

Прикладная эконометрика, 2025, т. 78, с. 50–65.

Applied Econometrics, 2025, v. 78, pp. 50–65.

DOI: 10.22394/1993-7601-2025-78-50-65

A.R. Urazbaeva¹

Response of micro, small, and medium-sized companies to the sanctions: Evidence from the Russian regions

The study objective is to estimate the change in the number of micro-, small-, and medium-sized companies in response to the sanctions imposed on the region of their registration. The estimated dose-response functions indicate that greater exposure to sanctions leads to a greater change in the number of enterprises. Extractive and agricultural regions were less affected by the sanctions, while small and medium-sized companies in manufacturing and service sector regions experienced growth. The findings are essential for regional policymaking in supporting business growth.

Keywords: sanctions; Russia; MSMEs; dose-response function; regional specialisation.

JEL classification: R15; R11; M13; C21.

1. Introduction

The years 2022–2023 have seen a significant intensification of sanctions pressure on the Russian economy. According to (Castellum.AI, 2024), 2695 sanctions were imposed on Russian individuals and entities before February 2022, with an additional 18069 imposed after. Most sanctions are imposed on large companies. Such sanctions to major employers can have a detrimental impact on micro-, small-, and medium-sized enterprises (MSMEs) through disruptions to supply chains and a decline in demand. By contrast, the market exit of foreign companies and greater government support can contribute to the growth of MSMEs. Given these countervailing forces, the objective of this study is to estimate the response of growth in the number of micro-, small-, and medium-sized companies to the exposure to sanctions of the corresponding Russian region.

The economic growth of Russian regions in the 2022–2023 period was uneven, with specialisation playing a defining role. Zubarevich (2024) posits that industrial specialisation led to faster growth in regions with a strong military-industrial complex. In contrast, regions with a high share of export products experienced a pronounced decline. In the context of industry-dependent shocks, entrepreneurship may be considered as a means of mitigating the negative influence of sanctions. It is agile, diversified, and requires minimal resources. Andreeva et al. (2016) indicate that innovative entrepreneurship is a source of economic growth in Russian regions. The same is suggested by international evidence. Castaño et al. (2016), Acs, Armington (2004), Audretsch et al. (2020) emphasise the positive relationship between entrepreneurial activity and economic growth. These

¹ Urazbaeva, Alina — HSE University, Moscow, Russia; aurazbaeva@hse.ru.

considerations motivate us to conduct an analysis separately for groups of regions with different predominant industries: manufacturing, extraction, services, and agriculture. This distinction allows for the formulation of relevant policy recommendations for each group of regions.

Another factor motivating us to consider manufacturing, extraction, services, and agricultural regions separately is their different exposure to sanctions. Figure 1 illustrates the number of unique enterprises under sanctions in regions according to their specialisation. The cities of Moscow, Saint Petersburg, and Moscow Region are excluded. The outstanding number of sanctioned entities in these regions can be attributed to businesses registering there, despite their actual locations of operations being dispersed (Barinova et al., 2023).

The majority of sanctioned entities are located in manufacturing and extractive regions. The average number of sanctioned companies per region is 11 in manufacturing regions, 10 in service sector regions, six in extractive regions and three in agricultural regions.

The literature on the impact of sanctions on entrepreneurship in Russia mainly focuses on the 2014–2015 sanctions. For instance, sanctions can exert a significant impact not only on the entity subjected to sanctions, but also on the entire set of firms engaged in foreign trade (Golikova, Kuznetsov, 2017). In this context, smaller enterprises face lower risks as they operate mainly in local markets and are less involved in international trade. Using the example of Iran, Cheratian et al. (2023) posit that older firms and micro firms are more resilient than SMEs in the face of sanctions, and Likhacheva (2019) finds evidence that state-supported import substitution and localisation strategies did not adequately consider the needs of SMEs operating outside the military-industrial complex and the export sector of the economy. Consequently, MSMEs were not only constrained by capital market limitations but also lacked the requisite support. The findings of Shida (2020) indicate that approximately half of managers of Russian regional firms perceive economic sanctions as having a negative impact. This study contributes to the literature by examining the impact of the recently imposed 2022–2023 sanctions on Russia. To this end, a unique database comprising monthly panel data for 85 regions of Russia for the period from January 2019 to December 2023 has been utilised.

Barinova et al. (2023) provide the most comprehensive regional analysis of entrepreneurship in Russia, describing the dynamics of entrepreneurship during the period of sanctions, however does not attempt to establish a causal inference between sanctions and the growth

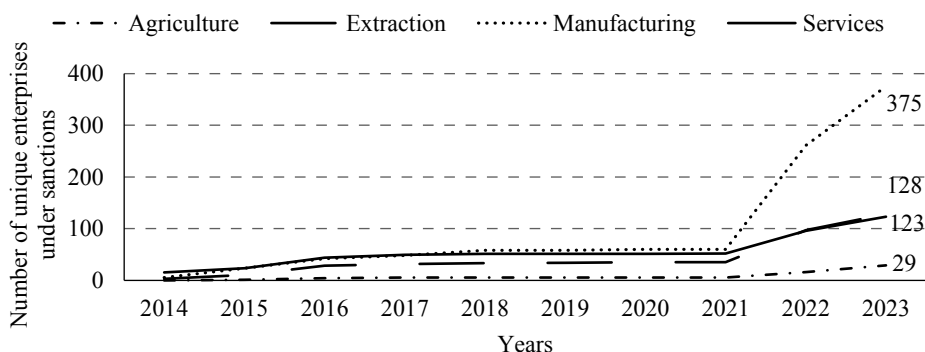


Fig. 1. Number of unique enterprises under sanctions in regions by their specialisation

Source: Voytenkov et al. (2024).

of entrepreneurship. In the current paper, an advanced econometric methodology of dose-response is employed to trace the link between regional exposure to sanctions and the growth of entrepreneurship. A further distinctive feature of the study is its novel approach to measuring the impact of the sanctions. While the majority of econometric models employed to investigate the impact of shocks incorporate dummy variables to indicate the occurrence of a shock, we utilise a continuous treatment variable, which captures the reaction of MSMEs to the magnitudes of the shock. The treatment variable of the index of sanction tension was calculated based on the data provided by Voytenkov et al. (2024).

Based on the above this study aims to test the following hypotheses.

Hypothesis 1. The greater the exposure of a region to sanctions, the higher the growth in the number of enterprises.

Hypothesis 2. The growth in the number of enterprises under sanctions in manufacturing and service sector regions is more pronounced than in extractive and agricultural regions.

Hypothesis 3. SMEs experience lower growth in all regions.

The study is organised as follows. Section 2 provides a description of the data. Section 3 outlines the methods. Section 4 presents the results. Section 5 discusses the results by comparing them with the literature, followed by concluding remarks.

2. Data

A plethora of data sources are available for the analysis of MSMEs in Russia. These include data from sample and continuous surveys conducted by the Federal State Statistics Service (Rosstat), financial statements from the Federal Tax Service of Russia, the Unified Register of SMEs from the Federal Tax Service of Russia, and the SPARK Interfax database. As our primary interest is in capturing the regional dynamics over the relatively short time span of 2019–2023, we have chosen the Unified Register of SMEs of the Federal Tax Service of Russia as the primary source of data. It provides access to the finest division of data, namely, data on MSME numbers in Russia by month and region. We use monthly panel data for 85 regions of Russia. The dataset encompasses the period from January 2019 to December 2023 (5100 observations). By definition, statistics on the shadow economy are unavailable and therefore we ignore unregistered MSMEs.

Despite the best efforts of the Unified register of SMEs of the Federal Tax Service of Russia to provide an accurate account of the data, the data are subject to seasonality. Annually in July or August, individual entrepreneurs and legal entities that failed to provide the information required to confirm their MSME status within the established deadlines or ceased to meet the criteria for MSME status are excluded from the register. In order to mitigate seasonality and still capture the dynamics of MSME, the growth rates of the number of enterprises for each region in each month were calculated in comparison with the same month of the previous year. The data still revealed abnormal growth rates in 2019 and 2022. Throughout 2019, the growth rates were negative for most regions, while the entirety of 2022 was positive. In the other years, the growth values are concentrated around 0. It is assumed that the anomalous growth was due to the imposition of the preferential tax regime for the self-employed in 2019 and the beginning of the Special Military Operation in 2022. To address this, two variables were included in the models to control for the years in question: Y19, Y22. Table 1 provides a description of the variables and the sources.

Table 1. Description of the variables

Variable	Description	Source
Growth in number of micro enterprises	The growth in the number of micro enterprises in the region i in month t in comparison to the same month of the previous year	Unified register of SMEs of the Federal Tax Service of Russia (2024a)
Growth in number of small enterprises	The growth in the number of small enterprises in the region i in month t in comparison to the same month of the previous year	Unified register of SMEs of the Federal Tax Service of Russia (2024a)
Growth in number of medium enterprises	The growth in the number of medium enterprises in the region i in month t in comparison to the same month of the previous year	Unified register of SMEs of the Federal Tax Service of Russia (2024a)
Sanctions tension severity	Index (0–1) measuring the sanctions tension in a region	Calculated by the author based on data by Voytenkov et al. (2024)
Loans to MSMEs	Logarithm of the volume of loans granted to micro, small and medium-sized businesses by the 30 largest Russian banks in million roubles per enterprise	Bank of Russia (2024)
MSME Employees	Logarithm of the average number of employees at small and medium-sized enterprises	EMISS (2024a)
Entrepreneurs' Confidence	Arithmetic mean of changes in the economic situation and demand for services in the surveyed period compared to the previous period, as well as the expected change in demand for services in the next period, %	EMISS (2024b)
Output Index	Per capita change in the volume of gross regional product in the current period compared to the base period, %	EMISS (2024c)
Government Support to MSMEs	Logarithm of the volume of SME support provided in RUB	Unified register of SMEs of the Federal Tax Service of Russia (2024b)
Year 2019	A dummy variable that equals 1 in 2019 and 0 otherwise	
Year 2022	A dummy variable that equals 1 in 2022 and 0 otherwise	

An index of sanction tension was calculated based on the data provided by Voytenkov et al. (2024):

$$SANCT_{it} = \frac{SANCTIONS_{it}}{\max_t(SANCTIONS_{it})}, \tag{1}$$

where $SANCT_{it}$ is the relative measure of sanction tension in a region i in month t , $SANCTIONS_{it}$ is the number of unique enterprises in region i under sanctions in month t , $\max_t(SANCTIONS_{it})$ is the highest number of unique enterprises in region i under sanctions over the entire period.

In order to account for heterogeneity of Russian regions, we divide all Russian regions into four major groups based on their predominant industry, following the methodology by Vasilyeva et al. (2023): extraction, manufacturing, agricultural, and service. The regions are divided according to the data on the structure of gross regional product (GRP) for the period 2016–2022 retrieved from EMISS (2024d). The average share of the industries in GRP over the entire period is calculated, and the regions are classified according to their predominant industries.

The following procedure was conducted for each region. The total contribution of each industry to the gross regional product (GRP) in thousands of rubles (in constant 2016 prices) for the entire observation period was calculated. Subsequently, the contribution of each individual industry was divided by the aggregate GRP of the region for the period between 2016 and 2022. In essence, the mean shares of industries in the GRP of the regions over a seven-year period were determined. This time period was selected on the basis of the availability of the most comprehensive data series. The industry with the most significant average contribution was identified as dominant. In a number of regions, the total share in GRP of all other industries exceeds that of the dominant industry. However, these industries represent a disparate range of economic activities, with an average individual contribution to GRP of the regions ranging from 1.3 to 4.6%. This does not allow for an evaluation of their significant influence on the region's specialisation.

Following the aforementioned procedure, the list of dominant industries was found to include extraction, agriculture (including forestry, hunting, fishing and fish farming), manufacturing (food, clothing, footwear, wood products, paper, petroleum products, chemicals, medicines, metallurgical production, etc.) and services (trade, repair, transport and storage, real estate operations, public administration and military security). The regions were classified into four groups according to the designated industries. Figure 2 illustrates where regions belonging to different groups are located. The full list of regions by main economic activity can be found in Appendix 2.

Predominant industry: Extraction Agriculture Manufacturing Services



Fig. 2. Map of regional specialisations

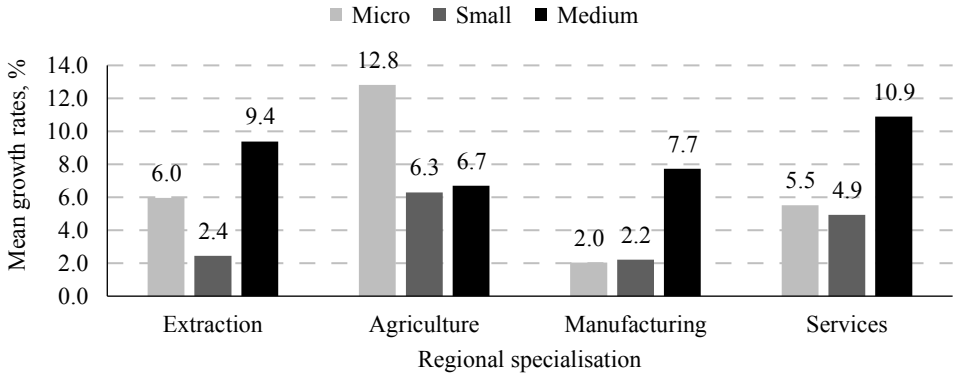


Fig. 3. Mean growth rates of the number of enterprises, August 2016 — December 2023
Source: MSP.RF (2024).

A review of the data reveals that most regions (39) are classified as manufacturing regions, with the majority of these located in central Russia. The second most numerous group of regions, extracting regions (21), are concentrated in the north and east of Russia. Service sector regions (14) include not only western developed regions, such as Moscow and Saint Petersburg, but also the eastern regions of the Khabarovsk and Primorskiy regions, which are primarily engaged in trade, and the southern regions, which are oriented towards tourism. Agricultural regions are concentrated in the south of Russia and account for a relatively small share (11). Figure 3 shows that the averages for growth in the number of enterprises vary considerably according to the size of the enterprise and the dominant economic activity in the region. Full summary statistics can be found in Appendix 1.

The number of small enterprises exhibits the most moderate growth rates in all regions. Nevertheless, their growth rates still vary considerably between regions, with an average of 2% in manufacturing regions and 6% in agricultural regions. The growth rate for medium-sized enterprises is relatively consistent across region types. It is the fastest-growing size of enterprises (7–11%), with the exception of agricultural regions, where the number of microenterprises grows at a rate of 13%. Their growth exhibits considerable volatility across regions — from 2% in manufacturing regions to 13% in agricultural ones.

3. Methods

When there are a number of counteracting forces and different levels of exposure to the shock, it becomes particularly difficult to determine the independent effect of shocks of a given magnitude. This is why the dose-response approach is used to make causal inferences. The concept of dose-response is founded on the treatment effect approach (Cerulli, 2012). The objects are divided into two groups: those that have not been treated and those that have been treated. In contrast to the binary division of treated and untreated, the treated group are subjected to a non-zero treatment of low, medium, or high levels. The objective is to estimate the causal effect of the treatment variable on the outcome variable.

There are several approaches to estimating the dose-response function (Cerulli, 2012; Hirano, Imbens, 2004). We employ the approach by Mattei, Bia (2009), which presents an estimation of the dose-response function through an adjustment for the generalised propensity score (GPS). This approach estimates the conditional expectation of the outcome given the observed treatment for each level. The principal advantage of this approach is that it permits the continuous treatment variable, while providing the output in the clear and concise form of a graph. Furthermore, it allows the continuous treatment variable to be divided into categories of interest. Another distinctive feature is that this method takes into account the list of control variables, which are used to estimate the GPS. This is crucial when it can be assumed that treated and untreated units may respond differently to observable confounders.

In this paragraph, the principal stages of the dose-response calculation procedure are delineated. For a more comprehensive exposition, see the works of Imbens (2000) and Guardabascio, Ventura (2014). Initially, the GPS $\hat{r}(\tau_i, X_i)$ is estimated. It represents the conditional probability of receiving a specific level of treatment τ_i , contingent on pre-treatment variables X_i . Then, the conditional expectation of the outcome $\hat{\beta}(\tau_i, \hat{r}(\tau_i, X_i))$ is estimated as a mathematical expectation of the outcome variable conditioned on two arguments: the treatment level and the probability of receiving the treatment that was actually received. In order to obtain the estimated conditional expectation $E\hat{Y}_i(\tau_i)$, the aforementioned conditional expectation $\hat{\beta}\{\tau_i, \hat{r}(\tau_i, X_i)\}$ is averaged:

$$E\hat{Y}_i(\tau_i) = \frac{1}{N} \sum_{i=1}^N \hat{\beta}(\tau_i, \hat{r}(\tau_i, X_i)), \quad (2)$$

where i is the subscript for region, N is the number of regions. We consider four types of regions and three outcome variables, which leads to a total of 12 graphs of the estimated conditional expectations.

We are interested in estimating the reaction to the sanctions of MSMEs separately. The outcome variables are therefore the change in the number of such enterprises. Although the dose-response approach is suitable for panel data, it does not take into account the time component; it is concerned with the levels of treatment, which may vary over time. The set of outcome variables includes the growth in number of micro, small, and medium enterprises separately. The treatment is the index of the sanctions tension.

For the sake of interpretation, we divide the treatment variables into four levels: 0 is no exposure to a shock, 1 is low exposure, 2 is medium exposure, and 3 is high exposure. In order to provide an overview of the levels of exposure, we present summary statistics of the severity of the sanctions imposed by the levels of exposure in Table 2.

Table 2. Summary statistics of the treatment variable by the levels of exposure

Level of exposure	Mean	Median	Max	Min	Range	Standard deviation	Observations
0	0.00	0.00	0.00	0.00	0.00	0.00	1667
1	0.13	0.14	0.21	0.05	0.16	0.05	854
2	0.44	0.45	0.67	0.22	0.45	0.14	1114
3	0.93	1.00	1.00	0.68	0.32	0.10	1336

The vector of control variables X_i includes the logarithms of MSME employees, loans to MSMEs, and government support to MSMEs, the indices of entrepreneurs' confidence and output, dummy variables for years 2019 and 2022.

4. Results

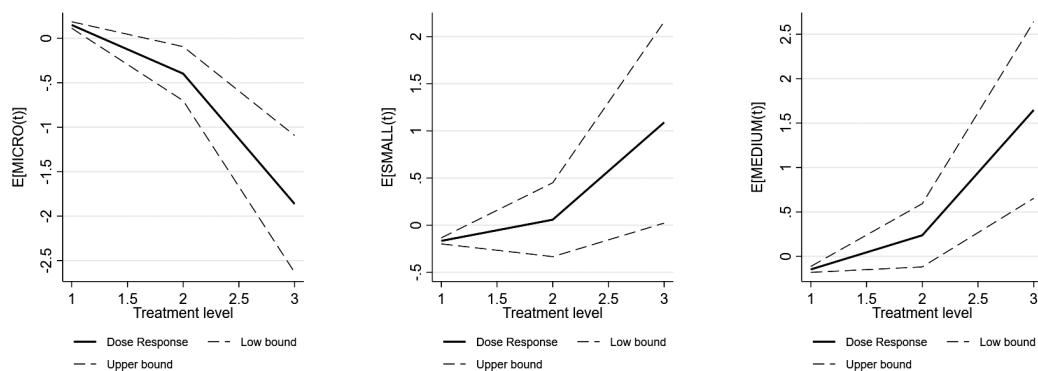
The dose-response function approach was used to estimate the growth of the number of MSMEs in response to the sanctions on the corresponding Russian region. The treatment variable $SANCT_{it}$ is continuous and is a score from 0 to 1, where 0 means no sanctions, and 1 is the highest level of sanctions. The treatment was scaled from 1 (low exposure to the shock) to 3 (high exposure to the shock) for interpretation. We also control for loans to MSMEs, MSME employees, entrepreneurs' confidence, output index, government support to MSMEs, years 2019, and 2022. Figure 4 represents the change in the number of enterprises in response to sanctions in manufacturing regions.

Low sanctions have no impact on the growth in the number of micro enterprises in manufacturing regions. However, the imposition of medium and high sanctions rapidly escalates the situation. For medium sanctions, the anticipated growth rate of micro enterprises in manufacturing regions is approximately -0.4% ; for high sanctions, the growth rate is projected to be -1.8% .

Despite the positive trend in the growth of small enterprises under sanctions, the wide confidence interval indicates that the sanctions have no significant effect on the number of small companies in manufacturing regions. With a 95% confidence, there is no effect of sanctions in this case.

Similar to small companies, low to medium sanctions have no discernible impact on the growth of medium-sized enterprises in manufacturing regions. However, in the event of high sanctions exposure, medium-sized enterprises in manufacturing regions are expected to exhibit a growth rate of 1.6% . Figure 5 illustrates the response of enterprises growth to sanctions in service sector regions.

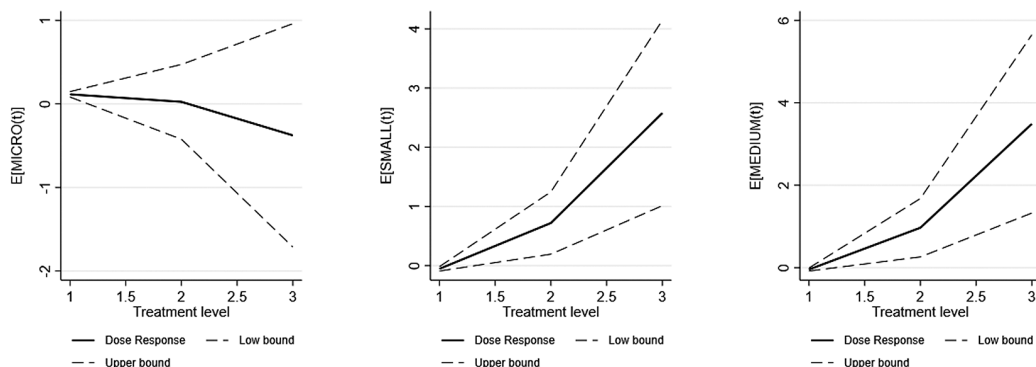
Manufacturing regions



Confidence Bounds at 95% level
Dose response function = Linear prediction

Fig. 4. Change in the number of enterprises in response to sanctions in manufacturing regions

Service sector regions



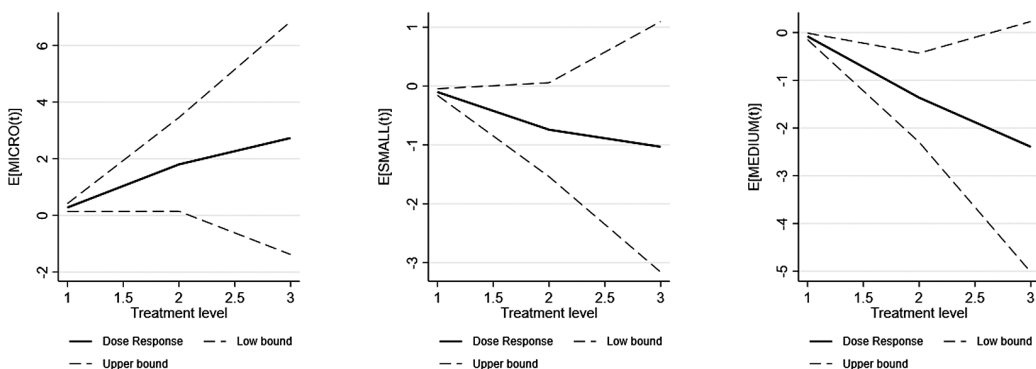
Confidence Bounds at 95% level
Dose response function = Linear prediction

Fig. 5. Change in the number of enterprises in response to sanctions in service sector regions

The widening confidence interval, which includes 0, indicates that sanctions have no significant effect on the growth of micro enterprises in service sector regions. The imposition of low sanctions does not appear to have a significant impact on the growth of small enterprises in service sector regions. Nevertheless, the greater the intensity of the sanctions, the higher the growth rates. A medium level of sanctions is expected to result in a growth rate of 0.7%, while a high level of sanctions is expected to result in a growth rate of 2.5%.

The growth of the number of medium enterprises in response to sanctions in service sector regions is analogous to that of small enterprises: no response to low sanctions and a positive link between the level of sanctions and the rate of growth. Medium sanctions result in 1% growth,

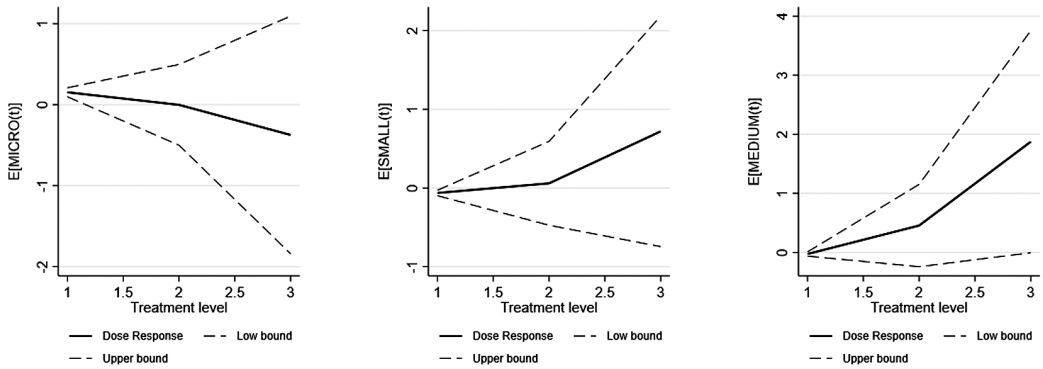
Agricultural regions



Confidence Bounds at 95% level
Dose response function = Linear prediction

Fig. 6. Change in the number of enterprises in response to sanctions in agricultural regions

Extractive regions



Confidence Bounds at 95% level
Dose response function = Linear prediction

Fig. 7. Change in the number of enterprises in response to sanctions in extractive regions

while high sanctions lead to 3% growth. Figure 6 presents the growth in the number of MSMEs to the exposure to sanctions in agricultural regions.

The wide confidence intervals, which are centred around 0, indicate that the sanctions have not had a significant effect on the growth of the number of MSMEs in agricultural regions. A similar conclusion can be drawn for the extractive regions (Figure 7).

Similar to the agricultural regions, the sanctions do not appear to exert a significant influence on the growth of the number of MSMEs in extractive regions.

5. Discussion

Table 3 presents an overview of the outcomes of the dose-response functions for MSMEs and regions with distinct industrial profiles.

Table 3. Results of the dose-response analysis: expected growth of the number of MSMEs under exposure to sanctions

Regional specialisation	Size of enterprises		
	Micro	Small	Medium
Manufacturing	Low: no effect Med: -0.4% High: -1.8%	No effect	Low: no effect Med: no effect High: +1.6%
Services	No effect	Low: no effect Med: +0.7% High: +2.5%	Low: no effect Med: +1.0% High: +3.0%
Extraction	No effect	No effect	No effect
Agriculture	No effect	No effect	No effect

Hypothesis 1 is confirmed. The greater the exposure to sanctions, the greater the change in the number of enterprises. The absolute values of the expected growth in the number of enterprises in manufacturing and service sector regions increase, as the exposure to sanctions increases. Hypothesis 2 is also confirmed. The growth in the number of enterprises under sanctions in manufacturing and service sector regions is significant, while we did not observe any significant effect for the extractive and agricultural regions. Hypothesis 3 is rejected. The results indicate that the number of small and medium companies increases in response to sanctions than micro enterprises.

Micro enterprises in manufacturing regions are the only negatively affected group of enterprises. Barinova et al. (2023) attributes the particular susceptibility of micro businesses to shocks in Russia to the fact that they are mainly concentrated in the service sector. The same was found by research concerning the shock of the COVID-19 pandemic. Adian et al. (2020) claim that smaller firms experience more sales shrinkage and cash drains than their larger counterparts based on the World Bank Enterprise Surveys in 13 countries. Bakiji (2021) found that the global pandemic had a profound impact on small businesses in the manufacturing, and export industries. Conversely, Harel (2021) found that small businesses in industrial sectors, which rely on subcontracting and long-term agreements, were not adversely affected by the pandemic in Israel. This discrepancy can be attributed to the differing institutional structures of Russia and Israel. As Vinogradova (2006) notes, small firms in Russia encounter difficulties in contract enforcement. Kulchina, Oxley (2020) also assert that entrepreneurs in Russia tend to rely on informal contracts to a greater extent than their counterparts in other countries.

Nevertheless, sanctions do have the potential to stimulate the number of small and medium businesses. Our results indicate that small and medium-sized enterprises in service sector regions and medium-sized companies in manufacturing regions are expected to experience growth in number as sanctions become more stringent. Barinova et al. (2023) assert that market niches are becoming available with the departure of foreign companies. Small and medium-sized enterprises are able to adapt and circumvent sanctions with relative ease. Furthermore, in the context of economic turbulence, the number of individuals compelled to become entrepreneurs will increase (Acs, 2006). Consequently, we observe that heightened sanctions pressure results in an increase in small and medium entrepreneurship. However, the growth rates are relatively modest.

The insignificant reaction in agricultural and extractive regions to the sanctions can be attributed to the fact that these regions experience sanctions to a lesser extent due to the preservation of domestic demand for food products and exports (Zubarevich, 2022). Barinova et al. (2023) note that in extractive regions, the purchasing power of the population is higher, which presents an opportunity for the development of small businesses in the trade sector.

Structural change in the MSME sector is another possible factor contributing to the change in the number of enterprises of different sizes and must be acknowledged. According to Barinova et al. (2023), a significant proportion of sole proprietors became self-employed in order to reduce their tax liability, while the number of medium-sized companies increased as a consequence of the reduction in the size of large companies. This also may explain the increase in the number of medium-sized firms observed in our study.

As indicated by Likhacheva (2019), import substitution and localisation strategies supported by the state and financed from the federal budget fail to consider the needs of MSMEs operating outside the military-industrial complex and the export sector of the economy. Consequently, MSMEs are unable to access sufficient support, despite the implementation of a number of federal measures

for MSME development and the work of regional development institutions. Barinova et al. (2023) posit that certain aspects of the government's approach to supporting MSMEs (such as the provision of financial assistance to encourage the establishment of new businesses) may not be enough to encourage entrepreneurial growth. Given the heightened susceptibility of manufacturing regions to economic shocks and the preponderance of manufacturing regions within the Russian economy, it is imperative to implement proactive measures to assist micro enterprises in manufacturing regions in order to ensure their resilience in the face of crises.

6. Conclusion

In light of the significant challenges presented to the Russian economy by the sanctions, the objective of the current study is to estimate the response of the growth in the number of MSMEs to the exposure to sanctions in Russian regions divided into four groups by the main industry.

The study presents three main findings. Firstly, the greater the exposure to sanctions, the greater the change in the number of enterprises. This phenomenon is particularly evident in manufacturing and service sector regions, where the absolute values of the expected growth in the number of enterprises are higher when there is greater exposure to sanctions. This dynamic is consistent regardless of whether the effect is positive or negative. Secondly, regions that are generally less exposed to sanctions (i. e., with fewer sanctioned enterprises per region) do not demonstrate a significant impact of sanctions on the growth of the number of MSMEs. This phenomenon is exemplified by extractive and agricultural regions. The greater the average number of sanctioned enterprises per region, the more pronounced the impact of sanctions on MSME growth. This is particularly evident in manufacturing and service sector regions. Thirdly, the results show that small and medium companies experience a higher growth rate in the event of sanctions than micro enterprises. This can be attributed to the fact that they have greater financial, managerial, and technological resources.

In light of our findings, we put forth the following policy implications. In allocating business support, it is essential to consider the specific specialisations of the region in question. It is currently necessary to prioritise support for micro enterprises in manufacturing regions, as they have been affected the most. Furthermore, it is advisable to differentiate support measures for companies of different sizes. While small and medium enterprises demonstrate relatively homogeneous dynamics in response to sanctions, stimulating the growth of the number of micro-sized enterprises is more challenging. It is therefore of paramount importance to address this issue, as business up-sizing is a key driver of economic growth. The objective of supportive policies for MSMEs should be to ensure the viability of enterprises and their gradual development from micro-enterprises to larger companies.

The current study raises a number of questions that require further investigation. Firstly, it is necessary to ascertain the driving force behind the growth in the number of MSMEs. It is possible that the increase in the number of such enterprises is not driven by the emergence of new companies, but rather by the shrinkage of existing ones. Secondly, it would be beneficial to further examine the effect of the government support on MSME growth and ascertain the optimal limits of effective support that stimulates the appearance of new companies.

Acknowledgments. The research was funded by the Russian Science Foundation (grant No. 24-28-01227, <https://rscf.ru/project/24-28-01227/>).

References

- Acs Z. (2006). How is entrepreneurship good for economic growth. *Innovations*, 1 (1), 97–107.
- Acs Z., Armington C. (2004). Employment growth and entrepreneurial activity in cities. *Regional Studies*, 38 (8), 911–927. DOI: 10.1080/0034340042000280938.
- Adian I., Doumbia D., Gregory N., Ragoussis A., Reddy A., Timmis J. (2020). Small and medium enterprises in the pandemic. *Policy Research Working Paper*, 9414. World Bank IFC.
- Andreeva E. L., Simon H., Karkh D. A., Glukhikh P. L. (2016). Innovative entrepreneurship: A source of economic growth in the region. *Economy of Region*, 12 (3), 899–910. DOI: 10.17059/2016-3-24.
- Audretsch D., Colombelli A., Grilli L., Minola T., Rasmussen E. (2020). Innovative start-ups and policy initiatives. *Research Policy*, 49 (10), 104027. DOI: 10.1016/j.respol.2020.104027.
- Bakiji M. (2021). Entrepreneurship and the role of women entrepreneurship in economic growth. *KNOWLEDGE — International Journal*, 45 (1), 299–302.
- Bank of Russia. (2024). Information on funds placed and attracted (in Russian). https://cbr.ru/statistics/bank_sector/sors/.
- Barinova V. A., Zemtsov S. P., Tsareva S. E. (2023). *V poiskah predprinimatel'stva v Rossii. Chast' I. Chto meshaet malomu i srednemu biznesu razvivat'sya*. M.: Delo (in Russian).
- Castaño M. S., Méndez M. T., Galindo M. Á. (2016). The effect of public policies on entrepreneurial activity and economic growth. *Journal of Business Research*, 69 (11), 5280–5285. DOI: 10.1016/j.jbusres.2016.04.125.
- Castellum.AI. (2024). Russia Sanctions Dashboard. <https://www.castellum.ai/russia-sanctions-dashboard>.
- Cerulli G. (2012). Ctreatreg: A STATA module for estimating Dose Response Treatment Models under (continuous) treatment endogeneity and heterogeneous response to observable confounders. https://www.stata.com/meeting/uk12/abstracts/materials/uk12_cerulli.pdf.
- Cheratian I., Goltabar S., Farzanegan M. R. (2023). Firms persistence under sanctions: Micro-level evidence from Iran. *The World Economy*, 46 (8), 2408–2431.
- EMISS. (2024a). Number of employed in the sphere of small and medium-sized enterprises, including individual entrepreneurs (in Russian). <https://www.fedstat.ru/indicator/61171>.
- EMISS. (2024b). Entrepreneurial confidence index (in Russian). <https://www.fedstat.ru/indicator/43029>.
- EMISS. (2024c). Index of goods and services output by basic types of economic activity by constituent entities of the Russian Federation (in Russian). <https://www.fedstat.ru/indicator/62024>.
- EMISS. (2024d). Gross regional product in basic prices (in Russian). <https://www.fedstat.ru/indicator/61497>.
- Golikova V., Kuznetsov B. (2017). Perception of risks associated with economic sanctions: The case of Russian manufacturing. *Post-Soviet Affairs*, 33 (1), 49–62. DOI: 10.1080/1060586X.2016.1195094.
- Guardabascio B., Ventura M. (2014). Estimating the dose-response function through a generalized linear model approach. *The Stata Journal*, 14 (1), 141–158. DOI: 10.1177/1536867X1401400110.
- Harel R. (2021). The impact of COVID-19 on small businesses' performance and innovation. *Global Business Review*. DOI: 10.1177/09721509211039145.
- Hirano K., Imbens G. W. (2004). The propensity score with continuous treatments. In: A. Gelman, X.-L. Meng (eds.), *Applied Bayesian Modeling and Causal Inference from Incomplete-Data Perspectives*, 73–84. DOI: 10.1002/0470090456.ch7.

- Imbens G. W. (2000). The role of the propensity score in estimating dose-response functions. *Biometrika*, 87 (3), 706–710. DOI: 10.1093/biomet/87.3.706.
- Kulchina E., Oxley J. (2020). Relational contracts and managerial delegation: Evidence from foreign entrepreneurs in Russia. *Organization Science*, 31 (3), 628–648. DOI: 10.1287/orsc.2019.1329.
- Likhacheva A. B. (2019). Unilateral sanctions in a multipolar world. *Russia in Global Affairs*, 17 (3), 109–131. DOI: 10.31278/1810-6374-2019-17-3-109-131.
- Mattei A., Bia M. (2009). DoseResponse: Stata module to estimate dose-response function through adjustment for the generalized propensity score. *Statistical Software Components S457096*. Boston College Department of Economics.
- MSP.RF. (2024). SME.RF digital platform (in Russian). <https://xn--1lagf.xn--plai/>.
- Shida Y. (2020). Russian business under economic sanctions: Is there evidence of regional heterogeneity? *Post-Communist Economies*, 32 (4), 447–467. DOI: 10.1080/14631377.2019.1659567.
- Unified register of SMEs of the Federal Tax Service of Russia. (2024a). Number of small and medium-sized enterprises (in Russian). <https://rmsp.nalog.ru/>.
- Unified register of SMEs of the Federal Tax Service of Russia. (2024b). Statistics on the support provided (in Russian). <https://rmsp-pp.nalog.ru/statistics.html#statdate=15.08.2024>.
- Vasilyeva R., Urazbaeva A., Voytenkov V. (2023). Determinants of export diversification: The case of Russian regions. *Eastern European Economics*, 1–37. DOI: 10.1080/00128775.2023.2265919.
- Vinogradova E. (2006). Working around the state: Contract enforcement in the Russian context. *Socio-Economic Review*, 4, 447–482. DOI: 10.1093/SER/MWL007.
- Voytenkov V., Urazbaeva A., Demidova O. (2024). Pokazateli izmereniya vliyaniya sankcij po regionam Rossijskoj Federacii za 2014–2023 gg. (in Russian). <https://elibrary.ru/item.asp?id=60779597>.
- Zubarevich N. (2022). Regions of Russia in the new economic conditions. *Journal of the New Economic Association*, 3 (55), 226–234 (in Russian). DOI: 10.31737/2221-2264-2022-55-3-15.
- Zubarevich N. (2024). Regions of Russia at the end of 2023: Have they managed to overcome the crisis recession? *Issues of Economic Theory*, 22 (1), 34–47 (in Russian). DOI: 10.52342/2587-7666VTE_2024_1_34_47.

Received 15.07.2024; accepted 23.09.2024.

Appendix 1. Summary statistics

Group of regions	Mean	Median	Max	Min	Standard deviation	Skewness	Kurtosis	Observations
<i>Variable: Growth in number of micro enterprises</i>								
Extraction	0.06	-0.02	2.45	-0.71	0.41	2.35	12.27	1260
Agriculture	0.13	-0.01	2.64	-0.67	0.57	1.83	7.29	660
Manufacturing	0.02	-0.03	0.98	-0.47	0.26	1.40	5.52	2340
Services	0.06	-0.01	1.61	-0.62	0.35	2.07	9.06	840
<i>Variable: Growth in number of small enterprises</i>								
Extraction	0.02	-0.04	0.87	-0.51	0.38	0.73	2.70	1260
Agriculture	0.06	-0.02	1.26	-0.52	0.41	0.81	2.92	660
Manufacturing	0.02	-0.04	0.88	-0.51	0.38	0.76	2.75	2340
Services	0.05	-0.01	0.92	-0.49	0.37	0.83	3.19	840
<i>Variable: Growth in number of medium enterprises</i>								
Extraction	0.09	0.00	2.50	-0.57	0.48	1.20	5.17	1260
Agriculture	0.07	0.00	1.34	-0.62	0.46	0.67	2.73	660
Manufacturing	0.08	0.00	1.14	-0.58	0.44	0.74	2.75	2340
Services	0.11	0.04	4.46	-0.80	0.59	3.64	25.32	840
<i>Variable: Sanctions tension severity</i>								
Extraction	0.41	0.27	1.00	0.00	0.42	0.38	1.43	1260
Agriculture	0.25	0.00	1.00	0.00	0.35	1.13	2.82	660
Manufacturing	0.37	0.23	1.00	0.00	0.37	0.65	1.91	2340
Services	0.38	0.19	1.00	0.00	0.38	0.42	1.54	840
<i>Variable: Loans to MSMEs</i>								
Extraction	7.58	7.81	10.83	2.08	1.52	-0.84	3.71	1260
Agriculture	7.11	7.51	10.21	0.00	1.57	-0.96	4.13	658
Manufacturing	8.61	8.59	11.95	5.99	0.93	0.06	2.57	2340
Services	8.67	8.65	13.22	4.47	1.99	0.16	1.94	840
<i>Variable: MSME Employees</i>								
Extraction	10.57	10.69	12.84	7.59	1.36	-0.67	2.56	1260
Agriculture	10.27	10.66	11.83	8.11	1.03	-0.57	2.25	660
Manufacturing	11.55	11.50	12.96	9.82	0.70	0.00	2.62	2340
Services	11.52	11.53	14.34	9.16	1.53	0.24	1.84	840
<i>Variable: Entrepreneurs' Confidence</i>								
Extraction	-0.07	-0.07	0.41	-0.52	0.14	0.01	4.16	1251
Agriculture	-0.08	-0.07	0.46	-0.82	0.18	-0.42	5.10	654
Manufacturing	-0.09	-0.08	0.52	-0.57	0.13	-0.49	5.07	2316
Services	-0.04	-0.03	0.48	-0.44	0.14	-0.06	4.38	822
<i>Variable: Output Index</i>								
Extraction	1.04	1.02	2.98	0.53	0.17	4.78	47.69	1248
Agriculture	1.04	1.04	1.80	0.56	0.12	0.41	7.69	660
Manufacturing	1.04	1.03	1.53	0.67	0.08	0.33	4.73	2340
Services	1.07	1.06	1.78	0.66	0.13	0.74	5.20	840

End of Table

Group of regions	Mean	Median	Max	Min	Standard deviation	Skewness	Kurtosis	Observations
<i>Variable: Government Support to MSMEs</i>								
Extraction	18.67	18.91	22.13	7.49	1.68	-1.36	7.14	1251
Agriculture	18.10	18.49	21.30	1.61	1.92	-2.62	16.02	624
Manufacturing	19.27	19.40	22.28	2.64	1.33	-1.51	14.38	2339
Services	19.39	19.56	23.56	10.07	1.97	-0.80	4.39	826

Appendix 2. Distribution of regions by their predominant industries

Extraction	Agriculture	Manufacturing	Services
1. Amurskaya oblast	1. Bryansk region	1. Altai region	1. Sevastopol
2. Astrakhan region	2. Republic of Dagestan	2. Arkhangelsk region	2. Crimea
3. Belgorod region	3. Republic of Ingushetia	3. Republic of Bashkortostan	3. Republic of Adygea
4. Chukotka Autonomous Okrug	4. Kamchatka Krai	4. Chelyabinsk region	4. Altai Republic
5. Irkutsk region	5. Kabardino-Balkarian Republic	5. Chuvash Republic	5. Republic of Buryatia
6. Kemerovo region	6. Karachay-Cherkess Republic	6. Ivanovo region	6. Chechen Republic
7. Khanty-Mansiysk Autonomous Okrug-Ugra	7. Republic of Kalmykia	7. Kaliningrad region	7. Krasnodar region
8. Komi Republic	8. Kursk region	8. Kurgan region	8. Khabarovsk region
9. Republic of Karelia	9. Oryol region	9. Kirov region	9. Moscow region
10. Magadan region	10. Stavropol region	10. Republic of Khakassia	10. Moscow
11. Nenets Autonomous district	11. Tambov region	11. Kaluga region	11. Primorsky Krai
12. Orenburg region		12. Kostroma region	12. Republic of North Ossetia-Alania
13. Republic of Sakha (Yakutia)		13. Krasnoyarsk region	13. Saint Petersburg
14. Sakhalin oblast		14. Leningrad region	14. Voronezh region
15. Republic of Tatarstan		15. Lipetsk region	
16. Tomsk region		16. Mari El Republic	
17. Tyva Republic		17. Republic of Mordovia	
18. Udmurt republic		18. Murmansk region	
19. Yamal-Nenets Autonomous Okrug		19. Novgorod region	
20. Jewish Autonomous region		20. Nizhny Novgorod region	
21. Transbaikal region		21. Novosibirsk region	
		22. Omsk region	
		23. Perm region	
		24. Penza region	
		25. Pskov region	
		26. Rostov region	
		27. Ryazan oblast	
		28. Samara region	
		29. Saratov region	
		30. Smolensk region	
		31. Sverdlovsk region	
		32. Tula region	
		33. Tver region	
		34. Tyumen region	
		35. Ulyanovsk region	
		36. Volgograd region	
		37. Vladimir region	
		38. Vologodskaya oblast	
		39. Yaroslavskaia oblast	