument of regional development regulation. The analysis was based on statistical data concerning household income, household spending, and capital turnover. Findings revealed a relationship between loan amount and levels of monthly household income, household expenditure, and household savings. Zvyagintseva et al. (2016) devoted their study to the assessment and improvement of the state regulation toolkit using regional development potential and modeled a number of development scenarios with regard to available resources.

To sum up, the existing research into the regional-level resource availability largely concentrates on analyzing or forecasting economic growth and developing instruments of state support. The state regulatory framework proposed in the present study takes into account the full range of regional resources and makes it possible to choose the most effective tools of state support.

5. Conclusions

Regional resource scarcity is a constraining factor in achieving better performance. At the same time, it is closely related to the concept of regional resource availability. The present work substantiates the need for using the concept of regional resource availability to analyze regional performance and develop measures of state support. The need for state support arises when the level of regional development deviates from the established 'ideal' level, and the aim of state support is to prevent further deviation.

The assessment of the regional economic development involves regional differentiation by regional GDP estimates, and the average GRP value across regions was taken as an 'ideal' value. All regions were thus divided into four groups: depressed regions (where GRP exhibits negative deviation), lagging regions (those with a below-average level of development), catching-up regions (those with an above-average level of development), and high development regions. Note that regional resource availability varies between regions depending on territorial affiliation, regional specialization, and the life cycle stage. For this reason, it is necessary to consider individual characteristics of regional development and possibilities for expanding their resource availability. For this, factor analysis was carried out, and the results revealed dependencies of economic development for each category of regions.

The study proposes a set of state support measures with the view to expanding the resource availability of regions with varying levels of economic development. Most attention is given to capital resources, information resources, human resources, and raw materials. However, it appears that state support cannot be established to expand primary natural resources. The region can improve the availability of this type of resource by enhancing environmental protection and pollution control.

Future research will focus on subdividing regions within each category by their territorial affiliation and identifying factors that have a boosting effect on economic growth and development. With this information, the proposed state regulatory framework can be adjusted, and each region will receive a specially designed set of state regulation measures.

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