Chapter 4
Adaptation Potential of Inclusive Growth of the Regions of the South of Russia in the Context of the COVID-19 Pandemic

Inna V. Mitrofanova, Olga A. Chernova, Henrietta Nagy, and Marina V. Pleshakova

Abstract The ongoing economic crisis caused by the COVID-19 pandemic and its asymmetric impact on some territories evoke research interest in identifying factors that determine the resilience of regional economies to external shocks. Solving this problem implies the need to study the specifics of the territory adaptation capabilities as well as measures taken by regional authorities aimed at entering the trajectory of inclusive growth. The research goal was to assess the adaptation potential of regions to the coronavirus crisis and determine the development trajectory as a result of this potential realization. The authors determined directions of the development of adaptation potential of regions ("bounce forward" or "bounce backward"). For this purpose, the analysis of regional changes in financial results of organizations, volumes of industrial production and provision of services, and the unemployment rate was carried out. As a result, it was revealed that the "bounce forward" is characteristic of the South of Russia regions with a high level of socio-economic potential and a diversified economy. For the regions with a low level of socio-economic development, adaptation opportunities were expressed in a "bounce backward". This research contributes to the study of behavioral trajectories of regional economies in the conditions of the coronavirus crisis.

I. V. Mitrofanova (✉)
Federal Research Centre the Southern Scientific Centre of the Russian Academy of Sciences (SSC RAS), Rostov-on-Don, Russia
e-mail: mitrofanova@volsu.ru

Volgograd State University, Volgograd, Russia

O. A. Chernova
Southern Federal University, Rostov-on-Don, Russia
e-mail: chernova.olga71@yandex.ru

H. Nagy
Kodolányi János University, Budapest, Hungary
e-mail: nagy.henrietta@kodolanyi.hu

M. V. Pleshakova
Moscow City University, Moscow, Russia
e-mail: pmv23@list.ru

E. I. Inshakova and A. O. Inshakova (eds.), *New Technology for Inclusive and Sustainable Growth*, Smart Innovation, Systems and Technologies 287,
https://doi.org/10.1007/978-981-16-9804-0_4

4.1 Introduction

Today, at the level of major international organizations, the need for inclusive growth is recognized, and in the European Strategy for Smart, Sustainable, and Inclusive Growth ("Europe 2020", 2010), inclusive growth is considered as an instrument of social and territorial consolidation. The concept of inclusive growth is considered by some experts as "coordinated growth", which for national economies means their involvement in improving the quality of life of the population not only within the country, but also in a global context. This concept can be applied to regions and macro-regions in order to assess their involvement in the development of the country.

The research currently underway emphasizes that the inclusiveness of regional development in the context of the coronavirus pandemic is determined not so much by the region's ability to reflect shocks as by its adaptation potential, that is, the ability to adapt to changing conditions. Moreover, these shocks can not only have negative effects, but also have a positive impact on economic development, leveling inefficient practices and developing promising business processes and institutional structures. Under these conditions, the task of the regional authorities is to support positive transformational trends by helping citizens and businesses to adapt to these transformations. Given the significant differentiation of regions by the level of use and development of socio-economic potential, by the type of resource and geographical conditions, as well as by the nature of the pandemic processes, there are no uniform recommendations for preventing the negative impact of external effects. However, the analysis of patterns of regional development, the identification of factors that would contribute to an increase in the adaptation potential of the economy, is of great theoretical and practical importance for the country's development [1–3].

Southern Russian regions, most of which have a pronounced agro-industrial specialization, are most vulnerable to shocks due to the low level of development of high-tech industries that stimulate innovative activity in the region; the high proportion of small- and medium-sized businesses most affected by the coronavirus crisis; the low level of economic diversification, which generates excessive dependence of regions on individual industries; lack of highly qualified personnel; and underdevelopment of transport and engineering infrastructure [4, 5]. Therefore, the search for ways to increase the sustainability of the Southern Russian economies through the development of the adaptation potential of the region is of great theoretical and practical importance.

Therefore, the purpose of this study is to analyze the adaptation potential of the regional economy in the conditions of the coronavirus crisis. The object of the study is the regions of the Southern Federal District. The hypothesis of the study is that the adaptation potential of the region is determined by specific regional factors and conditions, as well as the nature of state restrictive and supportive measures.

The economic crisis caused by the spread of COVID-19 has significant differences from the so-called "traditional" economic crises. For example, R. Cortes and Johnston W. identify the following distinctive features of the coronavirus crisis, which should be taken into account when developing measures to overcome it: (1) formation, (2)

focus, (3) temporality, (4) government jurisdiction, (5) preparedness, (6) normality, (7) business, and (8) operational deployment [6].

Analyzing and observing the consequences of the COVID-19 crisis, the researchers note that one of its most significant characteristics determining the response of national and regional economies to the crisis from the point of view of sustainability is temporality. The specificity of the manifestation of this characteristic is that the COVID-19 crisis is characterized by a higher rate of deployment than "traditional" economic crises. The sequential deployment of the first, second, and possibly the next waves of the coronavirus crisis makes the recovery period uncertain and cyclical. At the same time, there are significant differences in the speed, duration of individual stages, and trajectory of development in different countries and regions, largely determined by how their economies reacted to the "first blow" of the pandemic. In this context, it is of particular importance to study the impact of the pandemic precisely at the first stages of the COVID-19 crisis, when the adaptation potential of the region's economy manifests itself. The change in the socio-economic indicators of the region's development at this stage can be either insignificant or multiple, and thus largely predetermine the trajectory of the development of crisis processes.

The concept of "adaptation potential of the region" was introduced into scientific circulation as part of the study of evolutionary transformations in socio-economic systems. As noted by V. Muštra, B. Šimundić et al., adaptive changes in regional socio-economic and institutional structures are necessary: (a) to preserve or restore the former path of development of the region, or (b) to transition to a new sustainable path. At the same time, it is assumed that the regional system does not lose the ability of allocating resources at its disposal efficiently [7].

In the works of W. Bonß, X. Hu., R. Hassink, R. Martin et al., the idea of "bouncing back" and "bouncing forward" as possible options for implementing the adaptation potential of the region is reflected [8–10]. A rollback occurs when the economic recovery involves a return to the original pre-crisis parameters. For example, the economy of the region, having survived the shock, retains the same structural proportions, traditional business processes, and business strategies. With a leap forward, there are significant changes in the industrial base, enabling the region to return to its usual business, as well radically new business models appear. The direction of adaptive changes is determined by the current state of the regional socio-economic system, as well as a complex set of proactive and reactive factors and conditions, which we define as the adaptation potential of the region.

Despite the fact that a lot of attention is paid to the adaptive capabilities of the territory in modern research, there is no definition of what is meant by the adaptation potential of the region. The concept of adaptation potential is most frequently used to denote the conceptual phenomenon of the adaptation process, characterizing the degree of ability of the socio-economic system to adapt to environmental conditions [11, 12]. The term "adaptation potential" is usually identified with the term "adaptive capabilities/abilities".

The set of factors that are defined as determinants of the adaptive capabilities of the territory, according to the researchers, as a rule, includes characteristics of the

socio-economic potential of the local economy and institutional conditions [13, 14]. Along with this, X. Hu, L. Li, K. Dong, C. Kakderi et al. note that in the early stages of the development of the crisis, the state influence is the most important and implies the introduction of various kinds of restrictive and supportive measures [15, 16].

The adaptive cycle model developed by R. Martin, P. Sunley, B. Gardiner B., and P. Tyler suggests that the adaptation potential of the region includes market innovations, training, and technological changes [see 10]. At the same time, a number of scientists identify social factors (social cohesion, social values and rules, and social trust) as the most important determinants contributing to the realization of adaptive opportunities, which enable the pooling of resources to counteract economic shocks [17].

4.2 Methodology

Despite the differences in approaches to assessing the adaptation potential of the region, the following main features can be identified by researchers to determine the ability of the region's economy to withstand external shocks and adapt to new conditions: the presence of a financial buffer, economic diversification, and government support. This ability has already manifested itself at the initial stage of the crisis, the so-called "first strike" stage. The nature of the reactions of the regional economy to emerging challenges at this initial stage determines the direction of further changes, launching the adaptation mechanism itself.

In this study, we will focus on the first wave of the pandemic in Russia, which began in March 2020. To analyze the adaptation potential of the regions, we will consider the dynamics of changes in the following indicators as the pandemic develops: financial results of organizations; indices reflecting changes in production volumes and the provision of services in areas of activity; the rate of unemployment.

The study of the trajectory of changes in these indicators will enable us to conclude to what extent the economy of the regions was able to adapt to the new realities and to assume in which direction the adaptation is taking place: a "leap forward" (growth of financial indicators, change in the structure of the economy, and low unemployment) or a "leap backward" (decline in financial indicators, preservation of the structure of the economy, and high unemployment).

4.3 Results

The uniqueness of the southern Russian regions consists in an extremely high degree of polarization of the socio-economic space, significant differentiation by industry structure, by the level of development of innovative potential, by the characteristics of natural resource potential, by the configuration of regional settlement systems, and many other features [18]. This causes differences in the South Russian regional economies in the levels of their sensitivity to the factors of the coronavirus crisis.

The official start date of the coronavirus crisis is March 12, 2020, when the first cases were recorded in Russia. Small businesses were the most sensitive to the "first blow". Thus, according to the Federal Tax Service, 66,820 individual entrepreneurs ceased their activities in Russia in March–April 2020. This is 77% more than in March 2019 (37.718). Including 64,237 entrepreneurs themselves decided to terminate the business. 1563 enterprises ceased to exist due to the death of the owner, and 158 enterprises were declared bankrupt. In the South of Russia, the largest number of small business entities that stopped operating was recorded in the Rostov region, which ranks first in the region in terms of the share of people employed in small business (15.5% of the employed population in the region).

As the results of the analysis show, according to the results of January–December 2019, the highest financial results were typical for the Krasnodar Territory. The Rostov region demonstrates a negative balance of financial results. However, according to the results of January–December 2020, we can note a significant improvement in financial indicators in the Rostov region (the second position in the region in the absolute value of the indicator), despite the massive closure of enterprises. The growth of financial results is also typical for the Republics of Kalmykia and Adygea (Fig. 4.1). The impact of the coronavirus crisis was manifested in the fact that outdated and inefficient business models left the market, and the remaining, more effective practices were spread and developed.

Paradoxically, the best indicators of adaptability were demonstrated by enterprises in those regions that had a low financial buffer. Whereas the regions with a high

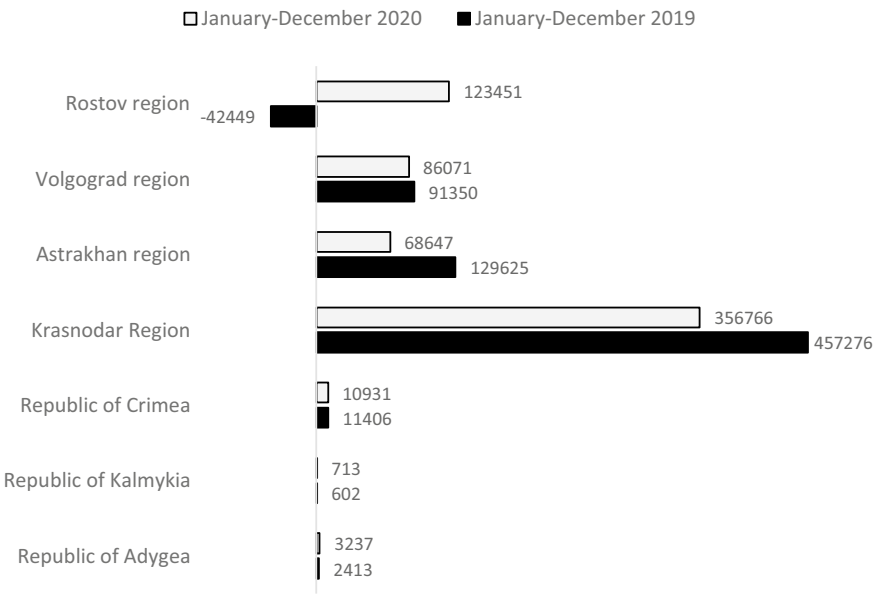

Fig. 4.1 The net financial result of the activities of organizations in the southern regions of Russia, million rubles. *Source* Developed and compiled by the authors based on [19]

value of financial results showed the highest level of their decline as a result of the coronavirus crisis.

Considering the change in structural proportions, we will focus on Rosstat (Russian Statistical Bureau) monitoring data, according to which the following areas of activity were identified: industrial production, agriculture, construction, transport, trade, and services. Indices of production volumes (rendering of services) by the studied regions for the period January–December 2020 in comparison with the corresponding period of 2019 are shown in Table 4.1.

From the data presented in Table 4.1, it can be seen that the conclusion is confirmed that the least adaptation potential was realized in the regions with the highest indicators of socio-economic development before the pandemic. Thus, in the Krasnodar Region and the Volgograd Region, there is a decrease in production volumes in all spheres of activity, the only exception is agriculture in the Volgograd region. At the same time, regions that do not have a high level of socio-economic development, nevertheless, showed growth in certain sectors of the economy. For example, in the Republic of Adygea, there is an increase in transport services, industrial production, and agriculture; in the Astrakhan region, there is an increase in construction; and in the Rostov region, despite the negative balance of the financial result of enterprises at the beginning of 2020, by the end of 2020, there was an increase in industrial production.

However, it cannot be said that it is regions with low indicators of socio-economic development that have a higher adaptability potential compared to developed regions. For example, in the Republics of Crimea and Kalmykia with low socio-economic potential, the indices of production volumes also significantly decreased in almost all

Table 4.1 Indices of production volumes (rendering of services) in the southern regions of Russia, percentage

Region	Industrial production	Agriculture	Construction	Transport	Trade	Rendering of services
Republic of Adygea	105.1	114.1	77.8	120.0	97.1	92.3
Republic of Kalmykia	92.1	91.5	84.3	54.8	101.1	92.0
Republic of Crimea	99.8	85.0	90.0	100.6	92.0	87,5
Krasnodar Region	97.0	91.3	98.2	97.7	91.7	90.1
Astrakhan Region	97.2	102.3	126.1	87.4	93.7	87.7
Volgograd Region	99.3	101.7	96.2	90.3	93.3	86.5
Rostov Region	101.7	97.1	95.2	118.8	93.0	89.2

Source Developed and compiled by the authors based on[19]

spheres of activity. These data show that the level of socio-economic development of the territory is not the key determinant for the realization of its adaptive production potential.

Our research enables us to conclude that the measures taken by the regional authorities in the conditions of the coronavirus crisis played a significant role in realizing the adaptation potential of the region. The authors believe that it was the state that influenced the adaptive capabilities of regional economies through the restrictions imposed, as well as supportive measures.

The strongest state support to business in the conditions of the pandemic was provided to the Rostov region. In this region, income tax rates were reduced, direct financing channels were significantly expanded, and preferential loans with deferred payment were provided. Whereas in the Krasnodar Region, tax support measures included only postponing the payment of taxes, and financial and credit measures consisted of issuing loans for urgent needs and salary payments, loan restructuring. Moreover, only in the Krasnodar Region among the southern Russian regions, strict quarantine measures were introduced by means of special passes for movement. In this region, restrictions on the activities of a number of enterprises were eliminated later than in other regions. This was due to the desire of the authorities to prevent the flow of tourists to the region to prevent the spread of the coronavirus crisis. As a result, the economy of the Krasnodar Region showed the lowest adaptability indicators in the South of Russia.

In general, despite the business support packages being introduced, the economic situation in the regions remained quite difficult. The deferral of lease payments extended only to state and municipal property, leaving entrepreneurs renting a private property in a very vulnerable position. Facilitating access to finance during the pandemic did not solve the long-term problems of business development. The sector of small- and medium-sized businesses remains unattractive for lenders. Moreover, a sharp decline in demand and services led to the situation when it was easier for an entrepreneur to declare bankruptcy than to take loans from a bank to pay wages to his employees.

Considering the indicators of production and economic activity in the regions in the sectoral context, it can be noted that agriculture has demonstrated the greatest resistance to the factors of the pandemic. This is due to the fact that agricultural production did not suspend its activities during the coronavirus crisis due to its importance for ensuring the food security of the national economy. In addition, outdoor work restrained the spread of the virus, as a result of which the number of cases in this field of activity was lower. Industrial production as a whole was also able to adapt to the new realities and in most regions return to the previous pre-crisis level.

The largest decrease in performance indicators is typical for retail trade, rendering services to the population, as well as the catering sector. It was during the first wave of the pandemic that restrictions were imposed on the activities of enterprises in this area, as well as on the movement of citizens, which led to a sharp decline in business activity. However, as restrictions were lifted, a period of recovery growth began, when enterprises and organizations were able to begin realizing their adaptation

potential. As a result, despite the existing differences in the pace of development, most of the southern Russian regions have maintained positive dynamics of indicators, practically bringing them to the value of the pre-crisis period.

Analyzing the change in the unemployment rate in the regions, it can be noted that its dynamics is directly related to the level of economic diversification. The number of unemployed increased to a greater extent due to the suspension and termination of activities during the lockdown of enterprises in the service sector, catering, hotel business, etc. However, in economically developed economies with a differentiated industry structure, the unemployment rate turned out to be significantly lower, since laid-off workers were able to find work in other areas. Thus, the highest unemployment rate is registered in the Republics of Kalmykia and Adygea, in the Astrakhan Region, where, despite the gradual recovery growth of the regional economies, many citizens who lost their jobs could not find a job, the lowest—in the Volgograd Region and Krasnodar Region. At the same time, it is in these regions that the rate of unemployment reduction is the highest.

According to Rosstat data (Fig. 4.2), in all regions, the peak of unemployment occurred in the period August–October.

To characterize the trajectory of adaptation changes in the regions, the regions are grouped into particular types in accordance with a combination of the following features: a change in the net result of financial activity; a change in structural proportions in growth indices; a change in the unemployment rate. Possible types of scenarios are presented in Table 4.2.

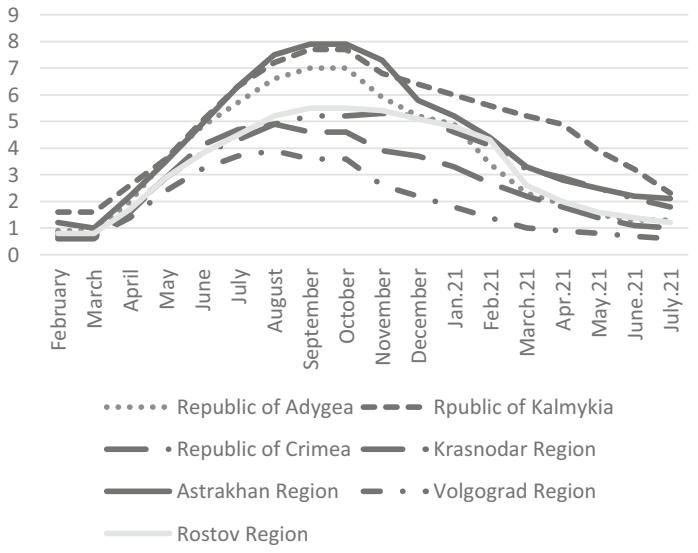

Fig. 4.2 Unemployment rate in the regions of the South of Russia, %. *Source* Developed and compiled by the authors based on [20]

Table 4.2 Types of the trajectory of adaptive changes

Changes in indicators	Level of change							
Change in the net result of financial activity	Growth				Decrease			
Changes in structural proportions of growth indices	High		Low		High		Low	
Changes in the rate of unemployment	High	Low	High	Low	High	Low	High	Low
Type of scenario	Bounce forward	Bounce forward	Bounce backward	Bounce forward	Bounce backward	Bounce forward	Bounce backward	Bounce backward

Source Developed and compiled by the authors

In cases where there is an increase in financial activity indicators in the region, then with a decrease in the level of employment, we can talk about the presence of a "leap forward". At the same time, the structural proportions of changes in growth indices may or may not be significant. Structural changes will indicate that some industries and spheres of activity receive an impetus for development in new conditions when other industries and spheres of activity (as a rule, these are traditional industries) reduce their business activity. If effective practices are consolidated in traditional activities, then significant changes in the industry structure may not occur.

A decrease in the financial result with an increase in the unemployment rate and a low change in structural proportions suggests that adaptation is following a "leap backward" trajectory. A decrease in the unemployment rate with high structural changes, even with a decrease in the financial result, may indicate the formation of a "leap forward" trajectory—the gradual consolidation of new business models in the economy.

The characteristics of the features and the type of trajectory of adaptive changes determined by the combination of these features are presented in Table 4.3.

According to the results of the analysis presented in Table 4.3, the "leap forward" occurred in most regions with higher indicators of socio-economic development and was characterized by a diversified economy: the Rostov region, the Volgograd Region, and the Krasnodar Region. In the Republics of Adygea, Kalmykia, Crimea, and the Astrakhan Region, the adaptation trajectory is developed along the path of a "leap back". The conclusions, that diversified economies are more resistant to the coronavirus crisis, are generally consistent with studies conducted by other authors.

Nevertheless, in order to conclude exactly what changes contributed to the formation of such a direction of the adaptive trajectory of development, additional research is needed, which determines the further tasks of the scientific search for authors.

Table 4.3 The type of trajectory of adaptation changes in the regions of the South of Russia

Regions	Change in the net result of financial activity		Changes in structural proportions of growth indices		Changes in the rate of unemployment		Type of scenario
	Growth	Decrease	High	Low	High	Low	
Republic of Adygea	+			+	+		Bounce backward
Republic of Kalmykia	+			+	+		Bounce backward
Republic of Crimea		+	+		+		Bounce backward
Krasnodar Region		+	+			+	Bounce forward
Astrakhan Region		+		+	+		Bounce backward
Volgograd Region		+	+			+	Bounce forward
Rostov Region	+		+		+		Bounce forward

Source Developed and compiled by the authors

4.4 Conclusion

The consequences of the coronavirus crisis have different manifestations in the southern Russian regions. This is due both to the margin of safety that the regional economy had before the outbreak of the pandemic and to the level of state support and the rigidity of the restrictive measures introduced.

The availability of a financial buffer was not a determining factor for ensuring a higher level of adaptability of regional economies. Moreover, regions with high socio-economic potential were among the most affected by the coronavirus crisis. This is largely due to the fact that regions with a high level of business activity in the conditions of the imposed restrictions had numerous connections destroyed, which put them in a vulnerable position at the very beginning of the coronavirus crisis. Additional problems for these regions were connected with the lack of sales in the conditions of the border closure.

Most of the southern Russian regions have a weak ability to withstand the factors of the pandemic. Their adaptation potential is realized mainly along the trajectory of a "leap backward", which is expressed in a return to previous business models and business strategies as restrictions are lifted. The sectoral structure of the economy and the degree of development of interregional ties were of decisive importance in realizing the adaptation potential. Regions in which, along with industrial production, there were agricultural enterprises (regions of agro-industrial specialization) demonstrated

a higher level of adaptability compared to regions with an undiversified economy, such as the Republics of Kalmykia and the Crimea.

State support significantly contributed in realizing the adaptation potential of the regions. It is the differences in the anti-crisis measures taken at the regional level that explain the differences in the adaptability of their economies. In this regard, it can be said that the level of adaptability of regional economies is largely determined by the extent to which regional authorities are able to make effective management decisions [21, 22]. That is, the quality of regional governance is more important for increasing the ability of the economy to resist external shocks than structural factors. This is of particular importance for the initial stage of the development of the crisis. The further ability to adapt and create conditions for inclusive growth is determined by how effectively economic agents will be able to use the resources provided to them, and consequently, the importance of the social trust factor increases in the long term. Further research of the authors will be devoted to the study of the role of this factor in increasing the adaptability of regional systems.

Acknowledgements The publication was prepared as part of the implementation of the State Assignment of the Southern Scientific Centre of the Russian Academy of Sciences for 2022, project "Strategic vectors of development of the socio-economic complex of the south of Russia taking into account regional resilience (economic and demographic aspects)".

References

1. Kazakova, S.M.: Sustainability Assessment of Russian Macro-Regions by Means of the Index of Inclusive Development. Regional Economy. South of Russia, 8 (4), 30–38 (2020). https://doi.org/10.15688/re.volsu.2020.4.3
2. Europe 2020: A European strategy for smart, sustainable and inclusive growth (2020). http://ec.europa.eu/research/era/docs/en/ec-understanding-era-13.pdf. Accessed 01 Sept 2021
3. Ljaskovskaja, E.A., Grigorjeva, K.A.: The Rating of Inclusive Development of Macro-Regions of the Russian Federation. Bulletin of the South Ural State University. Ser. Econ. Manag. **12**(2), 45–53 (2018)
4. Mitrofanova, I.V., Chernova, O.A., Pyankova, S.G., Batmanova, V.V.: Innovative impact of import substitution processes in the economy of the South of Russia. In: Inshakova A., Inshakova E. (eds) Competitive Russia: Foresight Model of Economic and Legal Development in the Digital Age. Lecture Notes in Networks and Systems. 110, 49–58 (2020). Springer, Cham. https://doi.org/10.1007/978-3-030-45913-0_6
5. Mitrofanova, I.V., Shkarupa, E.A., Batova V.N.: Export of agricultural products: trends and directions of state support in modern conditions. Reg. Econ. **9**(2), 131–140 (2021). https://doi.org/10.15688/re.volsu.2021.2.13. (South of Russia)
6. Cortez, R.M., Johnston, W.J.: The Coronavirus crisis in B2B settings: crisis uniqueness and managerial implications based on social exchange theory. Ind. Mark. Manag. **88**, 125–135 (2020). https://doi.org/10.1016/j.indmarman.2020.05.004
7. Muštra, V., Šimundić, B., Kuliš, Z.: Effects of smart specialization on regional economic resilience in EU. First SMARTER Conference on Smart Specialisation and Territorial Development: Changing Patterns of Territorial Policy: Smart Specialisation & Innovation in Europe, Sevilla, Španljoska (2016). https://www.bib.irb.hr/842329

8. Bonß, W.: The notion of Resilience: Trajectories and social science perspectives. In: Mauer A. (ed.) New Perspectives on Resilience in Socio-Economic Spheres, pp. 9–24. Springer VS, E-book (2016)
9. Hu, X., Hassink, R.: Exploring adaptation and adaptability in uneven economic resilience: a tale of two Chinese mining regions. Camb. J. Reg. Econ. Soc. **10**(3), 527–541 (2017). https://doi.org/10.1093/cjres/rsx012
10. Martin, R., Sunley, P., Gardiner, B., Tyler, P.: How regions react to recessions: resilience and the role of economic structure. Reg. Stud. **50**(4), 561–585 (2016). https://doi.org/10.1080/00343404.2015.1136410
11. Zemtsov, S., Barinova, V., Semenova, R.: The risks of digitalization and the adaptation of regional labor markets in Russia. Foresight STI Gov. **13**(2), 84–96 (2019). https://doi.org/10.17323/2500-2597.2019.2.84.96
12. Ziablitckaia, N.V., Ishniyazova, A.R., Prokopev, A.V., Prokopeva, T.V.: Adaptation potential assessment of oil and gas enterprises. Qual. Access Success **20**(170), 15–18 (2019)
13. Korolev, V.A., Toroptsev, Y.L., Matveeva, L.G., Chernova, O.A.: Modeling of dynamic properties of national economic systems. Serbian J. Manag. **13**(1), 133–143 (2018). https://doi.org/10.5937/sjm13-12991
14. Martin, R.: Regional economic resilience, hysteresis and recessionary shocks. J. Econ. Geogr. **12**(1), 1–32 (2012). https://doi.org/10.1093/jeg/lbr019
15. Hu, X., Li, L., Dong, K.: What matters for regional economic resilience amid COVID-19? Evidence from cities in Northeast China. Cities, p. 103440, ISSN 0264-2751 (2021). https://doi.org/10.1016/j.cities.2021.103440
16. Kakderi, C., Tasopoulou, A.: Regional economic resilience: The role of national and regional policies. Eur. Plan. Stud. **25**(8), 1435–1453 (2017). https://doi.org/10.1080/09654313.2017.1322041
17. Huggins, R., Thompson, P.: Local entrepreneurial resilience and culture: The role of social values in fostering economic recovery. Camb. J. Reg. Econ. Soc. **8**(2), 313–330 (2015). https://doi.org/10.1093/cjres/rsu035
18. Nikitaeva, A.Yu., Kiseleva, N.N.: Reconfiguration of business models of industrial enterprises: vectors of increasing sustainability in the new realities. J. Volgogr. **23**(1), 110–120 (2021). https://doi.org/10.15688/ek.jvolsu.2021.1.9. (State University. Economics)
19. Information for Monitoring Social and Economic State of the Subjects of the Russian Federation. Rosstat (2020). https://rosstat.gov.ru/folder/11109/document/13259. Accessed 20 Aug 2021
20. Report "Social and Economic State of Russia". Rosstat (2020). https://rosstat.gov.ru/compendium/document/50801. Accessed 01 Sept 2021
21. Inshakov, O.V.: Strategic ideas from regions–potential of effective consolidation (chief editor's deliberations). Reg. Econ. **1**(15), 4–12 (2017). https://doi.org/10.15688/re.volsu.2017.1.1. (South of Russia)
22. Inshakov, O.V.: Strategic planning of the social and economic development of a region: scientific substantiation and updating of a model. Reg. Econ. **1**(19), 23–43 (2018). https://doi.org/10.15688/re.volsu.2018.1.3. (South of Russia)