Priority Development Areas as a Tool for Enterprises Support in Russian Monotowns

S.G. Belev[a] ✉, V.V. Veterinarov[b], G.S. Kozlyakov[c], O.V. Suchkova[d]
[a, c, d] The Russian Presidential Academy of National Economy and Public Administration (RANEPA);
[a] Gaidar Institute for Economic Policy, Moscow, Russia;
[b] Center for Monetary and Financial Studies (CEMFI), Madrid, Spain;
[d] Lomonosov Moscow State University; Moscow, Russia
[a] http://orcid.org/0000-0003-3962-7428; [b] http://orcid.org/0000-0002-0169-1451;
[c] http://orcid.org/0000-0002-7072-0260; [d] http://orcid.org/0000-0003-3378-9426
✉ Corresponding author

ABSTRACT

This paper **aims** to estimate the effectiveness of the Priority Development Areas (PDA) program in Russian monotowns at the firm level. Using data from the SPARK-Interfax database on Russian companies in 2014–2018, the authors estimate the effect of the PDA residency on the firms' revenue growth in monotowns in Russia. The authors test two hypotheses. First, the status of the PDA resident is obtained by firms that have been successful in previous periods. Second, the PDA resident status does not have a positive effect on firm growth. To measure the treatment effect, the authors use the nearest neighbor propensity score matching **method**, which allows drawing conclusions about causality, as opposed to the ordinary least squares (OLS) method. The regressions consider the firm size, industry, and geographic location of the city. According to the **results** of the study, both hypotheses are confirmed. Resident status is determined by the gains in the company's revenue for the two previous periods (the coefficients are significant in all specifications at the 5% level). The influence of residency on the firm's revenue growth is neglected (becomes insignificant) when comparing enterprises with the same pre-2015 trends. Thus, the authors **conclude** that the success of the PDA program in Russian monotowns in terms of business support is questionable. The findings of the study are valid for enterprises established before 2015.

Keywords: monotown; city development; priority development area; spatial development; industry structure; nearest neighbor propensity score matching; SPARK; firm size

INTRODUCTION

A dilemma between equalization of territories and stimulating growth in the most developed regions arises when implementing a spatial policy[1] [1–3]. Both goals are outlined in the Strategy for the Spatial Development of Russia until 2025,[2] where also mentioned the problem of the development of single-industry towns (monotowns).

Many monotowns are facing the problem of excessive monopolization associated with the presence of a city-forming enterprise. This situation complicates the implementation and development of any other entrepreneurial activity [4]. Low-diversified cities, on the one hand, ensure the realization of comparative advantages and contribute to the growth of the country's economy (the so-called Marshall-Arrow-Romer effect takes place) [5, 6]. On the other hand, narrow specialization reduces the resistance of the urban economy to external shocks (the so-called Jacobs effect arises) [5, 7, 8]. Since 2016, Priority Development Areas (PDA) have been created in monotowns to ensure favorable conditions for accelerated socio-economic development. PDA residency gives businesses an advantage in paying taxes at reduced rates.[3] One of the goals of the PDA program in monotowns is to diversify the economy, stimulate the development of businesses that do not belong to city-forming enterprises.

According to the report "Analysis of the practice of applying preferential regimes, which are in force on the territory of the Russian Federation, in terms of their effect on economic growth and compliance with the stated goals" of the Accounts Chamber of the Russian Federation (2020)[4] monotowns for the period of 2014–2018 are characterized by a decrease in entrepreneurial activity, which means losing one of the growth points of the city.

Following the report of the Accounts Chamber, we note that there are no efficiency indicators of PDA in monotowns, so the development of monotowns is assessed ambiguously.

At the same time, when carrying out the analysis, it is important to note that not all enterprises of a monotown become PDA residents. In this regard, a more detailed analysis at the level of the individual resident and non-resident firms is more relevant than estimating the growth of total factor productivity at the city level, as authors in [9, 10] do. Therefore, we attempt to study the effects of the presence of Priority Development Areas to find out whether the status of a PDA resident has a positive effect on the growth of the firm.

PDA IMPACT ASSESSMENT IN THE SCIENTIFIC LITERATURE

The study [11] presents an estimation of the socio-economic development of cities in the Central Black Earth economic region of Russia, considering two indicators of the city's mono profile: the share of a city-forming enterprise in city-wide production volume, as well as the share of employed at the city-forming enterprise.

Government support for business, aimed at increasing productivity and employment in certain territories, is used in many countries around the world. However, accurate micro-econometric estimates of the effect of this support are rarely found in the economic literature. In [12], various criteria

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[1] World Investment Report 2019: Special Economic Zones. 2019:127–206. URL: https://unctad.org/system/files/official-document/wir2019_en.pdf (accessed on 19.05.2020).

[2] Decree of the Government of the Russian Federation of February 13, 2019, No. 207-r "On approval of the Strategy for the spatial development of Russia until 2025". URL: http://static.government.ru/media/files/UVAlqUtT08o60RktoOXl22JjAe7irNxc.pdf (accessed on 02.09.2020).

[3] More details on monogoroda.rf. URL: http://xn-80afd4affbbat.xn — p1ai/work/products/project-office/toser/ (accessed on 02.09.2020).

[4] Report of the Accounts Chamber 2020 "Analysis of the practice of applying preferential regimes in force on the territory of the Russian Federation, in terms of their impact on economic growth and compliance with the stated goals". URL: https://old.ach.gov.ru/activities/control/%D0%9E%D1%82%D1%87%D0%B5%D1%82%20%D0%BF%D0%BE%20%D0%BF%D1%80%D0%B5%D1%84%D0%B5%D1%80%D0%B5%D0%BD%D1%86%D0%B8%D1%8F%D0%BC%2020200330%202.pdf (accessed on 02.09.2020).

are used to select regions for a program to support manufacturing employment. The region selection criteria for the program change every 7 years, therefore, on the next change, the previous criteria were used as instrumental variables for the new selection criteria for participation in the programs. Using instrumental variables, authors identified a positive effect of the program on employment and investment, but not on total factor productivity (TFP). Estimates of the OLS model underestimated the effect of the program because it was originally targeted at lagging businesses and regions. However, the effect of such a program was found only for small firms; there was no effect of the manufacturing employment support program for large enterprises. It was also found that the increase in employment in the sectors included in the support program was due to a decrease in unemployment (and not due to interregional labor migration or migration between enterprises of the same region). The benefit of one new job place creation is estimated at $ 6,300. This result means that subsidies are efficient compared to the cost of paying them.

The European Union actively uses targeted support programs for enterprises and regions. In Italy, the state support program was aimed at providing problem regions with transfers for infrastructure modernization, and then at creating incentives for hiring additional employees. This policy was analyzed in [13]. Similar support measures were carried out in Sweden, France and Germany and were the examined in the study [14].

The government targeted measures to support enterprises and territories were also implemented in Asian countries. Special economic zones were created in China, the effect of which on the local economy was studied, for example, in the research by J. Wang [15]. The author estimate the effect of special economic zones (SEZ) on the total factor productivity (TFP). The author uses the method of propensity score matching: the changes between the municipalities that received the status of a special economic zone in earlier rounds, and those that received this status in later waves are compared. In this matching, the control variables used are: initial output, the number of students per capita, distance to coast, highway density, proximity to an airport or port, post offices and telecommunications per capita, deposits and loans per capita, wages, property prices, and historical trends in total factor productivity. J. Wang found that regions with a special economic zone status attract direct foreign investment, but this do not crowd out investment from residents. However, the effects are heterogeneous: for zones created earlier the benefits of municipalities are larger than for zones created later. It should be noted that the special economic zone does not cover the entire territory of the municipality in China. One municipality may have several special economic zones. It was found that municipalities with multiple SEZs experienced larger effects than those with only one SEZ.

In [16], the so-called synthetic control is used to estimate the long-term effect of earthquakes on TFP. Calculations are made for the provinces of Italy. Control variables are GDP per capita, investment per capita, the share of university graduates in the workforce, population density, the share of industries, and the quality of institutions.

In the study [17], factor analysis is carried out, which does not directly estimate the effect on the TFP, but indirectly — through the output. Estimates are based on quarterly data for Malaysia and answer the question to what extent various factors affect output. The following parameters are used as control variables: physical capital (gross capital as a share of GDP), labor force (number of employees), real flows of foreign direct investment, admission to universities (as an indicator of human capital), as well as the product of indicators "direct investment" and "university applicants" as a measure of absorption of investments in human capital.

The general methodological base for all studies on the impact of budget support measures on indicators of development of a territory (city) is a matching of territories (cities) that received and did not receive support. The following groups of indicators are used as control variables or comparative characteristics: human capital (share of university graduates in the labor force), (foreign) investment (as a share of GDP), population (labor resources, number of employees), wages, housing prices in the city, the quality of the institutional environment. They use total factor productivity, wages or investments, and the growth rate of the gross urban product as a dependent variable characterizing urban development.

For a more detailed analysis, it is necessary to compare the enterprises that received and did not receive the status of a PDA resident in case not all enterprises of the city are included in the PDA program. In the foreign literature, a number of studies explore the problem of favoritism in determining preferences for enterprises [18–21]. In this article, based on the analysis of pre-trends, we will also test the hypothesis that initially more successful enterprises receive the status of a PDA-resident.

Thus, we can draw the following conclusions based on the literature review:

• a simple comparison of the indicators of participants in a particular business support program before and after participating in it is a poor way to measure the effectiveness of this program since it does not distinguish the actual contribution of the program among all possible factors affecting the dynamics of business development;

• it is necessary to select a control group that would show the contribution of other significant factors, while the selection of firms in the control group or in the impact group should occur, if not by chance, then at least independently of other factors that are significant for business dynamics.

DATA AND MODEL

All calculations are based on the SPARK-Interfax database for Russian firms, which in-cludes information on more than 400 thousand enterprises for 2014–2018 according to 8 sections of OKVED (A, B, C, F, G, I, P, Q). We also used data on monotowns in Russia, in which the Priority Development Areas (hereinafter referred to as "PDA")[5] were created and the register of PDA residents of monotowns.[6]

The PDA status of enterprises was determined by the objects of the second level of the OKATO (administrative division, districts, cities), which corresponded to the monotowns list.

All estimates are made only for PDA-registered companies. Using the Google API, the coordinates of the PDAs and all firms at their legal addresses (at the location of tax payment) were obtained and then compared with each other. In addition, to create an indicator of the distance from Moscow and from regional centers (considering their spatial influence [22]), their coordinates were obtained, and then the distances from each PDAs to the nearest regional center and Moscow were measured.

All indicators are taken in real terms to account for inflation so that the growth of firms' incomes can be estimated. As a measure of inflation for the mining and manufacturing industries, we used the producer price indices of the mining and manufacturing industries, respectively. For construction, the producer price index for construction products is used. For all other industries, the consumer price index for goods and services was used. All indicators are taken from the Rosstat website.

In this article, we test two main hypotheses:

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[5] A complete list of Priority Development areas: federal and regional special economic zones (SEZ), priority development areas (PDA) in monotowns, in the Far East and other municipalities of the Russian Federation. URL: https://xn--dtbhaacat8bfloi8h.xn-p1ai/toser-all (accessed on 20.04.2020).

[6] A complete register of areas of advanced social and economic development residents created in single-industry municipalities of the Russian Federation. URL: http://old.economy.gov.ru/minec/activity/sections/econReg/monitoringmonocity/2019041502 (accessed on 16.07.2020).

• hypothesis 1 — the status of a PDA resident a priori is obtained by more dynamic firms in previous periods;

• hypothesis 2 — the status of a PDA resident does not have a positive effect on the company's growth.

Both hypotheses are closely interrelated since the non-randomness of the resident status in relation to the characteristics of the firm creates the problem of endogeneity in assessing the effect of residency [23]. If the indicators that affect the likelihood of residence are not considered or considered incorrectly, an overestimate will be received.

To consider the non-randomness of obtaining the resident status, we used the nearest neighbor propensity score matching (hereinafter referred to as "matching") [24]. All residents are an impact group, and firms operating in the PDA and not having resident status, from industries in which there are residents, are assigned to the control group.

The matching algorithm is designed in such a way that at the first step, the probability of impact (in our case, residency) is estimated depending on the selected characteristics. Further, for the probability distribution of the characteristics of the treatment group, such observations are selected from the control group so that the distribution of the characteristics of the control group is as close as possible to the distribution of the treatment group. In other words, firms with resident status are not compared with all other firms, but with purely similar firms that do not have such status. Therefore, it becomes possible to compare groups with the same probability of obtaining a resident status, thus, the quantitative effect of a resident will not be overestimated as a result of the fact that, on average, more dynamic firms received PDA resident status.

Unfortunately, exact matching is hardly possible, as it is impossible to find an exact copy for each resident due to the fact that firms have many continuous characteristics (such as revenue) that may differ slightly even if all other variables are the same (for example, belonging to a particular industry). For this reason, a likelihood (similarity) measure is calculated, which shows how certain firms with resident status have similar (including identical) firms without such status. This procedure is called matching (propensity score matching).

For matching, it is critical with which characteristics the matching is carried out according to the propensity. Therefore, before starting the algorithm for searching for similar firms, it is necessary to select the best specification for estimating the probability of residence.

We use the maximum likelihood method to estimate logistic regression (hereinafter referred to as "logit model estimation"):

$$\hat{\theta} = \arg\max_{\theta} \prod_{i=1}^{n} P\{y = y^i \mid x = x^i\}, \qquad (1)$$

where $P\{y=1 \mid x\} = f(z) = \dfrac{1}{1+e^{-z}}$ — the logistic function or the probability for the given characteristics $z = \theta^T x$ to be a resident, $P\{y=0 \mid x\} = 1 - f(z)$ — the probability of not being a resident. The values $\hat{\theta}$ obtained through the maximization of the likelihood function are the estimated values of the coefficients of the indicators of the influence of a particular characteristic on the probability of being a resident.

We are forced to use the logit model instead of a simpler linear probability model, where it is enough to apply the ordinary least squares method (hereinafter referred to as "OLS"), because, in contrast to the logit model, which guarantees that the probabilities predicted within the framework of the model will lie in the range from 0 up to 1 (determination of probability), OLS allows values to be outside the range of valid values.

Thus, to obtain an unbiased effect of residency, one must first determine the best specification of the logit model according to one of the information criteria, for example, Akaike:

$$AIC = 2k - 2\ln(L), \qquad (2)$$

where k — the number of parameters in the statistical model; and L — the maximum value of the likelihood function of the model. Akaike information criterion is a relative measure of model matching. The smaller its value, the better the model relative to others, since it allows the smallest number of characteristics to obtain the greatest value of the likelihood function.

As a proxy variable for the growth of the company, we use the indicator of revenue growth. After selecting the best specification, we use the matching algorithm and compare the base OLS estimate for all observations and those obtained using matching to see the difference in effect estimates.

Hypothesis 1 is correct if some of the characteristics of firms will significantly determine the status of residence in the assessment of the logit model. Hypothesis 2 will be confirmed if the estimate of the effect of residence on revenue growth after using matching loses its significance and decreases in magnitude relative to the base OLS estimate.

ANALYSIS RESULTS

Of the 443,512 companies available in the SPARK-Interfax database, 155 residents of the PDA were selected based on the list of the Ministry of Economic Development of Russia. Further, the industries in which it is possible to obtain the status of a resident were identified: there are 27 such industries[7] in total (*Table 1*).

On the basis of 27 industries and PDA firms, 9160 firms were selected that belong to the same industries as residents, are located and operate in the PDA, but do not have the status of residents.

Table 2 shows that more than two-thirds of the firms that received the PDA resident status did not exist before 2016. For those that were created only in 2018, it is not possible to assess the impact of the residency on revenue growth, because they did not yet

have revenue in 2017. The analysis will focus on firms that existed in 2015 (41 firms). This is done to control the so-called pre-trends — trends in revenue growth over the previous two periods, since otherwise there is a risk of comparing firms that are fundamentally different in terms of competitiveness.

The fact that most of the firms that received the status of residents were created when the PDA list was formed is of interest and requires a deeper analysis. After all, this can indicate both the success of the creation of the PDA, which attracts entrepreneurs to open new businesses, and the opposite — the PDA does not support existing businesses that need help and development. But this question will remain outside the scope of our analysis since a quantitative assessment is difficult due to the lack of many characteristics required to control for such an effect.

For all further calculations, the following indicators were used:
* resident — a dummy variable for firms that had resident status in 2018;
* revenue — the firm's revenue in billions of rubles for 2018;
* revenue growth — percentage change in revenue from the previous year to the current one (from 2017 to 2018);
* distance to the capital of the region — the Euclidean distance between the coordinates of the place of observation (the city in which the firm is located) and the coordinates of the nearest capital of the region of the Russian Federation in kilometers;
* distance to Moscow — the Euclidean distance between the coordinates of the observation (of the city in which the company is located) and the coordinates of Moscow in kilometers, zero for observations outside the European part of Russia;
* large firm — a binary variable indicating a type of firm in 2018 according to the classifier of financial statements;
* medium-sized firm — a binary variable indicating a type of firm in 2018 according to the classifier of financial statements.

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[7] Hereinafter, by industries, we mean the types of economic activities in accordance with the OKVED used in statistical accounting.

Table 1

Industries with residents

No.	Industries
1	Crop and livestock production, hunting and related services in these areas
2	Fishing and fish farming
3	Extraction of other minerals
4	Food production
5	Textiles production
6	Manufacture of clothes
7	Wood processing and manufacture of wood and cork products, excluding furniture, manufacture of straw products and plaiting materials
8	Manufacture of paper and paper products
9	Manufacture of chemicals and chemical products
10	Production of medicines and materials used for medical purposes
11	Manufacture of rubber and plastic products
12	Manufacture of other non-metallic mineral products
13	Metal production
14	Manufacture of finished metal products, except for machinery and equipment
15	Manufacture of computers, electronic and optical products
16	Manufacture of electrical equipment
17	Manufacture of machinery and equipment not included in other categories
18	Manufacture of motor vehicles, trailers and semi-trailers
19	Furniture production
20	Manufacture of other finished goods
21	Repair and installation of machinery and equipment
22	Building construction
23	Engineering construction
24	Wholesale and retail trade in motor vehicles and motorcycles and their repair
25	Wholesale trade, except for the wholesale trade of motor vehicles and motorcycles
26	Activities for the provision of places for temporary residence
27	Healthcare activities

Source: compiled by the authors.

Control of industry and regional affiliation [22] means the inclusion of binary variables of industries and regions in which firms are located. They can explain part of the variation, but the coefficients of each of them individually are not of significant interest for the objectives of our analysis. Therefore, to avoid a significant increase in the size of the tables shown in the article, they indicate whether there is a control for these binary variables or not.

Firms recognized as residents by years of establishment

Year	2015 and earlier	2016	2017	2018
Number of firms opened	41	12	38	64

Source: compiled by the authors.

The trend of revenue growth determines the residency (Logit estimation)

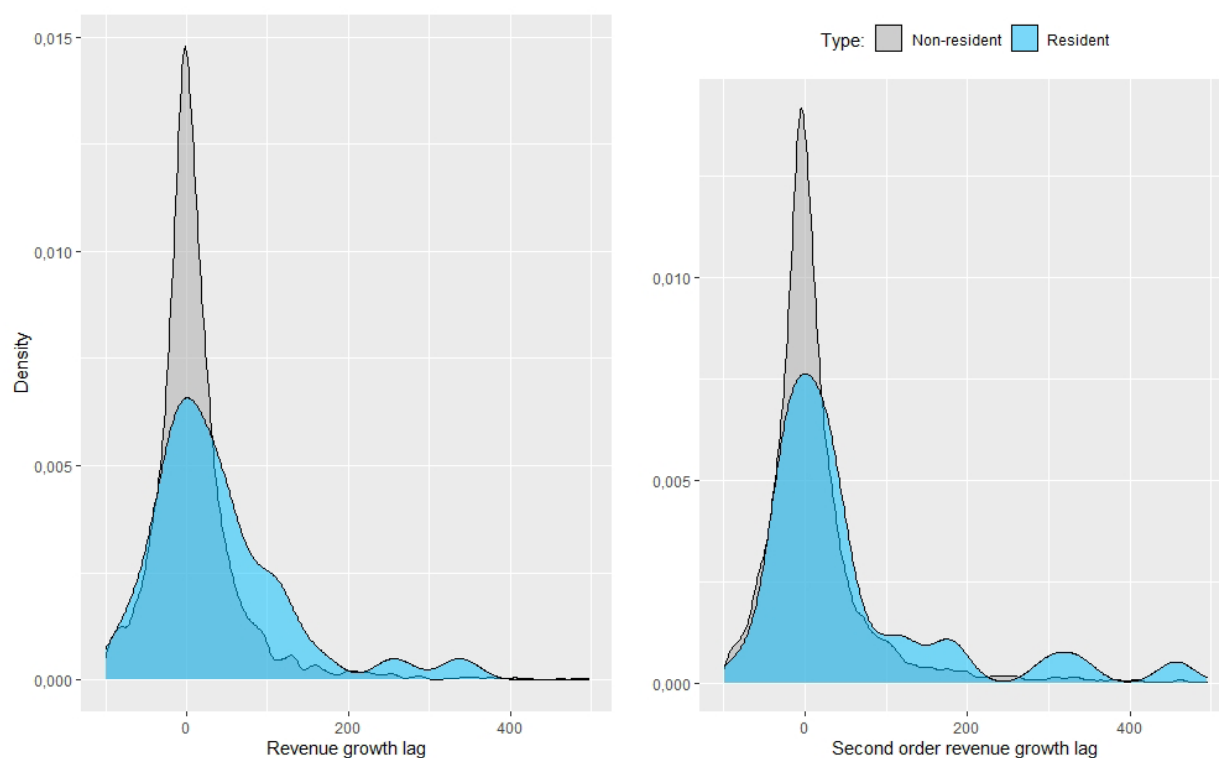|	Resident			
	I	II	III	IV
Revenue growth lag	0.004** (0.002)	0.006*** (0.002)	0.006*** (0.002)	0.006** (0.002)
Second order revenue growth lag	0.005*** (0.002)	0.004*** (0.002)	0.004*** (0.002)	0.005*** (0.002)
Distance to the capital of the region			0.002 (0.003)	
Distance to Moscow			−0.001 (0.0004)	
Industry control	No	Yes	Yes	Yes
Control for regional affiliation	No	No	No	Yes
Number of observations	5049	5049	5049	5049
Likelihood logarithm	−193.122	−156.573	−154.804	−131.167
Akaike information criterion	392.243	371.147	371.608	400.335

Source: compiled by the authors.

Note: measurements are made with a constant term, indicators with a lag are values one year earlier than the measurement period, * $p < 0,1$; ** $p < 0,05$; *** $p < 0,01$.

The lag of any indicator means the use of its value for the previous period. Accordingly, the second order lag is the use of the indicator value two periods ago.

For the estimates of the logit model (*Table 3*) and for all subsequent results, outliers were excluded for which the growth rate of revenue at least in one of the periods (2015–2016, 2016–2017, 2017–2018) was more than 500 percentage points. This allows for more universal estimates and more accurate estimates of probabilities. The results with the inclusion of outlier observations are similar, but for them it is impossible to construct visually understandable distributions and to

Fig. 1. **Distribution of revenue growth of previous periods for all observations**

Source: compiled by the authors.
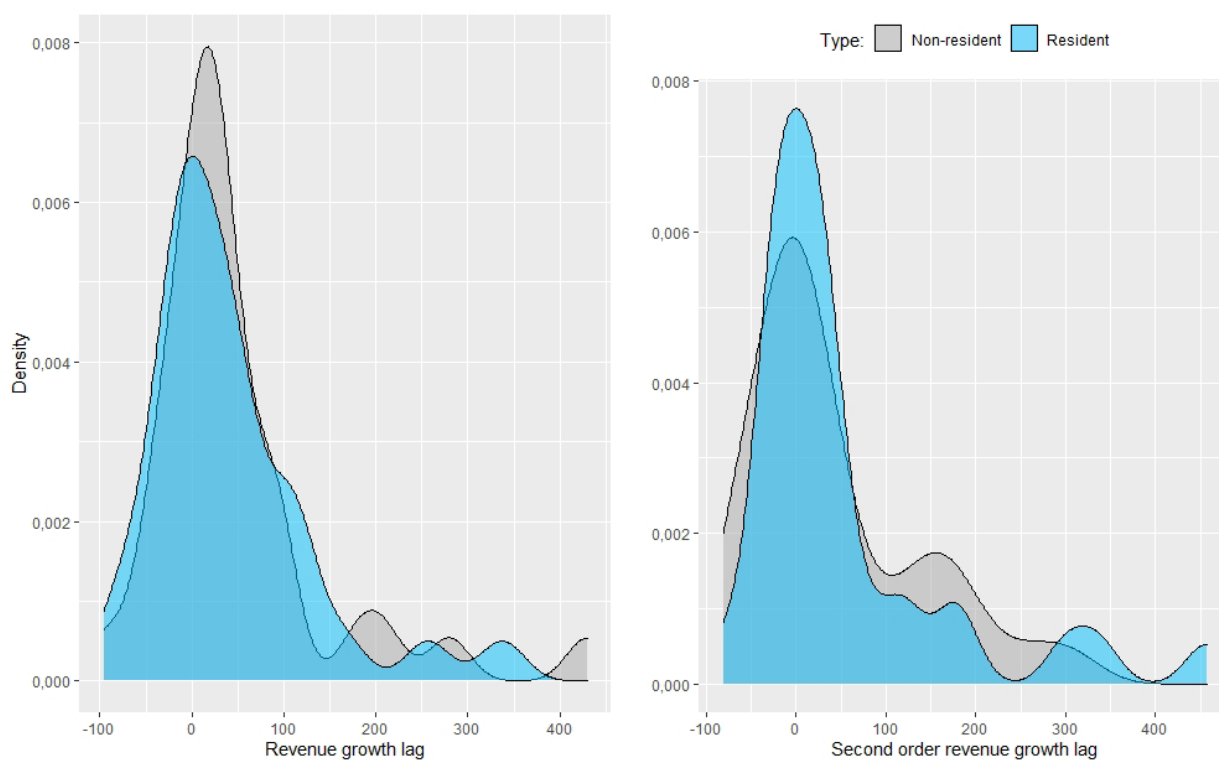
Fig. 2. **Distribution of revenue growth of previous periods after PSM**

Source: compiled by the authors.

Table 4

Residence effect disappears after PSM

	Revenue growth		
	I (OLS)	**II (matching)**	**III (matching)**
Resident	39.972** (16.513)	36.927* (21.435)	23.582 (20.997)
Revenue lag	−0.028 (0.032)		−0.000 (0.000)
Distance to the capital of the region	−0.028** (0.013)		0.132 (0.148)
Distance to Moscow	−0.004** (0.002)		0.007 (0.028)
Large firm	13.647*** (3.291)		25.763 (36.984)
Medium-sized firm	9.370*** (2.987)		−15.251 (17.798)
Industry control	Yes	No	Yes
Number of observations	5049	66	66
R^2	0.016	0.044	0.410
Adjusted R^2	0.010	0.029	0.148

Source: compiled by the authors.

Note: errors are heteroskedasticity-robust (HC 1), measurements are made with a constant term, indicators with a lag are values one year earlier than the measurement period. * $p < 0,1$; ** $p < 0,05$; *** $p < 0,01$.

interpret most of the coefficients. This leaves 33 resident firms and 5,016 non-resident firms that have operated since at least 2015 and have not increased revenues by more than 500 percentage points since 2015.

In all four specifications (*Table 3*), only the income growth values of previous periods have a significant impact on the likelihood of residence. The result is stable for different specifications: in the presence and absence of control over industry affiliation and geographic location, and the result does not change when either taking into account the distance to economic centers or simply when considering the fixed effects of the regions.

The increase in revenue over the previous two periods serves as sufficient residency statistics to allow us to argue that a particular firm is more likely to have resident status in 2018 if we know how that firm grew from 2015 to 2016 and from 2016 to 2017. The result fully justifies the fact that only firms that existed in 2015 were used for the estimates. Losing two-thirds of the sample of residents, we still get the opportunity to make accurate estimates of the effect and compare firms with similar growth dynamics.

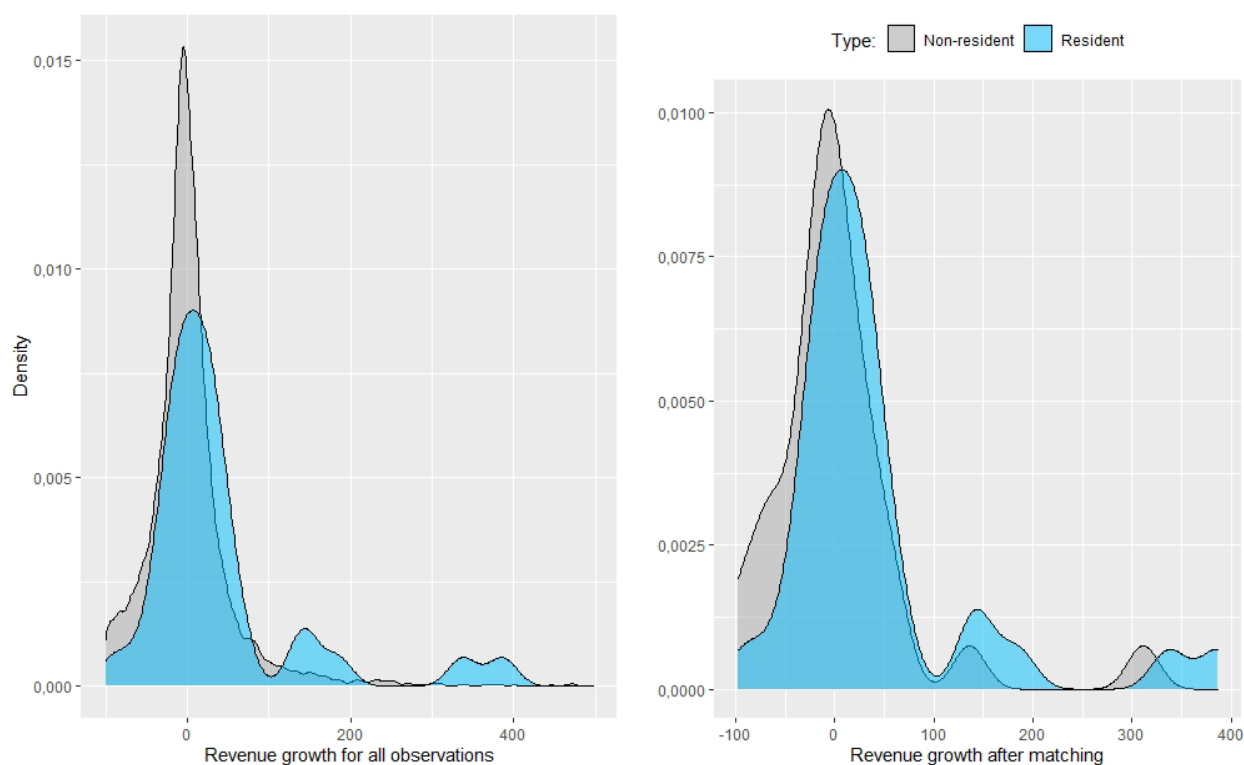Based on the Akaike information criterion, we can say that Specification II in *Table 3* is

Fig. 3. **Distribution of revenue growth of previous periods after PSM**
Source: compiled by the authors.

the best because it has the smallest criterion value. At the same time, none of the industry binary variables has a significant effect, it is just that in combination with the control for industry specifics the most correct estimates of the effect of first and second order revenue growth lags are obtained.

The marginal effect of revenue growth in prior periods is small. Thus, for a company whose revenue growth in the period from 2015 to 2016, as well as from 2016 to 2017 amounted to approximately 500 percentage points, the probability of residency will be only 3.16% higher, but for a general assessment of the impact of residency on revenue growth, even such a small change in probability is important.

Figures 1 and *2* show how the matching procedure, made based on characteristics from the logistic model, which is the best according to the Akaike information criterion (Specification II from *Table 3*), makes it possible to almost completely eliminate the difference in distributions. As a result, we can say that the problem of non-

randomness of the impact has been resolved, and an unbiased estimate of the effect of resident status can be obtained.

Table 4 allows us to compare the result of estimating the effect of residency with and without the matching procedure. Simple OLS for all available observations (Specification I) gives a 5% significant positive effect of residency on revenue growth. This estimate is biased upward because even if we use OLS based on observations selected using matching without control variables, the effect will become less significant (now on 10% level) and less in magnitude.

If for the observations selected using matching we also include control over the revenue of the firm of the previous period, geographic location, size of the firm, and its industry affiliation, then the effect completely disappears. In this case, most of the variation is explained by the belonging to a particular industry. And again the details are not important, but it is essential that the significant effect of residency is no longer obtained.

Moreover, if a simple OLS has adjusted R^2 of 1%, then the OLS after matching, even without control, explains 3% of the variation. And the OLS after matching with the control from Specification III in (*Table 4*) has a rather high value of 0.148.

The change in the effect is clearly seen in *Figure 3*. If without matching, the distributions of income growth are clearly different for non-residents and residents, then the matching procedure that eliminates the effect of the pre-trends makes the distributions of growth almost the same.

CONCLUSIONS

One of the goals of implementing the PDA program in monotowns was the diversification of economies by stimulating the development of businesses that are not related to the city-forming enterprises.

However, the results of our analysis of the impact of the PDA on the development of enterprises in monotowns cast doubt on the success of achieving the goal of this program. Results of our calculations show that the status of resident in the PDA is obtained by firms that have already developed quite successfully before the launch of this state initiative.

Both hypotheses of the research were confirmed. Resident status is not accidental, it is predetermined by the growth of the firm's revenue in the two previous periods. And the influence of residency on the growth of companies disappears when comparing companies with the same pre-trends — the trends of income growth over the previous two periods.

The result obtained allows for several interpretations. It is possible that resident status is mainly granted to firms that are already developing more dynamically, to report the success of the PDA program. Alternatively, more dynamic firms may find it easier to overcome bureaucratic difficulties in obtaining resident status, which creates a self-selection effect. Most likely, the observed result contains both of these interpretations.

A separate question arises: how to consider in the analysis not only firms that existed in 2015, but also those that appeared in subsequent years? Among the residents who received the status immediately after the establishment of the company, "special" enterprises, which differ from similar ones without the status of a resident, can also be found.

A promising area of future research of the effectiveness of PDA is a more detailed analysis of the nature of granting a resident status, as well as dividing the selection effect of firms applying for the status of PDA-residents into two: the choice of representatives of state bodies and the presence of the self-selection effect.

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ABOUT THE AUTHORS

Sergei G. Belev — Cand. Sci. (Econ.), Senior Researcher, Budget Policy Research Lab, Institute of Applied Economic Research, The Russian Presidential Academy of National Economy and Public Administration (RANEPA), Moscow, Russia; Head of Budget Policy Department, Macroeconomics and Finance research area, Gaidar Institute for Economic Policy, Moscow, Russia
belev@ranepa.ru

Viktor V. Veterinarov — PhD student, Center for Monetary and Financial Studies (CEMFI), Madrid, Spain
viktor.veterinarov@cemfi.edu.es

Gleb S. Kozlyakov — Junior Researcher, Budget Policy Research Lab, Institute of Applied Economic Research, The Russian Presidential Academy of National Economy and Public Administration (RANEPA), Moscow, Russia
kozlyakov-gs@ranepa.ru

Olga V. Suchkova — Junior Researcher, Budget Policy Research Lab, Institute of Applied Economic Research, The Russian Presidential Academy of National Economy and Public Administration (RANEPA), Moscow, Russia; Senior lecturer, Department of Mathematical Methods in Economics, Faculty of Economics, Lomonosov Moscow State University, Moscow, Russia
suchkova-ov@ranepa.ru

Authors' declared contribution:
Belev S. G. — statement of the problem, development of the concept of the article, conclusions.
Veterinarov V. V. — econometric calculations, tabular and graphical presentation of research results.
Kozlyakov S. G. — collection of statistical data.
Suchkova O. V. — literature review, description of results, conclusions.