

## BALANCED SCORECARD AS A TOOL FOR EVALUATING THE INVESTMENT ATTRACTIVENESS OF REGIONS COMPRISING THE ARCTIC ZONE OF THE RUSSIAN FEDERATION

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### **Abstract**

Prerequisite to sound investment decision-making is the availability of reliable, objective information on earlier investments and which economic sectors they have benefitted, as well as methods allowing for multi-faceted analysis of investment performance. This study aims to elaborate a balanced scorecard to reflect the performance of and the trends in the investment activity ongoing in the regions that comprise the Arctic Zone of the Russian Federation. Methodologically, the study relies on a systemic, balanced approach; balanced scorecard concept; and foreign and domestic practices of estimating regional investment attractiveness. The study is novel in that it has achieved a customized balanced scorecard that allows for analyzing the RF Arctic regions' investment attractiveness from various perspectives, while also allowing to identify these regions' major investment-related challenges and promising investment opportunities. Further, the study contributes to the scientific soundness of strategies that seek better investment image. Among key outcomes of this study is the economic model that uses the said balanced scorecard to measure the RF Arctic regions' investment attractiveness with regard to investment stakeholders (public authorities, investors, population). The outcomes of this study are expected to be used as guidance by the public authorities in the RF Arctic regions when shaping local investment policies. The prospects of this study lie in further improvement of the contents and the structure of the balanced scorecard as the Russian economy progresses in its development and, hence, improved models will be required for measuring its regions' investment appeal.

**Keywords:** The Arctic Zone of the Russian Federation, investment activity, investment risks, investment climate, investment policy, investment attractiveness, important investment aspects, estimation of investment attractiveness, balanced scorecard, regional economic system.

**JEL classification:** D29, L50, L52, L90

### **1. Introduction**

In the Arctic Zone of the Russian Federation (the RF AZ), efforts to enhance investment attractiveness are crucial to social, economic and infrastructural growth. Previous studies into the investment portfolios of the RF AZ regions have enabled a conclusion that the majority of investment resources are being channeled into the production of export-oriented raw materials, which explains why the sectoral make-up of the local economy is dominated by extractive industries.

The main reasons for the occurrence of the said sectoral imbalance lie in the fact that the regions in question lack a sustained investment policy, as well as practice-oriented methods for identifying their investment priorities. The solution lies in creating an economic mechanism which would make it possible to harmonize the interests of private investors, public authorities and population. One such mechanism is, in our view, a balanced scorecard and its potential to reflect the economic relations between the state and private businesses. The relevance of using the balanced scorecard as a tool for measuring the RF AZ regions' investment attractiveness comes from the fact that it also provides a picture of the information resources being sought by the parties to an investment process – an aspect contributive to the overall image of an area's invest attractiveness.

In order to ensure that the evaluation methodologies remain reflective of the changes that are likely to cause a tactical shift in national and regional policies, it is necessary that these evaluation methodologies are duly revised and corrected for the actual socioeconomic make-up of Russia and its regions.

The efforts to shape domestic methodology for exploring the investment appeal of the Russian regions, largely draw on the concepts and approaches developed by H. Hensler, Ph. Kotler, P. Walters, B. Toyne, and Harvard Business School. In their descriptions of the investment attractiveness of different countries and parts of the world, they operate with such notions as 'investment attractiveness', 'investment climate' and 'investment risks'. Commonly used in international studies is the notion 'business environment'. R. Anderson argues that 'investment climate' and 'business environment' cannot be used indiscriminately as the former fails to take into account the contribution to the economic growth from private businesses. Many international and domestic research teams point to the tangible connection between the performance of public authorities and the level of local investment attractiveness (business climate). Particularly, the studies have provided ample evidence of the positive economic growth dynamics being dependent on the authorities' efforts towards better entrepreneurship climate. We cannot but agree with the authors' statement that a policy to deregulate economies at national and regional levels has a beneficial effect.

In this paper, we suggest a balanced scorecard that allows to evaluate not only the investment attractiveness levels but also the performance by regional authorities towards making the RF AZ regions more appealing investment-wise.

Over the recent decade, there has been some significant progress in exploring the investment attractiveness of the Russian regions. Most prominent domestic studies in this area are led by I. Grishina, I. Roizman, G. Marchenko, A. Shakhnazarov, A. Folomyev, among others. Their integrated research into the Russian regions' investment attractiveness enables a conclusion that the majority of studies are, despite their positive aspects, not without methodological flaws, meaning that their outcomes may not be considered one hundred per cent reliable. For instance, the fact that many of the methodologies, that are used in the analysis of the investment appeal, use points-based systems and expert judgements that are based on rather statistics, speaks of these methodologies ignoring the actual variation in the indicator values, which aren't meant to be influenced by subjective judgements. The subjectivity of judgement as to indicator values is aggravated by the expert vision being combined with weighing of specific indicators (that are similarly established based on expert judgement). Furthermore, the majority of methodologies involve labour-consuming expert procedures and seem to be devoid of any objective validation criteria (relationship with region's investment attractiveness adjusted to time lag), a considerable methodological shortcoming.

Methodological shortcomings are the reason why domestic investment ratings can sometimes be contradictory and even illogical, and why regions' rankings lack sufficient substantiation. Despite their usefulness as a yardstick for measuring the success of the authorities' efforts to improve business environment, these ratings can't be considered meeting the information demand of all user categories. Moreover, the use of these ratings in managerial decision-making is limited by structural variations across regional economies.

Since the said methodological shortcomings can be expected to persist in further studies into the investment attractiveness of the RF regions, there is a need for new approaches to evaluating regional investment-related processes. One such approach is presented herein and represents an authorial methodology which uses balance scorecard (BSC) as a basis for evaluating the investment appeal of the RF AZ regions. It is essential that new approaches to evaluating regions' investment appeal take into account the interests of all stakeholders – state, private businesses and population – when elaborating regional investment strategies.

Meanwhile, little research has been conducted into the investment attractiveness of the RF Arctic Zone and how its investment strategy can achieve a better balance of stakeholder interests. Relevant in this regard is a balanced scorecard that would serve as guidance for the governmental agencies in their work to evaluate the investment attractiveness of the RF AZ regions.

This paper proposes a new, BSC-based methodological approach to measuring a region's investment attractiveness and analyzes its applicability as a tool for a more comprehensive

measuring of regional authorities' performance towards higher investment image of the RF Arctic Zone.

## **2. Research methodology and techniques**

This authorial methodology uses as its conceptual basis the balanced scorecard approach.

According to researchers, the concept of balanced scorecard has seen three phases in its development.

Balanced Scorecard, often abbreviated as BSC, has evolved from a simple matrix-based performance evaluation approach to a component of corporate strategic management. Initially proposed by D. Norton and R. Kaplan as a 'four perspective' approach to corporate performance measurement, BSC later expanded to include, additionally to financial performance indicators, three more perspectives of a business – learning and growth, internal business processes and customer, the latter representing key stakeholders in a business.

The first generation of BSC designs had two issues to overcome, one dealing with the process of filtering (selection process) and the other with clustering of indicators (grouping of the indicators selected within each of the perspectives). While clustering is still being widely debated in the economic literature, the process of filtering is argued only rarely and referred to as a step constituting BSC design method.

The second generation of BSC designs had evolved from an approach to indicator selection process to a "strategic linkage model" allowing managers to draw links between strategic objectives within each of the perspectives. This style of balanced scorecard is thought of by some of the authors as representing the "2nd generation" of BSC design approach.

Kaplan and Norton's studies during 1992-1996 focused more on ways to represent cause-effect chains among key indicators and objectives, the cause-effect chains being seen as what provides greater justification for the indicators chosen. With this modified approach, the strategic objectives are distributed so as to form a visual presentation of strategy and performance indicators. This attempt to present the cause-effect chains graphically had led to the emergence of a strategic linkage model or strategy map.

Kaplan and Norton (1996) stated that those modifications had changed the very function of the BSC design: it ceased to be an advanced evaluation system and became a basic element of corporate performance management system. Thus, the second-generation balance scorecard had transformed from what earlier functioned to merely draw lines between perspectives, to a full-fledged strategy management framework.

The third generation design method for balanced scorecards refined those that went before to give more relevance and functionality to strategic objectives and processes of modeling, analyzing and coordinating interrelationships across time.

Kaplan and Norton argued that the subsequent variants of BSC could serve as tools allowing businesses to manage their strategic performance more effectively.

Later versions of BSC offer a more flexible and user-friendly approach to planning and growth, suiting a wider range of sophisticated organizational types.

Despite BSC being widely used at a corporate level for performance managing purposes, there is no research on the applicability of BSC as a tool for analyzing the investment appeal of economies, including regional ones. Therefore, any further research concerning the use of BSC for evaluating the investment attractiveness of the RF Arctic Zone, can, in our opinion, be thought of as novel and likely to produce results that might prove helpful in modern economic governance. The concept of our BSC-based approach to measuring the investment attractiveness of the RF Arctic Zone builds on the assumption that evaluation findings must meet the information needs of all stakeholders in an investment process. This paper focuses exclusively on BSC-based model for the regions that comprise the RF Arctic Zone. To add to objectivity, repeatability and transparency of the proposed method, and to avoid methodological incoherence in calculations and evidence base, we made use of the statistics made by federal government officials.

To achieve better comparability of indicators and to eliminate the influence of size and economic scale across the regions, all sub-indicators are relative values, the core ones being population size, area, fixed assets value, etc.

When determining the overall scores, all sub-indicators on the BSC are to be converted into dimensionless relative values using the multivariate mean formula, with prior standardizing to be performed by way of normalizing the numerical values of each sub-indicator to a particular target value, which, in turn, is a way to avoid the influence from the average investment attractiveness score across Russia. For target levels, one is free to use the 'best values' of the sub-indicators on the BSC over a time period in question (i.e. the highest for direct indicators and the lowest for reverse indicators).

In this study, we did not use any weighing factors when calculating the overall scores as all our selected indicators are interrelated with the key parameters of investment attractiveness. This helped us ensure equal significance of indicators and achieve higher assessment objectivity (independence from expert assessments).

Given the limitations of the modern statistical databases, as well as the assumptions made for our BSC design, it may be difficult to determine precisely and concurrently the values of all sub-indicators of investment attractiveness. At the same time, the proposed set of indicators enables a precise identification of trends in the dynamics of the investment attractiveness of each of the regions in question, while also eliminating the dependence on the dynamics the in investment attractiveness scores of other RF regions.

The sub-indicators on the proposed BSC, grouped into four perspectives, are presented in Table 1.

**Table 1. BSC sub-indicators for measuring investment attractiveness of the regions comprising RF Arctic Zone (2016)**

Perspectives, indicators and sub-indicators	Republic of Karelia	Murmansk Region	Arkhangelsk Region, exclusive of Nenets Autonomous Area	Krasnoyarsk Territory	Komi Republic	Republic of Sakha (Yakutia)	Yamal-Nenets Autonomous Area	Chukotka Autonomous Area	Nenets Autonomous Area
<b>1. MANUFACTURING AND FINANCE PERSPECTIVE</b>									
<b>1. Financial performance indicators</b>									
1. High-performing businesses, share	0,638	0,628	0,791	0,772	0,673	0,742	0,682	0,609	0,526
2. Region's budget balance (revenues vs. expenditures), share	0,938	1,036	0,933	0,936	0,920	0,963	0,998	1,093	0,811
3. Overdue accounts payable, share	0,053	0,068	0,556	0,106	0,079	0,141	0,588	0,172	0,099
<i>Score</i>	<b>0,543</b>	<b>0,577</b>	<b>0,760</b>	<b>0,605</b>	<b>0,557</b>	<b>0,615</b>	<b>0,756</b>	<b>0,625</b>	<b>0,479</b>
<b>2. Environmental safety indicators</b>									
4. Harmful emissions from all fixed sources, trapped and decontaminated, share	0,553	1,110	0,918	0,909	0,480	0,814	0,000	0,689	0,000
<i>Score</i>	<b>0,553</b>	<b>1,110</b>	<b>0,918</b>	<b>0,909</b>	<b>0,480</b>	<b>0,814</b>	<b>0,000</b>	<b>0,689</b>	<b>0,000</b>
<b>3. Financial and operational performance indicators</b>									
5. Wear of fixed assets, share	0,302	0,349	0,299	0,359	0,333	0,364	0,255	0,294	0,346
6. ROI of employees, %	0,434	0,974	0,293	2,111	0,523	1,459	3,003	2,144	1,451

Perspectives, indicators and sub-indicators	Republic of Karelia	Murmansk Region	Arkhangelsk Region, exclusive of Nenets Autonomous Area	Krasnoyarsk Territory	Komi Republic	Republic of Sakha (Yakutia)	Yamal-Nenets Autonomous Area	Chukotka Autonomous Area	Nenets Autonomous Area
7. Return on assets within Mineral Production sector, %	0,226	0,504	0,066	0,163	0,041	0,285	0,106	0,476	0,033
8. Return on assets within Manufacturing sector, %	0,860	0,890	0,290	1,970	2,140	0,430	2,700	- 0,240	- 0,020
9. Return on assets within Energy, Gas and Water Management sector, %	0,981	0,915	1,430	0,960	1,072	1,264	1,280	0,605	0,676
10. Profitability of sales (products, works, services) within Mineral Production sector, %	0,313	0,865	0,595	0,476	0,149	1,006	0,229	1,158	0,121
11. Manufacturing sector, %	1,890	1,270	0,850	5,720	2,090	- 0,010	6,940	- 3,670	- 0,390
12. Energy, Gas and Water Management sector, %	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
<b>Score</b>	<b>0,626</b>	<b>0,721</b>	<b>0,478</b>	<b>1,470</b>	<b>0,794</b>	<b>0,600</b>	<b>1,814</b>	<b>0,096</b>	<b>0,277</b>
<b>PERSPECTIVE SCORE</b>	<b>0,653</b>	<b>0,783</b>	<b>0,638</b>	<b>1,317</b>	<b>0,773</b>	<b>0,678</b>	<b>1,526</b>	<b>0,303</b>	<b>0,332</b>
<b>2. GROWTH PERSPECTIVE</b>									
<b>1. Intellectual potential indicators</b>									
13. University-trained employees, share	0,838	0,838	0,838	0,838	0,838	0,838	0,838	0,838	0,838
14. Skill formation, share	0,073	0,054	0,109	0,081	0,094	0,110	0,044	н/д	0,087
<b>Score</b>	<b>0,455</b>	<b>0,446</b>	<b>0,473</b>	<b>0,459</b>	<b>0,466</b>	<b>0,474</b>	<b>0,441</b>	<b>н/д</b>	<b>0,462</b>
<b>2. Innovational potential indicators</b>									
15. R&D expenditure, share	0,041	0,056	0,036	0,096	0,044	0,030	0,001	0,006	0,002
16. Use of IT, share	0,638	0,680	0,689	0,620	0,705	0,641	0,139	0,237	1,220
17. Technological innovation expenditure, share	0,061	0,060	0,017	0,435	0,047	0,079	0,018	0,050	0,056
19. Sales investment requirement, share	0,757	1,187	1,061	1,185	1,832	1,585	2,793	0,737	1,666
18. Renewal of fixed assets, share	0,308	0,270	0,399	0,624	0,574	0,798	0,617	0,454	0,800
<b>Score</b>	<b>0,361</b>	<b>0,451</b>	<b>0,440</b>	<b>0,592</b>	<b>0,641</b>	<b>0,626</b>	<b>0,714</b>	<b>0,297</b>	<b>0,749</b>
<b>3. Infrastructural capacity indicators</b>									
20. Density of communication	0,244	0,119	0,084	0,029	0,081	0,008	0,013	0,001	0,002



Perspectives, indicators and sub-indicators	Republic of Karelia	Murmansk Region	Arkhangelsk Region, exclusive of Nenets Autonomous Area	Krasnoyarsk Territory	Komi Republic	Republic of Sakha (Yakutia)	Yamal-Nenets Autonomous Area	Chukotka Autonomous Area	Nenets Autonomous Area
<b>1. Prospects of region's economic growth</b>									
28. Dynamics of GRP, share	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,987
29. GRP per capita, RUB per resident	0,106	0,160	0,109	0,176	0,183	0,258	1,049	0,378	1,663
30. Openness of economy, thousand \$ per resident	0,134	0,407	0,233	0,210	0,123	0,579	0,391	0,239	0,000
31. Property relations	0,520	0,513	0,358	0,553	0,593	0,380	0,749	0,230	0,568
32. Inflation in manufacturing sector, %	0,850	0,990	0,952	0,920	0,916	0,920	1,107	0,936	0,996
33. Inflation in consumer sector, %	0,964	0,952	0,959	0,960	0,959	0,948	0,956	0,949	0,960
34. Entrepreneurship development level	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
<b>Score</b>	<b>0,368</b>	<b>0,432</b>	<b>0,373</b>	<b>0,403</b>	<b>0,396</b>	<b>0,441</b>	<b>0,607</b>	<b>0,390</b>	<b>0,739</b>
<b>2. Social security indicators</b>									
35. Common diseases incidence (per thousand residents)	0,090	0,120	0,098	0,127	0,093	0,097	0,091	0,093	0,070
36. Injuries, intoxications and some other externally induced effects (per thousand residents)	0,418	0,627	0,421	0,495	0,462	0,444	0,505	0,442	0,373
37. Recorded crime (per thousand residents)	0,327	0,353	0,394	0,351	0,314	0,544	0,468	0,438	0,403
<b>Score</b>	<b>0,278</b>	<b>0,366</b>	<b>0,304</b>	<b>0,324</b>	<b>0,290</b>	<b>0,362</b>	<b>0,355</b>	<b>0,324</b>	<b>0,282</b>
<b>3. Employee satisfaction indicators</b>									
38. Welfare spending, K roubles per resident	1,063	1,603	1,201	1,402	1,534	2,968	3,820	5,164	5,395
39. Population with income above subsistence line, share	0,835	0,879	0,866	0,824	0,841	0,810	0,935	0,918	0,904
40. Unemployment rate, share	0,217	0,260	0,282	0,328	0,230	0,278	0,769	0,571	0,235
41. GRP/average wage growth ratio	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,979
<b>Score</b>	<b>0,529</b>	<b>0,685</b>	<b>0,587</b>	<b>0,639</b>	<b>0,651</b>	<b>1,014</b>	<b>1,381</b>	<b>1,663</b>	<b>1,878</b>
<b>PERSPECTIVE SCORE</b>	<b>0,395</b>	<b>0,490</b>	<b>0,419</b>	<b>0,453</b>	<b>0,446</b>	<b>0,588</b>	<b>0,774</b>	<b>0,740</b>	<b>0,967</b>
<b>TOTAL SCORE</b>	<b>0,543</b>	<b>0,644</b>	<b>0,532</b>	<b>0,774</b>	<b>0,629</b>	<b>0,617</b>	<b>0,923</b>	<b>0,544</b>	<b>0,692</b>

Source: developed by authors

The above BSC consists of four perspectives which have been analyzed, based on a total of 41 sub-indicators and 12 overall scores, to measure the investment appeal of the RF AZ regions.

### 3. The BSC-based evaluation of the RF AZ regions' investment appeal: findings

As stated in the RF Presidential Edict N296 dd. 2 May 2014 "Concerning the Land Territories of the Arctic Zone of the Russian Federation", the Arctic Zone of the Russian Federation comprises the following regions:

1. Territory of Murmansk Region.
2. Territory of Nenets Autonomous Area.
3. Territory of Chukotka Autonomous Area.
4. Territory of Yamal-Nenets Autonomous Area.
5. Territory of municipal urban district Vorkuta (Komi Republic).
6. Territories of Allaikhovsky Ulus (district), Anabar (Dolgano-Evenkiisky) National Ulus (district), Bulunsky Ulus (district), Nizhnekolymsky District, Ust'-Yansky (district) (Republic of Sakha (Yakutia)).
7. Territories of the urban district of Norilsk, Taimyr Dolgano-Nenetsky Municipal District, Turukhanovsky District (Krasnoyarsk Territory).
8. Territories of the municipal entities City of Arkhangelsk, Mezen Municipal District, Novaya Zemlya, Town of Novodvinsk, Onega Municipal District, Primorsky Municipal District, Severodvinsk (Arkhangelsk Region).
9. Lands and islands in the Arctic Ocean as specified in the Decree of the Presidium of USSR Central Executive Committee, dd. 15 April 1926 "Concerning Declaring the Lands and Islands in the Arctic Ocean a Territory of the USSR" and related legal instruments of the USSR.

The balanced scorecard presented above has been used to evaluate the RF AZ regions' investment attractiveness over the period from 2010 through 2016.

As can be seen from Table 2, investment attractiveness has been found to increase in the following RF AZ regions: Yamal-Nenets Autonomous Area (1.9-fold), Republic of Sakha (Yakutia) (1.4-fold), Arkhangelsk Region exclusive of Nenets Autonomous Area (1.7-fold) and Republic of Karelia (1.2-fold).

**Table 2. Dynamics of the RF AZ regions' investment attractiveness scores (2010-2016)**

Year	Yamal-Nenets Autonomous Area	Krasnoyarsk Territory	Nenets Autonomous Area	Murmansk Region	Komi republic	Republic of Sakha (Yakutia)	Chukotka Autonomous Area	Republic of Karelia	Arkhangelsk Region exclusive of Nenets Autonomous Area
2010	0,491	0,907	0,812	0,631	0,656	0,451	0,540	0,467	0,306
2011	0,628	0,823	0,807	0,667	0,669	0,580	0,534	0,551	0,311
2012	0,667	0,762	0,818	0,643	0,669	0,633	0,520	0,534	0,392
2013	0,768	0,763	0,626	0,623	0,630	0,585	0,619	0,530	0,487
2014	0,863	0,779	0,606	0,699	0,606	0,595	0,615	0,537	0,534
2015	0,871	0,825	0,695	0,753	0,652	0,592	0,645	0,590	0,570
2016	0,923	0,774	0,692	0,644	0,629	0,617	0,544	0,543	0,532

Source: developed by authors

In Yamal-Nenets Autonomous Area (YNAA) and the Republic of Sakha (Yakutia), the investment attractiveness has increased mainly due to better performance in Manufacturing, Finance and Resources, while the score of Political, Economic and Social Environment has risen only slightly. Thus, in YNAA, the Manufacturing and Finance score had increased 6.5-fold, Resources 1.7-fold and Growth only 1.1-fold; in the Republic of Sakha (Yakutia) these scores have risen 17.6-, 1.5- and 1.3-fold, respectively.

In Arkhangelsk Region (exclusive of Nenets Autonomous Area), the increase in investment attractiveness had been caused by, in the first place, better performance in Growth (a 14.4-fold increase), with all other perspectives enjoying higher scores as well (2.2-fold increase within Manufacturing and Finance; 1.8-fold one within Resources; 1.2-fold one



within Political, Economic and Social Environment). The Republic of Karelia has enjoyed better performance in Manufacturing and Finance (a 1.5-fold increase) and Resources (1.6-fold) and lower performance within Growth (a 2 percentage point decrease) and Political, Economic and Social Environment (a 21 percentage point decrease), an indication of an imbalance in the economic growth.

Krasnoyarsk Territory and Nenets Autonomous Area (NAA), despite the fact that they continue to enjoy the highest ratings (the second and the third, respectively), have been found to be suffering a 15 percentage point decrease in their investment attractiveness, caused by lower performance within Manufacturing and Finance (a 30 percentage point decrease in Krasnoyarsk Territory and a 53 percentage point one in NAA) and Political, Economic and Social Environment (a 15 percentage point decrease in Krasnoyarsk Territory and a 24 percentage point one in NAA), which is partly offset by the increased scores in Resources (a 29 percentage point increase in Krasnoyarsk Territory and a 31 percentage point one in NAA) and Growth (a 21 percentage point increase in Krasnoyarsk Territory and a 53 percentage point one in NAA), which is indicative of an imbalance in the economies of these two regions of the RF AZ.

Murmansk Region has been found to have an investment attractiveness score varying between 0.6 and 0.7, and Chukotka Autonomous Area and Komi Republic between 0.5 and 0.6, which is due to fluctuations across all their BSC perspectives, giving them stably middle positions in the rankings.

The sub-indicators and the overall scores for each of the RF AZ regions have been calculated by way of benchmarking their current performance levels against the target ones. Ratings have been compiled, based on the findings, concerning the investment attractiveness of each of the regions in the Arctic Zone of the Russian Federation.

The top positions (top three places) are occupied by Yamal-Nenets Autonomous Area (0.923), Krasnoyarsk Territory (0.774) and Nenets Autonomous Area (0.692). Least attractive (bottom three places) are Chukotka Autonomous Area (0.544), Karelian Republic (0.543) and Arkhangelsk Region (exclusive of NAA) (0.532). Murmansk Region (0.644), Komi Republic (0.629) and the Republic of Sakha (Yakutia) (0.617) rank in the middle.

Given the analytical capacity of BSC-based evaluation, it is possible to identify main challenges and develop recommendations as to how the RF AZ regions can enhance their investment attractiveness.

Let us analyze, based on the results of the investment attractiveness BSC, the core challenges that are faced by the regions of the RF AZ with regard to their investment strategies.

For seven regions of the RF AZ, the highest-scoring perspective is Natural Resources and the lowest-scoring one is Growth (with exception of Krasnoyarsk Territory and Yamal-Nenets AA).

For Yamal-Nenets AA and Krasnoyarsk Territory (ranked first and second, respectively), the highest-scoring perspective is Manufacturing and Finance and the lowest-scoring one (for Krasnoyarsk Territory) is Political, Economic and Social Environment. Nenets Autonomous Area scores lowest in Manufacturing and Finance.

Our analysis of the influence the Natural Resources have on the investment attractiveness of the RF AZ regions enables a conclusion that this perspective appears to be crucial to the total score of each of these regions.

Further, the analysis of the main indicators comprising the Natural Resources perspective (Appendix 1-9) has found that Karelian Republic and Arkhangelsk Region (exclusive of Nenets AA) have their per capita energy production sub-indicator deviating greatly from the target level (in the rest of the RF AZ regions, per capita energy production rates are near the target level).

An indicator with highly positive impact on the investment attractiveness levels is, in the first place, resource endowment. The 'internal corporate funds' indicator is found to be near its target level in almost all the RF AZ regions (with exception of Yamal-Nenets AA), as is the 'economically active population' (which varies between 0.7 and 0.9). At the same time, the 'economically active population' shows negative growth, indicating insufficiency of efforts to meet regions' staffing needs for better economic growth.

Our analysis of the charts for the sub-indicators that comprise the Manufacturing and Finance perspective (Appendix 1-9) has found the regions' performance to be deviating greatly from the target levels for return on assets within Mineral Production sector; wear of fixed assets; share of high-performing businesses; overdue accounts payable (all regions of the RF AZ); and profitability of sales (products, works, services) within Mineral Production sector (with exception of Murmansk Region, the Republic of Sakha (Yakutia) and Chukotka AA, where this indicator is near or above the target level). Not far from the ideal target are 'region's budget balance (revenues vs. expenditures)', 'environmental safety', 'return on assets, sales and products (works, services) within Manufacturing sector' (with exception of the Republic of Sakha (Yakutia), Chukotka AA, Nenets AA), 'ROI of employees' (with exception of Karelian Republic, Arkhangelsk Region (exclusive of Nenets AA) and Komi Republic).

The fluctuations within the Manufacturing and Finance perspective are caused mainly by the RF AZ regions' unstable performances in manufacturing and finance sectors.

The fluctuating Manufacturing and Finance score is, in turn, an indication of fragility of the financial situation in the RF AZ regions (with exception of Krasnoyarsk Territory and Yamal-Nenets AA), a major factor inhibiting the increase in their investment attractiveness.

Wear of fixed assets remains consistently high, putting a constraint on the regions' manufacturing capacity.

One more indicator with positive effect on the investment attractiveness is 'environmental safety', provided that its level is near the target one.

Our analysis of indicators that comprise Political, Economic and Social Environment perspective (Appendix 1-9) – dynamics of GRP, workforce productivity/average wage growth ratio, population with income above subsistence line, welfare spending – enables a conclusion that they almost equal their target levels.

At the same time, such indicators as entrepreneurship development level, openness of economy, GRP per capita (with exception of Yamal-Nenets AA and Nenets AA) and property relations (with exception of Yamal-Nenets AA), have been found to deviate greatly from their target levels, an indication that the process of creating market economy institutions is slow and more efforts should be channeled into their formation.

Contributive to the increase in the investment attractiveness is growth in gross regional product (GRP). Even though its level accounts for 0.9 of the target one, the GRP per capita remains consistently low.

The negative effect of social security level on the investment attractiveness is due to the following factors: diseases incidence rate, which is 10-fold higher than its target level, and registered crimes per 1,000 residents, which exceeds its target level 3-fold. The 'social security' indicator shows a consistently low score.

Within Growth, a perspective crucial to the economic progress in the RF Arctic Zone (Appendix 1-9), the following key indicators have been found to deviate significantly from their target levels: R&D expenditure, technological innovation expenditure (with exception of Krasnoyarsk Territory), infrastructural capacity index, use of IT, skill formation, renewal of fixed assets (with exception of the Republic of Sakha (Yakutia) and Nenets AA).

Near its target level is 'share of university-trained employees'. 'Sales investment requirement' indicator exceeds its target level (with exception of Karelian Republic and Chukotka Autonomous Area), a factor with positive effect on the investment attractiveness of the RF AZ regions.

'R&D expenditure' and 'technological innovation expenditure' show negative dynamics, an indication of underperformance within research and development sector.

The challenges relating to renewal of fixed assets remain unsolved. In the future, the lack of adequate production capacities may complicate the manufacture of globally competitive products.

Benefitting the investment attractiveness of the RF AZ regions is the increase in investment requirement, which is found to exceed its target level. Consistently negligible is the growth in infrastructural potential, confirming the need to expand the transport infrastructure in the regions of the RF AZ. The share of university-trained employees has experienced a major growth and almost reaches its target level. At the same time, the low

value of 'skill formation' indicator (10 times lower than the target level) points to the need in the advanced training which would meet sector-specific needs.

With some of the directions in regions' investment attractiveness strategies receiving disproportionate amounts of efforts, as can be seen from the analysis of the perspectives of the above scorecard, almost all of the RF AZ regions (with exception of the Republic of Sakha) are experiencing challenges unfolding their investment potential – particularly, with regard to Growth, an aspect essential to overall economic progress.

As to the Republic of Sakha (Yakutia), its performance within all BSC perspectives deviates from target levels only slightly (the variation range being 0.5-0.7), which enables a conclusion that this region operates a balanced investment strategy.

#### **4. Final remarks**

The elaboration and implementation of a balanced scorecard-based performance evaluation system represents an effective way for raising the investment attractiveness of the projects being deployed in the Arctic Zone of the Russian Federation, which is fully in line with the targets of the RF economic development strategy. Further, the BSC-based assessment of a region's investment attractiveness can be seen as a way of harmonizing the interests of all stakeholders in an investment process, thereby achieving the desired changes in the investment attractiveness of the regions of the RF Arctic Zone.

Being a tool for evaluating regions' performance factors that are crucial to their investment attractiveness over a certain period of time, BSC serves also as a tool to identify and present, using a system of quantifiable indicators, the best regional practices towards better investment attractiveness. Conducting a balanced assessment of the effectiveness of a region's investment strategy appears to be especially important when it comes to improving the environment for business and investment activity.

Using federal data statistics, the proposed toolkit ensures an objective, balanced assessment which relies on cause-effect relationships between key factors of investment attractiveness and BSC indicators, while meeting the information demand of all stakeholders in an investment process. In addition to its repeatability (applicability for different regions), the proposed tool is open to change and can be altered subsequently as the RF Arctic regions progress in their economic and social development.

The main outcome of the study consists of the scientific rationale for and the description of a BSC-based model for measuring a region's investment attractiveness based on the analysis of the efficiency of its performance towards higher investment image of the Arctic Zone.

The obtained results will enable the authorities to identify pivotal issues in regional investment activity, shape strategies towards better investment image of the Arctic Zone and evaluate the effectiveness of regional investment strategies.

The study is novel in that it has achieved a balanced scorecard that allows the regions in the RF Arctic Zone to analyze their investment attractiveness with regard to the stakeholder interests and goals. The study provides a rationale for the expediency of the proposed method for use by regional authorities when analyzing their investment policies and measuring the current investment attractiveness of the RF Arctic regions.

The proposed method is hands-on in nature and can help the local governments in the RF Arctic Zone to shape better investment strategies and business corporations to decide on the expediency of investing in the Arctic projects.

The transparency of the proposed BSC-based assessment method makes it suitable for application to various social and economic environments as a research tool, while also raising its value in regional investment governance.

The contents of the proposed BSC are subject to change. Changes should be introduced to reflect dynamics of the social and economic growth in subsequent periods as the Russian economy and system of official statistics evolve.

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