Entrepreneurship Policy and SME Development during Pandemic Crisis in Russia

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Abstract—Small and medium-sized enterprises (SMEs) suffered from government restrictions and a drop in consumer demand in 2020–2021 and therefore became one of the main targets of anti-crisis support worldwide. We aimed to identify trends and factors influencing the SMEs’ dynamics in the Russian regions during the coronacrisis, including the impact of entrepreneurship policy. We have verified with the econometric analysis that the SMEs’ number reduction was more serious in regions with a large SME sector, with a high proportion of industries potentially affected by the crisis, with stricter anti-pandemic measures. The latter factor had an impact not only on the domestic market, but also on SMEs in neighboring regions, which proves the existence of close ties between enterprises of different regions. However, there are some factors that influenced the SMEs development positively: relatively higher income level, more favourable business climate and larger consumer market. The previously undertaken efforts of the regional authorities to improve the business climate had a positive effect on the SMEs survival during the crisis. Business digitalization turned out to be an effective way to adapt (online services and sales), and state support policies could be more efficient (targeted and accessible) in digitally advanced regions. The agrarian regions due to continued demand for food got through the crisis more easily, while the border regions, focused on foreign trade relations, suffered more. In general, the business performance reduction was smaller in the regions that significantly intensified support. In a group of proactive regions (Tyumen, Belgorod, Ulyanovsk oblast, Crimea, etc.), where both general and specific support were increased above the national average, SMEs decrease rate was 1.6% lower. According to our calculations, during crises special attention should be paid to supporting business digitalization, improving regional business climate and increasing the accessibility of markets for SMEs (transport development, import substitution, etc.). These measures can become a significant factor in business development after the events of 2022.

Keywords: small business, economic crisis, state support, covid-19, Russian regions, difference-in-difference, policy evaluation

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INTRODUCTION

The unprecedented scale of the COVID-19 pandemic (Pilyasov et al., 2021; Zemtsov and Baburin, 2021) and the subsequent economic crisis has created harsh conditions for small and medium-sized enterprises (SMEs) in many countries because of a decrease in household income and demand, the foreign markets closure, and the economic uncertainty (Dvoulety, 2021; Ratten, 2021). Many small businesses are financially fragile and have cash for only a few weeks. Most businesses planned to seek funding through the different public support programs. Large differences were between industries; the owners of enterprises in tourism, restaurant business and personal services were expecting business closures most of all (Bartik et al., 2020). The SMEs sector dynamics in Russia was negative even before the crisis, but the decline fastened in 2020–2021 in most Russian regions (Kudrin et al., 2021). Business confidence and SMEs activity reached the minimum of the 2015 crisis (Kudrin et al., 2021) (Fig. 1).

The self-isolation regime, introduced in April 2020 and then in November 2021 in Russia, has led to the temporary suspension of the activities of many service...
enterprises: trade firms, restaurants, hotels, repair shops, hairdressers, etc. (Kudrin et al., 2021; Kudrin et al., 2022; Zubarevich, 2021). The pandemic measures turned out to be the most harmful for the nascent entrepreneurs (Obraztsova and Chepurenko, 2020). About 11% of enterprises and 5.5 million employees were concentrated directly in the most affected industries, which experienced more than 90%–revenue drop in March—April 2020 (Kudrin et al., 2021). It had negative impact on more than 75% of SMEs in related industries (Zemtsov and Mikhailov, 2021). Numerous forecasts stated the possible bankruptcy of every third SME; almost half of SMEs completely ceased operations during the lockdown (Kudrin et al., 2021). Interesting to mention that the most dramatic drop in the SMEs number reduction was detected in Moscow and some other most developed regions (Kudrin et al., 2022).

A private entrepreneurial activity decreased sharply (Fairlie, 2020). It may have negative long-term impact on regional development (Demidova and Kamalova, 2021; Zemtsov, 2020), such as a decrease in competition, a reluctance of potential entrepreneurs to start a business, an entrepreneurial capital reduction and an increase of unemployment, etc. The cross-country research (Karalashvili and Viganola, 2020) shows that overall 2.6% of firms have been confirmed to have permanently closed since the onset of the pandemic, while 16.8% have been assumed to have permanently closed, although this average masks a considerable cross-country variation, with smaller firms, retail and service firms, and firms located in lower-income countries and regions hit hardest by the pandemic. That is why governments in many developed countries massively introduced additional measures to support SMEs (IMF, 2021): loan guarantees, direct state loans, grants and subsidies, property support measures, tax breaks, inspections moratoriums (OECD, 2020). Similar measures were taken in Russia (Razuvskaia et al., 2020) (see below).  

Now it is clear, that the pandemic SMEs reduction is an unprecedented one since 2008, even though it was not as dramatic as was predicted. The number of SMEs decreased by about 4% in 2020, 0.5% in 2021; it is dropping in 58 out of 85 regions for two years in a row. The dynamics of entrepreneurial activity varies significantly between regions (Obraztsova and Chepurenko, 2020). At the same time, employment in the SME sector increased slightly in 2020, but in 2021 it fell by its maximum since 2009, which accounts for 4.1% reduction, excluding the self-employed (Zemtsov et al., 2021a). The question is, why it happened and whether it was influenced by the anti-crisis measures of federal and regional authorities.

The purpose of our study is to identify impact of the 2020 crisis and the effect of the governments’ actions to facilitate the SMEs development in the Russian regions. The main variable of interest in the article is the number of small and medium-sized businesses, the data is taken from the federal tax service.

Recently introduced sanctions may have worsened the current state of SMEs in Russia, both in terms of breaking the usual supply and production chains as well as in terms of further decline of customer demand, resulted from many foreign companies leaving the market and causing the unemployment. However, due to the departure of foreign companies from the Russian market, many market niches have become free for small businesses. Potentially growing unemployment might lead to the increase of the necessity entrepreneurship. In our opinion, the tasks of the study are also relevant in the new conditions, since the need to stimulate entrepreneurship has only increased.

The structure of the article is as follows. The first part is devoted to the SMEs development and state support trends in Russia during the pandemic, the analysis is based on the main factors and barriers, identified in the literature. The second part substantiates the hypotheses and methods of how to study various factors and state support influence on the SMEs dynamics. In the third part the obtained results are discussed.

THE MAIN TRENDS AND SMES SUPPORT IN RUSSIA AND ITS REGIONS IN 2020–2021

The number of small and medium-sized enterprises in Russia was declining even before the crisis (−1.3%) (Fig. 1) (Kudrin et al., 2021), but the most dramatic indicator drop was registered in 2020, this was its absolute minimum since 2008 (−4.3%). The SME sector crisis affected almost all regions of Russia (Fig. 1). Based on the results of our previous studies (Barinova et al., 2018; Zemtsov, 2020; Zemtsov et al., 2020) we analyse the changes in the main factors of SMEs development in the Russian regions, including public policy, in order to understand what caused this drop.

Demand and Market Access

One of the basic factors in the enterprises’ creation/closure is the emergence/shrinkage of market niches, which is determined by the incomes of the local population and the availability of external markets (Barinova et al., 2018; Brown, 2008; Kudrin et al., 2021; Zemtsov et al., 2021a). In 2020 the incomes declined in 70 Russian regions out of 85 total, and there was an overall drop of 2.6%. Almost all foreign markets and the majority of regional markets were closed because of anti-pandemic measures. The indi-

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2 However, due to weak institutions, these direct measures may not only fail to solve existing problems, but also create new institutional traps. They may lead to stronger state control of the economy, support of unaffected or authority-affiliated firms, etc. (Zemtsov et al., 2020).
rect Government’s measures referred to the demand support for SMEs’ goods and services included the subsidies for the poorest, for families with children, the unemployed, as well as the increase in procurement of the largest state companies by 5.39% (in nominal prices). Reducing the requirements for securing government contracts for SMEs was an important step in supporting the demand for SMEs’ goods through set-aside public procurement programs.

Digitalization

A new factor of SMEs development is the digitalization, which helps businesses enter online markets (Fossen and Sorgner, 2021). The introduction of digital technologies leads to a significant minimization of transaction costs due to electronic workflow. Digital platforms such as Uber, Alibaba, Airbnb, etc. dramatically expand market entry opportunities. In fact, enterprises now can reach subcontractors, suppliers and customers from all around the world. Thus, regional digital inequality rate (digital divide) can be one of the barriers for SMEs development (Nambisan, 2017). The 2020 pandemic increased the role of digitalization, as many businesses that used to operate offline have been closed (Akpan et al., 2021; Zhang et al., 2020). On the contrary, during the pandemic period certain SMEs even got advantages, for example small innovative companies producing medical test systems or materials (medical gloves etc.), and firms specialized in telemedical technologies, financial technologies and online-education had exceptional opportunity to grow (Zemtsov et al., 2021b; Kalogianidis and Chatzitheodoridis, 2021). Those who have transferred their employees to remote work, have created webpages or use digital platforms to process orders online, are successfully developing (Kudrin et al., 2021). Federal and regional authorities sought to support the digitalization of businesses.

Pandemic-Specific Factors

During the pandemic, in addition to the lockdown (self-isolation regime) in April 2020 and November 2021, the Government proposed numerous anti-epidemiological measures. Regional governments were able to determine measures’ coverage depending on the epidemiological situation (Fig. 2). These measures included a large number of restrictions that implied administrative responsibility for both residents and businesses (Mau et al., 2020): self-isolation regime for citizens, access control, masks, quarantine, etc. By far, these actions have had the greatest impact on the sectors of the economy that depend on human interaction.

In order to prioritize support measures’ recipients, a list of “the most affected by the crisis industries” was suggested. It included industries that were largely represented by small and medium-sized businesses and suffered the most during lockdowns: transport; cul-

3 https://www.psbank.ru/Business/RSBI.
ture, leisure and entertainment; recreation activities and sports; tourism; hotels; catering; additional education, non-state educational institutions; the organization of conferences and exhibitions; household services (repair, laundry, dry cleaning, hairdressing and beauty services, healthcare; retail trade in non-food products). In May 2020, “media and printed products” were added to the list. Of course, the share of these industries varies significantly between regions (Fig. 3). This list of industries was formally tied to OKVED codes. Many companies before the pandemic did not pay much attention to inconsistency of their activities and their registered codes. Applying for support, companies had problems with receiving it, if their first OKVED code was not in the list of “the most affected industries”. Later, the list of OKVED codes, considered “the most affected”, began to be updated regularly, it was allowed to use additional codes and to even change codes. In addition, only small and medium-sized enterprises that were included in the Unified Register of SMEs could

4 OKVED is a Russian classification of economic activities, marked by codes; it corresponds to NACE Rev.2.

5 A unified register of SMEs is run by Federal Tax Service (FTS), it is open and monthly updated list of SMEs and SMEs employment.
receive support. Before the 2020 crisis, some companies were not included in the register, since they had not applied for support and preferred not to submit annual reports on the average number of employees on time. In the spring of 2020, companies were also allowed to resubmit previous reports. The mentioned statistical changes, as well as the transition of a number of large companies to medium might lead to an increase in the number of SME employees in Russia in 2020, although only in 24 regions (Zemtsov et al., 2021a).

**Investment Climate**

The improvement of the investment climate, which encourages productive opportunity-driven entrepreneurship (Belitski et al., 2021; Djankov et al., 2002; Smallbone and Welter, 2020), is one of the most important areas of business policy. This is a complex multi-factor category, including formal business environment, capital availability, tax and administrative costs (Audretsch et al., 2021; Audretsch et al., 2022). Russia for 2015–2020 moved from 51 to 28 place in the Doing Business ranking (Fig. 1), but the parameters of the rating were measured only for Moscow and St. Petersburg. At the regional level, the investment attractiveness rating of the Agency for Strategic Initiatives (ASI) has been developed (Freinkman and Yakovlev, 2015). The regions sought to reduce the time for registering a business, issuing permits, etc. These processes generally continued during the pandemic. Large funds were allocated to the digitalization of support measures and the provision of public services.

The number of tax audits has been declining in recent years (Zemtsov, 2020), but the introduction of online cash desks and expansion of the value added tax rate in 2019 has increased business costs. The suspension of inspections was one of the important measures in 2020, it managed to slightly reduce the administrative burden on enterprises. At the same time, a number of new sanitary and epidemiological requirements were introduced, including vaccination certificates. The retail trade stagnated due to the new restrictions (Zubarevich, 2021), but mainly in large cities, where the COVID-19 incidence rate sharply increased.

**Tax incentives** in 2020 included a reduction in insurance premium rates for SMEs and sole proprietors. According to various estimates this measure allowed SMEs to save from RUB 385 to 550 bln (Mau et al., 2020), and according to the Commissioner for the Rights of Entrepreneurs, 21.7% of the surveyed companies took advantage of it (Kudrin et al., 2021). In March 2020, a tax deferral was introduced for SMEs in the most affected industries. This measure may save entrepreneurs about RUB 410 bln (Mau et al., 2020). Considering many business failures, the suspension of the tax arrears collection from March 18 to July 1, 2020 became an important measure: a moratorium on fines’ payments was introduced and the blocking of SMEs accounts was temporarily prohibited. The moratorium on initiating bankruptcy proceedings for SMEs was in effect from April 6 to September 6, 2020. A package of tax incentives has also been introduced for small IT businesses in 2021.

According to the 2020 April polls of the Chamber of Commerce and Industry (Kudrin et al., 2021), 58% of entrepreneurs indicated the inability to continue paying rent payments as their main problem, 73% would like to use rental holidays. The deferral of rent payments for leased state and municipal premises was introduced in April 2020, until October 2020. In May 2020, a temporary cancellation of fines and penalties for non-payment of debts for housing and communal services was introduced, as well as an instalment for
rental debts payments. But it was introduced only for state property, and these measures helped only a small part of SMEs. In 2021, private landlords were offered incentives to reduce rents for SMEs, including tax breaks.

**Financial Support**

Subsidies for the payment of wages turned out to be in high demand in 2020. The most important goal of these measures was to maintain a stable employment. During surveys, this measure was noted as necessary by more than 60% of companies in the affected industries, but only 16% of the surveyed companies took advantage of it, although according to the Ministry of Economic Development of Russia, this measure was used monthly by about 18% of all SMEs and encompassed about 3.8 million people, or 5.0% of the SME workforce (Kudrin et al., 2021). Financial support measures also included the expansion of the concessional lending program for SMEs, which provided access to loans at a reduced rate. According to the Ministry of Economic Development, more than 210 thousand loan restructurings were approved by July 2020. Interest-free loans were not so popular with entrepreneurs, since they required numerous documents, like many non-crisis support measures, and were issued for a year only and on the pledge of property, which means that in case of non-payment on time, they inevitably led to bankruptcy. From June 2020 to April 2021, it was possible to write off a loan for SMEs in affected industries if the company saved jobs; the state would provide 85% guarantees. This measure turned out to be one of the most demanded, accounting for more than half of all SMEs anti-crisis support applications.

An analysis of statistics from the Register of Support Recipients (Federal Tax Service) shows that federal and regional assistance in 2020 amounted to more than RUB 434.2 bln, where RUB 238.5 bln were transferred as a direct financial support. Federal aid (subsidies and grants) has increased 20.7 times since 2018, and general financial support has doubled since 2019. In 2020, more than 22.4% of SMEs (including individual entrepreneurs and self-employed) were provided with some forms of support against 2–3% in 2018, 0.9% in 2019 and 2021. The total support coverage decreased and amounted to about 0.5% by mid-2021. In the fall of 2021, the allocation of RUB 38.5 bln was announced, which was supposed to support about 3 million employees. However, this support was meant to help only SMEs of the most affected industries, as well as socially oriented non-profit organizations.

Federal measures were supplemented by regional initiatives, aimed at reducing the regional part of taxes, additional subsidies and benefits for the use of property, etc. Financial support more than doubled in 2020 in 52 out of 85 regions. Mostly these were poorly developed regions with a low initial base (Ingushetia, Dagestan, Tyva, etc.), but also regions, that traditionally implement a proactive entrepreneurship policy: Vladimir, Belgorod, Leningrad, Kaliningrad oblasts, St. Petersburg, etc. The second package of anti-crisis measures, introduced in 2021, was distinguished by great regional variability. Regional authorities could choose different options in terms of the level of concessional lending, the issuance of guarantees, and microcredits.

**DATA AND METHODS**

The impact of the COVID-19 on SMEs in Russia varies by region and by industry. We used SMEs number growth as an indicator to analyse main trends and factors of SMEs development in Russia (Fig. 2). In most regions, SMEs number reduction ranged from −3.0 to −4.5%. Brief spatial analysis allows us to identify some regions where the drop was higher (Zemtsov and Mikhailov, 2021):

— the largest agglomerations (Moscow, St. Petersburg, Volgograd and Samara oblasts, Perm and Krasnodar krais), where SMEs play an important role in the market services sector, and the introduced quarantine measures were more rigorous;

— northern resource regions (the republics of Komi and Sakha, the Khanty-Mansi and Yamalo-Nenets autonomous okrugs, the Krasnoyarsk krai), where the export drop of raw materials led to a decrease in household income, a reduction in transport services and other business services for large companies;

— border regions (Jewish Autonomous Oblast, Pskov and Bryansk oblasts), where anti-epidemiological measures limited the ability to import products from neighbouring countries, and also negatively affected the attraction of domestic and foreign tourists (Krasnodar krai, Republic of Crimea, Astrakhan oblast).

Based on the analysis of the literature, trends and geography of the crisis (Zubarevich, 2021; Zubarevich and Safronov, 2020), we proposed several hypotheses.

**Hypothesis 1.** The negative impact of the anti-covid measures on SMEs’ growth: the more measures were introduced in a region, the higher the SME’s decrease in this region was. It is not obvious, as the local measures may not lead to an additional reduction in SMEs number against the backdrop of the federal lockdown. At the same time, restrictions in neighbouring regions may also affect SMEs. SMEs depend on the markets of other regions (Barinova et al., 2018), so restrictions in large agglomerations could worsen the situation in neighbouring regions.

**Hypothesis 2.** The more SMEs of the affected and related industries were in the region, the greater the regional SMEs’ number reduction was. However,
SMEs adapted well, especially in large agglomerations, so there might not be a dependence. At the same time, the combination of such an economic structure with the severity of anti-COVID measures could be fatal for SMEs.

Hypothesis 3. In the largest agglomerations, the crisis was more destructive for small and medium-sized businesses due to the high role of the service economy. But in large agglomerations, there were more opportunities for adaptation: larger markets, a higher level of education and digitalization.

Hypothesis 4. In the regions with higher incomes the impact of the crisis was less noticeable due to a smaller reduction in consumer demand.

Hypothesis 5. In the regions with more favourable business climate (ASI rating), the reduction of SMEs was lower. However, the formal conditions might not affect this dynamic.

Hypothesis 6. In the regions, where business has quickly adapted to the digital environment, the magnitude of fall is lower; however, this is not obvious for most regions where the online sector accounts for a tiny percentage of trade.

Hypothesis 7. Different strategies were used to support SMEs: either to allocate small amounts of money to as many SMEs as possible or to allocate a lot, but to few beneficiaries. The increased amount of supported companies turned out to be the most effective strategy. At the same time, state support worked most effectively in those regions, where the business digitalization was high; otherwise, the support could be belated and not targeted.

Hypothesis 8. In general, the regions that provided proactive complex SMEs support were able to maintain a greater number of businesses.

First, the model included an assessment of possible convergence. The control variable was the number of SMEs. It was assumed, that regions with fewer SMEs could grow faster.

Regional governments were themselves able to determine measures’ coverage depending on the epidemiological situation. The level of measures’ strictness was assessed in points depending on the number of restrictions introduced (Mau et al., 2020): wearing masks, self-isolation regime for citizens and entrants, access control, restrictions on movement, administrative responsibility, quarantine, etc. The index of the quarantine measures’ strictness (Fig. 2) was higher in a number of regions with the largest agglomerations: Krasnodar and Krasnoyarsk krais, Nizhny Novgorod and Sverdlovsk oblasts, the Republics of Tatarstan and Chukotka autonomous okrugs, Magadan and Murmansk oblasts, the republics of Komi, Karelia, etc.).

(Fig. 1) In these regions the share of transport and business services SMEs, which had been negatively affected by a lockdown, was higher. This share was also higher in the largest agglomerations (Moscow, St. Petersburg, Sverdlovsk, Novosibirsk and Nizhny Novgorod oblasts, etc.), with the better developed SME sector specializing in real estate transactions, lease and services. The volume of services for sale and real estate lease dropped significantly due to anti-epidemiological measures. The SME sector was potentially less vulnerable to the crisis in the North Caucasus and in a number of southern regions with a higher share of agriculture in regional economy, since the demand for food products remained stable. The agricultural regions were singled out separately, since during crises the population did not significantly reduce food consumption, and, accordingly, farming and other small businesses in the countryside could experience a smaller drop.

To estimate the proximity of large goods and services markets for SMEs, we used the New Economic Geography approach. We have proposed two indicators. The first one took into account the sum of the GRP of other regions, divided by the distance to them. The second indicator considered the GRP of the desired region, the volume of GRP of other regions and the GDP of other countries, divided by the distance to these regions and countries (for more details: Barinova et al., 2018). The first indicator was used for testing the influence of the severity of anti-epidemic measures in neighbouring regions. We divided the estimate of the size of external regional markets by the level of measures’ strictness in neighbouring regions. Relatively speaking, we got an estimate of the share of neighbouring markets that might diminish during covid-19 restrictions. The second indicator was used as an indirect assessment of the restrictive measures’ impact in border regions near large foreign markets. Other important indicators of the size of markets, available to SMEs, were incomes and the size of the regional central city. Unemployment might be an indirect indicator of economic problems.

To assess the institutional conditions, we used the ASI investment attractiveness rating for 2018. We assumed, that the leading regions of the rating formed favorable conditions for business survival. The second indicator concerned the assessment of the capital
availability: a higher provision with credit funds could be an indirect indicator of the banking system development and low interest payments.

To assess the impact of the regional state support level, we used three indicators: the amount of support per SME, the regional share of support, and the share of SMEs supported. We used the first indicator to evaluate the region’s strategy for the overall increase in support growth. The second one assessed the role of regional authorities: we assumed that a high share of regional support could lead to its greater efficiency, since regional authorities better understand the needs of business. In terms of funding, regional support exceeded federal in 46 out of 85 regions. The third indicator assessed the results of the region’s strategy to reach as many SMEs as possible, although the amount of support might not be high.

To find a combination of factors that influenced the SMEs’ number dynamics in 2020 we used econometric regressions. Due to the high heteroscedasticity, the OLS model was used with an appropriate correction. A multicollinearity check was carried out as well.

However, this approach has its drawbacks. In particular, calculations based on one year data do not help to identify causal relationships, except for cases with time lags. But the problem of potential endogeneity still occurs. Therefore, the size of SME sector support may be related to the level of sector drop (influence opposite to our assumptions), when regional authorities sought to increase support amid a deteriorating situation. This problem led to the impossibility of confirming or refuting the last hypothesis.

Therefore, we also used the difference-in-difference method. For evaluation, we selected regions that more than doubled the volume of support, increased the specific support, the regional part and the support coverage above the average regional values: Belgorod, Tyumen, Ulyanovsk, Kurgan, Magadan, Smolensk oblasts, the republics of Altai, Kalmakia, Mordovia, Khakassia, Chuvashia, Crimea, Chukotka Autonomous Okrug, Sevastopol. We called these regions the most proactive in terms of SME support measures during the pandemic. To assess the effects of such policy (increasing complex support), we used the difference-of-differences method, which is often used to assess the impact of measures as a basis for evidence-based policy (McCann and Ortega-Arguilés, 2016; Smallbone, 2016; Storey, 2002). The method assumes the presence of two groups of observations (experimental and control) and two time periods (before and after policy measures). Then the model can be represented as follows (Imbens and Wooldridge, 2009):

\[ y_{it} = \alpha_0 + \alpha_1 dEProactive_i \cdot dT_t + \gamma dEProactive_i \cdot dT_t + \beta_1 dT_t + \eta_{it}, \]

where \( y \) is the growth in the number of SMEs; \( i \), Russian regions, \( t \), 2018–2019; \( dEProactive \) is a dummy variable equal to 1 if the region is in our list of proactive ones, and 0 otherwise; \( dT \) is a dummy variable for each sample year; \( dEProactive \cdot dT \) is an interaction variable equal to 1 in 2020, when the region pursued a proactive policy, and 0 for other cases.

The \( dEProactive \) dummy variable reveals differences between the two groups prior to the implementation of support measures. Variables \( dT \) identify external factors that would cause changes in the number of SMEs even in the absence of a support policy: most likely, in 2019–2020, the number of SMEs would have decreased regardless of support for the reasons described above. The coefficient \( \gamma \) of interest determines the average effect of a proactive support policy in 2020, that is, the difference in the SMEs number change between the experimental and control groups. This method eliminates bias in comparison between treatment and control groups in the second period, which may only be due to persistent differences between these groups due to other factors, as well as eliminates bias in comparison over time, which may be due to temporal trends, and not the result of policy (Imbens and Wooldridge, 2009).

THE RESULTS OF THE ANALYSIS OF SMES’ DEVELOPMENT TRENDS AND FACTORS

At the first stage, we graphically checked the dependencies within the framework of the main hypotheses. If we compare the share of SMEs in the most affected and related industries and the SMEs number decline recorded in statistics, there is practically no relationship between these indicators (Fig. 5a). This is partly due to imperfect data on the sectoral structure of SMEs in the regions. Many entrepreneurs complained about the discrepancy between the OKVED codes and their real activities (Kudrin et al., 2021). There is no strong direct relationship between the quarantine measures’ strictness and the SMEs’ number reduction in the region (Fig. 5b), due to the fact that in some regions the quarantine requirements were not strictly observed and they were introduced with a lag in some regions. At the same time, in the largest cities, the population’s income is on average higher and the variety of needs is wider, which creates conditions for SMEs survival. In the regions with higher population’s income in 2020 the number of SMEs decreased to a lesser extent (Fig. 5c).

ASI rating assesses regional business environment as a whole, including regional SMEs support. We assumed that the previous leaders of this ranking will maintain favourable business environment during the current crisis. In general, institutional conditions are one of the most significant factors of the entrepreneurship development (Barinova et al., 2018). The correlation between the region’s position in the rating of investment attractiveness of ASI and the SMEs number dynamics indirectly supports this hypothesis (Fig. 5d). Regions that demonstrated an increase (or smaller decrease) in the number of firms with a website experienced a smaller decrease in the number of
SMEs (Fig. 5e). We consider this an indicator of the digitalization of business in the region, its ability to quickly adapt to new conditions, and the transition to the online sector. But there are no direct links between state support and the preservation of SMEs.

An increase in the number of SMEs was recorded in two regions of Russia—Leningrad oblast and the Chukotka Autonomous Okrug. In the first case, this is due to the targeted SMEs support, provided by the regional authorities, as well as the favourable influence of the Saint Petersburg large market. In the second case this can be explained by a “low base effect” and proactive regional support.

The scatter plots clearly show the presence of heteroscedasticity, high dispersion of data for different values of the independent variable. This limits the possibilities of correlation analysis. Therefore, the construction of a multivariate regression adjusted for heteroscedasticity helps us partially solve this problem, and considering the influence of several factors—improve the results of the assessment (Table 2).

First, we confirmed that, on average, regions with a smaller SME sector experienced lower rates of decline, which may be due to the low base effect. We have confirmed, that the number of SMEs decreased faster in regions with a high proportion of affected industries and stricter anti-pandemic measures (Table 3). While the share of crisis-affected industries in the SME sector was 1% higher in the past, the decline in the number of SMEs was 0.02% stronger in 2020. At the same time, the regions with higher population’s income, larger markets (capital cities) and better business environment experienced smaller decrease in the number of SMEs.

![Fig. 5. The relationship between factors (x-axis) and the SMEs number dynamics in the regions of Russia (y-axis) in 2020.](image-url)
Normally, large and diverse agglomeration markets generated entrepreneurial activity nearby. During pandemic this was insignificant because of transport and other restrictions. However, we confirmed (model 7) that the larger the size of markets in neighbouring regions covered by restrictions, the greater the rate of decline. In other words, the preventive measures had a negative impact not only on the domestic market of the region, but also on the businesses of neighbouring regions.

The business digitalization could contribute to its survival (model 3). Moreover, we proposed a variable to indicate the relationship between regional proportion of companies with a website and regional support, which turned out to be significant (model 7). In other words, the public support efficiency was higher in regions where business digitalization was higher, since they could receive state support in time, change the business model with its help, enter the online sector, etc.

With a few concerns and reservations it is possible to acknowledge, that the agrarian regions got through the crisis a little easier, and the border regions—a little more difficult (model 2). However, Schwartz criterion value for model 2 is higher than for model 1, 3 and 7, and this can indicate the presence of unnecessary (almost nonsignificant) variables in the model. In the first case, the impact of agricultural subsidies and an increase in the consumption of domestic products could serve as an incentive for farms. In the second case, this may result from the negative impact of prohibitive custom border measures of the large countries (China, the EU).

Large government support per SME (model 5) and the increase in the share of regional support (model 4) generally were observed in regions with low rates of decline in the number of SMEs. We can assume, that regional support might had a more positive effect because regional authorities had a better understanding of local business. Although the strategy to increase the scope of support can be considered rather unsuccessful (model 6), since the support amounts might be insufficient.

Unfortunately, as already noted, the model we proposed did not allow us to fully establish the direction of the causal relationship between SMEs’ support and the SMEs’ dynamics. Therefore, we used the “difference-in-difference” method (Table 3). The SMEs situation in the regions that pursued a proactive policy in 2020 before the pandemic was on average worse than in other regions: the coefficient for the \( dE_{Proactive} \) variable is negative. That is, these regions had no economic advantage before the pandemic. The number of SMEs decreased in 2019 in most regions, which is
confirmed by calculations (negative value of the coefficient $dT_{2019}$). During the pandemic, the situation in Russia deteriorated, so the growth rate of the SMEs number was 10.6% lower in 2020 (the value of the coefficient $dT_{2020}$) than it could be in comparison with the conditions of a stable 2018. But in regions that pursued a proactive policy, the retention rate of SMEs was 1.6% higher than in other regions (the value of the coefficient $dT_{2020}$). In other words, we do confirm the positive impact of state support, which, however, cannot be compared to the negative consequences of the pandemic.

Table 2. Results of the assessment of factors affecting the dynamics of the number of SMEs in 2020

|                                | (1)       | (2)       | (3)       | (4)       | (5)       | (6)       | (7)       |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Constant                       | 4.3***    | 4.3***    | 4.1***    | 4.3***    | 4.3***    | 4.1***    | 4.2***    |
| SMDs number in 2019            | (0.065)   | (0.066)   | (0.11)    | (0.11)    | (0.10)    | (0.099)   | (0.10)    |
| Proportion of SMDs in          | -0.0079***| -0.0074***| -0.0078***| -0.0076***| -0.0058** | -0.0077***| -0.0067***|
| potentially affected and in    | (0.0026)  | (0.0024)  | (0.0025)  | (0.0024)  | (0.0023)  | (0.0024)  | (0.0022)  |
| related industries in 2015, %  | -0.020*** | -0.016*** | -0.018*** | -0.025*** | -0.020*** | -0.019*** | -0.021*** |
| The index of the quarantine    | -0.0051*  | -0.0040   | -0.0067** | -0.0064** | -0.0066** | -0.0067** | -0.0069***|
| measures strictness, points   | (0.0029)  | (0.0025)  | (0.0026)  | (0.0028)  | (0.0023)  | (0.0026)  | (0.0021)  |
| Population of the regional     | 0.010***  | 0.010***  | 0.010***  | 0.010***  | 0.010***  | 0.010***  | 0.010***  |
| capital in 2019, persons       | (0.0025)  | (0.0021)  | (0.0023)  | (0.0022)  | (0.0022)  | (0.0022)  | (0.0021)  |
| ASI investment climate index   | 0.044***  | 0.046***  | 0.058***  | 0.047***  | 0.042***  | 0.062***  | 0.044***  |
| in 2018, points                | (0.013)   | (0.011)   | (0.014)   | (0.013)   | (0.012)   | (0.013)   | (0.012)   |
| Population income minus        | 0.0085**  | 0.012***  | 0.0083**  | 0.0077**  | 0.0055*   | 0.0076*** | 0.0068*** |
| the subsistence level, RUB     | (0.0032)  | (0.0029)  | (0.0033)  | (0.0031)  | (0.0031)  | (0.0027)  | (0.0030)  |
| Share of crop production in    | 0.0021*** | 0.0021*** | 0.0021*** | 0.0021*** | 0.0021*** | 0.0021*** |
| GRP in 2019, %                 | (0.00046) | (0.00046) | (0.00046) | (0.00046) |
| GDP of the countries divided   | -0.010*** | -0.010*** | -0.010*** | -0.010*** | -0.010*** | -0.010*** |
| by the distance to them in 1999| (0.0037)  | (0.0037)  | (0.0037)  | (0.0037)  | (0.0037)  | (0.0037)  |
| Growth in the share of         | 0.026*    | 0.017     | 0.018     | 0.025**   | 0.023*    | 0.023*    |
| companies with a website, %    | (0.015)   | (0.015)   | (0.014)   | (0.014)   | (0.012)   | (0.013)   |
| Share of regional SME support, %| 0.0024**  | 0.0024**  | 0.0024**  | 0.0024**  | 0.0024**  | 0.0024**  |
| SME support per SME, RUB       | (0.0011)  | (0.0011)  | (0.0011)  | (0.0011)  | (0.0011)  | (0.0011)  |
| Share of supported SMEs        | 0.0030*   | 0.0030*   | 0.0030*   | 0.0030*   | 0.0030*   |
| (0.0017)                       | (0.0017)  | (0.0017)  | (0.0017)  | (0.0017)  | (0.0017)  |
| Market volume (GDP) of          | -0.010*** | -0.010*** | -0.010*** | -0.010*** | -0.010*** |
| neighboring regions divided by  | (0.0024)  | (0.0024)  | (0.0024)  | (0.0024)  | (0.0024)  |
| their index of strictness of    | 0.00094*  | 0.00094*  | 0.00094*  | 0.00094*  |
| anti-pandemic measures          | (0.00047) | (0.00047) | (0.00047) | (0.00047) |
| Ln (SME support per            |         |         |         |         |         |         |         |
| SME)*Ln(share of companies with |         |         |         |         |         |         |         |
| a website)                     |         |         |         |         |         |         |         |
| Corrected R²                   | 0.35     | 0.51     | 0.40     | 0.51     | 0.54     | 0.46     | 0.55     |
| Schwartz criterion             | 360      | 382      | 358      | 374      | 380      | 356      | 362      |

P-value: * significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level.

CONCLUSION

As we showed, the main indicators of SMEs development were decreasing even before the crisis (Kudrin et al., 2021), having clearly manifested themselves after the introduction of mandatory online cash registers and the VAT increase. A sudden COVID-19 crisis, being far beyond an economic one (Mau et al., 2020), was predicted to deal a crippling blow to the Russian economy in general and entrepreneurship in particular, due to a sharp decrease in demand for goods and services of SMEs.
This crisis demanded urgent measures to support SMEs. Most of the “quick response” measures were direct, aimed at preventing the bankruptcies. Those were subsidies, lower interest rates on loans, deferrals of mandatory payments, including lease payments (Mau et al., 2020). But not all of these measures were efficient and in demand. Almost all of those measures were temporary, so the entrepreneurs were supposed to pay their debts later. Thus, the bankruptcies of many entrepreneurs were only postponed, only partially reducing the risk of high financial instability in the post-crisis period.

The Russian anti-crisis SMEs support measures generally corresponded to those applied internationally, but turned out to be less ambitious both in terms of the target audience and the amount of funding; they were also implemented with some delay, partly due to the later start of the pandemic in Russia (Mau et al., 2020). The Russian anti-crisis package was characterized by more rigorous criteria for companies’ compliance: that is a narrow list of affected industries, strict criteria for the size of enterprises. As a result, the target audience was smaller and there were less support measures recipients. Moreover, in Russia, the proposed anti-crisis measures were more difficult to use: it was necessary to collect a package of documents and wait for a longer period for processing applications. The amounts of financial support also differed: in Russia, the employment support was 26–30% of the average wage in Russia, while in some OECD countries it reached 50–90% (Mau et al., 2020). The ability to get SMEs state support was limited by problems with identifying industries, assigning firms to these industries, and submitting reports by firms on time. But in general, in the current situation, governments reacted quite quickly to the unexpected COVID-19 problems. According to SMEs surveys, 27.8% of SMEs were satisfied with federal support measures, and 23.4% were satisfied with the regional measures (Mau et al., 2020), which indicated the insufficiency of anti-crisis SMEs support. 63% SMEs indicated, that the proposed measures did not help at all (“others are needed”). Almost half of the interviewed entrepreneurs noted that their businesses were not able to meet the support criteria—most likely, industry-specific.

Despite the fact that direct SMEs support measures are generally ineffective (Shane, 2009; Zemtsov et al., 2020) and can create institutional traps in developing countries, the use of such measures is justified during a crisis period. According to our estimates, the proposed measures had partially mitigated the destructive impact of the COVID-19 crisis on the SME sector.

The calculations showed, that the Russian anti-crisis SMEs support measures have worked, although not at their full capacity. The SME sector in Russia has suffered less than expected. The SMEs number was slightly negatively affected by the rigorous quarantine measures, and positively—by the level of income and the investment climate. Thus, the overall favourable institutional background in certain regions smoothed out the negative impact of the crisis. The share of the number of SMEs in most affected industries, primarily the tourism and entertainment complex, transport services and business services, had a weak negative effect on the number of SMEs. Accelerated digitalization of government services has played an important role. Thus, automatic electronic services on SMEs support measures have been launched, providing an opportunity to apply for a disinfection subsidy online. Business digitalization has had a positive impact on the retention of SMEs. In regions that pursued a proactive policy, the retention rate of SMEs was 1.6% higher than in other ones. So, we do confirm the positive impact of state support, which, however, cannot be compared in scale with negative pandemic consequences.

New sanctions introduced have become an instant shock for entrepreneurs, especially those integrated into international supply chains. On the other hand, new opportunities have appeared as well: these are the released market niches and the cheap ruble, that makes it easier to develop a business. Concerning current situation, the entrepreneurial policy in Russia should now concentrate on short-term intensive support measures, implying not only the direct support, but also creating incentives and giving opportunities. That includes maximum tax reductions, eliminating all inspections, simplifying all necessary procedures.

In our opinion, COVID-19 anti-crisis SMEs’ support measures are still relevant now and are needed to be extended and expanded (Obraztsova and Chepurenko, 2020) further in 2022–2023. Based on the identified factors, it is necessary to continuously implement a set of short-term anti-crisis measures: subsidies to vulnerable social groups, an increase in public procurement share from SMEs in order to maintain sustainable demand for SMEs’ products and services; wages subsidies, that should be larger; tax incentives and deferrals for companies that have lost a certain

### Table 3. Results of the assessment of the proactive policy impact in the Russian regions in 2020

| Dependent variable: number of SMEs in August 2020, in % as against August 2019. Random Effects (GLS). 2018–2021. 85 regions |
|---------------------------------------------------------------|
| const                                                        | 106.4*** (0.8003) |
| dEProactive                                                 | −1.143** (0.5773) |
| dEProactive*dT                                                | 1.591** (0.6747) |
| dT_2019                                                     | −7.725*** (0.6574) |
| dT_2020                                                     | −10.62*** (0.8612) |
| dT_2021                                                     | −6.826*** (0.6264) |
| R2                                                          | 0.52 |

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share of profits (the criteria of the company’s own development results is better than the OKVED codes or other formal classifiers).

In the long term, Russia as a developing country with rather weak institutions and poor prospects of high budget revenues due to a drop in hydrocarbon exports, should focus on less expensive indirect support measures that create favourable business environment. These measures are able to serve as drivers for post-crisis recovery. Anti-crisis measures of that kind include moratoriums on inspections, on repayment of loans, on rent payments; it is also tax breaks, including insurance premiums deferrals. A complete digitalization of public services for SMEs in the regions (remote opening of a bank account, a simplified closure of a company, etc.); regulatory guillotine, simplification of reporting procedures, a moratorium on changing requirements for SMEs, retraining of the unemployed; reducing the digital divide through the development of ICT infrastructure, subsidizing the digitalization of SMEs; export support and reduction of relevant customs barriers, etc.

Our results confirm that regional conditions are important for the business sector, as well as regional policies. This once again raises the question of the need to increase the tax and budget independence of the regions in order to pursue a proactive ecosystem policy (Zemtsov et al., 2020). And the point is not in growing support, but in creating conditions, environment, improving the business climate, digitalization to increase the density, connections and diversification of small businesses within the region.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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