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PRIORITY DEVELOPMENT AREAS IN THE CONTEXT OF THE ECONOMIC SECURITY OF MACRO-REGION

In March 2017, after the adoption of the Russian Federation Economic Security Strategy until 2030, the need for strengthening the security of the subjects of the Russian Federation including macro-regions became relevant. In this aspect, the Arctic zone of the Russian Federation deserves special attention as it is a strategically important not only for economic, but also for the national security of the country. Therefore, at the present stage of the state development, the substantiation of the special measures for the stimulation of the macro-region's development to ensure its economic security is a relevant and priority task. The authors have analysed the intermediate results of some priority development areas since their creation in 2014. We have concluded that not enough time has passed to estimate whether this mechanism was effective or not in stimulating the regional growth and development of the business. Therefore, despite the traditional financial indicators of investment efficiency, we have included the estimation of quantitative change of one productive indicator depending on the change of a number of the parameters influencing this indicator in the assessment of the efficiency of priority development areas. We have estimated this quantitative change by means of the instruments of correlation and regression, and trend modelling. To apply this approach, we have designed a dependency model of the index of industrial production of Primorsky Krai as one of the indicators of the Economic Security Strategy on revealed factors, which cause the growth or decrease of this index. The economic interpretation of the model outputs consists in the following. When investments into fixed capital increase by 1 million rubles, the index of industrial production in the region grows by 0,9 %. When the indicator of the real monetary income of the population increases by 1 thousand rubles, the index of industrial production in the region decreases by 1,36 %. Trend forecasting has allowed to define such indicators as the investments into fixed capital and the real income of the population continue to change, the index of industrial production will show a steady downward trend for three next years. This proves that the policy of management of priority development areas in Primorsky Krai is inefficient. The research has concluded that from the perspective of ensuring the economic security of the macro-region, the creation of priority development areas in the Arctic will be effective only when all shortcomings of its functioning are eliminated. It is defined on the basis of the analysis of the corresponding experience of the Russian Far East. High-quality forecasts will contribute to a positive impact from the creation of priority development area not only on the socio-economic sphere of the Arctic, but also on the strengthening the economic security of the macro-region in general. The results of the research can be used for the regional governance, monitoring of regional economic security, as well as for the increase in the scientific validity of state decisions.

Keywords: priority development areas, economic security, macro-region, Arctic zone of the Russian Federation, the Russian Far East, Primorsky Krai, trend forecast, assessment of the efficiency of priority development areas, indicators of the effectiveness of priority development areas, correlation and regression analysis

Introduction

The adoption of the Russian Federation Economic Security Strategy until 2030 in March 2017 raised the urgency of improving approaches to strengthening the security at the level of the subjects of the Russian Federation, including the macro-regions. To ensure the stable functioning of the regional economic security system, the state should take a number of measures aimed at stimulating the development of territories, including by establishing the special regimes of economic activities. This task is also relevant for the current stage in the development of the Arctic zone of the Russian Federation, and it should be addressed not only through adaptation of the regional economies, but also by guaranteeing their security and resilience to challenges, threats, and risks coming from the outside world [1–6].

The regional economy, including the Arctic one, will be able to face the external challenges and threats when it has a high level of socio-economic development, which can be achieved by creating and implementing the comprehensive priority investment projects that have a significant multiplier

effect and can drive the comprehensive socio-economic development of the macro-region [7–11]. The modern practice of regional development has many tools for stimulating the development of territories, such as free economic zones, priority development areas, free ports, Severny Zavoz (Northern Supply Haul), etc. [12, 13]. To assess the feasibility of using these tools for ensuring the economic security of the Arctic zone of the Russian Federation, we will consider the experience of Priority Development Areas (PDAs) established in 2014 to facilitate the development of the regions in the Russian Far East[1].

The key idea of the PDA is to build the system of tools to develop the Russian Far East, improve its global competitiveness, and promote it in the Asia Pacific.

Like Special Economic Zones (SEZs), these areas establish tax preferences for their residents. However, a PDA has some differences from SEZ. First, in addition to tax benefits, the state has the obligations to create the necessary infrastructure in accordance with the legislation. Secondly, there is a number of mechanisms for deregulation and simplification of doing business in these areas. For example, this includes the restrictions on inspections of residents in the PDAs, as well as the transfer of powers over administrative and economic issues to the management company, a single regulatory authority. In addition, a SEZ represents the land plots where the companies can conduct certain activities. Based on the infrastructure created by the state, the resident of SEZ must invest significant funds in its further business activities. PDAs may include the entire municipal entities, the development of which is among the obligations of the state (creation of infrastructure) and investors (development of production facilities, creation of new jobs, tax liabilities, etc.) Therefore, the pivotal idea of establishing a SEZ is to build the competitive production facilities; while the idea of establishing a PDA is to develop the territories, including by locating there the new production facilities. As a result, in each case, the tax incentives perform somewhat different functions. In the first case, they support the businesses while, in the second, they represent a mechanism for attracting the businesses to these territories because without the various preferences the companies will see no need to move their assets to the Russian Far East.

The establishment of PDAs is aimed at providing a clearer regulation and orientation of the business entities by economic activities. Their association should be based on the principle of cluster formations, rather than a random set of production facilities that managed to find a way into the area. This shows the desire of legislators to implement primarily the export orientation of PDAs and create there the favorable environment for joint ventures.

Efficiency analysis of PDAs in the Russian Far East

The year 2015 was marked by the establishment of first PDAs in the Russian Far East, including Khabarovsk PDA and Komsomolsk PDA in Khabarovsk Krai, and Nadezhdinskaya PDA in Primorsky Krai. The agreements signed on the establishment of PDAs reflect the rights and obligations of the parties, provide the procedure and specify the sources for financing the construction, reconstruction, and further operation of infrastructure facilities of PDA, describe the governance system of the areas, set the procedure for addressing the land-related issues, describe tax and other preferences for residents of the areas.

Another 6 priority development areas have been established later, including Kangalassy PDA (Republic of Yakutia), Beringovsky PDA (Chukotka Autonomous Area), Mikhailovsky PDA (Primorsky Krai), Priamurskaya PDA (Amur Region), Kamchatka PDA, and Belogorsk PDA.

The Far East Development Corporation (FEDC) operating as a management company[2] and providing the administrative support for all investment projects based on the "one-stop shop" principle was established for centralized and coordinated governance of the areas.

The status of PDA resident gives a number of advantages:

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[1] O territoriyakh operezhayushchego sotsialno-ekonomicheskogo razvitiya v Rossiyskoy Federatsii. Federalnyy zakon ot 29 dek. 2014 g. № 473-FZ [On Priority Socio-Economic Development Areas in the Russian Federation. Federal Law No. 473-FZ of December 29, 2014]. Rossiyskaya gazeta. Federalnyy vypusk №6571 (299) [Rossiyskaya Gazeta. Federal Issue No. 6571 (299)]. (In Russ.)

[2] On the management company exercising the governance functions in the priority socio-economic development areas in the subjects of the Russian Federation included the Far Eastern Federal District and the free port of Vladivostok. The Decree of the Government of the Russian Federation No. 432 of April 30, 2015. Retrieved from: http://pravo.gov.ru/ipsdata/?doc_itself=&backlink=1&nd=102371401&page=1&rdk=1#I0 (date of access: December 11, 2017). (In Russ.)

1. Tax and customs preferences (relevant amendments were made to the federal legislation on the establishment of tax benefits[3], as well as the benefits for payment of social insurance premiums[4]):

— Exemption from profit, property, and land taxes in the first 5 years (for PDA residents, the federal tax rate for activities carried out in the priority development area is 0 %; tax payments to the regional budget shall not exceed 5 % of the entire tax base. This regime may apply for five tax periods, starting with the period of the first profit. For example, if the company was registered in PDA in 2016, and the profit will be generated in 2018, the reduced tax rates can be applied for the period of 2018–2022);

— The accelerated procedure of VAT refund for exporters (in case of declarative procedure for VAT refund, the money from the budget will be credited to the company's account after filing of the relevant documents no later than 11 working days, which shall be guaranteed by the surety agreement with the current management company of PDA);

— 7.6 % of social insurance premiums (6 % to the Pension Fund of Russia, 1.5 % to the Social Insurance Fund, and 0.1 % to the Federal Compulsory Medical Insurance Fund) for the investor in the first 10 years instead of 30 % (benefits apply from the month following the month of obtaining the resident status, but they can be used only by those insurers who were registered in the PDA no later than three years from the date of its establishment);

— 0 % VAT on imports for processing;

— 0 % import and export customs duties;

— Free customs zone.

2. Administrative preferences:

— Receiving land with complete infrastructure free of charge;

— Ban on inspections without the consent of the Ministry for Development of the Russian Far East;

— One-stop shop for investors;

— Simplified state control;

— Accelerated and facilitated administrative procedures, including for obtaining construction permits, customs clearance, etc.

Not so much time has passed since the establishment of the first PDA in 2014 to allow drawing conclusions on PDA effectiveness or lack thereof.

The amount of investments by residents of PDAs and information on the number of created new jobs (according to the Far East Development Corporation[5]) are presented in Fig. 1–2.

Despite the presented growing forecast dynamics for the amount of investments and new jobs created by the residents of PDAs, these indicators did not produce the expected socio-economic effect in regions and municipal entities.

Below is the analysis of the main socio-economic indicators, which can be viewed as indicators of efficiency for Nadezhdinskaya PDA, Khabarovsk PDA, and Komsomolsk PDA.

Nadezhdinskaya PDA is located in Nadezhdinsky District of Primorsky Krai. It has three anchor residents

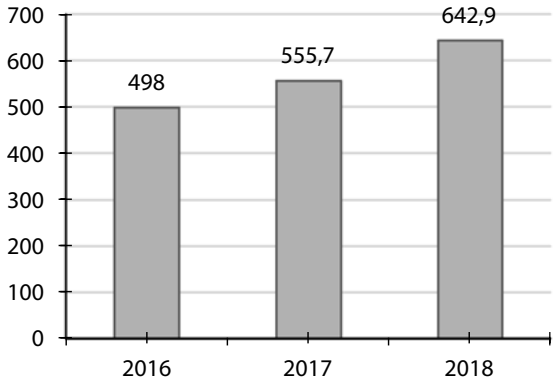

Fig. 1. *The amount of investments by residents of PDAs (fact and forecast), billion rubles (a fact for 2016; forecast for 2017 and 2018)*

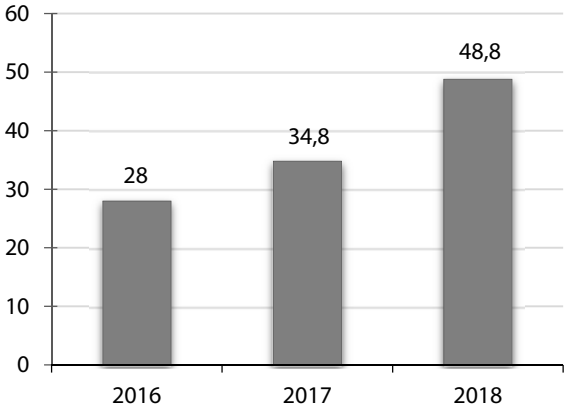

Fig. 2. *New jobs created by residents of PDAs (fact and forecast), thousand people (a fact for 2016; forecast for 2017 and 2018)*

[3] On amendments to part two of the Tax Code of the Russian Federation in connection with the adoption of the Federal Law "On Priority Socio-Economic Development Areas in the Russian Federation". The Federal Law No. 380-FZ of November 29, 2014. (2014). The Collection of Laws of the Russian Federation. 2014. No. 48. Art. 6661. (In Russ.)

[4] On amendments to certain legislative acts of the Russian Federation in connection with the adoption of the Federal Law "On Priority Socio-Economic Development Areas in the Russian Federation". The Federal Law No. 519-FZ of December 31, 2014 (2015). The Collection of Laws of the Russian Federation. 2015. No. 1. Part 1. Art. 72. (In Russ.)

[5] Far East Development Corporation. Summary Statistics. Retrieved from: http://erdc.ru/ (date of access: December 11, 2017). (In Russ.)

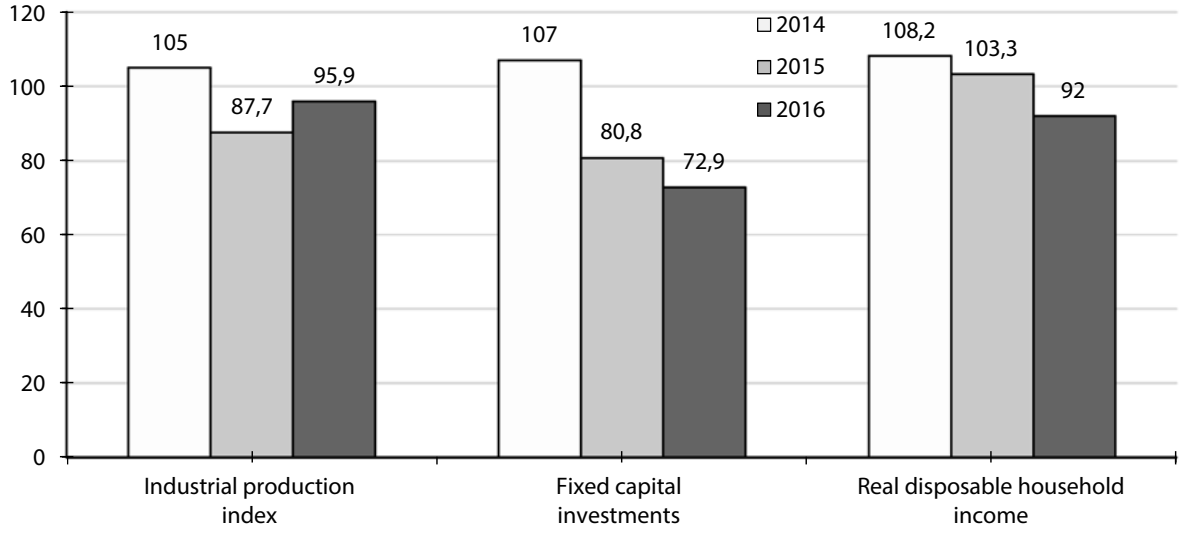

Fig. 3. *The growth rate dynamics of socio-economic development of Primorsky Krai, % to the previous year (The administration of Primorsky Krai and executive power authorities of Primorsky Krai. Retrieved from: http://primorsky.ru (date of access: December 11, 2017). (In Russ))*

which activities are associated with the development of transport and logistics complex, confectionery plant, and food industry (manufacturing of semi-finished products). In the first stage, the required amount of private investments by the first residents is 6.7 billion rubles. The additional 30 billion rubles will be raised during the second and third stages in the period until 2021. In the first stage, the investments from the state budget to finance the construction of infrastructure will be 3.9 billion rubles. Currently, the number of newly created is 28 thousand.[6]

According to preliminary calculations, by 2025, the contribution of Nadezhdinskaya PDA residents to the GRP will be 76.5 billion rubles and, in the future, it will reach 147 billion rubles. The tax proceeds for the same period are expected at 2.9 billion rubles and 33 billion rubles, respectively[7]. The plans also provide for the obligations of the authorities in Primorsky Krai to finance the construction of infrastructure facilities in the amount of 1,986.1 million rubles by 2017, including 722.9 million rubles for the construction of road infrastructure facilities and 495 million rubles for municipal infrastructure[8].

Some indicators of socio-economic development of Primorsky Krai are presented in Fig. 3.

Overall, we see a downward trend of these indicators compared to 2014 and 2015, when the law was signed on the establishment of PDAs and registration of their first residents. Therefore, so far, there is no expected socio-economic effect, despite the impressive investments.

In the manufacturing sector, the industrial production index for 2016 was at 98.5 % to 2015 in comparable prices. In the context of individual sectors, the growth is reported in the following areas:

— Food products (+6.1 %);

— Vehicles and equipment (+1.3 %);

— Metallurgical and metal product manufacturing (+8.7 %).

In the total amount of fixed capital investments in Primorsky Krai for 2016, the investments in buildings and structures accounted to 39.7 %; in machinery, equipment, vehicles, production and business equipment, 35.7 %; in housing, 17.2 %; other investments, 7.4 %.

Next, we should analyze the completion of infrastructure facilities announced for construction in Nadezhdinskaya PDA (Table 1).

[6] The Ministry for Development of the Russian Far East. Retrieved from: http://minvr.ru/activities/toser.php (In Russ.)

[7] Biznes Dalnego Vostoka zhdet effekta ot rezhimov TORov i Svobodnogo porta [The business community in the Russian Far East is waiting for the effects of PDAs and the Free Port regime]. Retrieved from: http://www.zrpress.ru/business/primorje_27.02.2017_82329_biznes-dalnego-vostoka-zhdet-effekta-ot-rezhimov-torov-i-svobodnogo-porta.html (date of access: December 11, 2017). (In Russ.)

[8] The administration of Primorsky Krai and executive power authorities of Primorsky Krai. Retrieved from: http://primorsky.ru/; Chto segodnya sdelano dlya TOR "Nadezhdinskaya" v Primorye? [What was already made for Nadezhdinskaya PDA in Primorye?] Retrieved from: http://prim.news/2016/10/31/chto-segodnya-sdelano-dlya-tor-nadezhdinskaya-v-primore/ (date of access: December 11, 2017). (In Russ).

Table 1

Monitoring the construction of infrastructure for Nadezhdinskaya PDA*

Site	Responsible	Design, %	Construction, %	Commissioning of the site	Current status
1.1 Construction of the road Zima Yuzhnaya — Razdolnoye — Khasan on the section Zima Yuzhnaya — Novy — De-Friz, in Primorsky Krai	Department of Transport and Road Facilities, Administration of Primorsky Krai	100	33	October 1, 2017	Construction
2.1 Water treatment plant with capacity of 250 thousand cub. m/day. Phase 1 of the construction with capacity of 65 thousand cub. m/day, Stage 1 with capacity of 30 thousand cub. m/day	Primorsky Vodokanal Regional State Unitary Enterprise, Administration of Primorsky Krai	100	0	December 31, 2017	Preparing the procurement for construction and installation works
2.2 Construction of the water main	Primorsky Vodokanal Regional State Unitary Enterprise, Administration of Primorsky Krai	100	29	December 31, 2017	Construction
2.3 Construction of the main sewerage system and sewage pumping station	Primorsky Vodokanal Regional State Unitary Enterprise, Administration of Primorsky Krai	100	29	December 31, 2017	Construction
2.3.1 Territory planning documentation for water supply and water removal facilities	Department of Urban Planning of Primorsky Krai, Administration of Primorsky Krai	100	0	—	Completed
3.1 Elaborating the territory planning documentation for gas line facilities: 1. Inter-settlement gas pipeline from GDS Artyom to MGDS-1 (Zavodskoy settlement) with a branch to MGDS-6, MGDS-7, MGDS-9; 2. Inter-settlement gas pipeline from T-branch to MGDS-9	Department of Urban Planning, Administration of Primorsky Krai	90	0	—	Agreeing the territory planning documentation with executive power authorities
4.1 Elaborating the design documentation for the construction of Industrial Park 220 kV substation	Far East Development Corporation JSC	100	0	—	Preparing the documents for obtaining the construction permit
4.2 Elaborating the working documentation and performing the construction and installation works for the construction of Industrial Park 220 kV substation (including the construction oversight, field supervision, etc.)	Far East Development Corporation JSC	100	5	December 28, 2017	Procurement for construction and installation works

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Site	Responsible	Design, %	Const-ruction, %	Commissio-ning of the site	Current status
4.3 Technological connection of power receiving facilities of Far East Development Corporation JSC (Industrial Park 220 kV substation) to electric grids of FGC UES JSC	Far East Development Corporation JSC, FGC UES PJSC	30	0	December 28, 2017	Designing
5.1 Construction of gas supply facilities for Nadezhdinskaya PDA	Gazprom PJSC	80	0	December 28, 2017	Designing
5.2 Elaborating the territory planning documentation for Nadezhdinskaya site of Nadezhdinskaya PDA	Far East Development Corporation JSC	90	0	—	Approving the territory planning documentation

[*] Monitoring of infrastructure construction. Retrieved from: http://erdc.ru/personal/tor_info/# (date of access: December 11, 2017). (In Russ.)

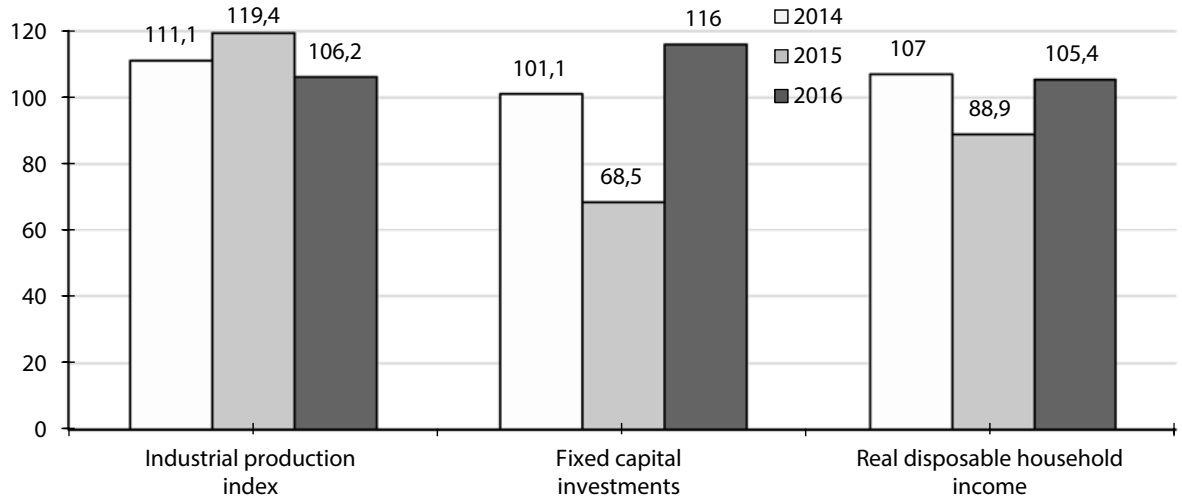

Fig. 4. *The growth rate dynamics of socio-economic development of Khabarovsk, % to the previous year (Itogi sotsialno-ekonomicheskogo razvitiya g. Khabarovska [The results of socio-economic development of Khabarovsk]. Administratsiya goroda Khabarovska [The City Administration of Khabarovsk]. Retrieved from : https://www.khabarovskadm.ru/economics/other/ekonomika/socio-econom_situation/ (date of access: December 11, 2017). (In Russ.))*

The fact that almost all of the 11 infrastructure projects have passed through their design and agreement stage and, for three of them, the construction has already started, should be viewed as a positive trend. This indicates that the state fulfilled its obligations to create the PDA infrastructure.

Geographically, ***Khabarovsk PDA*** is located within the city of Khabarovsk. It has 9 anchor residents which activities are aimed at establishing and developing the metallurgical plant, agro-industrial greenhouse complex, warehouse transport and logistics complex, and the airport. The planned amount of private investments is stated at 15.4 billion rubles, while the required investments from the state budget amount to 2.4 billion rubles. The activities conducted by the residents of Khabarovsk PDA are expected to create 2,574 new jobs.

The advantages, such as the developed transport infrastructure, close proximity to the Trans-Siberian railway, and availability of utilities infrastructure for PDA, made Khabarovsk attractive for high-tech production facilities, as well as modern agro-industrial and transport and logistics complexes. The close proximity to foreign markets opens opportunities for developing new business areas[9].

Some indicators of socio-economic development of Khabarovsk are presented in Fig. 4.

[9] Khabarovsk Priority Development Area. Far East Development Corporation. Retrieved from: http://erdc.ru/tor/khabarovsk/ (date of access: December 11, 2017). (In Russ.)

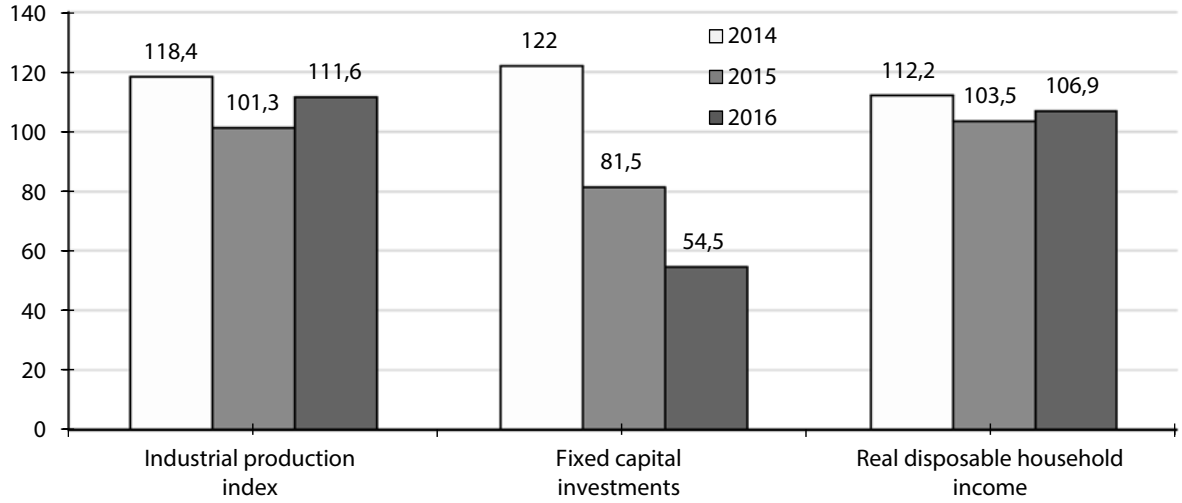

Fig. 5. *The growth rate dynamics of socio-economic development of Komsomolsk-on-Amur, % to the previous year (Komsomolsk-on-Amur. The official website of local self-government authorities. Retrieved from: https://www.kmscity.ru/ (access date: December 11, 2017) (In Russ.); Itogi sotsialno-ekonomicheskogo razvitiya munitsipalnogo obrazovaniya gorodskogo okruga "Gorod Komsomolsk-na-Amure" [The results of socio-economic development in municipal entity of the urban district "The City of Komsomolsk-on-Amur."] Retrieved from: https://www.kmscity.ru/assets/activity/progress/j_2016_progress_itogi.pdf (date of access: December 11, 2017). (In Russ.))*

The year 2015 was marked by the slower growth of such indicators as fixed capital investments and real disposable household income. However, at the end of 2016, these figures returned to the upward trend. Overall, it is clear that the territory badly needs stimulating its development by attracting new investors. Khabarovsk PDA aims to achieve this objective, but it is still too early to judge of its positive impact.

Only two infrastructure development projects (out of 25) have been fully completed. Only 6 projects moved past their design stage, and the construction began only for one project (excluding the completed projects). Although, for a number of projects, the commissioning deadlines fall at the end of 2017, there is a risk of not having time to complete them, because the works have not yet begun[10].

Komsomolsk PDA has an area of 210 hectares and is located mainly within the boundaries of Komsomolsk-on-Amur and partly in the city of Amursk. PDA has 4 anchor residents, the activities of which are related to the manufacturing of parts for the aircraft industry and wood processing. The required amount of private investments was stated at 7.9 billion rubles, and the investments from the state budget will be 1.2 billion rubles. The activities in PDA are expected to create 770 new jobs.[11]

Some indicators of socio-economic development in Komsomolsk-on-Amur, the main territory of Komsomolsk PDA, are presented in Fig. 5.

Despite the registration of the main Komsomolsk PDA residents in 2015, the amount of fixed asset investments in 2016 was 54.5 % compared to the level of 2015. In other words, there was no expected inflow of investments to the region. This can be explained by the fact that there was no actual investment, because all projects are at the stage of design and approval. In absolute terms, for 2016, the total investments in Komsomolsk-on-Amur were 10.9 billion rubles, while the development of Komsomolsk PDA requires the overall amount of 9.1 billion rubles. Therefore, the socio-economic effect expected from the development of PDA requires the investments at the level equal to almost the annual amount which, in our opinion, is unlikely to facilitate the implementation of the projects planned by the authorities.

Out of 24 infrastructure development projects, only four projects, which had been described as the "elaboration of design documents," are fully completed. Nine projects are not even at the start of their design stage. The construction has not started on any of the projects, although the deadline for commissioning some of them falls at the end of 2017 and, therefore, there is a risk of violating the period established for their implementation.

[10] The article was submitted for publication in 2017.

[11] The Ministry for Development of the Russian Far East. Retrieved from: http://minvr.ru/activities/toser.php (In Russ.)

Methods

In addition to traditional financial indicators describing the effectiveness of investment, the effectiveness of establishing and operating the priority development areas can be assessed by analyzing the quantitative change in one effective indicator depending on the changes in a number of parameters that affect it.

In terms of managing the effectiveness as an economic category, it is also important to have information on the quantitative impact of individual indicators on results [14–16]. The implementation of this dependence lies in the context of the economic statistics apparatus, namely, the correlation and regression modeling. The advantage of this method is the possibility to identify the cause-effect relationship between the studied values, that is, to show how much Y will following a change in x, as well as to predict the values of the dependent variable Y by using one or more variables xn. This allows to quantify the contribution made by individual independent variables to the variability of studied dependent value. The correlation and regression modeling results in the following equation [16]:

$$Y = a_0 + a_1 x. \quad (1)$$

The economic interpretation of the model parameters is as follows: a_0 is a free member of a regression equation that reflects the impact of factors not included in the model; a_1 is the parameter in an independent variable that indicates how much Y will change when x is changed by 1.

Also, it is necessary to consider the additional characteristics:

— If the relationship between x and Y is direct ($a_1 > 0$), then the growth of x leads to the growth of Y;

— If the relationship between x and Y is indirect ($a_1 < 0$), then the growth of x leads to the decrease of Y.

The economic effect is the absolute indicator describing the broad volume result of the activity. In the regional governance, it is most often described by the industrial production index viewed as the aggregated result of consolidated activity by all types of production facilities in the analyzed region [17–19].

To determine the factors (levers) affecting the indicators of effectiveness or the set of factors $\{x_n\}$, it is necessary to identify the factors (or arguments) affecting the effectiveness. This can be appropriately performed by using StatSoft Statistica 10.0, a special software program for statistical data processing (hereinafter, Statistica)[12], where the researchers enter the adapted input data.

In terms of statistical requirements in economic and mathematical modeling, the analysis should be based on such parameters that can independently describe the impact on the studied value Y_i. If there is a high correlation between the parameters, their impact on Y_i will be incorrect, which will lead to a high error in the model, and its quantitative relationships will not be able to reflect the reality (real data).

Therefore, the broad requirements for sufficiency of indicators in economic and mathematical modeling are as follows:

— Minimum values of pair correlation between x_n (the correlation coefficient should tend to 0);

— Maximum correlation of each x_n with Y_i (the correlation coefficient should tend to 1).

The input parameters for calculations are the official statistics, as well as the information from the official web sites of regional and municipal authorities.

Since the main goal of this study is the feasibility of using such special regime as the priority development area for ensuring the economic security of the macro-region, we suggest to use the indicators from the Russian Federation Economic Security Strategy until 2030 (Article 27) for assessing the expected results (effects). As an example of consistency in the calculations presented in this article, we suggest to analyze the industrial production index, because stimulating the industrial development and other related sectors of the national economy, as a result, will have a positive impact on the economic security in the Arctic zone of the Russian Federation.

Thus, to assess the effectiveness of PDAs in Primorsky Krai, the input parameters for modeling will be the data presented in Table 1.

It should be noted that the relevant literature provides more than a dozen indicators that describe the factors affecting the industrial production index. In this study, the authors presented only two

[12] Official web site of StatSoft Statistica 10.0. Retrieved from: http://statsoft.ru/resources/support/download.php (date of access: December 11, 2017). (In Russ.)

Table 1

The indicators of effectiveness of PDAs in Primorsky Krai in 2014–2016*

Indicator, symbol	Value of indicator		
	2014	2015	2016
Industrial production index (Y_{pk}), % to the previous year	105	87.7	95.9
Fixed capital investments (a_1), % to the previous year	107	80.8	72.9
Real disposable household income (a_2), % to the previous year	108.2	103.3	92

* The administration of Primorsky Krai and executive power authorities of Primorsky Krai. Retrieved from: http://primorsky.ru (date of access: December 11, 2017). (In Russ.)

influencing parameters as an example and in order to consider the economic (fixed capital investments) and social (real disposable household income) components of the analysis.

The implementation of these parameters by using Statistica software allowed to obtain the following linear model describing the dependence of the industrial production index in Primorsky Krai (Y_{pk}) on the influencing factors (a1 is the growth rate of fixed capital investments in Primorsky Krai; a_2 is the growth rate of real disposable household income in Primorsky Krai):

$$Y_{pk} = 154.8 + 0.9a_1 - 1.36a_2. \quad (2)$$

The practical value of this model is in defining the quantitative relationships between the industrial production index in the region and the factors that cause its growth or decline. The results of modeling can be interpreted as follows:

— With the increase of growth rate of fixed capital investments (a_1) by 1 million rubles, the industrial production index in the region will grow by 0.9 %;

— With the increase of real disposable household income (a_2) by 1 thousand rubles, industrial production index in the region will decline by 1.36 %.

Based on the values of model coefficients (2), the greatest impact on the industrial production index in the region is made by the real disposable household income, which represents the household income (net of mandatory tax payments) adjusted for the inflation rate. This indicator allows to assess, in the most comprehensive way, the change in the living standards of the population in the region, namely, to track the dynamics of the cost of living. The higher is the cost of living for the population, the less inclined is the population to spend money on personal consumption. As a result, lower consumer demand leads to decline in the output of industrial enterprises, which is reflected in the negative dynamics of the industrial production index. Thus, the inverse relationship between the higher cost of living for the population of Primorsky Krai and the industrial production index of this region reflects the logic of regional development.

The validation of individual parameters describing the adequacy of the model (model verification) and the retrospective run of the model allowed to make a conclusion on the conformity to its initial data. This was proved by substituting the initial parameters into the model to display the real results. This allows to conclude that the model is fit for the purpose of making the forecasts and assessing the effectiveness of administrative decisions.

Studying the development characteristics of any economic category, including the effectiveness of adopted administrative decisions for the development of territories, implies the forecasting of that phenomenon in order to determine the levers for future impact [20–23].

As a forecasting method, we suggest to use the trend analysis, which is a convenient and effective tool provided by Excel software package. However, it should be emphasized that the trend forecast shows the trend (trajectory) in the development of the studied indicator for the future by taking into account the existing external and internal conditions and does not pretend to provide accurate quantitative values. Such forecast is aimed at studying the generalized dynamics of analyzed processes. Therefore, it is possible to assume the growth or decline in the indicator in the forecasted future period. However, it is impossible to trace the fluctuations of this indicator within shorter time intervals (a week, month, or year).

This forecasting method takes into account only one independent value (time) and does not consider other quantitative indicators affecting the analyzed parameter (Fig. 6–8).

In the presented graphs, the variable t (time) is plotted along the horizontal axis, and the industrial production index dynamics in Primorsky Krai are plotted along the vertical axis. We also added a trend

line (dotted line), which describes the trend in the change of analyzed value based on actual values and a 3-year forecast. Additionally, the graph shows the model (equation) for the selected power-law forecast and the value of approximation coefficient (R^2), which indicates the validity of forecast data.

The forecast is made by extrapolation, that is, by extending the trends of change in the index for previous periods into the future. The trend forecast graph allows to conclude that, with the current trends of change in such indicators as the fixed capital investments and real disposable household income, the industrial production index for the next three years following the date of forecast will have a steady downward trend, which proves the ineffectiveness of the policy selected for implementation and management of priority development areas in Primorsky Krai and its negative impact on the level of economic security.

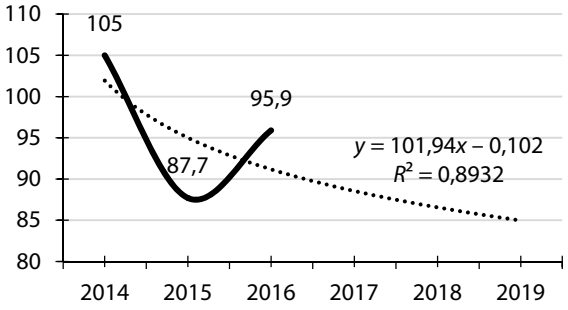

Fig. 6. *The trend forecast of industrial production index dynamics in Primorsky Krai based on power-law equation, %*

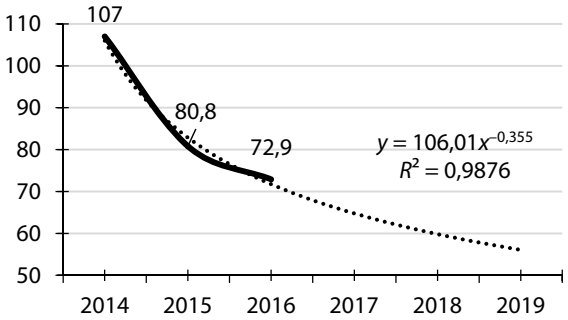

Fig. 7. *The trend forecast of fixed capital investment dynamics in Primorsky Krai based on power-law equation, %*

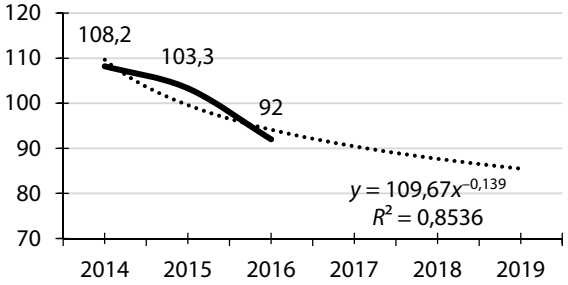

Fig. 8. *The trend forecast of real disposable household income dynamics in Primorsky Krai based on power-law equation*

Obtained results

After analyzing the functioning of the first PDAs registered in the Russian Far East, as well as some macroeconomic indicators describing the development of regions and municipal entities where the PDAs are located, we can conclude that so far the stated targets for improvement of socio-economic development have not been fully achieved.

Based on the classical definitions of economic theory, the socio-economic development implies the improvement in the life of the population in specific territories (social development), as well as the development of the economy through the growth of relevant indicators. The idea behind the establishment of PDAs was not only to achieve the social and economic targets, but also to work on outpacing them. Moreover, in its essence, the outpacing development implies selecting and justifying the use of specific indicators, the achievement of which within the stated period should become mandatory. If these conditions are not met, PDAs or any other mechanisms for stimulating the regional development can be viewed as ineffective. The regulatory and legal base for the mechanism of PDA regulation does not have the unified set of indicators for assessing the effectiveness of development in all such areas.

However, at this point, the building of infrastructure, the costs of which are born by the state, can be considered as the reserve for outpacing development. According to many officials[13], these measures will pay off in the future by growing economic activity of investors, the inflow of new investments, the creation of additional jobs, and quality of life improved of the population in the regions.

To adapt the approach used in establishing PDAs in the Russian Far Est for the Arctic territories, it is necessary first to identify their common traits.

The analysis of statistics over the past 10 years shows the declining dynamics of the main macroeconomic indicators describing the development of territories in the Russian Arctic and the Far East. This happens as a result of insufficient value added due to the ineffectiveness of industrial and mining enterprises located in these regions, unfavorable exports and imports, imbalances in the socio-economic development of the territories. Large-scale investments are required to stimulate the development of territories and eliminate the imbalances in regional development by attracting

[13] TOR na starte [PDAs at the start line]. (2017). Rossiyskaya gazeta — Ekonomika Tsentranogo okruga [Russian Newspaper — Economic of the Central District], 7218(52).(In Russ.)

businesses and the population to these regions, which cannot be provided by the regions alone. This situation determines the dependence of the territories in the Russian Far East and the Arctic on external capital, including the foreign sources.

The analysis of development in the Arctic zone of the Russian Federation leads to the conclusion that new investors are required in order to raise the attractiveness of that region for businesses and population. These investors can be attracted only by appropriate preferences. In this regard, the establishment of PDA in the Arctic may be appropriate only if that regime is adapted to the specifics of development in the Arctic territories by taking into account the detailed analysis of the balance between the drop in tax revenues and the investment flows expected in the region after provision of the relevant preferences.

In case of high-quality forecast estimates, the establishment of PDA in the Arctic will have a positive impact not only in the budgetary and economic areas, but also in the social sphere. Higher tax proceeds and value-added, the inflow of foreign equipment and technology, and development of infrastructure will be reflected in the economic effectiveness of the Arctic territories. The creation of additional jobs and the development of construction and tourism will have a positive impact on the social sphere [24–25].

Conclusions

To sum up, the effective implementation of PDA format in the Arctic zone with the view of strengthening its economic security requires to adopt a number of measures.

1. Elaborating and accordingly legislating the indicators for assessing the effectiveness of PDA, including on the basis of existing indicators from the Russian Federation Economic Security Strategy until 2030. These indicators should reflect the effectiveness or lack thereof in the development of regions or municipalities with PDAs. Such indicators should be quantifiable (without qualitative, score-based, and weighted subjective characteristics), systematic (mandatory calculation and provision of relevant indicators for a specific period, we recommend once a year) and have statutory values or targets. The failure to comply with the statutory values of indicators describing the effectiveness in the development of PDA may lead to the withdrawal of that status from the territory or review of its resident list. Therefore, the compliance of PDA with the requirements to achieve the established indicators of effectiveness in the socio-economic development should be set as mandatory, rather than recommended provision at the regulatory level.

Today, the Law on PDAs does not include a unified system of effectiveness indicators. The assessment of PDA effectiveness is mentioned only in the list of goals established for the Supervisory Board of PDA as the possibility of such assessment, but without indicating that it should be mandatory and systematic. No explanatory regulations were adopted for making such assessment. The absence of relevant regulatory and legal acts defining the list of effectiveness indicators does not allow to assess the effectiveness of PDAs.

2. Providing the mechanisms for reviewing the terms of PDA functioning and PDA resident status after a certain period of time. We consider that the optimal solution would be to review and adapt the legislation on PDAs every five years by taking into account not only the regional and macroeconomic needs and trends, but also the assessment of territory effectiveness. Today, PDAs are created for 70 years, which is a very long time for them to operate in an unchanged form or regime.

3. Creating a single structure to manage the investment projects and regulate the infrastructure development during the establishment of PDA in the Arctic (management company). It should be similar to the Far East Development Corporation and provide the comprehensive coverage of all objectives to be achieved.

4. Creating a supervisory authority, functions of which include not only the monitoring over the activities of the Development Corporation and PDAs, but also the effectiveness of budget spending.

Today, the Law on PDAs provides for the significant use of budgetary funds, including to finance the construction and operation of infrastructure facilities, ensuring the activities of specially established institutions to monitor the timely and full payment of social insurance premiums, as well as to finance the activities of management companies. In addition to the stated infrastructure costs, it is necessary to estimate the expected administrative budgetary costs (such as the support for the "new development institutions") and assess their effectiveness. In the current version of the Law, the legislator provides the following explanations for the absence of such calculations, "In view of the general institutional

nature of the draft law, it is impossible to specifically assess the impact of their adoption on the federal budget and budgets of the subjects of the Russian Federation"[14]. Therefore, currently, there are no calculations with regard to the costs of supporting the new development institutions which, as a result, may exceed the private investments.

5. Clearly setting and defining the format of the relationship between PDAs and the subjects of the Russian Federation and municipal entities in which these PDAs were established. Since providing PDAs with broad powers and specific advantages of their residents implies the reduction of similar powers in the subjects of the Russian Federation by transferring them to the management company.

6. Elaborating and establishing at the regulatory level the mechanisms and/or institutions that ensure the spread of impulses from outpacing the development of PDAs to other territories of that macro-region.

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