Graduate School of Economics and Management, Ural Federal University and Varazdin Development and Entrepreneurship Agency

Ural Federal University
named after the first President of Russia B.N.Yeltsin
Graduate School of Economics and Management

Economic and Social Development

SPECIAL EDITION

XIV International Conference «Russian Regions in the Focus of Changes»

Book of Proceedings

Editors:
Irina Turgel, Ural Federal University, Russian Federation
Hans Wiesmeth, Ural Federal University, Russian Federation
Victor Beker, University of Buenos Aires, Argentina

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CONTENTS

DYNAMICS OF SOCIAL-ECONOMIC INDICATORS OF LARGEST CITIES OF THE REPUBLIC OF TATARSTAN (2007-2017)

Nailya Bagautdinova
Kazan Federal University, Russia
nailya.mail@mail.ru

Svetlana Khusnutdinova
Kazan Federal University, Russia
hsvr@yandex.ru

Rustem Khusnutdinov
Kazan State Power Engineering University, Russia
khrr@yandex.ru

ABSTRACT

The contemporary Russian Federation is high urbanized country. An analysis of the dynamics of the main demographic and socio-economic indicators of the largest cities at the regional level can help to understand the paths of the country's territorial development in general. The study reveals the role of the largest cities and their agglomerations in the socio-economic development of the region on the example of the Republic of Tatarstan. The cities of the Republic of Tatarstan with a population of more than one hundred thousand people are taken as a study site. The dynamics of the main demographic indicators (population, natural population growth, share of people older than the working-age, share of people younger than the working-age, share of children 0-6-year-old), socio-economic indicators (average nominal salary, average pension, retail turnover, share of cities retail turnover in the region, total area of housing per city dweller). are analyzed. There are nine cities with a population of more than 50 thousand people in the Republic of Tatarstan. All of them are included in three republic agglomerations except Chistopol. The largest cities of the region are Kazan, Naberezhniye Chelni, Nizhnekamsk, Almetyevsk with more than 100 thousand population. The proportion of the population, living in the studied cities, constantly increases in comparison to the population of the region. According to The Strategy of the social-economic development of the Republic of Tatarstan until 2030, there are three agglomerations: Kazan, Kama and Almetyevsk. They are located at a distance more than 100 km from each other. In the Kazan agglomeration, a post-industrial specialization and strategy goals are defined. Kama and Almetyevsk agglomerations are keeping traditional industrial specialization. Analysis of socio-economic indicators shows an increase in average nominal salary, average pension and a *total area of housing per city dweller in all cities. These cities provide more than 80% of regional retail turnover.*

Keywords: *Agglomeration, City, Demography, Region, Socio-Economic Indicator, Urbanization.*

1. INTRODUCTION

Urbanization processes are intensifying all over the world - now more than 55% of the world's population lives in cities. The most attractive for life are large cities and their agglomerations. Research interest in urban issues has a wide range. The theoretical foundations of the emergence of cities and metropolitan areas, including agglomeration effects, causes of city sprawl, geography concentration, urban diversity, are set out in a number of works (Burchfield, 2006; Fujita, 2002; Holmes, 1999; Jacobs, 1969; O'Sullivan, 2012; Overman, 2009; Rosental, 2001). In recent years a significant number of publications are devoted to the study of urbanization processes on the example of individual countries and regions of the world (Yeh, 2019;

Monkkonen, 2019; He, 2019; Broitman, 2019; Bakaric, 2019; Sarkar, 2018). The Russian Federation is high urbanized country. There are 16 cities with a population of more over 1 million peoples. Volga Federal District is a leader among other federal districts in terms of a number of cities with a million population. It has five cities with a million population – Nizhny Novgorod, Samara, Kazan, Ufa and Perm. All of them are capital of their regions and cores of agglomerations. Nizhny Novgorod is the biggest city of the Volga Federal District. It's the capital of Nizhny Novgorod Oblast and the administrative center of Volga Federal District. The population of this city is 1.259 million at 01/01/2018. The second city of Volga Federal District due to population is Kazan. The city of Kazan is the capital of the Republic of Tatarstan. The Republic of Tatarstan has three agglomerations according to The Strategy of social-economic development of the Republic of Tatarstan until 2030 – Kazan, Kama and Almetyevsk agglomerations. The city of Kazan is the core of monocentric agglomeration, Kama and Almetyevsk agglomerations have several cores and both of them polycentric. In recent years, the number of publications devoted to the problems of cities and their agglomerations has been increasing, which is associated with the strengthening of urbanization processes and an increase in the proportion of the population of cities. Theoretical questions are revealed in many works devoted to the types of cities and agglomerations, their spatial organization, ways of forming agglomerations and impact on suburbia and region (Lappo, 2012; Pertsik, 2009; Makhrova, Kirillov, 2016). Another important problem of modern cities is the narrow specialization of the so-called monotowns (Starodubovskaya et al., 2011; Turgel et al., 2016). The urban settlement and largest cities of the Russian Federation are subject of a row of publications (Brade et al., 1999; Glezer et al., 2014; Krivov, 2012; Lappo, 2012; Rossman, 2013; Treivish et al., 2014; Volchkova, 2013). Most of them are devoted to Moscow and St. Petersburg, as well as their agglomerations (Golubchikov, Makhrova, Felps, 2010; Nefedova, Treivish, 2014; Makhrova, Kirillov, 2016; Nefedova, 2018; Pertsik, Makhrova,1988).

The theme of Kazan agglomeration was studied as an example of agglomeration which has the regional capital as the core of the agglomeration (Khusnutdinova, 2017; Zakirova, Khusnutdinova, Yurinova, 2016). The city and agglomeration are involved in mass mobility of the population, include pendulum migration, social polarization and spatial inequality, gentrification or/and degradation (Glezer et al., 2014; Nefedova et al., 2016; Nefedova, Treivish, 2019). Polarization of space, increasing population mobility and pendulum migration are very important processes connected with demography situation and social-economy indicators of largest cities and their agglomeration (Makhrova et al., 2016). There are studies on the role of biological and economic factors of urban population growth (Shcherbakova, 2019). The leading role of the largest cities and agglomerations in the socio-economic development and spatial inequality of the Russian Federation is a complex research task and is reflected in the contemporary strategic planning documents (Zubarevich, 2018; Zubarevich, 2019). The adoption of Federal Law №-172 "About strategy planning in Russian Federation" and elaboration of the Strategy on regional and federal levels can be considered as a stimulus of interest in studying the issues of largest cities and their agglomerations as the next stage of urbanization processes in the modern Russian Federation.

2. DATA AND METHODS

The study has taken into account the cities with a population of over 100,000 people of the high urbanized region of the Russian Federation - the Republic of Tatarstan. There are twenty-four towns and cities with a population from several thousand to more than one million peoples in the republic. General demography and socio-economics trends and anomalies were identified. The basic method was comparative analyses. Several steps are required to clarify the role of cities with over 100.000 population in the socio-economic development of the region. Firstly,

identifying the demographic dynamics – that are similar and different trends in the cities with a population of more than 100 thousand people. Secondly, finding out the main trends of social-economics development of the largest region cities: the average salary, pensions, housing, retail turnover. The statistic base for the study was data of Federal State Statistics Service, including data of the All-Russian Population Census, "Regions of Russia. The main socio-economic indicators of cities" (2002-2018), "Regions of Russia. Main socio-economic indicators". The information base was "The Strategy for the Spatial Development of the Russian Federation for the period until 2025", "The Strategy of social-economic development of the Republic of Tatarstan until 2030".

3. RESULTS AND DISCUSSIONS

The Republic of Tatarstan is a high urbanized region of the Russian Federation with a population about 3,9 million. More than 76% of the population of the Republic of Tatarstan lives in the cities and towns. There are nine cities with a population of over 50 thousand people in the Republic of Tatarstan – Kazan, Naberezhniye Chelni, Nizhnekamsk, Almetyevsk, Bugulma, Elabuga, Zelenodolsk, Leninogorsk, Chistopol. All of them are included in three republic agglomerations with the exception of Chistopol. This city is located in the center of the region, but agglomerations are located at a distance more than 100 km from each other (Fig.1). The city of Kazan is the core of monocentric agglomeration with three towns-satellite – Zelenodolsk, Laishevo, Innopolis. Kama agglomeration is polycentric and includes four towns and cities - Naberezhniye Chelni, Nizhnekamsk, Elabuga and Mendeleevsk. Almetyevsk agglomerations have several cores too – Almetyevsk, Bugulma and Leninogorsk. The largest cities in the region are Kazan, Naberezhniye Chelni, Nizhnekamsk, Almetyevsk. They have more than 100 thousand population. The share of residents of the largest cities of the republic in the total population has increased over the past decade by almost 3% and amounts to 55.85%, i.e. More than half of the inhabitants of Tatarstan live in the four largest cities.

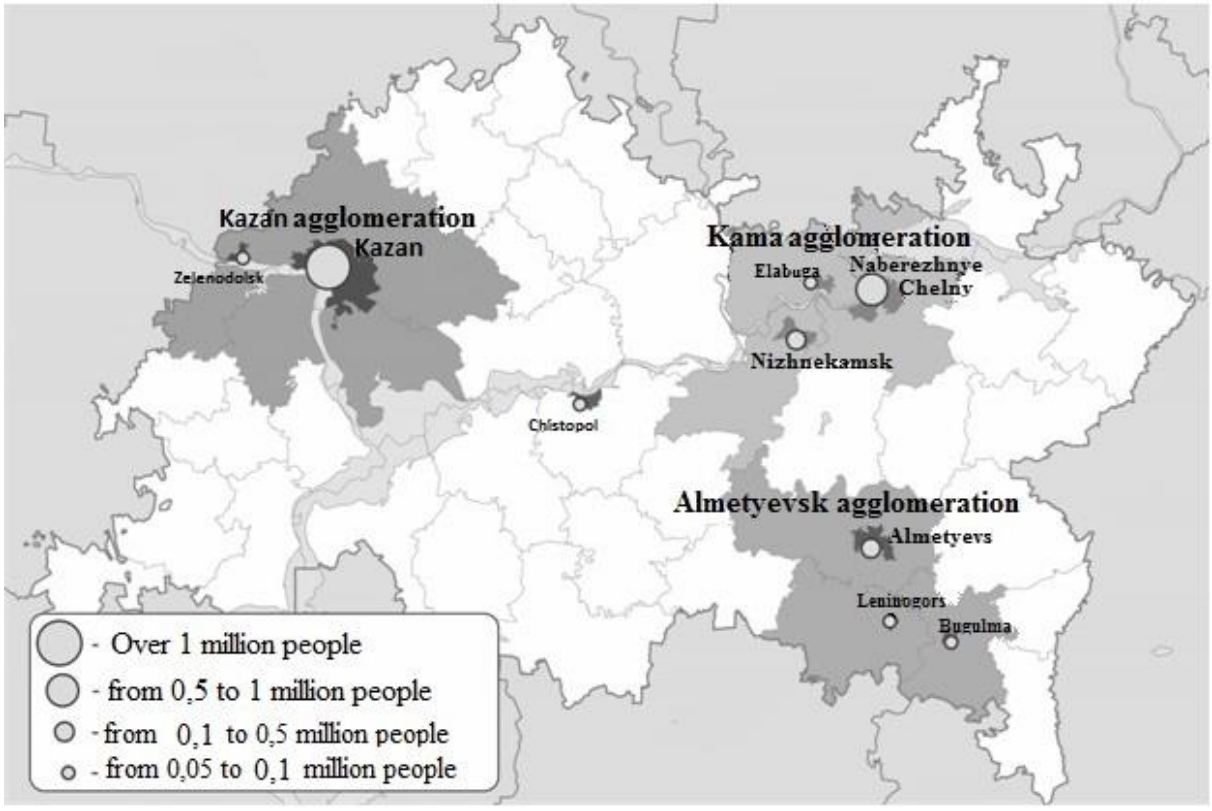


Figure 1: The map of agglomerations of the Republic of Tatarstan

The largest agglomeration is Kazan agglomeration with a population of more than 1,5 million people. Kazan has three satellite towns – Zelenodolsk, Laishevo and Innopolis. The largest satellite of Kazan is Zelenodolsk with a population of slightly less than 100 thousand people. The youngest one is Innopolis. The population of the Kazan agglomeration is more than 1.5 million people, i.e. slightly less than half of the republic's population lives in this metropolitan area. The second and third most populous cities of the Republic of Tatarstan are Naberezhnye Chelny and Nizhnekamsk. Both of them belong to the polycentric Kama agglomeration, with a population of about 0.9 million people. The third agglomeration – Almetevskaya. This agglomeration is polycentric as Kama agglomeration and has three main cities – Almetyevsk, Leninogorsk and Bugulma. Kama agglomeration is formed on the base of oil production and has a population of about 0.3 million people. Almetyevsk agglomeration is located at approximately the same distance both from Kazan and from the capitals of the neighboring regions – Ufa (The Bashkortostan Republic). and Samara (Samara Oblast). Kazan agglomeration is recognized for post-industrial specialization and strategy goals. Kama and Almetyevsk agglomerations are keeping traditional industrial specialization. The city of Kazan is the capital and the biggest city of the region with a population of more than 1,2 million. The city is located on the left bank of the Volga - the largest river in the European part of Russia and has significant water resources inside the city – the Kazanka River, the Kaban Lake system, etc. There is one of the oldest universities in Russia – Kazan Federal University. In the 20th century the city had industrial specialization. The turn of the 20th and 21st centuries change the city and now the post-industry activity is playing the main role – high education, the banking sector, IT infrastructure and tourism-oriented to mega-events sporty character and "city breaks"-tourism. The number of tourists visiting is growing. Three million tourists visited Kazan in 2018.

Table1: The dynamic of demography indicators of the cities of the Republic of Tatarstan with a population of more than 100 thousand people (Federal State Statistics Service, 2007-2019)

Indicator	Year	Kazan	Naberezhnye Chelny	Nizhnekamsk	Almetyevsk
Population, thousand	2007	1120,2	506,1	226,4	142,0
	2012	1176,2	519,0	235,4	149,0
	2017	1243,5	532,5	237,9	156,0
Nature population growth	2007	-2,9	3,2	3,8	0,8
	2012	3,9	7,7	6,9	3,9
	2017	5,0	4,8	4,0	4,9
Birth rate	2007	10,0	8,1	8,2	12,2
	2012	15,4	15,8	15,1	14,8
	2017	15,2	13,2	12,3	15,0
Death rate	2007	12,9	8,1	8,2	11,4
	2012	11,5	8,1	8,2	10,9
	2017	10,2	8,4	8,3	10,1

An analysis of the dynamics of demographic processes shows an increase in the population of all four largest cities in the region. Moreover, over ten years there have been noticeable changes in natural population growth. According to this indicator, Nizhnekamsk was the leader in 2007, and regional capital had ever - 2.9. But now the capital is a leader and has 5.0 indicator of natural population growth. For cities, positive demographic trends are noticeable. Firstly, a decrease in the death rate in Kazan and Almetyevsk. Secondly, the growth of birth rate in all cities in 2012 year. Thirdly, nature population growth is observed in all four largest cities of the republic. Share of children grew in all cities over the study period and is at the level of 9% of the total population of the city, the leader in this indicator is Almetyevsk, followed by Kazan.
It is important to note that for the region capital the increase in the share of children is more noticeable than for other cities. Kazan during the study period was the leader in the share of the older generation. However, the largest increase in the share of population older than labor force is demonstrated by the city of Naberezhnye Chelny. Here, the indicator grew by 8.6%, while in Kazan it was only 2.6%. The largest share of population younger than labor force during the observation period is recorded in Nizhnekamsk.

Table 2. Share of population older and younger than labour force (working age), %(Federal State Statistics Service, 2019)

Indicator	Year	Kazan	Naberezhnye Chelny	Nizhnekamsk	Almetyevsk
Share of population older than labour force (working age),	2007	21,2	15,0	14,0	16,7
	2012	22,6	19,6	17,8	18,7
	2017	23,8	23,6	21,8	21,0
Share of population younger than labour force (working age), %	2007	14,4	16,1	17,6	18,0
	2012	15,7	17,8	18,8	18,7
	2017	19,2	20,5	21,7	20,6
Share of children 0-6 year old, %	2007	5,4	6,2	6,8	6,7
	2012	6,6	7,6	7,6	7,6
	2017	9,1	9,0	8,8	9,4

Analysis of socio-economic indicators shows an increase in average nominal salary and average pension in all cities. In the period from 2007 to 2012, the average nominal salary grew more significantly in all cities than in the period from 2012 to 2017. In the period under review, Almetyevsk was the leader in wages, Nizhnekamsk took second place. It is noticeable that the gap between the average nominal salary between Almetyevsk and other cities is narrowing in the indicated period. If in 2007 the average nominal salary in Almetyevsk was 38% higher than in Kazan, then by 2017 this difference was only 6%.

Table following on the next Page

Table 3: The social-economic indicators: of the Republic of Tatarstan with a population of more 100 thousand people (Federal State Statistics Service, 2019)

Indicator	Year	Kazan	Naberezhnye Chelny	Nizhnekamsk	Almetyevsk
Average nominal salary (thousand rubles)	2007	12570,1	11818,6	13903,7	17426
	2012	25373	22279	26773	28347
	2017	41020,8	33841,5	41042,8	43628,7
Average pension (thousand rubles)	2007	3735,9	3484,9	3554,0	3661,4
	2012	9323,9	8731,9	8978,7	9284,9
	2017	13582,3	12842,7	13255	13754,3
Share of cities retail turnover in the region (%)	2007	56,8	15,9	4,4	5,6
	2012	55,8	16,4	5,5	4,8
	2017	54,8	16,3	5,3	5,2
Total area of housing per city dweller, $м^2$	2007	21,4	18,5	19,8	21,3
	2012	23,6	20,3	20,8	23,4
	2017	25,3	22,5	21,3	25,4

The indicator “total area of housing per city dweller” is increasing in all cities. Kazan and Almetyevsk are the leaders in indicators of the total area of housing per city dweller for ten years. More than 80% share of retail turnover in the region is accounted for by 4 major cities, with more than half of regional capital. A noticeable trend is a decrease in the share of the capital by 2% - from 56.8% to 54.8% and a change in the share of Almetyevsk and Nizhnekamsk. Given that less than 30% of the republic’s population lives in the capital, it is logical to assume that trade services are provided not only to Kazan residents.

4. CONCLUSION

The modern cities and agglomerations play a significant leading role in the socio-economic development of regions in the Russian Federation. The Republic of Tatarstan is one of the high urbanized regions of the Russian Federation. There are three agglomerations and 24 cities and towns in the republic. Four biggest cities with a population of over 100 thousand peoples are included in the three agglomerations. The city of Kazan is the capital of the Republic of Tatarstan and takes first place in terms of the population with 1,2 million peoples. The city of Kazan is the core of Kazan agglomeration, which has post-industrial specialization and strategy goals in the development of tourism, high education, IT, etc. According to the average salary indicator Kazan occupies only the third place after Almetyevsk and Nizhnekamsk. And Almetyevsk is the fourth largest city in the region. The formation of the city is associated with oil production in the south-east of the republic. Kazan provides more than half of the regional retail turnover. An analysis of the demographic situation of the largest cities of the Republic of Tatarstan showed that, firstly, at resent ten years there is a positive natural increase. Secondly, the regional capital and the biggest city of the region, is leading in the share of population older than the labor force and this indicator is increasing in all four cities. The indicator “Share of the population younger than labor force” is increasing in all four cities too, but the city of Kazan takes the last place in this row. The city with the highest share of the population younger than the labor force is Nizhnekamsk.

LITERATURE:

1. Bakaric I.R., Bacic K.; Slijepcevic S (2019). City specialisation and diversification in South East Europe (SEE). countries, *E & M ekonomie a management*, Vol.22, No 2, pp.4-21.
2. Brade I, Nefedova T. G., Treivish A. I (1999). Changes in the system of Russian cities in the 1990s, *Izvestiya Rossiiskoi Akademii Nauk. Seriya Geograficheskaya , No 4*, pp.64-73.
3. Broitman D., Koomen E (2019). 'The attraction of urban cores: Densification in Dutch city centres' *Urban Studies*, doi: 10.1177/0042098019864019.
4. Burchfield M., Overman Y.G., Puga D., Turner M.A (2006). Causes of sprawl: A Portrait from space, *Quarterly Journal of Economics*, Vol.121, No 2, pp. 587-633.
5. Fujita M., Thisse J-F (2002). *Economics of Agglomeration.* Cambridge University Press. p.466
6. Glezer O. B., Kolosov V. A., Brade I. et al (2014). Integrated forms of urban settlement pattern in Russia, Europe, and Worldwide, *Regional Research of Russia*, Vol. 4, No.2, pp. 80–89.
7. Golubchikov O.Yu., Makhrova A.G., Felps N.A (2010). Sovremennye process urbanizacii v Podmoskov'e: fenomen «okrainnogo goroda» (Modern processes of urbanization in the suburbs: the phenomenon of "marginal city), *City and town planning*, No 4, pp. 63-68.
8. He Q., Zeng C., Xie P., Tan S.,Wu J.(2019). nComparison of urban growth patterns and changes between three urban agglomerations in China and three metropolises in the USA from 1995 to 2015. *Sustainable Cities and Society*, Vol.50., doi: 10.1016/j.scs.2019.101649.
9. Holmes T.J (1999). Localiszation of industry and vertical disintegration, *Review of Economics and Statistics*, Vol.81, No 2, pp.314-325.
10. Jacobs J (1969). *The Economy of Cities*. New York: Random House.
11. Krivov A.S (2012). Nacional'naja Sistema rasselenija Rossiĭskoĭ Federacii – XXI vek (National Settlement System of the Russian Federation - XXI century), *Territory Development Management*, No 3, p.12.
12. Lappo G.M (2012). *Goroda Rossii. Vzgljadgeografa* (Cities of Russia. Geographer'sview), Moscow: Novyj hronograf, p.504.
13. Makhrova A. G., Kirillov P. L (2016). Seasonal pulsation of settlement pattern in the Moscow agglomeration under the influence of dacha and work commuting: Approaches to studies and assessment, *Regional Research of Russia*, Vol. 6, No. 1, pp. 1–8.
14. Makhrova A. G., Nefedova T. G., Treivish A. I (2016). The central russian megalopolis: polarization of space and population mobility, *VestnikMoskovskogoUniversiteta. Seria5:Geografia*, No. 5, pp. 77–85.
15. Monkkonen P., Montejano J., Guerra E., Caudillo C.(2019). Compact cities and economic productivity in Mexico'. *Urban Studies*, doi: 10.1177/0042098019869827
16. Nefedova T. G (2018). 'The Moscow suburbs: Specifics and spatial development of rural areas', *Regional Research of Russia*, Vol. 8, No. 3, pp. 225–237.
17. Nefedova T. G., Slepukhina I. L., Brade I (2016). Migration attractiveness of cities in the post-soviet space: A case study of Russia, Ukraine, and Belarus, *Regional Research of Russia*, Vol. 6, No. 2, pp. 131–143.
18. Nefedova T. G., Treivish A. I (2019). Urbanization and seasonal deurbanization in modern Russia, *Regional Research of Russia*, Vol. 9, No. 1,pp. 1–11.
19. Nefedova T. G., Treivish A. I., (2014). Russia between the two capitals: Specifics of territorial changes, *Regional Research of Russia*,Vol. 4, No. 4,pp. 31–44.
20. O'Sullivan A (2012). Urban Economics. – 8th edition. McGraw-Hill.

21. Overman Y.G., Puga S., ed. E.L.Glaeser (2009). Labour pooling as a sourse of agglomeration: An empirical investigation, The Economic of Agglomeration. Cambridge, MA: National Bureau of Economic Research
22. Pertsik E.N., (2009). *Geourbanistika (Geographical Urban Science)*, Moscow.
23. Pertsik E.N., Makhrova A. G (1988). Aglomeracii vtorogo porjadka v Moskovskom stolichnom regione: razvitie, granicy, vzaimosvjazi (Second order agglomerations in the Moscow metropolitan region: development, boundaries, interconnections), *Voprosy geografii*, Vol.131. pp.56-63.
24. Rosental S.S.,Strange W.C (2001). The determination of agglomeration. *Journal of Urban Economics*. Vol.50, No 2, pp.191-229.
25. Rossman V (2013). *Stolicy: ih mnogoobrazie, zakonomernosti razvitija i peremeshhenija* (*Capitals: their diversity, patterns of development and movement)*, Moscow: Gaidar Institute Press, p.336.
26. Sarkar S., Phibbs P., Simpson R.,Wasnik S (2018). The scaling of income distribution in Australia: Possible relationships between urban allometry, city size, and economic inequality. *Environment and Planning B-Urban Analytics and City Science*, vol.45, No 4, pp. 603-622.
27. Shcherbakova N. V (2019). The role of biological and economic factors in urban population growth, *R-ECONOMY*, No 5(3), pp.103–114.
28. Starodubovskaya I.V., Lobodanova D.L., Borisova L.V., Filyushina I.C (2011). *Strategii razvitija staropromyshlennyh gorodov: mezhdunarodnyj opyt i perspektivy v Rossii* (Development strategies of old industrial cities: international experience and prospects in Russia), Moscow: Gaidar Institute Press, p.248.
29. Treivish A. I., Zotova M. V., Savchuk I. G., (2014). Types of cities in Russia and across the globe, *Regional Research of Russia*, Vol. 4, No. 2, pp. 90–94.
30. Turgel I., Bozhko L., and Leskova L (2016). State support of monotowns in Russia and Kazakhstan: experience and problems, *Energy Procedia*, Vol. 95, pp.559-563.
31. Volchkova I.V (2013). *Osobennosti social'no-jekonomicheskog orazvitija gorodskih aglomeracij v Rossii* (Features of the socio-economic development of urban agglomerations in Russia), Tomsk: Publishing house of Tomsk State University of Architecture and Civil Engineering, p.92.
32. Yeh A., Gar-On, Chen Z (2019). From cities to super mega city regions in China in a new wave of urbanisation and economic transition: Issues and challenges. *Urban Studies*, doi:10.1177/0042098019879566
33. Zakirova Yu.A., Khusnutdinova S.R., Yurinova A (2016). Formirovaniye funktsionalno-prostranstvennoi modeli aglomeratsionnogo poyasa g. Kazan (Formed funcional-spatial model of the agglomeration belt of Kazan), *Izvestiya KGASU*, No 1(35), pp.87- 94.
34. Zubarevich N.V (2018). Concentration of the population and the economy in the capitals of post-soviet countries, *Regional Research of Russia*, Vol. 8, No. 2, pp.141–150.
35. Zubarevich N. V (2019). Spatial development strategy: priorities and instruments, *Voprosy Ekonomiki*, No 1. pp. 135-145.

THE PROSPECTS FOR USING METHODS OF SPATIAL AND HIERARCHICAL ANALYSIS TO STUDY THE INFLUENCE OF CONTEXT ON THE DEVELOPMENT OF ENTREPRENEURSHIP

Konstantin Grishin
Bashkir State University, Russian Federation
grishin2472@yandex.ru

Rustam Malikov
Ufa State Petroleum Technological University, Russian Federation
malikovri@rambler.ru

Venera Timiryanova
Bashkir State University, Russian Federation
79174073127@mail.ru

Natalia Kuzminykh
Bashkir State University, Russian Federation
kashatan@inbox.ru

ABSTRACT

The Russian national entrepreneurship system has a complex and multi-level structure, characterized by a wide variety of territorial and other conditions and factors that explicitly and implicitly affect the development of entrepreneurship. Understanding the mechanisms of its functioning is a condition for the formation of effective tools to increase business activity needed to ensure the sustainable economic growth of the country.The purpose of this article is to determine the prospects for using modeling methods that consider both horizontal and vertical relationships when analyzing the influence of territorial contextual factors on the performance of business entities (volume of the shipped goods of own production, performed works and services), fixed at the municipal level. For this aim, there were compared classic LM (Linear Model), HLM (Hierarchical Linear Model), SAR (Spatial Autoregressive Model). and HSAR (Hierarchical Spatial Autoregressive model). The research is based on the data obtained from 335 municipalities located in 7 regions of the Russian Federation in 2017. The results show that all four models allow for predicting changes in the volume of the shipped goods, however, every model has its disadvantages and advantages. Based on the value of the log-likelihood function, the SAR model provides the best results. At the same time, the use of the HSAR model has significant prospects for estimate differentiation of the volume of shipped goods, works, and services produced by the enterprise per one person. It supports the multilevel diagnosis of the structure of this phenomenon, taking into account the effect of spatial interactions. The use of these models contributes to expanding the existing understanding of the regional system of entrepreneurship and allows determining the influence of contextual factors on the performance of enterprises, which can be used by state authorities in the formation of entrepreneurship development programs at the regional and municipal levels.

Keywords: *the results achieved by enterprises, the volume of shipped goods, spatial, hierarchical model*

1. INTRODUCTION

The national business system of the Russian Federation is characterized by a rather complex architecture, which is manifested in a considerable interregional differentiation of factors that are essential in terms of entrepreneurial activity affecting the ability of a business entity to achieve the expected result.

It seems quite reasonable that in such a complex multi-level system, characterized with a network of interconnected interactions, the effectiveness of business structures is determined not only by the internal resources of enterprises, but also by the context of the territory (Acs et al., 2016, pp. 527-535). on which they are located, as well as the situation in the neighboring territories. This suggests that enterprises capable of linking certain in-house characteristics to the parameters of the environment in which they operate are superior to other firms (Ketchen et al., 1993, pp. 1278-1313). Therefore, to ensure maximum efficiency, the organization structure of business entities must be internally consistent and also correspond to the configuration of numerous contextual dimensions (Doty et al., 1993, pp. 1196-1250; Ketchen et al., 1993, pp. 1278-1313; Miller, 1996, pp. 505-512). To date, to ensure a successful business operation, an entrepreneur must understand, track and analyze the environment context (Chepurenko, Yakovlev, 2013, 51-60; Acs et al., 2016, pp. 527-535), of his business. Herein, the context refers to the specific manifestation of multilevel external and internal factors, as well as their attendant risks, which are relevant to identifying and commercializing entrepreneurial opportunities (Shane, Venkataraman, 2000, pp. 217-226). and which affect the ability of a business entity to achieve the expected result. Each region has its own specific context differing from the context of the neighboring region, which accordingly leads to differentiation of the potentials for the emergence, discovery, and exploitation of entrepreneurial opportunities. Moreover, the region's context is spatially heterogeneous and can vary significantly, resulting in the formation of polarized centers of entrepreneurial activity (for example, in municipalities-urban districts with developed industrial or financial potential). in the region, as well as semi-peripheral and peripheral territories (municipalities and subregions). with a lower level of business initiative development. As part of our approach, we will consider, among other things, the impact of business activity in the neighboring regions (municipalities). on business activity in the region (municipality), given the coherence of the economic space in the structure of territorial configuration of contextual factors affecting the economic performance of business structures. That is, we proceed from the fact that entrepreneurial activity in the neighboring territories is an essential part of the business context, which must be considered in business research. In general, it can be stated that the multiplicity, multi-levelness, and heterogeneity of the local (regional). context it difficult for understanding and requires special studies using modern methods and tools to determine the cumulative impact of contextual conditions on the growth of business and investment activity in Russian regions.

The performance of enterprises in such a complex, interconnected network of multi-level system interactions is determined not only by the internal resources of enterprises but also by the context of the territory on which they are located, as well as the situation in the neighboring territories. Therefore, in this article, the authors focused on the possibilities of studying horizontal and vertical relationships and assessment tools for the influence of the territory context on the effectiveness of entrepreneurial structures, which is adjusted to spatial connectivity and hierarchical nesting of the economic system. In recent years, the methods of hierarchical and spatial analysis have become popular tools used for these purposes. Through the efforts of P. Moran (Moran, 1948, pp. 243-251), R. Geary (Geary, 1954, pp. 115-145), L. Anselin (Anselin, 1990, pp.185-207). spatial analysis techniques have been actively developed and are now used extensively to study different aspects of the enterprise activity (Cheng, Li, 2011, pp. 773-789; Davidson, Mariev, 2015, pp. 95-105; Levratto, 2014; Zemtsov, Tsareva, 2018, pp. 118-134; Arcuri et al., 2019, pp. 99-118). and analysis of entrepreneurial activity (Plummer, 2009, pp. 146-175; Ragoubi, Harbi, 2017, pp. 374-422). This implies the use of various spatial matrices and consideration of environmental factors of the local and neighboring territories. In general, these findings suggest the need for a geographically differentiated policy in the sphere of businesses.

The development of hierarchical analysis methods was initiated by H.Goldstein (Goldstein, 2010), D. Garson (Garson, 2009). They allow decomposing the variation of the results achieved by enterprises/entrepreneurs into several levels. Most often, in the study of entrepreneurial structures, foreign scientists allocate individual (personal). and country levels (Erkko, Zoltán, 2009, pp. 3-46). Sometimes industry (Hirsch et al., 2014, pp. 703-721; Bamiatzi et al., 2015, pp.1448-1471). and/or region (Stavropoulos, Skuras, 2015, pp. 66-80). additionally include as a level. These studies reveal noticeable differences in the parameters of the business environment affecting the functioning of entrepreneurial structures and the performance of business entities. Spatial analysis methods allow considering the business activity of enterprises located in neighboring municipalities. The advantage of the Hierarchical Linear Model (HLM). method is that it allows identifying more complex dependencies and consider the influence of factors at both micro and macro levels (Beliaeva, Bogatyreva, 2018, 273-294). As for studies involving the combination of hierarchical and spatial modeling capabilities – there is very little work in this direction. Even though Hierarchical spatial data started to take shape at the end of the last century (Timpf, Frank, 1997, pp. 69-84; Car, Frank, 2019, 15-24), it is very difficult to find real studies of business activities and the development of entrepreneurship conducted using this approach. Hierarchical models have just begun to include the spatial component. More recently, several publications described studies that used tools of spatial and hierarchical modeling, however, not on the problem under consideration (O'Connell, 2015, pp. 18-26; Cellmer et al., 2019, pp. 195). Moreover, the latest update of specialized programs includes the ability to build hierarchical models with a spatial lag on the upper level. Such hierarchical spatial models, HSAR, consider both micro-scale spatial effects and the context resulting from the location of specific observations at subsequent levels in the spatial hierarchy (Cellmer et al., 2019, pp. 195). Scientists note that hierarchical models represent one of the main alternatives of capturing spatial effects, allowing to concentrate on the multi-level aspects of causal relationships, which are a reality for many spatial processes. Researchers believe that the combination of spatial and hierarchical models represents a promising new research area, involving the study of spatial dependence within and between groups in a multi-level context (Corrado, Fingleton, 2011, pp. 210-239). To define prospects for using the modeling methods described above, which consider both horizontal and vertical relationships, the authors conducted a comparative analysis of the results obtained in the construction of models that allow predicting a change in one of the main indicators characterizing the performance of enterprises.

2. DATA AND METHODS

2.1. Data of research

The research is based on the data obtained from 335 municipalities located in 7 regions of the Russian Federation in 2017. One of the main indicators characterizing the efficiency of economic activity of business structures, is the volume of shipped goods of own production, works and services (Figure 1). These data are collected by the Federal State Statistics Service (https://www.gks.ru/dbscripts/munst/). broken down by municipalities. This indicator reflects the cost of goods shipped or released through the sale and direct exchange (under an exchange agreement). of all manufactured goods, works performed and services rendered in-house by enterprises, excluding small businesses. For research purposes, the authors calculated it per person.

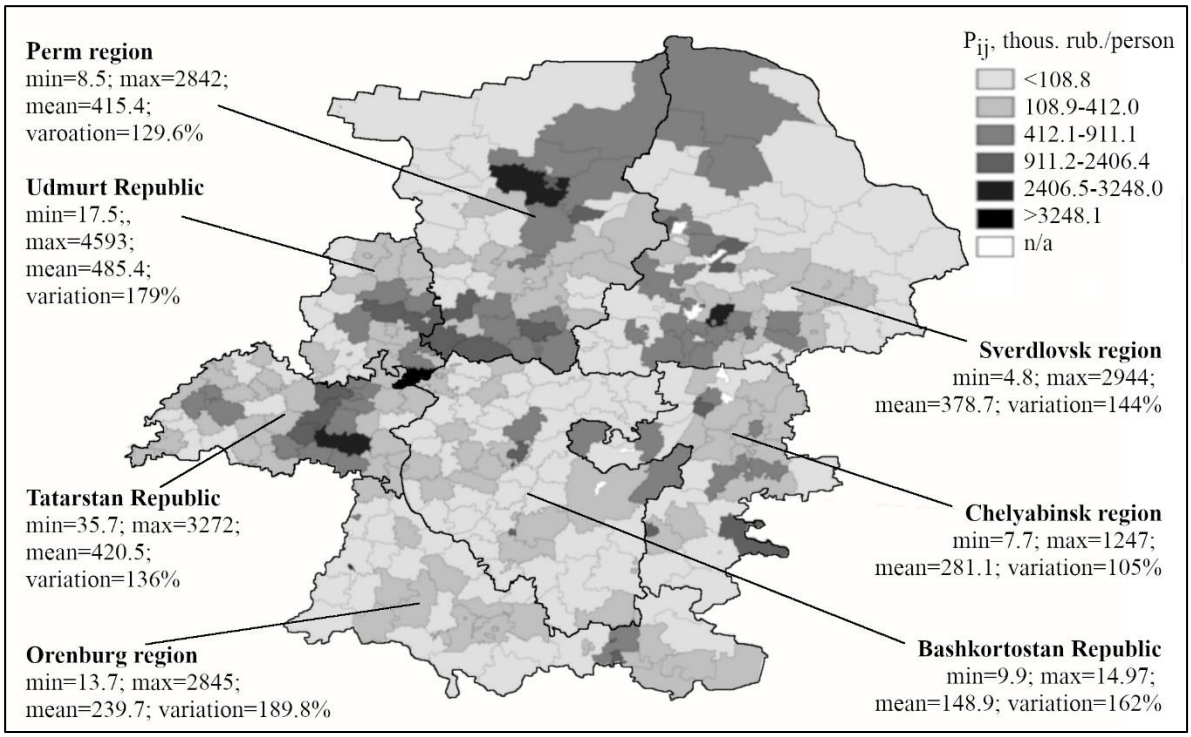


Figure 1: The volume of shipped goods, works, and services produced by the enterprise per 1 person within the municipalities in 2017 (source: Federal State Statistics Service statistics, processed by the authors)

"The volume of investments in fixed assets (excluding budgetary funds). per one person" was taken as a contextual factor variable in the calculations. It turned out highly significant in all models.

2.2. Methods for assessing hierarchical and spatial effects

The study provides a comparative analysis of models considering the spatial organization of data. A point of reference for further research provided a classical multiple regression model (LM), which allowed a simple analysis of relations between the volume of shipped goods, works, and services produced by the enterprise per 1 person and the volume of investments in fixed assets (excluding budgetary funds). per 1 person.

Classical multiple regression model (LM). has the form:

$$P_{ij} = a_0 + a_1 \cdot I_{ij} + \varepsilon, \quad (1)$$

where P_{ij} is the volume of shipped goods, works, and services produced by the enterprise per 1 person in the i-th municipality of the j-th region of the Russian Federation, in thousand rubles;

a_0, a_1 is the regression coefficients;

I_{ij} is the volume of investments in fixed assets (excluding budgetary funds). per 1 person, in thousand rubles;

j is the index for affiliation of a municipality to a specific Russian constituent entity, (j=1, 2,...,7);

i is the index for affiliation to a particular municipality (i=1, 2, ..., 335).

ε – is the error of the model.

In the next step the authors constructed a Spatial Autoregressive model (SAR):

$$P_{ij} = a_0 + a_1 \cdot x + \rho \cdot W^M \cdot P_{ij} + \varepsilon, \quad (2)$$

where ρ is the spatial autoregression parameter, representing the effect of the volume of shipped goods, works, and services in the neighborhoods on the volume of shipped goods, works, and services of territories;
W^M – is the spatial weight matrix for the municipalities.

This model considers the spatial data infrastructure at the level of municipalities. However, this model does not take into account the integration of municipalities into regions of the Russian Federation. For estimation used a first-order queen contiguity spatial weights matrix to identify a county's neighbors:

$$w = \begin{cases} 1, \text{for municipalities with a common border;} \\ 0, \text{for municipalities without a common border.} \end{cases}$$

Similarly to the multiple regression model, this model considers the "volume of investments in fixed assets per 1 person", which is an internal characteristic of the municipality. At the same time, it also takes into account the volume of the shipped goods, performed works, and services in the neighboring municipalities.

In the next step, the authors constructed a Hierarchical Linear Model. According to Corrado L. и Fingleton B., it represents one alternative way of capturing spatial effects, focusing on the multilevel aspects of causation that are a reality of many spatial processes (Corrado, Fingleton, 2011, pp. 210-239).

A two-level mixed model with predictors on lower level tests the proposition that the mean (intercept). for the volume of shipped goods, works, and services (P). is a random effect of the region and the volume of investments in fixed assets per 1 person (I). at level municipalities (level 1):

Level 1 (lower):

$$P_{ij} = a_{0j} + a_{1j} \cdot I_{ij} + r_{ij} \quad (3)$$

Level 2 (upper):

$$a_{0j} = \gamma_{00} + u_{0j} \quad (4)$$

$$a_{1j} = \gamma_{10} \quad (5)$$

where γ_{00} is the general intercept for all municipalities;
u_{0j} is the error of interregional variance that explains differences between region values of indices achieved by their constituent municipalities;
a_{1j} is the regression coefficient (slope). of I_{ij} equal to the constant γ_{10};
r_{ij} is the error of intraregional variance (inter-municipal), explaining the differences between the municipalities within individual regions; represents the error in estimating this indicator within regions;

The fourth model (Hierarchical Spatial Autoregressive model, HSAR). also considers the two-level data structure and its spatial organization:
Level 1 (lower):

$$P_{ij} = a_{0j} + a_{1j} \cdot I_{ij} + r_{ij} \quad (6)$$

Level 2 (upper):

$$a_{0j} = \gamma_{00} + b_0 \quad (7)$$

$$a_{1j} = \gamma_{10} \quad (8)$$

Spatial Dependence:

$$b_0 = \rho \cdot W^R \cdot b_0 + u_0, \quad (9)$$

where W^R is the spatial weight matrix at the group (region). level.

As can be seen, unlike the SAR model, it takes into account the spatial data infrastructure at the regional level. To estimate the Models used different methods, which may hinder the unambiguous interpretation of the common information criterion for all analyzed models. Therefore, the assess models were using the criterion of minimizing errors: The value of the log-likelihood function, Sigma-square. When comparing the Linear Model (LM). and the Spatial Autoregressive model (SAR), the authors considered the estimates of R-squared, Akaike info criterion, and Schwarz criterion. The Hierarchical Linear Model (HLM). and the Hierarchical Spatial Autoregressive model (HSAR). were further compared by Reliability estimate and Deviance.

3. RESULTS

Before building models, the authors analyzed the average and variation indicators, which revealed relatively high differences in municipalities. Thus, the average volume of the shipped goods of own production, performed works and services per one person amounted to 148.9 thousand rubles/person in the Republic of Bashkortostan, 420.5 thousand rubles/person in the Republic of Tatarstan, and 485.4 thousand rubles/person in the Udmurt Republic. The lowest variation in this indicator is observed in the Chelyabinsk region (105.1%), the highest – in the Orenburg region (189.8%). and the Udmurt Republic (179%). The presence of variation allowed constructing a zero HLM model and calculate the intraclass correlation coefficient (ICC), which revealed that the contribution of the constituent entities of the Russian Federation to the indicator variation accounted to 3.1%, while 96.9% of all differences in the volume of production is due to differences in municipalities within the regions. Thus, in terms of the variation, the differences in the constituent entities of the Russian Federation are not high but sufficient for the subsequent construction of the Hierarchical Linear Model (HLM). with a predictor at the lower level. The calculated Univariate Moran's I value of 0.13 indicates a good spatial connection of municipalities, which serves as a basis for the construction of the Spatial Autoregressive Model (SAR). All four constructed models showed sufficient importance and can be used in predicting the volume of shipped goods of own production, performed works and services rendered in-house (Table 1). At the same time, their explanatory power is not high enough. Thus, the value of R2 in the classical multiple regression model was 0.178. However, there was no goal of constructing a model that allows predicting a change in the indicator with high accuracy. The authors of this paper were interested in the possibility of using models to study the influence of territorial factors (context). on the economic activities of business entities and their competitive advantages.

Table 1: Results of estimations (processed by the authors)

Coefficients	LM	SAR	HLM	HSAR
Constant, a0	271.954*	200.194*	278.896*	273.0895*
a1	0.00174*	0.00167*	0.00172*	0.00172*
ρ		0.23088**		
R-squared	0,178	0.209	-	-
Sigma-square / σ^2	229343	219307	224325	223569.7
Reliability estimate	-	-	0.549	0.474
Deviance	-	-	5085.96	5079.62
The value of the log-likelihood function	-2541.79	-2537.04	-2542.98	-2539.81
Akaike info criterion	5087.58	5080.08	-	-
Schwarz criterion	5095.21	5091.52	-	-

*prob.<0.001 **prob.<0.005

A classical multiple regression model (LM). provided that investments significantly affect the change in the volume of shipped goods of own production, work performed, and services rendered in-house. The other model (SAR). was built based on the spatial autocorrelation phenomena. It shows that the volume of shipped goods of own production, performed works and services depend on the volume of investments, as well as on the volume of production of goods in neighboring municipalities. Thus, the horizontal communication of business structures associated with the production and sale of goods in the neighboring municipalities are essential and should be considered when modeling the performance of business entities. In a subsequent model (HLM), fixed effects related to explained variables and random effects for the second hierarchy level were taken into account, without taking into consideration spatial dependencies. The two-level mixed model with a predictor on the lower level showed that investments also significantly affect the value of the analyzed indicator. In The HSAR model the weight matrix for the second level is based on the common threshold criterion (contiguity). of distinguished zones. The geographical neighborhood within groups is not taken into account, which can be considered as a disadvantage of this model. However, it also showed that investments per person significantly affect the volume of shipped goods of own production, performed works and services rendered in-house. At the same time, its quality is insignificant, although better than the Hierarchical linear model.

Among all four models, the SAR Model has the lowest value of the log-likelihood function. Compared to the LM model, it has a higher R-squared value, lower Sigma-square, Akaike info criterion, and Schwarz criterion.

4. CONCLUSION

The study showed quite good prospects for using modeling methods that simultaneously take into account horizontal and vertical relationships in analyzing the impact of territorial contextual factors on the performance of business entities. The results show that the differences between the results are not significant, which allows using all four models to analyze the influence of territorial contextual factors on the parameters of the economic activity of the business entities. All models used have shown the importance of including the contextual factor – investment per person. Moreover, one model allowed to consider the spatial effect at the level of municipalities, the second – to decompose it into two levels (municipal and regional), the third – in addition to the second – to consider the spatial effect at the level of the subjects of the Russian Federation. In general, the inclusion in the model of other contextual factors that are significant in terms of entrepreneurship and that affect the ability of a business entity to achieve the expected result (for example, characterizing the institutional environment, socio-economic development of territories, etc.). will significantly increase their predictive force. At the same time, unfortunately, HSAR is currently being implemented in a way that it takes into account spatial relationships only at the upper level, superimposing the adjacency matrix of the constituent entities of the Russian Federation, which does not allow considering the internal contextual heterogeneity of the territory (region), which can have a significant impact on territorial configuration of entrepreneurial activity. In this regard, further development of the proposed methods for studying the impact of the entrepreneurial context on business activity is seen in the formation of a hierarchical model with the imposition of a spatial matrix at the level of municipalities. Based on the value of the log-likelihood function, it can be argued that the SAR Model was better than others. On the one hand, this indicates that in the framework of the 335 municipalities under consideration, lower-level spatial connections turned out to be more important than interregional differences. Moreover, such a result might be due to a small sample (only seven subjects of the Russian Federation). within which the spatial matrix at the upper level, considered in the HSAR model, did not allow identifying the neighborhood effects.

In general, the proposed methods have significant practical potential in the study of entrepreneurship problems since they simultaneously consider spatial heterogeneity and hierarchical data structure, determine spatial effects of various levels and the role of the context of territories in the development of business structures, which in the applied plan makes it possible to develop and implement measures that can significantly increase the effectiveness of state policy in the field of entrepreneurship and based on this significantly increase the level of business and investment activity in the Russian regions.

LITERATURE:

1. Acs, Z., Audretsch, D., Lehmann, E., Licht, G (2016). National Systems of Entrepreneurship. *Small Business Economics,* 2016, Vol. 16, № 4, 527–535.
2. Anselin, L (1990). Spatial Dependence and Spatial Structural Instability in Applied Regression Analysis. *Journal of Regional Science,* 1990, №30, 185-207.
3. Arcuri, G., Brunetto, M., Levratto, N (2019). Spatial patterns and determinants of firm exit: an empirical analysis of France. *The Annals of Regional Science,* 2019, Volume 62, Issue 1, 99–118.
4. Bamiatzi, V., Bozos, K., Cavusgil, S. T., Hult, G. T. M (2015). Revisiting the firm, industry, and country effects on profitability under recessionary and expansion periods: A multilevel analysis. *Strategic Management Journal,* 2015, 37(7), 1448–1471.
5. Beliaeva, T. V., Bogatyreva, K.A (2018). National culture and entrepreneurship: Literature review and further research directions. *Russian Management Journal,* 16 (2), 273–294.
6. Car, A., Frank, A.U (2019). Modeling a Hierarchy of Space Applied to Large Road Networks. *In IGIS'94: Geographic Information Systems. Proceedings of International Workshop on Advanced Research in GIS,* in Ascona, Switzerland, edited by J. Nievergelt, et al. Berlin: Springer-Verlag, 15-24.
7. Cellmer, R., Kobylińska, K., Bełej, M (2019). Application of Hierarchical Spatial Autoregressive Models to Develop Land Value Maps in Urbanized Areas. *ISPRS International Journal of Geo-Information,* 2019, 8(4), 195. Retrieved 10/10/2019 from https://www.mdpi.com/2220-9964/8/4/195.
8. Cheng, S., Li, H. (2011). Spatially Varying Relationships of New Firm Formation in the United States. *Regional Studies,* 2011, 45(6), 773–789.
9. Chepurenko, A., Yakovlev, A. A (2013). Theory of Entrepreneurship: The Importance of Context. *Russian Management Journal,* 2013, T. 11, № 2, 51-60.
10. Corrado, L., Fingleton, B (2011). Where is the economics in spatial econometrics? *Journal of Regional Science,* 2011. 52(2), 210–239.
11. Davidson, N. B., Mariev, O. S (2015). The impact of spatial concentration on enterprise performance. *Ekonomika regiona [Economy of Region],* 2015, №4, 95-105.
12. Doty, D., Glick, H., Huber, P (1993). Fit, equifinality, and organizational effectiveness: A test of two configurational theories. *Academy of Management Journal,* 1993, Vol. 36, № 6, P. 1196–1250.
13. Erkko, A., Zoltán, J (2009). Institutional influences on strategic entrepreneurial behaviors. *Jena economic research papers,* 2009, №080, 46. Retrieved 10/10/2019 from https://www.econstor.eu/bitstream/10419/32605/1/610028219.pdf
14. Garson, D (2013). *Hierarchical linear modeling: Guide and applications,* Wiley.
15. Geary, R (1954). The contiguity ratio and statistical mapping. *The Incorporated Statistician,* 1954, 5, 115 – 145.
16. Goldstein, H (2010). *Multilevel Statistical Models:* 4th Edition, Wiley.
17. Hirsch, S., Schiefer, J., Gschwandtner, A., Hartmann, M (2014). The Determinants of Firm Profitability Differences in EU Food Processing. *Journal of Agricultural Economics,* 2014, 65(3), 703–721.

18. Ketchen, D., Thomas, J., Snow, C (1993). Organizational configurations and performance: A comparison of theoretical approaches. *Academy of Management Journal*, 1993, Vol. 36, № 6, 1278 –1313.
19. Levratto, N (2014). Does firm creation depend on local context? A focus on the neighboring effects. *Réseau de Recherchesurl'Innovation/ Research Network on Innovation 2014,* Working Papers 40, Retrieved 10.10.2019 from https://cit2014.sciencesconf.org/conference/cit2014/pages/Carre_Levratto_Forum_2014.pdf.
20. Miller, D (1996). Configurations revisited. *Strategic Management Journal*, 1996, Vol. 17, Issue 7, 505–512.
21. Moran, P (1948). The interpretation of statistical maps. *Journal of the Royal Statistical Society*, 1948, Series B, 10, 243 – 251.
22. O'Connell, H. A (2015). Where there's smoke: Cigarette use, social acceptability, and spatial approaches to multilevel modeling. *Social Science & Medicine*, 2015, 140, 18–26.
23. Plummer, L. A (2009). Spatial Dependence in Entrepreneurship Research. *Organizational Research Methods*, 2009, 13(1), 146–175.
24. Ragoubi, H., El Harbi, S (2017). Entrepreneurship and income inequality: a spatial panel data analysis. *International Review of Applied Economics*, 2017, 32(3), 374–422.
25. Shane, S., Venkataraman, S (2000). The Promise of Entrepreneurship as a Field of Research. *Academy of Management Review*, 2000, vol. 25, 217-226.
26. Stavropoulos, S., Skuras, D (2015). Firm Profitability and Agglomeration Economies: An Elusive Relationship. *Tijdschrift Voor Economische En Sociale Geografie*, 2015, 107(1), 66–80.
27. Timpf, S., Frank, A. U (1997). Using Hierarchical Spatial Data Structures for Hierarchical Spatial Reasoning. *Spatial Information Theory. A Theoretical Basis for GIS International Conference COSIT '97* Laurel Highlands, Pennsylvania, USA. October 15-18, 1997, 69-84.
28. Zemtsov, S.P., Tsareva, Yu.V (2018). Entrepreneurial Activity in the Russian Regions: How Spatial and Temporal Effects Determine the Development of Small Busines. *Journal of the New Economic Association*, 2018, 1 (37), 118–134.

INDUSTRIAL REVOLUTION 4.0: IS INDONESIA LABOR MARKET READY OR NOT?

Febry Wijayanti
Ural Federal University, Yekaterinburg – Russia
Universitas Negeri Malang, Malang – Indonesia
febry.ie008@gmail.com

Irina Turgel
Ural Federal University, Yekaterinburg – Russia
i.d.turgel@urfu.ru

ABSTRACT

Innovation and technological development have an essential role in bringing up the concept of a modern economy, namely the industrial revolution 4.0. The industrial revolution 4.0 aims to omnipresent connectivity people, machines, and real-time data, thus forming new business models and raising the necessity of high technology. Nowadays, the presence of the digital era increases the demand for highly skilled and highly educated workers. However, the labor market in Indonesia is dominated by a low educated workforce. Therefore, this study identifying the readiness of the Indonesia labor market in the era of digitalization or the industrial revolution 4.0. The study conducted is based on secondary data obtained from many professional reports and studies carried out by government institutions, enterprises, consortia, journals, and previous research, as well as literature related to this research. The result showed that the current condition of the Indonesia labor market is not proficient at preventing the impact of industry 4.0. This unpreparedness is because the majority of workers in Indonesia have a low level of education and digital knowledge. The heedlessness and demographic bonus can contribute to the causes of poverty and unemployment in the future. Additionally, the education system that does not follow the times will be exacerbated circumstance of the labor market. Therefore, the educational outcome and the low creativity of human resources can not fulfill the current demands. Whereas, the government should revitalization the education system, facilitate training that could improve the work skills, and increase the education budget to invest in Indonesia's human capital to build the foundation of a more competitive economy in the future, especially industry 4.0. era

Keywords: *Bonus demographics, Human capital, Industrial revolution 4.0, Labor market, Skill shortage.*

1. INTRODUCTION

Nowadays, Indonesia is moving forward into the industrial era 4.0 and leaving behind the technological era associated with digitalization. The era of digitization has influenced several industries and economic sectors. Accordingly, several empirical studies (Zaire, 1998; Bartel, 2007; Hagén et al., 2008; Cardona et al., 2013; Shahiduzzaman and Alam, 2014). asserted the existence of digitalization drives increasing firm productivity, the efficiency of all levels of production process, deducting setup time, and less costly. Meanwhile, technology advancement leads to rising the total demand for output, although reducing labor hours in the future (Nerhus, 2014; de Groen, 2017). The reduction of labor hours would impact the labor market, particularly Indonesia will face a demographic bonus. UNFPA (2015). and Bappenas (2015). stated that the condition of an abundant of productive working age called "demographic bonus" could strengthen the rise of Indonesia economies. In case, Indonesia cannot manage the community in facing the new industrial era, and the demographic bonus will be Indonesia's burden. Accordingly, Frey and Osborne (2013). and Balsmeier and Woeter (2019). argued that

the era of digitalization and computerization would have an impact on the labor market, especially work that can be replaced by computers and machines and lead to job destruction. Job destruction created by the majority of new jobs requires higher skills than many jobs in the past. This situation is contrary to a second industrial revolution, which did not cause mass unemployment because the capacity and quality of the education sector can rapidly meet the labor demand at that time. Thus, in the current era, workers are demanded with higher skills. The low-cost and low-skilled labor are the gigantic attractions of supply labor in ASEAN industrialization (Anbumozhi and Kimura, 2018). Nevertheless, the new technologies, such as robotics and artificial intelligence (AI), would reduce the competitiveness of those attractions. In five ASEAN countries - Cambodia, Indonesia, Vietnam, Thailand, and the Philippines - ILO (2016). estimates that 56% of jobs are at high risk of automation in the coming decades. Whereas, the labor force in ASEAN is expected to grow by 11.000 new workers every day for the next 15 years. In a short time, at least, there is a possibility that technological unemployment will increase. Meanwhile, based on data from ADB (2016). showed that 51.5% of Indonesian workers are underqualified or lack the right skills to do the job, 40.0 % are well-matched, and 8.5 % are over-qualified (see chart 1). This data shows us that Indonesia is facing a skills shortage and inevitably also the lack of digital literacy. Therefore, the purpose of this study to understanding how the situation of the labor market in Indonesia facing industrial 4.0.

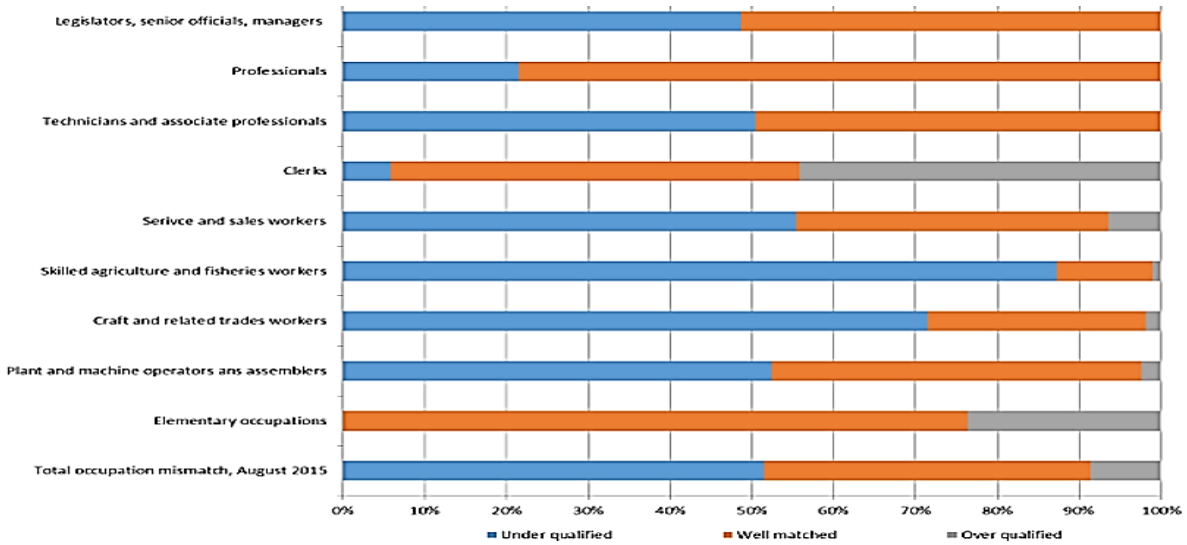


Chart 1: Occupational mismatch, August 2015 (ADB, 2016)

2. LITERATURE REVIEW

Roland Berger (2014). refers to Industry 4.0 as the fourth major upheaval of modern manufacturing, beginning with the lean revolution in the 1970s, then the phenomenon of outsourcing in the 1990s, and automation taking off in the 2000s. The transformations brought about by the digitalization and industry 4.0 era will affect future production capacity and industrial competitiveness in the world, especially Indonesia. However, the change process will have a profound impact. Thorbecke et al (2013). emphasized that the emergence of the production network and its automatic production caused direct replacement of industrial equipment at around 40% -50%. Substantially, the wave of digitalization process can lead to better firm operation from manual to automatic (Heeks, 2013; Parviainen, 2017). Then, Walwei (2016). added that digitalization would drive the improvement of productivity and labor productivity in particular. Moreover, the employment conditions of each business sector will improve due to digitalization. The skills improvement is the impact of routine work automation and free time that workers have used to develop their new skills (Heeks, 2013; Manyika et al., 2017; Acemoglu and Restrepo, 2018). In other words, the industries are now capable of

performing their business activities with higher efficiency. The enhancement of tremendous efficiency and the current industrial era could change the bond between labor and technology. This transition is due to technological development not only oriented to jobs that use muscles, but also jobs using the brain. The effect of technological development will vastly be boosting the efficiency of cost and shifting the labor structure (Frey and Osborne, 2013). Furthermore, Degryse (2016). asserted that the digitalization revolution would have a significant impact on the labor market. Keynes stated that this condition would create technological unemployment (Frey and Osborne, 2013; Bührer and Hagist, 2017). Likewise, Frey and Osborne (2013). had estimated around 47% of the labor force of the US would face a high risk of automation of their occupations. The risks occur as an outcome of the firm's findings on how to economizing the use of labor beyond the pace at which firms can find new uses for labor. Also, Bührer and Hagist (2017). presumed that the development of technology tends to increase the demand for more educated labor. This demand is a signal for changes in the wage structure, which shows a race between technology development and education access. The change, creation, destruction, and shift of jobs produced by digitalization will have an impact on development in the labor market, wages, social inequality, the new quality (Nerhus, 2014; Degryse, 2016; Vermeulen et al., 2018). Mostly of developing countries can be beaten so hard by the digitalization leverage. This state, due to the low society of preparedness in the face of change. Educational reform is needed in carrying out this digital age and fulfilling the demands of the workforce with new skills. Therefore, employments, who keep up the development of existing technology and improve their skills, will not be easily removed from their positions and also suitable for their wages. Walwei (2016). and de Groen, et al (2017). stated that the collaboration of digitalization and globalization could improve competition, and lower of restrictions on trade and the availability of information at any point and at any time that could encourage the national economy to be more specialized. Walwei (2016), Degryse (2016), and Bührer and Hagist (2017). affirmed that the synergy between digitalization and demography is complementary. They were conceding that demographic changes, which have the potential for labor shortages, may be compensated for by technological developments (e.g., labor-saving machines). Additionally, Frey and Osborne (2013). added that the era of digitalization and computerization would have an impact on the labor market, especially work that can be replaced by computers and machines. Notwithstanding, developing countries, which have a low level of readiness for technological progress, low skill, and education, are threatened unsuccessful in fighting in the global market with countries that have advanced technology. This situation is due to developed countries having high productivity compared to developing countries, and they can fulfill global market demand. The existence of a few restrictions strengthens the position of developed countries. Oppositely, countries with a demographic bonus may face problems with abundant labor compensation with technology, namely technological unemployment like Keynes' expectation. Thus, in the new industrial era, employees are demanded with higher skills. However, in the digital era, the abundance of labor with low human capital can be a burden and occur the problem of unemployment in a country that has a demographic bonus such as Indonesia. Otherwise, the abundance of human resources with capable human capital enables the development of new startups, job creation, and economic improvement in developing countries such as Indonesia. In other words, the human capital of a society is the key to boost the economic condition in Indonesia.

3. METHODOLOGY RESEARCH

This research conducted through quantitative analysis methods. According to Creswell (2014, p. 234), data analysis is a descriptive analysis of the size of reporting trends and central variations. Coupled with inferential analysis to test hypotheses and examine confidence intervals and effect sizes. Thus, we get results that use tables, numbers, discussion of the main

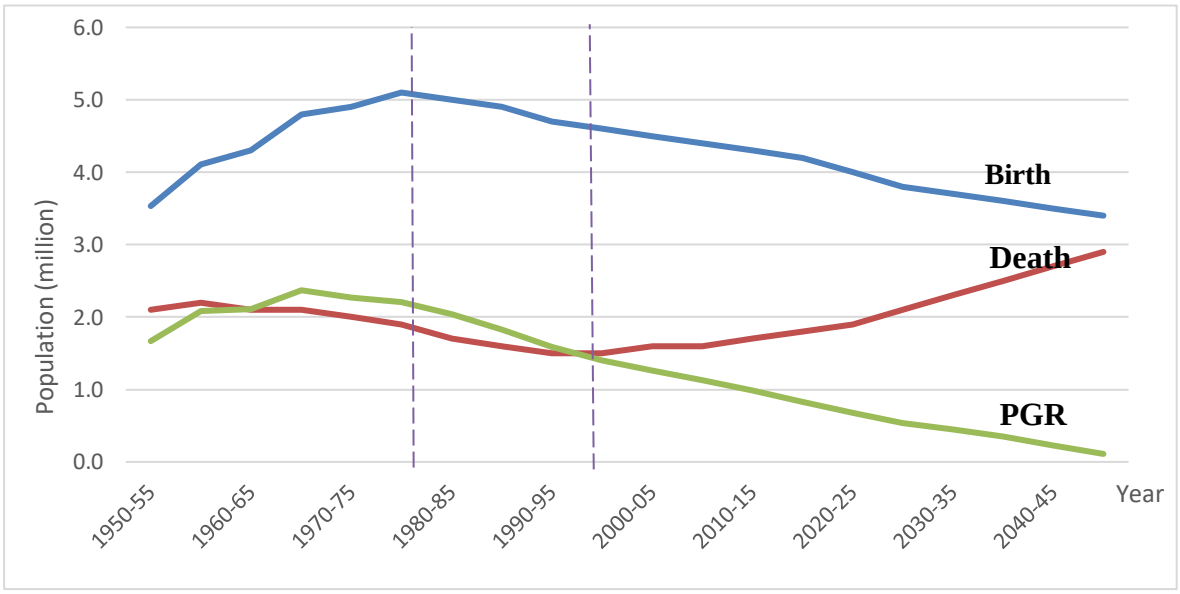
results, and interpret the results of data analysis. Crewell (2012, p 175). explain that the transformation of raw data into forms that would create them easy to understand and interpret, ordering, manipulating, and rearranging data to produce descriptive information. From these data and their description can provide valuable information about the nature of certain groups of individuals. The research conducted in the paper is based on secondary data obtained from many professional reports and studies carried out by state institutions, consortia, or enterprises.

4. RESULT AND DISCUSSION

4.1. Population and labor market condition in Indonesia

The demographic bonus that Indonesia will face could be a curse for Indonesia in the digital industrial era. This disaster occurs when human resources do not have sufficient capabilities to support the digital industry. Based on chart 2, the demographic transition in Indonesia began with the family planning movement in 1970 to suppress the rising birth rate, so that the year of population growth in Indonesia experienced a declining trend. However, starting in 1990, the death rate has increased due to the increasing number of the elderly population who died. From this condition, leading Indonesia to have a population of high productive age. Consequently, in 2020, it is predicted that the number of people of productive age (15-64). will reach 65 percent and above (The Ministry of National Development Planning - Bappenas, 2017). That year is also referred to as the window of opportunity that can be used to increase public welfare.

Chart 2: Demographic Transition, Indonesia



(UN World Population Projection, 2002 Revision)

With a population of productive age that is predicted to reach 64 percent or 190 million out of a total population of 297 million people (see chart 3), Indonesia will benefit abundantly. However, the availability of abundant productive age human resources must be balancing with an increase in quality in terms of education and skills, including its relation to facing labor market openness. Assuming that Indonesia could not manage these resources, then the demographic bonus will become a disaster by creating technological unemployment. The technological unemployment realized according to the predictions of several experts such as Keynes, Frey, and Osborne (2013), Walwei (2016), Degryse (2016), and Bührer and Hagist (2017). On the one hand, demographic bonuses are a blessing if human resources have sufficient capabilities for the digital industry. With this capability, it can be predicted that there will be many entrepreneurs born in the digital industrial era.

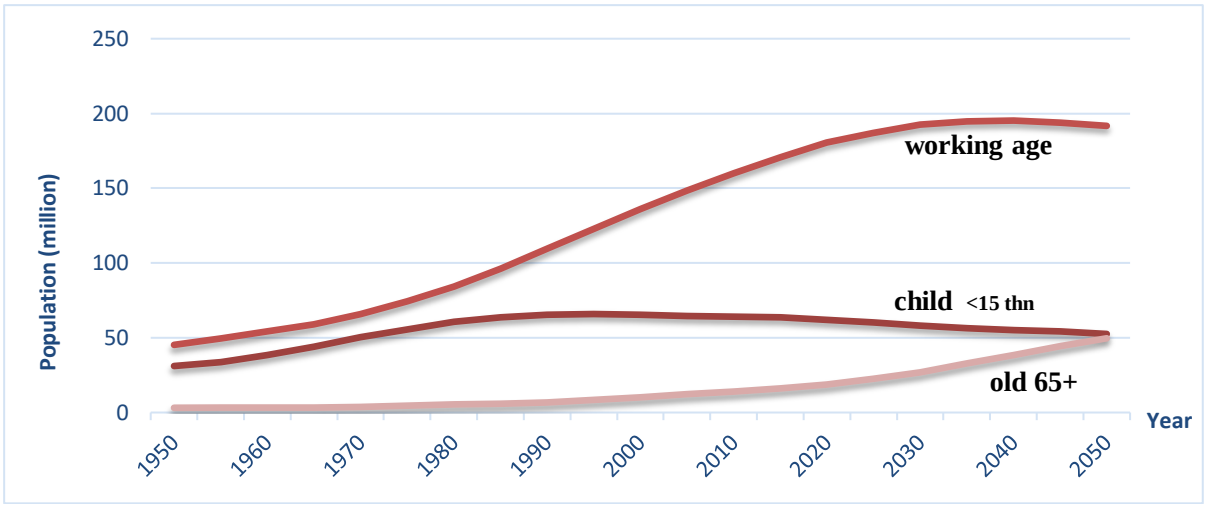


Chart 3: Working-age, old and children, Indonesia, 1950-2050
(UN World Population Projection, 2002 Revision)

Nowadays, based on chart 4, the Indonesia labor market in 2016 announced the population of working age reaches 125.44 million people, and the labor force participation 66.34 percent. In the next year, this number is increasing by 2.62 million or 128.06 million people. Likewise, around 48.51 percent of the Indonesian people are working, and the labor force participation rate also increased by 0.33 percent.

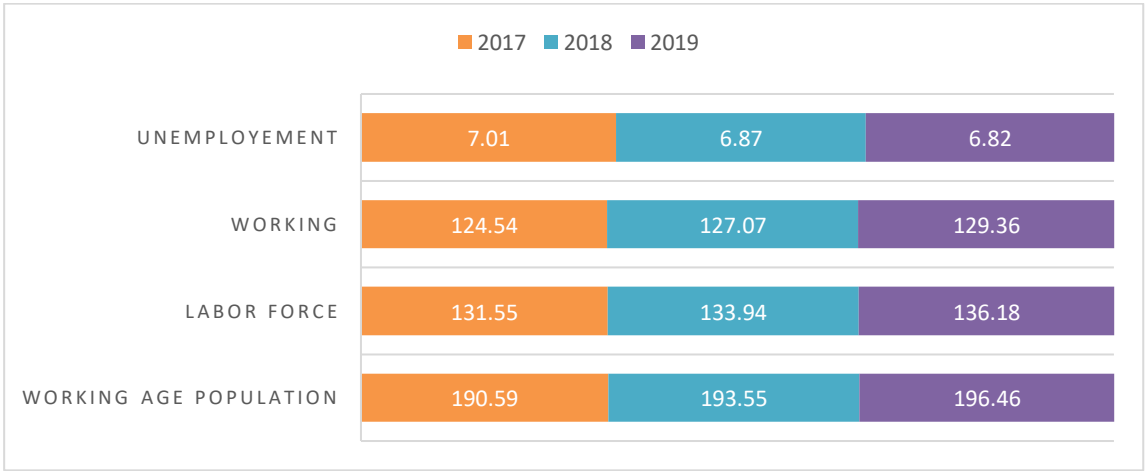


Chart 4: Labor market condition in Indonesia (million
(Statistic Indonesia, 2019)

Bobkov et al (2016). pointed out that the highest job vacancy in this era is IT specialists, engineers, and sales managers. Undoubtedly, those jobs need high-level education and high skills to solve complex problems that needed in a short time in the labor market. Unfortunately, Indonesian employees are in low education. Statistic Indonesia proved that employees with education under the university are 90% (see chart 5). In 2019, around 40,51% of workers in Indonesia are not graduated from elementary school, which means that employees are with low education and skill are abundance. This condition is that undoubted would create a disaster in Indonesia's labor market. Moreover, at most, 9.75 percent of workers have university education levels. Moreover, this circumstance is better than in 2015, in which almost 50% of the workers had low education.

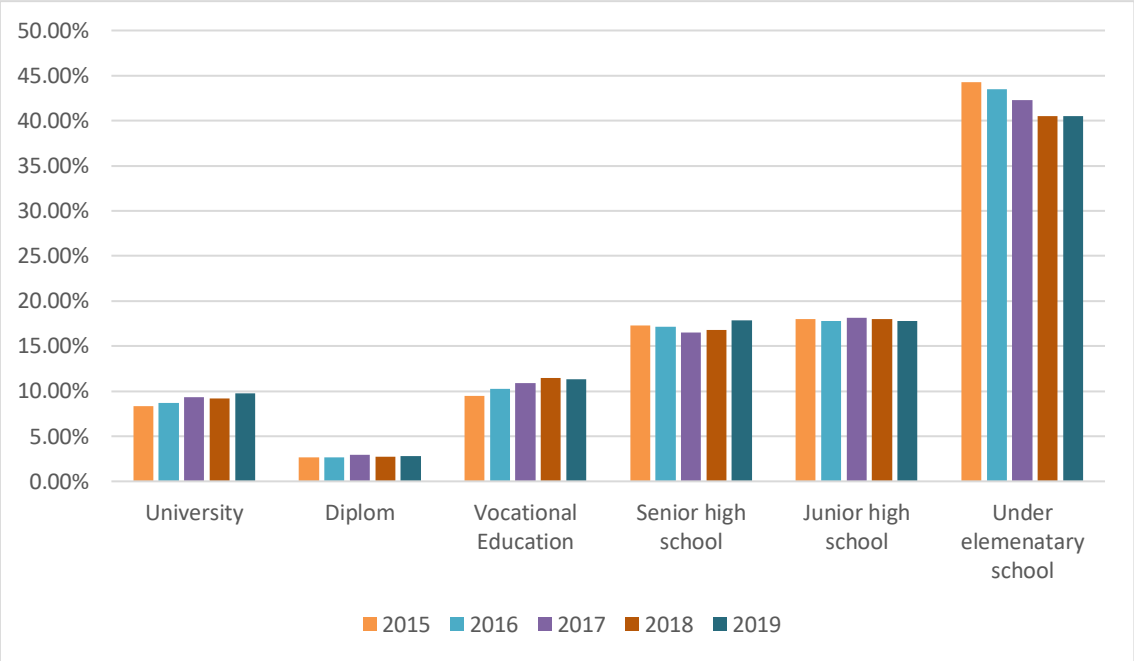


Chart 5: Worker Education Level in Indonesia, 2015-2019 (Statistic Indonesia, 2019)

Wijayanti (2018). asserted that worker education level is an asset to develop the firm and one of the reasons in the decision to hire someone. Inevitably, greater involvement between education providers and the private sector is needed to ensure graduates meet the demands of the labor market. Particularly, Indonesia is struggling with a severe shortage of skills, with half of its workforce below the qualifications for their jobs and labor market demands. Although there has been an increase in educational attainment from 2015 to 2019 (see chart 5), there are too many older workers, especially not yet completing secondary school. Moroever, Wijayanti (2018). affirmed that the decision to hiring a worker with a high education level is worthwhile in boosting firm productivity. Another weakness is that possible for Indonesian youth not to get the right skill lessons to match the labor market in Indonesia. Therefore, the government step in revitalizing in improving the ability of students to adapt and responsiveness of the education system. Nevertheless, in achieving these goals, education is needed that is echoed by all parties in the digital industrial ecosystem. The existence of the demographic bonus makes Indonesia always seen as a gold market for digital industry players. However, if human resources are not ready, then the Indonesian people only want to be spectators or consumers, not actors in the digital era, and unable to compete at the global level.

4.2. Education and digital literacy in Indonesia

The principal capital in dealing with industry 4.0 is to strengthen the fields of education and skills that are appropriate and needed in their future careers. Further, the employers' essential requirements for their workers are excellent professional knowledge and skills and capability to study (Bobkov et al., 2016). Thereby, to improve the educational outcome is fundamental urgent needs in facing industry 4.0 in developing countries and especially in ASEAN. Based on the Education Index released by Human Development Reports, in 2010-2017, Indonesia ranked seventh in ASEAN with a final score of 0.622 (see chart 6). For 17 years, the highest score was Singapore, which was 0.832 in 2017. The second rank was occupied by Malaysia (0.719). and followed by Brunei Darussalam (0.704). In fourth place is Thailand and the Philippines, both of which have a score of 0.661. This circumstance shows that the education sector in Indonesia relatively low.

With a ranking of seventh in the education index in ASEAN, Indonesia must increase the competitive power of its people and reduce the workforce with low education. This condition requires reform of the education system, curriculum, and education budget. Another skill needed in the industrial era 4.0 is knowledge of ICT. In meeting the demands of this erratic era, employees with high ICT or digital literacy will have great opportunities and wage increases.

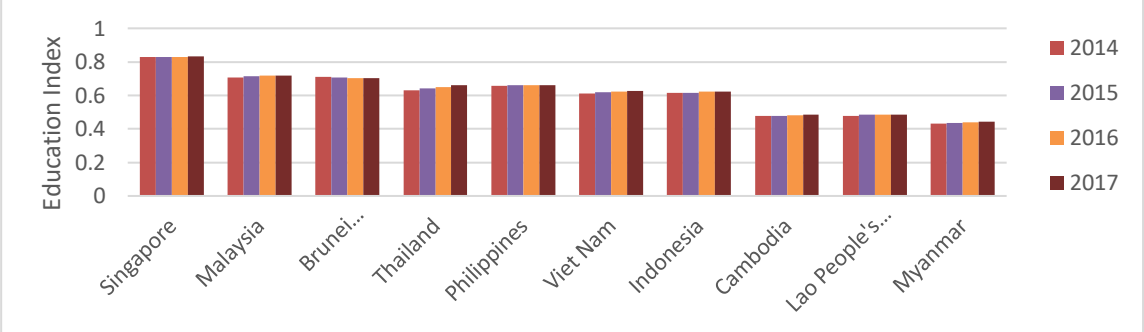


Chart 6: Education Index, 2014-2017 (Human Development Reports, 2017)

The lack of digital literacy is reinforced by chart 7; in general, the proportion of adolescents and adults with ICT skills increased by an average of 4.79%. A significant improvement in digital literacy was found in Kalimantan, wherein 2015 the proportion owned was 28.11% and increased by 5.97% the following year. On the one hand, Java still dominates with a value of 39.83% and exceeds the value of Indonesia by 31.83% in 2016. Indeed, human capital with ICT knowledge in Java makes Java become the Indonesia economic center. Then, followed by Kalimantan with 34.08% and Sumatra with 29.24%. These islands also have a high percentage due to ICT facilities built by foreign companies, which require workers with high skills and education related to ICT. On the other hand, eastern Indonesia (Maluku and Papua). with scores below 25% indicate population shortage with adequate ICT skills, causing an underdeveloped economy in these areas. Another reason for this lack is the majority population in Maluku and Papua are living in poverty and uneducated. Consequently, the equitable distribution of infrastructure and education are the main things in preparing Indonesia for Industry 4.0.

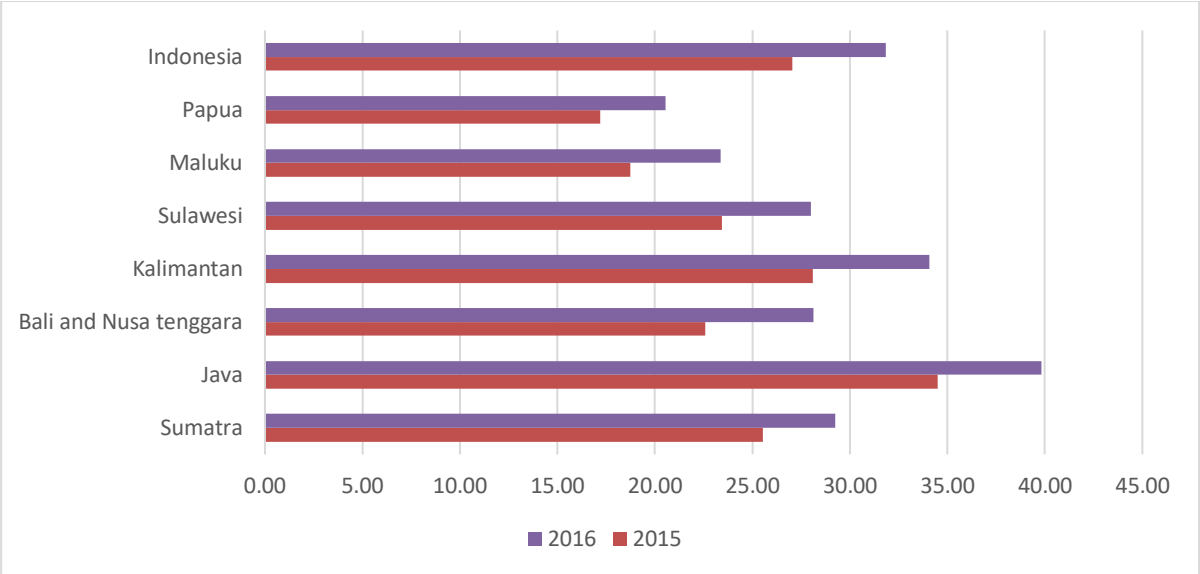


Chart 7: Proportion of Adolescents and Adults Aged 15-59 y.o with Information and Computer Technology (ICT). Skills by Island (%). (BPS, 2017)

In understanding more profound about digital literacy in Indonesia, Siberkreasi Kemkominfo conducted a survey (see chart 8). The survey subject is students (aged 13-18). in 4 cities that has internet penetration or digital technology above 70 percent to know their digital literacy. Of the eight elements assessed, students get the highest score in the ability to find and sort information. Teenagers in Bandung city got the highest score of 85.02, followed by Denpasar with a value of 84.08, Pontianak 84.36, and Surabaya 81.90. However, the low value of the creativity component shows that students are less facilitated in developing and honing creativity at school or home. Thus, the revitalization of the education system in Indonesia becomes an urgent agenda in facing the digital era and demographic bonus. The existence of an education system that can encourage students' creativity will encourage them to create unique startups and support the Indonesian economy. Therefore, Indonesian society becomes not only consumers but also entrepreneurs that can compete at the ASEAN and global levels.

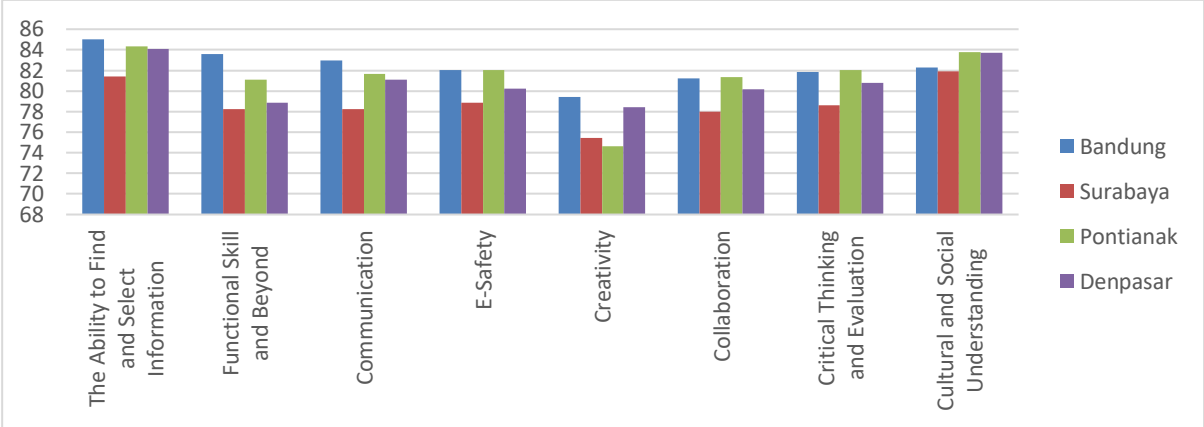


Chart 8: Digital literacy of students in Indonesia, 2018 (Siberkreasi Kemkominfo, 2018)

5. CONCLUSION

In welcoming industry 4.0 and the imminent demographic bonus, the Indonesian labor market still dominated by undereducated workers. Thus, it is unsurprisingly that Indonesia's education index is lower than other ASEAN countries, except Cambodia, Lao, and Myanmar. The condition of Indonesia exacerbated by the concentration of experts in ICT and the proportion of adolescents and adults who have ICT skills in Java, Sumatra, and Kalimantan. Therefore, it is one of the reasons why economic growth in other regions is slow. Generally, the digital literacy condition in Indonesia is at moderate levels. However, the most crucial thing is the lowest of the creativity component. The existence of an education system that can encourage students' creativity will encourage them to create unique startups and support the Indonesian economy. Therefore, Indonesian people become not only consumers but also businesses that can compete at the ASEAN and global levels. Mainly, we can conclude that industry 4.0 could decrease the employment rate in Indonesia, and irritated by the uncertainty of the effects of demographic bonuses. At this point, the government should improve and innovate Indonesian educational levels to compensate for technological change. Also, the government necessary to increase the budget regarding education and invest in Indonesia’s human capital to build the foundation of a more competitive economy in the future. Conceding that Indonesia slowly responds to prevent the impact of industry 4.0 and the demographic bonus will lead to poverty and unemployment. Then, the reconsideration curricula of education are urgently needed. Notably, enhanced training curricula for workers so that they will have better soft and hard skills — moreover, reformed competency-based vocational training and apprenticeship programs. Besides, expanded of the qualification, requirement, and the operation of professional certification institutions across the country will give the workers the new value of their profile and makes them ready with industry 4.0.

LITERATURE:

1. Acemoglu, D., & Restrepo, P. (2018). Low-Skill and High-Skill Automation. *Journal of Human Capital, vol. 12, no. 2*, 204-232.
2. Anbumozhi, V., & Kimura, F. (2018). *Industry 4.0: Empowering ASEAN for the Circular Economy.* Jakarta: ERIA.
3. Asian Developmet Bank (ADB). (2016). *Analysis of Trends and Challenges in The Indonesian Labor Market.* Manila: ADB.
4. Balsmeier, B., & Woerter, M. (2019). Is this time different? How digitalization influences job creation and destruction. *Research Policy*, 1-10.
5. Bappenas. (2015). *Rencana Pembangunan Jangka Menengah Nasional (RPJMN) 2015-2019.* Jakarta: Bappenas.
6. Bappenas. (2017). *Bonus Demografi 2030-2040: Strategi Indonesia Terkait Ketenagakerjaan dan Pendidikan.* Jakarta: Bappenas.
7. Bartel, A., Ichniowski, C., & Shaw, K. (2007). How Does Information Technology Affect Productivity? Plant-Level Comparisons of Product Innovation, Process Improvement, and Worker Skills. *Quarterly Journal of Economics 122(4)*, 1721-1758.
8. Bobkov, V. N., Litvinyuk, A. A., & Ledneva, S. A. (2016). Moscow Metropolis Labour Market Features: The Requirements of Employers and The Quality of Young Specialists. *R-Economy Vol 2, Issue 4*, 509-517.
9. Bührer, C., & Hagist, C. (2017). The Effect of Digitalization on the Labor Market. V H. Ellermann, P. Kreutter, & W. Messner, *The Palgrave Handbook of Managing Continuous Business Transformation* (str. 115-137). London: Palgrave Macmillan.
10. Cardona, M., Kretschmer, T., & Strobel, T. (2013). ICT and Productivity: Conclusions from the Empirical Literature. *Information Economics and Policy*, 109-125.
11. Creswell, J. W. (2012). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research, 4th ed.* Boston: Pearson Education, Inc.
12. Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches (4th ed).* Thousand Oaks: SAGE Publications.
13. de Groen, W. P., Lenaerts, K., Bosc, R., & Paquier, F. (2017). *Impact of Digitalisation and the On-Demand Economy on Labour Markets and the Consequences for Employment and Industrial Relations.* Brussel: European Economic and Social Committee.
14. Degryse, C. (2016). *Digitalisation of the economy and its impact on labour markets.* Brussels: ETUI AISBL.
15. Frey, C. B., & Osborne, M. A. (2013). *The future of employment: how susceptible are jobs to computerization?* Pridobljeno iz Oxford Martin School Working Paper: http://www.oxfordmartin.ox.ac.uk/downloads/academic/ The_Future_of_Employment.pdf (accessed 3 April 2019)
16. Hagén, H.-O., Glantz, J., & Nilsson, M. (2008). *ICT use, broadband and productivity.* Stockholm : Yearbook on Productivity 2008.
17. Heeks, R. (2013). Information Technology Impact Sourcing. *Communications of the ACM, 56(12)*, 22-25.
18. International Labour Organization (ILO). (2016). *World Employment and Social Outlook.* Geneva: ILO.
19. Manyika, J., Lund, S., Chui, M., Bughin, J., Woetzel, J., Batra, P., . . . Sanghvi, S. (2017). *Jobs Lost, Jobs Gained: Workforce Transitions in A Time of Automation.* New York: McKinsey Global Institute.
20. Nerhus, L. (2016). Automation and the Labor Force. *Major Themes in Economics vol. 16*, 65-79.

21. Parviainen, P., Tihinen, M., Kääriäinen, J., & Teppola, S. (2017). Tackling the Digitalization Challenge: How to Benefit from Digitalization in Practice . *International Journal of Information Systems and Project Management, Vol. 5, No. 1*, 63-77.
22. Roland Berger. (2014). *Industry 4.0: Think Act Point of View.* Brussels: Roland Berger. https://www.rolandberger.com/publications/publication_pdf/roland_berger_tab_ industry_4_0_20140403.pdf (accessed 8 November 2019)
23. Shahiduzzaman, M., & Alam, K. (2014). Information technology and its changing roles to economic growth and productivity in Australia. *Telecommunications Policy, 38(2),* 125–135.
24. Thorbecke, W. L., & Komoto, G. (2013). Promoting Learning and Industrial Upgrading in ASEAN. V W. Thorbecke, & W. Hsieh, *Industrial Restructuring in Asia: Implications of the Global Economic Crisis* (str. 69-101). New Delhi: ADBI-Sage Publications.
25. United Nations Population Fund (UNFPA). (2015). *Policy Memo Taking Advantage of The Demographic Dividend in Indonesia: A Brief Introduction to Theory and Practice.* Jakarta: UNFPA.
26. Vermeulen, B., Kesselhut, J., Pyka, A., & Saviotti, P. P. (2018). The Impact of Automation on Employment: Just the Usual Structural Change? *Sustainability 10 (5), 1661*, 1-27.
27. Walwei, U. (2016). *Digitalization and Structural Labour Market Problems: The Case of Germany.* Geneva: International Labour Office .
28. Wijayanti, F. (2018). Younger vs. older workers in ASEAN countries: substitutes or complements? *R-Economy, 4(4)* , 151–157.
29. Zeira, J. (1998). Workers, Machines, and Economic Growth. *The Quarterly Journal of Economics, Vol. 113, No. 4 (Nov., 1998),* 1091-1117.

SPATIAL DEVELOPMENT OF POST-SOVIET RUSSIA: TENDENCIES AND FACTORS

Evgeniya Kolomak
Institute of Economics and IE SB RAS and Novosibirsk State University, Russia
ekolomak@academ.org

ABSTRACT

The paper studies the transformations in the spatial proportions of the economic development of post-Soviet Russia in several dimensions: east-west, periphery-centre and resource-processing economies. Theil index and regression estimations are used in the analysis. Changes in the spatial concentration of the population, employed, fixed capital and the gross regional product are considered. The analysis showed that in the post-Soviet period, spatial concentration of economic acivity and increase in interregional differences were observed. The general heterogeneity between the subjects of the Russian Federation determined the main contribution to the value of the overall Theil index. Differences between western and eastern, central and non-central, resource and manufacturing regions contributed a small part of the differentiation. Along with the general process of spatial concentration, there was a redistribution of economic activity in the predicted directions: from the periphery to the centre, from east to west and from the territories of resource mining to regions of manufacturing specialization. Spatial transformations in Russia were determined by factors of a market and agglomeration nature, such as the capacity and accessibility of regional markets, as well as large urban centres. The positive externalities of the urban economy are determined by the structure of the urban system, significant effects on development are created by large cities. However, the impact of the resource economy on the development of the territory is ambiguous and depends on its weight in the economic activity. Predictions about the post-Soviet evolution of spatial proportions in Russia were not fully realized in terms of the rate of the changes, a more active dynamic was expected, but they were correct in terms of mechanisms and trends.
Keywords: *economic activity, empirical analysis, Russia, spatial proportions.*

1. INTRODUCTION

The post-Soviet period in Russia was associated with the significant spatial transformations that should follow market reforms. It was stated that central planning, violating the principles of efficient allocation, had led to an overpopulation of the northern and eastern territories of the country (Gaddy, Hill, 2003). and restrained agglomeration processes and urbanization (Clayton, Richardson, 1989). Therefore, it was predicted that the introduction of market mechanisms should lead to an increase in the spatial concentration and to the active migration of the population from eastern regions to the western part of the country and from villages to cities.

These statements are based on the concept of the multiplicity of spatial equilibrium, which has received convincing arguments in the theory of new economic geography (Combes et al., 2008). The "centre-periphery" model shows that economic space is shaped by the costs of economic agents' interaction, increasing return to scale, market size and the variety of produced products. As a result of a combination of these factors, either a polarized or a dispersed spatial structure of production is formed. However, the tendency towards spatial concentration varies by economic sector; therefore, different combinations of polarization and homogeneity and different spatial models of economic development are possible (Combes et al., 2011; Paluzie et al., 2004; Roses et al., 2010). However, there are alternative theories; according to these theories, settlement systems are highly stable and are provided by geographic, climatic and historical determinants. Neither multiplicity nor uniqueness of the spatial equilibrium has yet received unambiguous empirical evidence.

The empirical justifications of the spatial equilibrium multiplicity are based on the assumption that a transition to a different spatial model may occur due to major global, macroeconomic, technological or political shocks. The beginning of this line of research is connected with the work of Davis and Weinstein, which assessed the impact of the American bombing in Japan during the Second World War on the distribution of the population and industrial sectors (Davis, Weinstein, 2002; Davis, Weinstein, 2008). The authors did not find confirmation of the multiplicity of spatial equilibrium; rather, arguments were found in favour of its uniqueness. Not only the population and the total industrial production but also the output of different industrial sectors showed a tendency to restore the pre-war spatial structure. The same conclusion was made by the authors of two other papers (Brakman, Garretsen, Schramm, 2001; Miguel, Roland, 2001); when they evaluated the impact of the war bombing of German and Vietnamese cities, no long-term impact on the spatial distribution of economic activity in these countries was identified. However, other authors come to a conclusion of changing spatial equilibrium. Bosker and co-authors (Bosker, Brakman, Garretsen, Schramm, 2007). analysed the consequences of the Second World War for Germany and found noticeable changes in the post-war distribution of the population among cities in the country. Other authors (Redding, Sturm, Wolf, 2011). studied the impact of the division of Germany in 1945 and its reunification in 1990. They used data on air travel and airport load and concluded that there was a change in the spatial proportions of development. The stability of spatial proportions, which, despite serious destruction and cataclysms, has been demonstrated by many countries, is an argument of supporters of geographical determinism. Historical and cultural roots also work towards the preservation of traditions, including the places of residence, restrain population mobility and reinforce the established system of settlement. Changes in the spatial structure of economic activity in Russia in the post-Soviet period can be viewed as the results of a natural experiment, where a transition from non-market spatial equilibrium to a market equilibrium is ongoing (Berkowitz, DeJong, 2002; Berkowitz, DeJong, 2003; Berkowitz, DeJong, 2005; Berkowitz, Jackson, 2006). The historical legacy of a centralized planning system is subject to change as a result of the incorporation of market mechanisms. Strict regulation of internal migration, limitations on the growth of large cities, industrial policy supporting the development of medium-sized and small cities, an active regional policy aimed at smoothing out interregional differences, and significant subsidies to the northern and eastern territories are largely a thing of the past. Have market reforms and a lack of central planning led to a change in the spatial model of the country's development?

The Russian situation has a number of features and differs from the cases studied in the papers mentioned above. First, the vast territories of Russia provide greater flexibility and spatial manoeuvring than Germany, Japan or Vietnam, where the density of economic activity is quite high. Second, the case of market reforms is not a destructive technical shock but an institutional shock, and it is positive. Third, the influence of the reforms extends to the whole country and not to the limited territory of bombings or relocations. Finally, in Russia, the resource economy continues to play a significant role: the extraction of oil, gas, metals and forest products and their primary processing increases the weight of the “first nature” factors and the geographical immobility of economic activity (Ahrend, 2005). In addition, the strong central government in the country pursues a policy of smoothing inter-regional differences to maintain political and social stability. Its instruments are federal investment, large national projects and active inter-budgetary transfers. As a result, the inertia of economic processes, complemented by the high costs of migration, the history of the settlement system, and the geographical features of the territories, increases and constrains the spatial mobility of the population and production. This gives the spatial structure of the economy formed during the Soviet period a certain amount of stability (Bertaud, Renaud, 1997; Markevich, Mikhailova, 2013; Shepotylo, 2012).

Taking into account the arguments made in the literature, the following trends in the change in the spatial proportions of economic activity in Russia are of interest. Is there a spatial concentration of economic activity in Russia? Which vector does the evolution of the spatial proportions of economic activity display: east – west, resource – processing, periphery – centre?

2. DATA

The analysis is based on the official data of the Federal State Statistical Agency of the Russian Federation. A number of indicators presented in official statistics can be used as characteristics of economic activity: population, employment, fixed capital and gross regional product (GRP). To study the directions of spatial redistribution of economic activity, we single out the western and eastern regions, the regions of mining and processing specialization, as well as and the subjects of the federation of the central and non-central parts of the country. The regions of the Central, North-West, Southern, North-Caucasian and Volga federal districts belong to the western regions, and the territories of the Ural, Siberian and Far-Eastern districts belong to the eastern regions. The assignment to the regions of resource specialization is according to the sectoral structure of gross value added; the criterion was is the share of mining in GRP. The regions of the Central, North-West and Volga federal districts are assigned to the centre of the country, and the territories of the Southern, North-Caucasian, Ural, Siberian and Far Eastern districts were are referred to as the periphery.

3. METHODS

Several characteristics of spatial concentration are proposed in the literature; the Theil index is used in this analysis since it can divide the general heterogeneity into the contributions of various components and different groups. This allows us to consider two levels: groups of regions and individual regions within these groups.

The regression estimation uses the approach of the extended production function *Y=AF(K,L).* by including spatial development factors, where *A* is the total factor productivity, *Y* is value added, *K* is the stock of fixed capital, and *L* is labour resources. The regional proportions of development in Russia were shaped by a combination of different mechanisms, including both market and government forms of influence. The key market factors of economic growth are the size and availability of domestic and foreign markets.

To assess the availability and capacity of regional markets, a variable of market potential is introduced. The market potential of a region *r* in the year *t* (MP_{rt}). is estimated as the sum of the regional outputs of its neighbours, weighted by the inverse of the distance to the region *r*.

$$MP_{rt} = \sum_{s \neq r} \frac{Y_{st}}{dist_{rs}}$$

The distance from the region *r* to the region *s* ($dist_{rs}$). is taken as the minimum path along the roads from one regional centre to another. This measure of market potential evaluates the size and accessibility of the domestic regional markets; but does not take into account the opportunities of the foreign markets. Global market and its impact on the Russian regions are controlled through dummy variables for each year of the period. And the advantages of the proximity of individual regions to borders, ports, transport and logistics centres and to the infrastructure of foreign economic relations are controlled by means of fixed regional effects.

Regarding the Russian economy, it is important to control for the specialization in the resource and manufacturing economy. The weight of a resource economy is defined as the share of the mining industries in the regional value-added and is denoted by R_{rt}.

Urbanization is currently an important spatial resource of development, large cities are poles of growth (Anas, 2004; Fujita, Krugman, Venables, 1999). This fact is confirmed by a wide empirical material, for different countries, the estimates of the increase in labour productivity due to doubling the cities size are from 3 to 16% (Békés, Harasztosi, 2013; Ciccone, 2002; Ciccone, Hall, 1996; Nakamura, 1985). The contribution of the urban economy to overall regional activity is controlled through the variable of the urban population share (U_{rt}).

The influence of the concentration within the urban system may be ambiguous. On the one hand, the concentration of economic activity in the regional centre intensifies the negative aspects of urbanization, making the problems of infrastructure provision, ecology and social inequality more serious. On the other hand, an urban system having a dispersed structure has limited opportunities for utilizing the advantages of scale and agglomeration economy (Bruhart, Mathys, 2008; Henderson, 1974). To control the internal structure of the urbanization, the share of the urban population living in the largest city of the region is used in the regression (B_{rt}).

To preserve political and social stability, the central government of the Russian Federation has pursued a policy of restraining the growth of interregional inequality, using state investment and initiating large national projects. To take into account the impact of these projects, the model specification was expanded, and a variable of government investment from the federal budget into the regional economy was introduced (SI_{rt}). State investments often compensate for low economic activity in the territory and are aimed at reducing inter-regional disparities. New jobs created as a result of the implementation of investment projects attract the population, restrain migration from the regions, create additional demand in local markets and reduce the agglomeration processes. Since there is a lag in the returns on the investment decisions of the federal centre, the lag dependence is used in the regression equation. It is also necessary to eliminate the correlation of the scale of the federal aid with the size of the regional economy. For this purpose, a normalization procedure is performed; the ratio of state federal investments to GRP is used in the estimations.
The panel structure of the data allows for regional and time fixed effects to be included; the former control for specific regional variables unchanged over time and the latter control for changes over time that spread across all territories and sectors.
The assumption that the production function is of Cobb-Douglas type and its logarithm give the following econometric model:

$$lnY_{rt} = lnA + a \cdot lnK_{rt} + b \cdot lnL_{rt} + c \cdot lnR_{rt} + d \cdot lnMP_{rt} + f \cdot lnU_{rt} + g \cdot lnB_{rt} + h \cdot lnSI_{r(t-1)} + \mu_r + \lambda_t + \varepsilon_{rt}, \quad \varepsilon_{rt} \sim N(0, \sigma^2 I)$$

where μ_r – fixed regional effects and λ_t – fixed time effects.

One of the key results findings of the new economic geography is the conclusion about the endogenous nature of the forces that determine the spatial structure of economic development. We can assume that there is the problem of endogeneity regarding several explanatory variables in the regression, since they depend on the economic activity in the region: market potential (MP_{rt}), urbanization (U_{rt}). and size of the largest city (B_{rt}). We can assume that there is a the problem of endogeneity regarding several explanatory variables in the regression, since they depend on the economic activity in the region: market potential (MP_{rt}), urbanization (U_{rt}). and size of the largest city (B_{rt}). To solve this problem, the method of instrumental variables is used.

4. RESULTS OF ESTIMATIONS

The main result of economic activity is value added, and the key factors of development are human resources and fixed capital. Following this logic, we consider changes in the spatial

concentration of the population, employed, fixed capital and the gross regional product (GRP). of the Russian regions. Estimates of the total Theil index for the population and the contribution of differences in the selected group of regions are presented in Table 1.

Table 1: Theil index for the population

	1990	1995	2000	2005	2010	2015	2017	Growth rate for the period
Theil index	0.2760	0.2854	0.3022	0.3224	0.3395	0.3570	0.3631	131.6
Theil - between west-east index	0.0021	0.0033	0.0041	0.0052	0.0058	0.0051	0.00623	300.8
Contribution into Theil index, %	0.8	1.1	1.4	1.6	1.7	1.4	1.7	228.6
Theil - between center-periphery index	0.0051	0.0047	0.0047	0.0049	0.0048	0.0066	0.0046	90.8
Contribution into Theil index, %	1.8	1.6	1.6	1.5	1.4	1.9	1.3	69.0
Theil - between resource-processing index	0.0137	0.0141	0.0143	0.0146	0.0148	0.0149	0.0149	108.8
Contribution into Theil index, %	5.0	4.9	4.7	4.5	4.4	4.2	4.1	83.0

The results show that the spatial concentration of the population in the country is ongoing; since 1990, the value of the total index has increased by 32%. The main contribution to the spatial heterogeneity of the population is associated with the internal interregional differences. The contribution of differences between resource and processing, centre and periphery and between west and east is small. However, the migration of the population from the east to the west led to a significant increase in the contribution of this vector of differences to the overall estimate of spatial concentration (229%). The share of the other dimensions of heterogeneity reduced.
The pace of spatial concentration of employment was noticeably higher than that of the population, and the total Theil index since 1995 has grown by 45% (Table 2). Spatial differences of the average annual employed increased in all directions, including the vector centre-periphery, which suggests that the migration flows of the economically active population did not coincide with the directions of movement of the population. The assumption is that it is due to the migration of elderly people to the south of the country, where climatic conditions are better. The redistribution of employment in favour of the western and processing territories at the expense of the eastern and resource regions, respectively, outpaced the growth rate of differences between all Russian regions. However, the main spatial differences in employment were associated with general interregional differentiations; its weight was more than 80%.

Table 2: Theil index for the employment

	1990	1995	2000	2005	2010	2015	2017	Growth rate for the period
Theil index	0.2760	0.2854	0.3022	0.3224	0.3395	0.3570	0.3631	131.6
Theil - between west-east index	0.0021	0.0033	0.0041	0.0052	0.0058	0.0051	0.00623	300.8
Contribution into Theil index, %	0.8	1.1	1.4	1.6	1.7	1.4	1.7	228.6
Theil - between center-periphery index	0.0051	0.0047	0.0047	0.0049	0.0048	0.0066	0.0046	90.8
Contribution into Theil index, %	1.8	1.6	1.6	1.5	1.4	1.9	1.3	69.0
Theil - between resource-processing index	0.0137	0.0141	0.0143	0.0146	0.0148	0.0149	0.0149	108.8
Contribution into Theil index, %	5.0	4.9	4.7	4.5	4.4	4.2	4.1	83.0

The rate of spatial concentration of fixed capital was even higher, and the Theil index for this indicator increased more than 2 times from 1995 to 2017. The directions of the spatial redistribution of the fixed capital did not fully coincide with the trends in the movement of labour resources (Table 3), which is associated with the technological features of the extractive industries. The difference between the centre and the periphery grew at the highest rates, and the contribution of the corresponding index increased 9 times. The gap between the western and eastern regions has narrowed, but this was due to the redistribution of capital in favour of the western regions, which were lagging behind the eastern territories. However, the concentration of fixed capital in the resource regions continued, which is explained by the higher capital intensity of the extractive industries.

Table following on the next Page

Table 3: Theil index for the fixed capital

	1995	2000	2005	2010	2015	2017	Growth rate for the period
Theil index	0.3672	0.39431	0.6269	0.8078	0.8182	0.8430	229.6
Theil - between west-east index	0.0037	0.0013	0.0029	0.0004	0.0006	0.0011	30.3
Contribution into Theil index, %	1.0	0.3	0.5	0.0	0.1	0.1	13.2
Theil - between center-periphery index	0.0002	0.0012	0.0012	0.0062	0.0044	0.0033	1582.2
Contribution into Theil index, %	0.0	0.2	0.1	0.7	0.5	0.4	913.9
Theil - between resource-processing index	0.0093	0.0078	0.0211	0.0186	0.0214	0.0227	243.4
Contribution into Theil index, %	2.5	2.0	3.4	2.3	2.6	2.7	106.0

Moreover, with the factors of production, a spatial concentration of output was ongoing. Since 1995, the Theil index for GRP has grown by 130% (Table 4). The increase in the corresponding indicator for employment is less than 50%. This means that the spatial concentration of economic activity in Russia is especially fast in sectors with higher labour productivity.

Table 4: Theil index for the gross regional product (GRP)

	1995	2000	2005	2010	2015	2016	Growth rate for the period
Theil index	0.4736	0.7889	0.9288	0.8465	0.8155	0.8198	173.1
Theil - between west-east index	0.0036	0.0001	0.0002	0.0005	0.0008	0.0011	30.7
Contribution into Theil index, %	0.8	0.0	0.0	0.1	0.1	0.1	17.7
Theil - between center-periphery index	0.0016	0.0097	0.0106	0.0138	0.0130	0.0144	875.9
Contribution into Theil index, %	0.3	1.2	1.1	1.6	1.6	1.8	505.9
Theil - between resource-processing index	0.0087	0.0107	0.0137	0.0048	0.0048	0.0037	42.2
Contribution into Theil index, %	1.8	1.4	1.5	0.6	0.6	0.4	24.4

Consequently, differences in the productivity of regional economies increased. The dominant direction of the spatial redistribution of the value added was from the periphery to the centre. The contribution of the differences between the west and the east of the country and between the resource and processing groups of regions in the overall heterogeneity decreased. However,

this meant an increase in the output of not the eastern and resource regions but of their counterparts. The reduced differences were due to the redistribution of the production in favour of the groups of the western and manufacturing regions, which were lagging behind in terms of the value added at the beginning of the period. Therefore, during the entire period and for all indicators of economic activity, spatial concentration processes took place. The general heterogeneity between the subjects of the Russian Federation determined the main contribution to the value of the overall Theil index. Differences between western and eastern, central and non-central, resource and manufacturing regions contributed a small part of the differentiation and did not exceed 5%. Along with the general process of spatial concentration, there was a redistribution of economic activity in the predicted directions: from the periphery to the centre, from east to west and from the territories of resource mining to regions of manufacturing specialization. The regression estimates were carried out both for the entire sample and for the selected groups of regions, which allows us for identifying the features of their development; Table 5 presents the estimation results. The results show that the market potential is significant variable, along with fixed capital and human capital, for all groups of regions. Under market conditions, output is largely determined by the size and transport accessibility of markets, and regression estimates have confirmed this. The variable of market potential, reflecting the accessibility of external regional markets, is significant and very important for the value-added of Russian regions. The average elasticity of this factor is the highest, with an estimate of 0.74%. The estimates are slightly higher for the western, central and processing regions compared to the eastern, peripheral and resource ones. This result is quite natural, as the influence of the market is determined by the communication infrastructure and mobility of production factors. The eastern and peripheral territories lag behind in the development of transport infrastructure, and in resource regions a significant part of economic activity is immobile.

Table 5: Results of the regression estimates. Dependent variable: Gross Regional Product

Variable	Whole sample	West	East	Centre	Periphery	Processing	Resource
Constant	-3.313 (0.886)	-3.993 (1.273)	-1.031 (0.956)	-6.549 (0.230)	2.736 (1.736)	-0.888 (1.228)	-5.407 (1.064)
Fixed capital	0.305 (0.023)	0.196 (0.038)	0.301 (0.033)	0.173 (0.043)	0.342 (0.033)	0.180 (0.033)	0.295 (0.043)
Employment	0.658 (0.138)	0.732 (0.190)	0.413 (0.153)	0.686 (0.230)	0.409 (0.201)	0.330 (0.183)	0.983 (0.163)
Share of the mining sector in GRP	-0.013 (0.394)	-0.063 (0.020)	0.080 (0.023)	-0.055 (0.028)	-0.007 (0.020)	-0.063 (0.017)	0.159 (0.037)
Market potential	0.739 (0.019)	0.877 (0.037)	0.706 (0.028)	0.850 (0.045)	0.729 (0.028)	0.885 (0.033)	0.741 (0.038)
Share of the urban population	-0.167 (0.231)	-0.026 (0.281)	-0.109 (0.406)	0.779 (0.433)	-0.102 (0.204)	-0.240 (0.245)	-0.286 (0.690)
Share of the urban population living in the largest city	0.251 (0.106)	0.321 (0.162)	0.250 (0.431)	0.372 (0.178)	0.514 (0.273)	0.659 (0.249)	0.155 (0.204)
Ratio of state federal investments to GRP	0.008 (0.008)	0.012 (0.009))	0.0002 (0.016)	0.013 (0.010)	0.003 (0.013)	0.012 (0.008)	-0.010 (0.017)
R^2	95.9	96.5	95.4	96.2	95.8	96.2	96.1

Note: Standard errors in parentheses.

In all estimates the investments of the federal budget and the level of urbanization do not have a statistically significant effect on the production of the gross regional product. Federal budget investments, as a rule, are directed to the implementation of infrastructure projects that create the basis for development, but the realization of growth opportunities is a business task.

State investment is often due to social policy and the provision of public services and is not directly related to the promotion of production in the territory. In addition, the flow of financial resources from the federal centre to the regions is often influenced by political rather than economic priorities. All these facts obviously determined the absence of a significant correlation between the productivity of regional economies and federal investments. The level of urbanization also turned out to be a nonsignificant factor, while the proportion of the urban population concentrated in the largest regional city is a positive and statistically significant factor of economic development in the estimates for the whole sample. But the degree of influence of this factor varies across the country, a statistically significant positive effect is confirmed in the western, central and processing regions, in the Eastern, peripheral and resource regions the influence of large cities is statistically insignificant. This means that the agglomeration effects and positive externalities of the urban economy are determined by the structure of the urban system. Significant positive effects on economic development are created by large cities. Mining industries continue to play a significant role in the Russian economy and in foreign trade operations. However, the impact of the resource economy on the development of the territory is ambiguous and depends on its weight in the activity. Share of the mining sector in GRP is a negative factor for the western and manufacturing regions and a positive one for the eastern and resource regions. The resource sector creates noticeable development impulses for the territory, when the regions specialize in mining.

5. CONSLUSION

Institutional reforms in Russia associated with the introduction of market mechanisms have caused changes in the spatial proportions of economic development. In the Soviet period, one of the goals of state policy was to mitigate inter-regional disparities and to make the spatial development more homogeneous. The less active state participation in the economy and the rejection of centralized planning led to a number of predicted results.In the post-Soviet period, spatial concentration of economic acivity and increase in interregional differences were observed. This process was accompanied by migration of factors and the results of production from east to west and from the periphery to the centre. Spatial transformations in Russia were determined by factors of a market and agglomeration nature, such as the capacity and accessibility of markets, as well as the presence of large urban centres acting as development poles. Predictions about the post-Soviet evolution of spatial proportions in Russia were not fully realized in terms of the rate of the changes, but they were correct in terms of mechanisms and trends. There is a concentration of factors and the results of economic development in Russia, resulting in the growth of interregional differentiation.

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LITERATURE:

1. Ahrend, R (2005). Speed of reform, initial conditions or political orientation? Explaining Russian regions' economic performance. *Post-Communist Economies: V. 17* (p. 289-317).
2. Anas, A (2004). Vanishing Cities: What Does the New Economic Geography Imply About the Efficiency of Urbanization? *Journal of Economic Geography: V. 4* (p. 181-199).
3. Békés, G., Harasztosi, P (2013). Agglomeration premium and trading activity of firms. *Regional Science and Urban Economics: V. 43* (p. 51–64).
4. Berkowitz, D., DeJong, D (2002). Accounting for growth in post-Soviet Russia. *Regional Science and Urban Economics: V. 32* (p. 221–239).
5. Berkowitz, D., DeJong, D (2003). Policy reform and growth in post-Soviet Russia. *European Economic Review: V. 47* (p. 337–352).

6. Berkowitz, D., DeJong, D (2005). Entrepreneurship and post-socialist growth. *Oxford Bulletin of Economics and Statistics: V. 67* (p. 25–46).
7. Berkowitz, D., Jackson, J (2006). Entrepreneurship and the evolution of income distributions in Poland and Russia. *Journal of Comparative Economics: V.34* (p. 338–356).
8. Bertaud, A., Renaud, B (1997). Socialist cities without land markets. *Journal of Urban Economics: V. 41* (p. 137-151).
9. Bosker, M., Brakman, S., Garretsen, H. and Schramm, M (2007). Looking for multiple equilibria when geography matters: German city growth and the WWII shock. *Journal of Urban Economics: V. 61* (p. 152–169).
10. Brakman, S., Garretsen, H. and Schramm, M (2004). The Strategic bombing of German Cities during World War II and Its Impact on City Growth. *Journal of Economic Geography: V. 4* (p. 201-208).
11. Bruhart, M., Mathys, N (2008). Sectoral agglomeration economies in a panel of European regions. *Regional Science and Urban Economics: V. 38* (p. 348 – 362).
12. Ciccone, A (2002). Agglomeration effects in Europe. *European Economic Review: V. 46* (p. 213 – 227).
13. Ciccone, A., Hall, R (1996). Productivity and the density of economic activity. *The American Economic Review: V. 86* (p. 54-70).
14. Clayton, E., Richardson, T (1989). Soviet control of city size. *Economic Development and Cultural Change*: *V. 38* (p. 155-165).
15. Combes, P.-P., Mayer, T. and Thisse, J.-F (2008). *Economic Geography. The Integration of Regions and Nations*. Princeton, NJ: Princeton University Press.
16. Combes, P.-P., Lafourcade, M., Thisse, J.-F. and Toutain, J.-C (2011). The rise and fall of spatial inequalities in France: A long-run perspective. *Exploration of Economic History: V. 48* (p. 243-271).
17. Davis, D., Weinstein, D (2002). Bones, Bombs, and Break Points: The Geography of Economic Activity. *The American Economic Review: V. 92* (p. 1269-1289).
18. Davis, D., Weinstein, D (2008). A Search for Multiple Equilibria in Urban Industrial Structure. *Journal of Regional Science: V. 48* (p. 29-65).
19. Fujita, M., Krugman, P. and Venables, A (1999). *The Spatial Economy: Cities, Regions, and International Trade*. Cambridge, MA: MIT Press.
20. Gaddy. C, Hill, F (2003). *The Siberian Curse. How Communist Planners Left Russia Out in the Cold*. Washington, DC: Brookings Institution Press.
21. Henderson, J (1974). The Size and Types of Cities. *American Economic Review: V. 64* (p. 640-656).
22. Markevich, A., Mikhailova, T (2013). Economic Geography of Russia. In Alexeev, M., Weber, S (ed.). *The Oxford Handbook of the Russian Economy*. Oxford: Oxford University Press.
23. Miguel, E., Roland, G (2001). The long-run impact of bombing Vietnam. *Journal of Development Economics: V. 96* (p. 1–15).
24. Nakamura, R (1985). Agglomeration economies in urban manufacturing industries: a case of Japanese cities. *Journal of Urban Economics: V. 17* (p. 108-124).
25. Paluzie, E., Pons, J., Tirado, D (2004). The geographical concentration of industry across Spanish regions. 1856-1995. *Review of Regional Research: V. 24* (p. 143-160).
26. Redding, S., Sturm, D., Wolf, N (2011). History and industry location: evidence from German airports. *The Review of Economics and Statistics: V. 93* (p. 814–831).
27. Roses, J., Martinez-Galarraga, J., Tirado, J (2010). The upswing of regional income inequality in Spain (1860-1930). *Exploration of Economic History: V. 47* (p. 244-257).
28. Shepotylo, O (2012). Cities in Transition. *Comparative Economic Studies*: *V. 54* (p. 661–688).

THE IMPACT OF BONDS MARKET ON INVESTMENT INTO PUBLIC-PRIVATE PARTNERSHIP PROJECTS

Natalia Davidson
Ural Federal University, Russia
natalya.davidson@gmail.com

Oleg Mariev
Ural Federal University, Russia
o.s.mariev@urfu.ru

Irina Yunusova
Ural Federal University, Russia
imyunusova@gmail.com

ABSTRACT

The aim of our research is to find out how the bonds market affects investments into public-private partnership (PPP). projects. Special attention is paid to the analysis of the effects arising from the corporate bonds market. Besides, we analyze the volume of private investment in PPP projects along with the volume of overall investment into such projects. We estimate an econometric model with fixed effects based on the World Bank data for 37 middle-income countries for the period 1997-2018. While there are studies devoted to the impact of the financial sector on PPP projects, our work contributes to the existing research by analyzing the role of government and corporate bonds market. The results show that the bonds market positively affects investments in PPP projects. The impact of corporate bonds turned out to be relatively larger. An increase in the bonds market proved to affect private investments into PPP projects relatively more than overall investments. The positive and significant impact of government bonds market on investments into PPP shows that in middle-income developing countries government financing of infrastructure projects is still substantial. GDP per capita was found to positively affect investments into PPP projects, while the impact of inflation and of revenues from exporting natural resources proved to be negative. The results can be useful for the development of economic policy recommendations concerning PPP projects and bond markets.

Keywords: *Bonds, Infrastructure, Middle-income countries, Public-private partnership.*

1. INTRODUCTION

Infrastructure facilitates comfortable living conditions and by doing so enhances countries' economic growth. However, resources of either the state or private sector are not sufficient for creating infrastructure and covering all risks associated with infrastructure projects. The mechanism of public-private partnership (PPP). allows implementing the projects that state alone cannot finance. PPPs help to fill the gap in infrastructure by helping the government to create the infrastructure demanded by society. In this paper, we study if increased access to financing for the private sector through bonds will stimulate investments into PPPs.

Thus, our research aims to find out how the development of the bonds market affects investments in PPP projects. We consider the following questions. How will the issue of the bonds affect the volume of investments into PPP projects, as well as the participation of the private sector in such investments? Are government or corporate bonds more important for PPP projects? Analysis of these questions will help understand if the policy aimed at developing bonds market will help to finance PPP projects.

The analysis is carried out based on the World Bank data for 37 middle-income countries for the period 1997-2018. In the existing literature the impact of the financial sector on investments into PPP projects was analyzed, but not specifically government or corporate bonds. The paper is structured in the following manner. In the next chapter, we analyze the theoretical and empirical literature. We consider the theories and models devoted to investments in PPP projects and analyze factors behind the development of PPP projects. Besides, we describe the PPP market, the kinds of projects existing in this market, and how PPP projects are implemented. In the third chapter, we analyze the development of PPP projects and the bonds market in middle-income countries. In this chapter we also discuss data, methods and the results of the econometric analysis devoted to the impact of bonds market on investments into PPP projects. Conclusion follows.

2. THEORIES BEHIND PPP AND THE EXPERIENCE OF THE WORLD COUNTRIES

2.1. The theoretical background of PPP

Infrastructure provides possibilities for economic growth in the country, and governments expect the population to demand a larger volume of high-quality infrastructure. The private sector does not willingly invest in infrastructure due to profitability reasons, long duration of projects, high investment risks, and high capital intensity of these projects (Grimsey, 2002, p. 109). Besides, natural monopolies are typical for infrastructure sectors because of high initial costs, substantial barriers to entry on these markets and a large volume of investments (Sharma, 2012, p. 155).

PPP projects were introduced as a solution to infrastructure problems. There is a number of definitions of PPP in the literature (Varnavskiy et al., 2010, p. 24; Hodge, 2007, p. 546; Bovis, 2015, p. 202; Vinogradov, 2014, p. 540; Bovaird, 2004, p. 205; Raisbeck, 2010, p. 350). The concept of PPP reflects a form of cooperation between the government and the private sector within a project based on mutual benefit (Tkatchenko, 2014, p. 27). In broad terms, PPP means that the private sector invests in public goods and services. As for specific conditions, risks and responsibilities are distributed between state and private sectors (De Bettignies, 2009, p. 361). The theoretical background of PPP can be traced back to the X-efficiency theory by Leibenstein (Leibenstein, 1966, pp. 392-415). According to this theory, PPP helps public organizations to function in the market environment and to become more competitive. At the beginning of the 1980ies Great Britain and other countries, mainly those with Anglo-Saxon traditions, implemented principles of private enterprises work into the public system (Bovaird, 2004, pp. 199-215). The reason for this was the necessity to reduce public expenditures and to overcome the deficit of managerial skills. During the following years, the government started considering PPP as an alternative way of financing and managing infrastructure projects.

However, it is not an easy task to stimulate the participation of the private sector in creating infrastructure, especially in middle-income countries (Greco, 2015, p. 140). Among the reasons are low creditworthiness of the countries, underdeveloped financial markets and high economic risks typical for infrastructure projects (Zhang, 2016, p. 563). Partner relations between public and private sectors are considered as one of the financial mechanisms allowing to accumulate the necessary amount of financial resources and to spend them on the sustainable development goals and poverty reduction in the developing countries. The issue of bonds is a type of direct financing through financial markets involving a large number of investors. For this purpose, firms' financial situation is thoroughly studied, and the relevant information can be disclosed to the general public (Ehrhardt, 2004, 123-140).

Financing through bonds meets the need in financial resources, particularly for the infrastructure projects, as it is suitable for the long term projects that demand a large volume of financial resources in such areas as construction, operation, and maintenance of infrastructure. All this leads to the assumption that participation of the private sector through the bonds market in financing infrastructure projects has the potential to facilitate the development of infrastructure in the middle-income countries.

2.2. Forms of PPP projects and their specific features

In the framework of the partnership between public and private sectors, the parties join their efforts and possibilities to develop, create, finance, manage and maintain infrastructure projects. Here are the most widespread forms of PPP.

Service contract. The private sector provides a range of services to the state authorities, and the public sector, in turn, retains the property rights for the facility. Duration, i.e. implementation period, of such projects, is usually from 1 to 3 years (Varnavskiy, 2010, p. 24).

Management contract. The private sector bears responsibility for the daily servicing of the facilities. In its turn, public authority pays for the services of the private sector following the key efficiency indicators. The duration of such type of PPP is around 2–5 years.

Rental contract. In the contracts of such type of public sector owns the assets, but responsibility for the operation of these assets is transferred to the private sector for the period defined by the contract between the parties. The private party manages the facility for a long period (often from 5 to 15 years). and is responsible for the repair and maintenance following the contract terms (Saifullin, 2012, p. 312).

Concession. State authorities pass full control over the project and all necessary investments to the private party for a long time, i.e. private party is fully responsible for the operation and maintenance of the infrastructure facility. The duration of such type of PPP is usually 20-30 years (Manko, 2013, p. 105).

Support of construction contract. The private party participates in the planning and construction of new infrastructure and bears some risks. Among the most common forms of such contract are: 'Design, Build, Operate', 'Build, Operate, Transfer', 'Build, Own, Operate'. These are some forms of support *for construction contracts*.

Overall, private participation in infrastructure projects is important for achieving two major goals: efficiency and sources of finance for the projects. Another point is that in case the PPP project fails, there is a question of who bears commercial risk – public or private sector. And a specific feature of the PPP projects in a variety of their implementation periods, from 1 to 30 years. PPP projects can have various forms. The choice of a form for a PPP project is associated with the allocation of risks and responsibility among partners, the goals of the project and its implementation period.

2.3. Empirical evidence on the determinants of PPP projects

Countries with a relatively more stable economy, with substantial internal resources and reserves, are more inclined to invest in infrastructure facilities. The macroeconomic situation in the country is reflected by such indicators as GDP, total public investment, public debt, consumer price index. Many researchers who study PPP projects consider political, institutional factors, country risks, the legal framework in a country (Sharma, 2012, pp. 149-166).

For example, Moszoro based on data for 130 developing countries for the period 1990-2010 finds that in parliamentary systems and the systems with the strong rule of law, an increase in political competition is associated with an increase in private participation in infrastructure projects (Moszoro, 2014, pp. 103-126). There are numerous studies devoted to determinants of PPP projects characterizing the state of the financial sector, such as lending to the private sector, level of fiscal freedom, capitalization of the financial market (Liu, Sun, 2016, pp. 50-54).

Asante, Arellano, and Bover analyze determinants of investments into PPP projects in Ghana during the years 1970-1992 and find that macroeconomic instability is a serious obstacle for private investment. Besides, the results show that political instability, particularly, military take-overs, negatively affect private sector participation in infrastructure projects. In its turn, substantial growth of lending to the private sector demonstrates a positive and statistically significant impact on private investment (Asante, Arellano, Bover, 2000, pp. 108).

Zerfu analyzes the situation in Ethiopia based on data for 1950-2003 and finds that positive factors for private investments are strengthening of demand, trade liberalization, and government investments. Political instability has an expected negative impact (Zerfu, 2001, pp. 29-31). Ouattara finds that in Senegal in 1970-2000 government investments, GDP per capita and foreign aid positively influenced private investments (Ouattara, 2004, pp. 36-43). Hammami and Etienne study the determinants of PPP in the lower-middle-income countries and find that PPP projects are more widespread in countries with heavier public debt. Corruption level is found to negatively affect investment into PPP projects, while the previous experience of the countries in PPP projects is favorable for the current projects (Hammami, Etienne, 2006, pp. 589–611).

Thus, researchers find that among the factors important for investments into PPP projects are economic growth, macroeconomic stability, country risks, development of the financial sector and institutions (Ba, Gasmi, Noumba, 2010, p. 113; Tewodaj, 2018, pp. 1-29; Kasri, Wibowo 2015, pp. 1-34; Deng, 2016, pp. 63-76). Investments into PPP tend to be more common in the countries where total demand is large enough so that the projects are profitable. Macroeconomic stability, especially low inflation, is important for PPP projects due to the long duration of construction and operation associated with them. As for institutional factors, a lot of PPP projects are carried out in the countries with lower corruption and the effective rule of law; previous experience in PPP is also useful.

Overall, the development of the financial sector is a decisive determinant of investment in PPP projects. There is controversial evidence on the impact of lending to the private sector on the development of PPP projects. Our objective is to find out if better availability of financing for the private sector will stimulate investment into PPP projects.

3. DETERMINANTS OF PPP PROJECTS IN THE MIDDLE-INCOME COUNTRIES

3.1. Determinants of PPP projects in the world countries: statistical analysis

Since the end of the 20th century, almost all the developing countries have addressed the issue of cooperation between public and private sectors in infrastructure projects. We analyze the situation in the world countries based on the World Bank data on private sector participation in infrastructure for 37 middle-income countries (World Bank classification). for the period from 1997 to 2018. In this database, projects are classified along with four sectors of the economy: water supply, transport, telecommunications and power industry, and across eight regions: East

Asia and Pacific region, Europe and Central Asia, Latin America and Carribean countries, Middle East and Northern Africa, South Asia, Sub-Saharan Africa.

Investment in infrastructure projects with private sector participation in middle-income countries accounted for $110 bln in 1997 and decreased to $21 bln in 2002. A large volume of investment at the end of 1997 occurred because developing countries started to open the infrastructure sector for foreign participation. This tendency proved not to be sustainable, as privatization was largely over, and further investment that would have been useful for extending and modernizing infrastructure did not come. In 2004 the volume of investment increased again. In 2008-2009 a slight downturn happened in all sectors, apart from a water supply, that could have been caused by the world financial crisis. However, by 2012 the market recovered. The next downturn occurred in 2016, probably due to a decrease in foreign direct investment into developing countries by 14% caused by slow economic growth and substantial political risks. In terms of sectors, the majority of investments in PPP projects were made in the power sector. The number of PPP projects tends to be distributed relatively more evenly than the volume of investments among the world countries. For example, Europe and Central Asia account for 17% of investments, but only 12% of projects. Since 1990 almost all developing countries have been carrying out private investments into infrastructure. However, as it could have been being expected, investors tend to prefer relatively larger, richer and rapidly growing markets. During the period from 1997 to 2018 such countries accounted for 87.77% of the overall volume of investment intro PPP in developing countries. Since 1997 the largest number of projects have been implemented in the power sector, and this sector received the largest volume of investment. Latin American countries are more inclined to privatize state-owned assets, while Asian countries mainly use new enterprises to generate power for their growing needs. The most popular form of PPP is concessions and support of construction contracts. During the recent ten years' dynamics of the corporate bonds market demonstrates a sharp increase, and by the year 2018 exceeds the government bonds market in terms of volume. Governments introduce measures aimed at increasing the use of corporate bonds, as this instrument is a viable source of long term financing for the companies.

3.2. Data and methods for estimating determinants of investments into PPP projects

In this research, we use the World Bank data on the PPP projects for the period from 1997 to 2018, where information on such projects is registered based on open data sources. Thirty-seven countries are considered, all of them belonging to the middle-income countries according to the World Bank classification. Russia is among the countries included in this sample. In Table 1 variables for econometric analysis are presented.

Table following on the next Page

Table 1: Variables for econometric analysis

Variable	Explanation
ppp	The volume of investment into PPP projects, in relation to GDP
pi	The volume of private investment into PPP projects, in relation to GDP
bonds	The volume of the issued bonds, in relation to GDP
gbonds	The volume of the issued government bonds, in relation to GDP
cbonds	The volume of the issued corporate bonds, in relation to GDP
credit	The volume of loans received by no-financial sector, in relation to GDP
stmarket	The volume of financial market capitalization, in relation to GDP
fuelexp	Revenue from exporting fuel, in relation to GDP
inflation	Consumer price index (%)
lngdp	GDP per capita
govdebt	Public debt, in relation to GDP
popul	Population, in relation to GDP

As for the correlation between the variables, there is a rather high correlation between the variable *public debt* and *the volume of the issued bonds*, especially *the volume of the issued government bonds*. Besides, there is a substantially high correlation between the variables *population* and *GDP*. Therefore, we do not include the variables of *public debt* and *population* into the model.

In the econometric model, dependent variables are *the volume of investment into PPP projects, in relation to GDP* and *the volume of private investment into PPP projects, in relation to GDP* interchangeably. We estimate 4 specifications of the regression in order to find out specific features of the determinants under consideration for investments into the total volume of PPP projects and private sector investments into PPP projects (formulas (1). and (2)).

$$PPP\ (PI) = \beta_0 + \beta_1 bonds + \beta_2 credit + \beta_3 stmarket + \beta_4 fuelexp + \beta_5 inflation + \beta_6 gdp + \beta_7 popul + \beta_8 govdebt + \varepsilon \quad (1).$$

$$PPP\ (PI) = \beta_0 + \beta_1 gbonds + \beta_2 cbonds + \beta_3 credit + \beta_4 stmarket + \beta_5 fuelexp + \beta_6 inflation + \beta_7 gdp + \beta_8 popul + \beta_9 govdebt + \varepsilon \quad (2).$$

We suggest the following hypotheses. H1: Increase in the bonds market leads to an increase in investments into PPP projects. H2: Increase in the bonds market affects private investments in the PPP projects relatively more than overall investments. H3: Increase in corporate bonds affects investments into PPP projects relatively more than the increase in government bonds.

3.3. The impact of bonds market on investment into PPP projects: estimation results

To estimate the impact of bonds on investment into PPP projects we used panel data and a fixed-effects model. As PPP projects involve a complex agreement between two parties, previous experience in such activities is favorable for the current projects. Therefore, we estimated a model with one lag of variable *the volume of investment into PPP projects*. The results of the estimation are presented in Table 2 below.

Table 2: Estimation of the econometric model

	The volume of investment into PPP projects, in relation to GDP		The volume of private investment into PPP projects, in relation to GDP	
L.PPP / L.PI	0.095039*** (0.03)	0.138918*** (0.04)	0.08526*** (0.02)	0.132689*** (0.04)
bonds	0.0776338** (0.03)		0.0784429** (0.03)	
gbonds		0.0541746* (0.03)		0.0531226* (0.03)
cbonds		0.0874483*** (0.03)		0.0900519*** (0.03)
credit	-0.3462234** (0.15)	-0.3181388** (0.15)	-0.3532003** (0.15)	-0.3244319** (0.15)
stmarket	-0.00000297 (0.00)	-0.00000268 (0.00)	-0.00000289 (0.00)	-0.00000259 (0.00)
fuelexp	-5.021686*** (1.12)	-4.54982*** (1.13)	-4.932981*** (1.12)	-4.455778*** (1.13)
inflation	-6.672935*** (2.36)	-6.469604*** (2.35)	-6.779781*** (2.35)	-6.562414*** (2.34)
lngdp	1.549532*** (0.41)	1.24241*** (0.43)	1.510923*** (0.41)	1.201831*** (0.43)
cons	-25.65457*** (4.8)	-21.04535*** (4.98)	-26.04322*** (4.79)	-20.76685*** (5.34)
Adj-R2	0.248	0.252	0.227	0.230

Notes: Standard deviation is in parenthesis. * $p < 0.1$, ** $p < 0,05$, *** $p < 0.01$

An important result is a positive and significant impact of bonds on investments into PPP projects, as well as on participation of the private sector in PPP projects. 1% increase in the volume of bonds leads to 7.76% growth of investment into PPP projects and to 7.84% increase in private investments into PPP projects. With a 1% increase in the volume of government bonds investments into PPP projects increase by 5.41%, and with a 1% increase in the volume of corporate bonds investments into PPP projects increase by 8.74%. The positive and significant impact of government bonds market on investments into PPP shows that in middle-income developing countries government financing of infrastructure projects is still substantial. Investment in PPP projects depends upon loans for the non-financial sector. This indicator reflects the level of financial market development, and the results demonstrate the negative impact of loans on investment into PPP projects. Stricter regulation of the capital market after the global financial crisis has probably made banks to forego lending to PPP projects. Besides, the PPP market tends to involve just a limited number of participants, such as state-owned banks and companies. The level of GDP per capita positively affects investments in PPP projects.

Large volumes of market and purchasing power of consumers create favorable conditions for the investments.

The results show a negative impact of inflation on investments into PPP projects. Infrastructure projects, as well as automobile roads, airports, and bridges, have a long service life. Therefore, high inflation implies an additional risk for the investors, and macroeconomic stability is especially important for them. The results confirm that countries that have such sources of revenue as fuel and other natural resources are less likely to participate in PPP projects.

4. CONCLUSION

Analysis of the existing theories and the situation in the world countries shows that public and private sectors are potentially interested in PPP projects. However, the interests of the public and private sectors do not always coincide. The public sector is interested in creating infrastructure with minimum costs. The private sector in its turn is aimed at maximizing its profit from the implementation of the infrastructure projects. Besides, from the existing experience of the world countries we see that there are various forms of PPP projects. A choice of a form depends on the allocation of risks and responsibility between the partners, as well as on the objectives and duration of a project. The results of the statistical analysis show that starting from 1990 almost all developing countries have been carrying out private investment into infrastructure. At the same time, as it could be expected, investors tend to prefer relatively large, rich and rapidly growing markets. The results of the econometric estimation confirm our hypotheses and are in line with the existing research. Results show that the bonds market positively affects investment in PPP projects. Corporate bonds have a relatively larger positive impact. An increase in the bonds market proved to affect private investments into PPP projects relatively more than overall investments. The volume of loans for the private sector, fuel export revenues and inflation negatively affect investment into PPP projects. The impact of GDP per capita is positive. The conclusion about the impact of corporate bonds on investment in PPP projects is an argument for the government in favor of the development of the corporate bonds market. In its turn, the positive and significant impact of government bonds on investment in PPP projects is evidence that middle-income developing countries are still substantially dependent on government funding for the infrastructure projects. The results can be useful for the development of economic policy recommendations concerning PPP projects and the bonds market.

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LITERATURE:

1. Asante, Y., Arellano, M. and Bover, O (2000). Determinants of Private Investment Behaviour in Ghana, *African Economic Research Consortium Research Paper,* No 231, p.108
2. Ba L., Gasmi, F. and Noumba, P (2010). Is the Level of Financial Sector Development a Key Determinant of Private Investment in the Power Sector? *World Bank Policy Research Working Paper WPS5373,* No 2152., p.113
3. Bovaird, T (2004). Public-private partnerships: From contested concepts to prevalent practice, *International Review of Administrative Sciences,* No 70., pp. 199-215
4. Bovis, C. H (2015). Risk in public-private partnerships and critical infrastructure, *European Journal of Risk Regulation: EJRR,* No 6., pp. 200-207

5. De Bettignies, JE. and Ross, TW (2009). Public-private partnerships and the privatization of financing: An incomplete contracts approach, *International Journal of Industrial Organization*, No 27., pp. 358–368
6. Deng, Z. Q., Song, S. F. and Chen, Y. J (2016). Private participation in infrastructure project and its impact on the project cost, *China Economic Review*, No 39., pp. 63-76
7. Ehrhardt, D. and Irwin, T (2004). Avoiding Customer and Taxpayer Bailouts in Private Infrastructure Projects Policy toward Leverage, Risk Allocation, and Bankruptcy, *Policy Research Working Paper*, No 3274., pp. 123−140
8. Greco, L (2015). Imperfect bundling in public–private partnerships, *Journal of Public Economic Theory*, No 17., pp. 136–146
9. Grimsey, D. and Lewis, M (2002). Evaluating the Risks for Public Private Partnerships for Infrastructure Projects, *International Journal of Project Management*, No 20., pp. 107-118
10. Hammami, M. and Etienne, Y (2006). Determinants of Public–Private Partnerships in Infrastructure, *IMF Working Paper W/06/99*, No 83., pp. 589–611
11. Hodge, G. A. and Greve, C (2007). Public–private partnerships: an international performance review, *Public administration review*, No 67., pp. 545-558
12. Kasri, R. and Wibowo, F (2015). Determinants of Public–Private Partnerships in Infrastructure Provision: Evidence from Muslim Developing Countries, *Journal of Economic Cooperation and Development*, No 36., pp. 1-34
13. Leibenstein, H (1966). Allocative Efficiency vs. 'X-Efficiency', *American Economic Review*, No 56., pp. 392−415
14. Liu, H. and Sun, H (2016). Selection of social capital for PPP projects based on fuzzy network analysis, *Financing account*, No 32., pp. 50-54.
15. Man'ko, N. N (2013). Gosudarstvenno-chastnoe partnerstvo: istochniki sredstv i metody finansirovaniya proyektov **[**Public-private partnership: sources and mtehods of financing], *Problemy teorii i praktiki upravleniya*, No 1 (pp. 102-110.). (in Rus.)
16. Moszoro, M (2014). Efficient Public–Private Capital Structures, *Annals of Public and Cooperative*, No 34., pp. 103-126
17. Ouattara, B (2012). Modelling the Long Run Determinants of Private Investment in Senegal, *Journal of Economic Cooperation and Development*, No 24., pp. 36-43
18. Raisbeck, P., Duffield, C. and Xu, M (2010). Comparative performance of PPPs and traditional procurement in Australia, *Construction Management and Economics*, No 28., pp. 345-359
19. Saifullin, R. I (2012). Kontseptsiya gosudarstvenno-tchastnogo partnerstva v sovremennoy ekonomitcheskoy sisteme (metodologitcheskiy podkhod). [The concept of public-private partnership in the contemporary economic system (methodological approach)], *Vektor nauki Tolyattinskogo gosudarstvennogo universiteta*, Vol 4, No 22 (pp. 311-314.). (in Rus.)
20. Sharma, C (2012). Determinants of PPP in Infrastructure in Developing Economies, *Transforming Government: People, Process and Policy*, No 6., pp. 149-166
21. Tewodaj, M (2018). Determinants of Private Participation in Infrastructure in Low and Middle- Income Countries (LMICs), *Journal of Economic Cooperation and Development*, No 14., pp. 1-29
22. Tkatchenko, I. N. and Evseeva, M. V (2014). Steykkholderskaya model' korporativnogo upravleniya v proektah gosudarstvenno-tchastnogo partnerstva [Stakeholder model of corporate governance in the public-private partnership projects], *Upravlentcheskiye nauki*. Vol 1, No 10 (pp. 26-33.). (in Rus.)
23. Varnavskiy, V.G., Klimenko, A. V. and Korolev, V. A (2010). Gosudarstvenno-tchastnoe partnerstvo: teoriya i praktika [Public-private partnership: theory and practice], Publishing house of State University Higher School of Economics, Moscow., pp. 23-25.(in Rus.)

24. Vinogradov, D., Shadrina, E. and Kokareva, L (2014). Public Procurement Mechanisms for Public- Private Partnerships, *Journal of Public Procurement*, No 14.,pp. 538-566
25. Zerfu, D (2001). Macroeconomic Determinants of Private Investment in Ethiopia, *A Paper Prepared For the Conference on Development Policy in Africa: Public and Private Perspectives*, Oxford University: Centre for the study of African Economies (pp. 29-31.)
26. Zhang S., Chan, A., Feng, Y. and Duan, H (2016). Critical review on PPP Research–A search from the Chinese and International Journals, *International Journal of Project Management*, No 34. pp. 597-612

INTERNAL MARKET CONCENTRATION OF COMPANY TOWNS

Irina Antonova
Tomsk Polytechnic University, Russia
antonovais@tpu.ru

Evgeny Pchelintsev
Tomsk State University
evgen-pch@yandex.ru

Ekaterina Maleeva
Tomsk Polytechnic University, Russia
eam21@tpu.ru

ABSTRACT

Company towns are essentially focused on external markets. It becomes the cause of the unsustainable development of these settlements in the crisis conditions. In this paper we evaluate the market concentration of company towns and define those settlements that can shift their focus on the internal market due to the unconcentrated market share of a core industry - Novokuznetsk, Krasnoturyinsk, Miass, Karpinsk, Zlatoust and Trehgorny. The market concentration is estimated on the basis of two indicators: the share of revenues of a core industry in the total revenue of the enterprises in a company town and the Herfindahl-Hirschman index on the revenue of enterprises. The result of the evaluation makes it possible to identify company towns with a relatively diversified market, which allows a core industry to be more oriented and develop the internal of goods in comparison with the company towns that have internal market more significantly concentrated. For company towns with a high concentration of a core industry, the development of the external marketing market will remain the dominant task of sustainable development. This result contributes to the classification of company towns by possible opportunities for development, including the internal market refocusing.

Keywords: *Company town, Concentration ratio, Herfindahl-Hirschman index, Internal market, Market concentration.*

1. INTRODUCTION

Competition is a market development mechanism allowing consumers to receive additional benefits: lower prices, improved product quality and diversity, improved services, and the possibility of acquiring innovative products. However, the competition mechanism is confined by the monopolized market. The level of concentration in the industry becomes higher with the emergence of new players with a strong, dominant position. It leads to market monopolization and, as a result, decrease in the quality of functioning of the entire industry (Owen, Sun, Zheng, 2017; Song, Wang, 2018). However, competition and monopoly are very rare in practice as a pure form, which is facilitated, on the one hand, by antitrust legislation, on the other hand, by the natural barriers - the restricted number of producers and consumers. Therefore, monopoly and competition remain “marginal” states of the market rather than a common state of affairs. It allowed scientists to focus on oligopoly and monopolistic competition (d’Aspremont, C., & Ferreira, 2016; Parenti, Ushchev, Thisse, 2017). Fujita states that the market process based on price interactions within the monopolistic competition generates itself spatial agglomeration (Fujita, 1988; Liu, Fujita, 1991). Agglomerations have various factors to form including geographical location, availability of natural resources, the presence of agglomeration potential, the development of human capital, the rules and the regulations of society called institutions (Krugman, 1992; Fujita, 1988; North, 1990).

Centrifugal and centripetal forces of agglomerations form the balance without which the territory has spatial disparities. Unevenness starts at certain points where a new quality of activity emerges and access to new types of resources is provided. All other participants line up relative to these points (Schedrovitsky, 2004). The monopoly evokes disparities of economic activities within market shares and market concentration indexes. High concentration in the industry assumes that a market is divided into several manufacturers with high market share. A monopoly advantage may be possessed by a company leading in the industry or a company organizing the market. The emergence of a major player may be the result of the merger of several companies united by a common strategy and goal, for example, monopolizing the market, reducing marginal costs, expanding the product line. The monopoly reduces the diversity of economic activity. Considering export operations only highly developed countries growth by economic specialization, less-developed countries are likely to grow through diversification (Imbs, Wacziarg, 2003; Cadot, Carrère, Strauss-Kahn, 2011). The market economy focused on economic efficiency leads to its divergence by social and economic development. Meanwhile, the main incentive for State regulation in the development of regions is to reduce spatial disparities in their development searching for some balance between convergence and economic growth (Kozlovskaya, Akerman, 2010). The key indicators of all these balances are the concentration indexes. Herfindahl-Hirschman Index (HHI). and the share of a company (CR). are the most widespread through them. HHI can be used in a variety of contexts. The degree of repetition of individuals' choices of daily activity-travel-location assessment by HHI (Susilo, Axhausen, 2014). Sanders (2019). discusses the economic effects and consequent regulatory practices for M&A and joint venture activity in the USA. Li et al (2018). and Liviano, Arauzo-Carod (2014). estimate spatial dependence using the HHI index. The HHI index reflects the absolute level of concentration in the industry and provides information on the effectiveness of competition mechanisms. An important feature of the HHI is that it gives more weight to the shares of dominant market participants. Typically, when calculating the HHI index, they are limited to use the information about the fifty-first market participants. This is due to the fact that firms with a small market share do not affect the absolute level of concentration in the industry. In practice, together with the HHI index, the level of concentration change in the industry is also calculated as the ratio of the HHI values before and after this change. US Horizontal Merger Guidelines of 1982 has an important indicator to implement the antitrust legislation: when $HHI \leq 1000$ mergers and acquisitions are allowed without control; the level of $1000 < HHI < 1800$ requires the verification of the Department of Justice; in case of $1800 < HHI$ and $\Delta HHI \leq 50$ mergers and acquisitions are allowed, otherwise, if $\Delta HHI > 100$ the Department of Justice requires checking procedures. The analysis of recent researches shows that these criteria are still relevant (Swift, Sanchez, 2017). Nevertheless, the later issues of the guidelines (1997, 2010). revise these criteria reducing the requirements from 1000 to 1500, from 1800 to 2500. The first levels of HHI (1000 and 1800). translate respectively into four-firm concentration levels of 50% and 70% (White, 1987). This empirical transformation enables to evaluate both the share of considered companies and their concentration within the other existing business. Considering HHI and four-company share (CR_4). it is generalized the following types of markets:

- highly concentrated ($70\% < CR_4 < 100\%$; $1800 < HHI < 10000$);
- moderately concentrated ($45\% < CR_4 < 70\%$; $1000 < HHI < 1800$);
- unconcentrated markets ($CR_4 < 45\%$; $HHI < 1000$).

Company towns are the settlements formed around one company or serve one industry. Generally, the town-forming enterprise is focused on the external market. Nevertheless, the economic downturn within a specific industry or technological shift in it makes the company vulnerable to the economic environment. At such a difficult time a town-forming enterprise has nothing left but considers the internal market potential. We offer to evaluate the concentration

level of core industries within company towns tightly placed in three regions of Russia: Kemerovo, Sverdlovsk and Chelyabinsk regions. The micro-level data gathered and aggregated by towns enable testify HHI and CR methods for highly concentrated economic activities. Thus, the aim of the paper is to assess the potential of infernal markets of company towns based on monopoly restriction techniques in the deteriorating external environment.

2 .METHODOLOGY

We consider 52 company towns' data on core industry shares (CR or PSI). and HHI by revenues of companies during 2013-2017. All company towns are located within three regions: Kemerovo (19 from 24 company towns), Sverdlovsk (16 from 17 company towns). and Chelyabinsk (14 from 16 company towns). regions. We removed from the sample the towns with zero core industry due to it is presented by the branch of the outside registered company with no data on it. We use cluster analysis to differentiate these company towns and testify the antitrust levels to identify the market types. Cluster analysis was carried out by the *k*-means method.

The Herfindahl-Hirschman index is calculated as the sum of the squares of the sales shares of each company in the industry:

$$HHI = S_1^2 + S_2^2 + ... + S_n^2, \quad (1)$$

where S_i – the share of the sales revenues of the enterprise *i* in total sales revenues of the companies in the town;

n – the number of companies.

The concentration ratio was defined as follows:

$$CR = \sum_{i=1}^{n} Y_i, \quad (2)$$

where Y_i – the share of the sales revenues of core industry enterprises in total sales revenues of the town; n – the number of companies.

3. RESULTS

We consider initial cluster centers sorting by distances and taking observations at constant intervals using the STATISTICA app. We succeed in differentiating 6 clusters by two variables: CR (PSI). and HHI during 2013-2017. Fig. 1 shows the standardized levels of considered data.

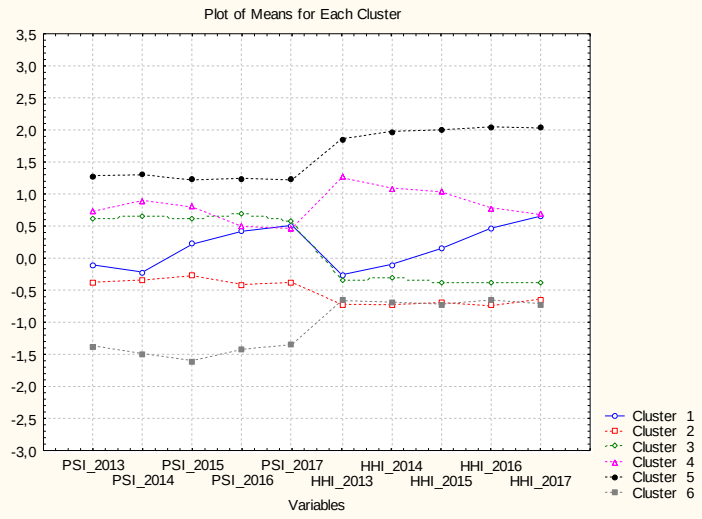

Figure 1: The plot of the means for cluster analysis (Calculated by the authors on the basis of the financial statements data of enterprises on the information and analytical system SPARK)

The most significant differences are seen between clusters 5 and 6. The 5th cluster relates to the company towns with the highest concentration of core industry, whereas 6th conversely the lowest. The most concentrated internal market belongs to Yashkino (Kemerovo region, food industry), Krasnouralsk (Sverdlovsk region, copper smelting industry), Severouralsk (Sverdlovsk region, bauxite mining industry), Karabash (Chelyabinsk region, blister copper production), Sim (Chelyabinsk region, machine building). These company towns are depicted in fig. 2 along with the blue line. The 6th cluster consists of Anzhero-Sudzhensk (Kemerovo region, coal mining), Krasnobrodsky (Kemerovo region, coal mining), Mariinsk (Kemerovo region, beverage production), Yurga (Kemerovo region, machine-building and metallurgy), Karpinsk (Sverdlovsk region, machine building), Verhny Ufaley (Chelyabinsk region, machine building), Zlatoust (Chelyabinsk region, metallurgy), Ozersk (Chelyabinsk region), Trehgorny (Chelyabinsk region), Nyazepetrovsk (Chelyabinsk region). These towns are also shown in the fig. 4 along with the blue line. Taking the antitrust legislation into account and CR levels for internal market specification we came to the conclusion that all of the considered company towns are distributed by two groups: 5th cluster – highly concentrated market, 6th – unconcentrated market (fig. 2-4). The obvious result shows the fig. 2 – most company towns from cluster 3 and 4 have a highly concentrated internal market as well as the 5th ones. The 1st and the 2nd clusters become less obvious. Prokopievsk (Kemerovo region, coal mining). has a moderate concentration of the internal market (fig. 3), accompanied by Miass (Chelyabinsk region, machine building), Novokuznetsk (Kemerovo region, metallurgy). and Krasnoturyinsk (Sverdlovsk region, metallurgy). – fig. 4.

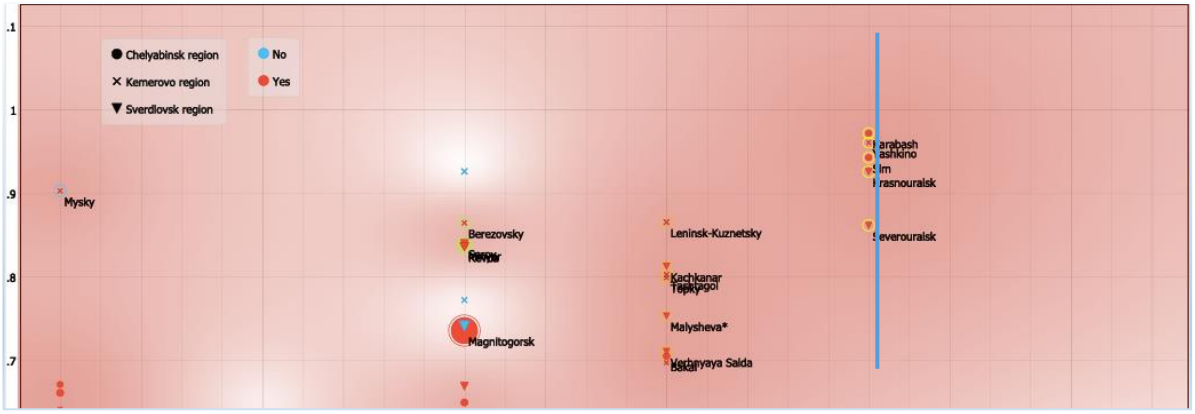

Figure 2: Cluster analysis (6 clusters). for highly concentrated internal markets of company towns (vertical axes – CR, horizontal axes – cluster number depicted at fig. 4). analysis (Calculated by the authors based on the financial statements data of enterprises on the information and analytical system SPARK)

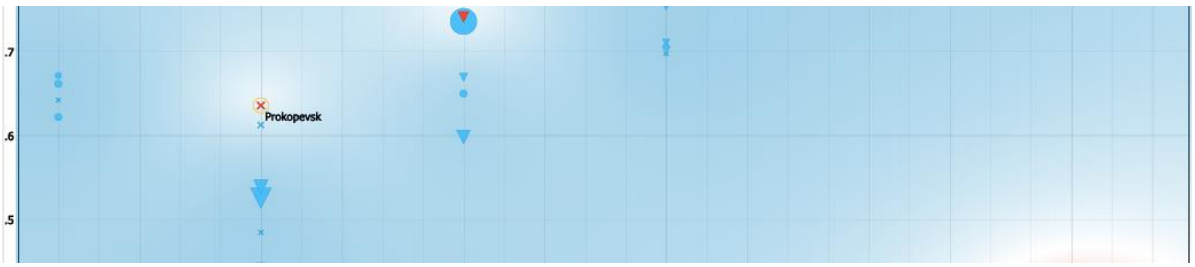

Figure 3: Cluster analysis (6 clusters). for moderately concentrated internal markets of company towns (vertical axes – CR, horizontal axes – cluster number depicted at fig. 4) analysis (Calculated by the authors based on the financial statements data of enterprises on the information and analytical system SPARK)

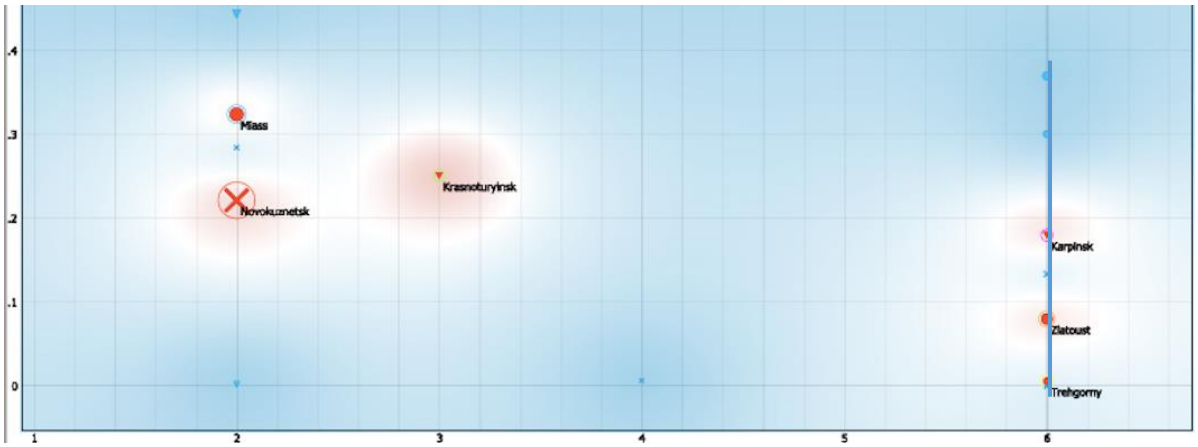

Figure 4: Cluster analysis (6 clusters). for unconcentrated internal markets of company towns (vertical axes – CR, horizontal axes – cluster number). analysis (Calculated by the authors based on the financial statements data of enterprises on the information and analytical system SPARK)

Thus, we can differentiate two types of internal market concentration for clusters 5 and 6. The 5th cluster is the most concentrated. In the crisis conditions these company towns will suffer the most because the internal market is not enough to shift the focus into it. At the same time the 6th cluster can try to refocus its production into the internal market leading the appropriate strategy. At the same time, only some of the company towns have a low concentration of the market that allows them to refocus the town-forming enterprises into the internal market.

5. CONCLUSION

This article results in a deep analysis of the market concentration of company towns using concentration indexes and cluster analysis and contributes to the classification of company towns by the possibility of development, including the internal market refocusing. The conducted research defined the basic tendencies in the internal market of company towns concentration in 2013-2017. In this paper authors used the traditional approach for diversity evaluation comprises concentration ration in different variations, including the Herfindahl-Hirschman index on the revenue of enterprises (HHI), the share of revenues of a core industry in the total revenue of the enterprises in company town (CR(PSI)). By differentiating 6 clusters by two variables: CR (PSI). and HHI, we identified company towns with a relatively diversified market. The result of the research includes the evaluation of the market concentration of company towns and the definition of those settlements that can shift their focus toward the internal market due to the unconcentrated market share of the core industry. The analysis showed that company towns essentially focus on external markets. Nevertheless, in the crisis conditions it takes to shift the strategic priorities including refocusing into the internal market. Implementing the methods of cluster analysis in complex with market concentration evaluation, we define that only a few company towns can do it – Novokuznetsk, Krasnoturyinsk, Miass, Karpinsk, Zlatoust and Trehgorny. The authors come to the conclusion that the other towns have lower possibilities to focus on the internal market for more sustainable development.

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LITERATURE:

1. Cadot, O., Carrère, C., & Strauss-Kahn, V (2011). Export diversification: What's behind the hump?. *Review of Economics and Statistics*, 93(2), 590-605

2. d'Aspremont, C., & Ferreira, R. D. S (2016). Oligopolistic vs. monopolistic competition: Do intersectoral effects matter? *Economic Theory*, *62*(1-2), 299-324
3. Fujita, M (1988). A monopolistic competition model of spatial agglomeration: Differentiated product approach. *Regional science and urban economics*, *18*(1), 87-124
4. Fujita, M., & Thisse, J. F (1996). Economics of agglomeration. *Journal of the Japanese and international economies*, *10*(4), 339-378
5. Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings – 2004/C 31/03. *Official Journal of the European Union (February 2004)*, 5-18
6. Imbs, J., Wacziarg, R (2003). Stages of diversification. *American Economic Review*, 63-86
7. Kozlovskaya O.V., Akerman E.N (2010). *Osobennosti sinergeticheskogo podkhoda v upravlenii prostranstvennym razvitiyem regiona [Features of a synergistic approach to managing the spatial development of a region: monograph]*. - Tomsk: Publishing house of Tomsk Polytechnic University.
8. Krugman, P (1992). *A dynamic spatial model* (No. w4219). National Bureau of Economic Research.
9. Li W., Sun B., Zhao J., Zhang T (2018). Economic performance of spatial structure in Chinese prefecture regions: Evidence from night-time satellite imagery. *Habitat International*. Vol. 76, 29-39
10. Liu, H. L., & Fujita, M (1991). A monopolistic competition model of spatial agglomeration with variable density. *The Annals of Regional Science*, *25*(2), 81-99
11. Liviano D., Arauzo-Carod J-M (2014). Industrial Location and Spatial Dependence: An Empirical Application. *Regional Studies*. Vol. 48, 727-743
12. Sanders, S (2019). Firm mergers and acquisitions (M&As). *Managerial Finance*. Vol. 45 No. 10/11, 1349-1353
13. North, D (1990). Institutions and their consequences for economic performance. *The limits of rationality*, 383-401
14. Owen, B. M., Sun, S., & Zheng, W (2017). China's competition policy reforms: the Anti-monopoly Law and beyond. *Law and the Market Economy in China* (pp. 121-155). Routledge.
15. Parenti, M., Ushchev, P., & Thisse, J. F (2017). Toward a theory of monopolistic competition. *Journal of Economic Theory*, *167*, 86-115
16. Shedrovitsky, P (2004). Promyshlennoj politiki ne budet bez politiki regional'noj [There will be no fictional politics without regional politics]. *Expert-Ural*, (27), p. 154
17. Song, M., & Wang, S (2018). Market competition, green technology progress and comparative advantages in China. *Management Decision*, *56*(1),188-203
18. Susilo, Y. O., & Axhausen, K. W (2014). Repetitions in individual daily activity–travel–location patterns: a study using the Herfindahl–Hirschman Index. *Transportation*, *41*(5), 995-1011
19. Swift, K., & Sanchez, E (2017). The US carpet industry: history, industry dynamics, and a simple model for short-term forecasting. *Business Economics*, *52*(1), 57-67
20. White, L. J (1987). Antitrust and merger policy: a review and critique. *Journal of Economic Perspectives*, *1*(2), 13-22

FEATURES OF SANITARY AND EPIDEMIOLOGICAL POPULATION WELFARE IN MONOPROFILE CITIES WITHIN THE CONDITIONS OFTECHNOGENIC ENVIRONMENT

Ekaterina Zinovyeva
Nosov Magnitogorsk State Technical University, Russian Federation
ekaterina_7707@mail.ru

Natalia Balynskaya
Nosov Magnitogorsk State Technical University, Russian Federation
balynskaya@list.ru

Svetlana Koptyakova
Nosov Magnitogorsk State Technical University, Russian Federation
svetlana.cop@yandex.ru

ABSTRACT

The article is devoted to the peculiarities of the sanitary-epidemiological welfare of the population in Magnitogorsk for 2015 - 2017 in a technogenic environment. The article analyzes the influence of the technogenic environment conditions on the socio-economic development of Magnitogorsk. The relevance of the study is due to the importance of the state of health and the quality of life of the population, which are subject to the constant influence of such factors as the negative impact of the environment, the work of large enterprises, poor quality of food and natural resources, and labor protection problems. The article presents the assessment results of the main directions characterizing the sanitary and epidemiological welfare of the population in Magnitogorsk in the conditions of an industrial environment - the state of the human environment and its impact on public health; level of occupational morbidity.The study results of the occupational morbidity level suggest that at the industrial enterprises of Magnitogorsk the number of workers employed in work with harmful and dangerous working conditions has increased and amounts to 42.95%. In 2017, the proportion of jobs of industrial enterprises that do not meet sanitary and hygienic requirements increased by a physical factor - noise, the proportion of jobs that did not meet sanitary and hygienic standards for vibration and microclimate, illumination decreased, and not a single one was detected by EMI deviations. Chronic occupational pathology in 2017 most often arose as a result of technological processes imperfection (36.65% of cases), the imperfection of jobs (30.0%), constructive shortcomings of labor means (16.65%). and sanitary mechanisms (6.65%), professional contact with an infectious agent (10.0%). The research results are of practical importance, as they can be used to improve existing programs at the federal and regional levels in order to improve the environmental situation in the anthropogenic environment.

Keywords: *Atmospheric air, Habitat, Public health, Occupational morbidity, Sanitary and epidemiological welfare, Single-industry town.*

1. INTRODUCTION

To date, there is a threat to the normal functioning of the socio-economic sphere of single-industry cities in the Russian Federation. The need to study this problem is evidenced by the fact that in Russia about 40% of the cities where about a quarter of the country's urban population lives can be classified as single-industry, and production in single-industry towns provides a quarter of Russia's gross domestic product. In addition to the single-industry towns themselves, in the Russian Federation there are urban-type single-industry towns, in which about 8 million people are still living.

The globalization intensification, especially in the economic sphere, leads to the fact that the city-forming enterprises of Russian single-industry towns that have worked effectively in a planned economy become uncompetitive in the world market, including due to the lack of the necessary technical base and insufficient qualification of employees, which, in turn, leads to difficulties arising in the functioning of economic, social and other spheres in single-industry towns. The limited functioning scope of a single-industry town is its specific feature - a city exists on the basis of one or related industries, a small number or a single enterprise, which is a city-forming one. A single-industry town is characterized by a special type of economic structure in which the city's economy depends on the activities of the city-forming enterprise. The formation and development of the socio-economic environment is carried out on the basis of building an effective system for managing the socio-economic development of the single-industry town, which allows for targeted innovative transformations of the city-forming enterprise, large, small and medium-sized businesses, being a prerequisite for the socio-economic and innovative development of the single-industry town. A single-industry town function within the framework of socio-economic and regional innovation systems, being their integral part, and are characterized by the effectiveness of the interaction of the constituent elements, by the influence degree of positive and negative environmental factors. The era of post-industrialism, the information and the communication process of the people development have provided many images to modern society. In recent decades, society is increasingly called technogenic. This is due to the specifics of the civilization development of modern society. The complex social system of modern society determines the emerging bias in the study of the problems of single-industry towns and their population. Social changes caused by scientific and technological innovations, on the one hand, increase the possibility of achieving more significant than before, standards of existence and integration of world society. On the other hand, these changes can enhance the processes of social dynamics and encourage society to choose and introduce life strategies, motivated by the introduction of scientific and technological achievements, into practice. A sufficiently high level of scientific and technological development and socio-innovative activity is an effective guarantee of the functioning of mechanisms characteristic of the socio-economic society development and the national security of the state. This development level is also a condition for personal freedom of the individual in modern society on conditions that the individual considers the best of his existentially personal orientations. A technogenic society adopts its norms and values, realizing them in the production of new things, technologies and services. However, not all modern innovations, ideas, inventions, things, achievements are useful, necessary and valuable. Unfortunately, creative and innovative activities often become an end in themselves. This process is especially evident in small industrial single-industry towns, for example, in Magnitogorsk, located in the influence zone of the anthropogenic factors complex. The issues of sanitary and epidemiological welfare of the population are widely covered both in Russian literature and in foreign works.

Theoretical and methodological issues of the sanitary-epidemiological welfare of the population are considered in the works of Aksenova O.I (2015), Ivanov S.I., Belyaev E.N (2013), Volkova N.A (2015), Butaev T.M., Reshetnikov A.V., Kucherenko V.Z (2014), Vukovic D (2017), Kuzmin V.B (2016), Zaitseva N.V (2015), Steblyanko V.L., Zinovieva E.G (2019). et al.

Theoretical and methodological issues the quality of atmospheric air, soil and water are considered in the works of Alferova I.N (2016), Yakovenko N.V., Avaliani S.L (2012), Butorina N.N (2017), Onishchenko G.G (2012), Mayorova T.V (2015; 2017), etc.

Possibilities of using foreign experience in the sanitary-epidemiological welfare of the population in the Russian Federation are studied by such authors as Smolensky V.Yu (2012), Toporkov I.G., Leaves G. D., Chen Q (2019), Herbert R. D (2002), Song(2019), Jaakkola J.J.K (2000), Alvarez-Herranz A (2017), Aznar-Sánchez J.A (2018), Jiang K (2019), Fu Y (2019), Gani A.(2014), Pacca L (2020). etc.

The information base for the study of effective indicators is provided by documents of legislative authorities, regulatory legal acts of the Federal Service for Supervision of Consumer Rights Protection and Human Welfare of the Russian Federation (1999; 2011), as well as data from the Office of the Federal Service for Supervision of Consumer Rights Protection and Well-being people in Chelyabinsk region in Magnitogorsk for 2015 - 2017.

2. PERFORMANCE EVALUATION OF MONITORING SANITARY AND EPIDEMIOLOGICAL WELFARE OF POPULATION

Magnitogorsk is a city in the Chelyabinsk region of Russia, one of the world's largest centers of ferrous metallurgy, as well as a major cultural and business center of the South Urals. The municipal formation of Magnitogorsk, formed at a metallurgical plant, developed as a monoculture, which has a specialization in the ferrous metallurgy industry. The prosperity of the consumer market increases the living standard of citizens, expands the list of goods and services, their price range. A developed social sphere that includes enterprises and organizations that provide various services to the population has been developed in Magnitogorsk. Social infrastructure is largely determined by urban enterprises, and accordingly they play a large role in managing the social sphere of the city, providing huge financial assistance to local authorities. Thanks to the city-forming enterprise, social programs are implemented, the social infrastructure of the city is supported, enterprises and organizations of the social sphere are supported. In addition to the factors of the industrial environment, social factors have a tremendous impact on morbidity and mortality and, thus, change the demographic picture in the region. So, a number of socio-economic indicators characterizing the quality of life of the population (gross regional product per capita; average monthly nominal accrued salary; population with incomes below the subsistence level; total area living quarters on average per inhabitant; specific gravity of the total area not equipped with water supply and sewerage; specific gravity of the total area not equipped with a central replacement; cost of fixed assets by type of economic activity; cost of a fixed set of consumer goods and services; health care costs; education costs). and sanitary and hygienic indicators (complex chemical load determined by chemical pollution of food, drinking water, atmospheric air and soil; biological load determined by microbiological contamination of food, drinking water and soil; physical factors (including physical factors affecting working conditions, training and education). In addition, the experts identify the lifestyle factors (poor quality and unbalanced nutrition, consumption of alcoholic beverages and beer, smoking). as priority factors that have a negative impact on the state of the population's health. Based on the foregoing, based on the data from the Office of the Federal Service for Supervision of Consumer Rights Protection and Human Welfare in Magnitogorsk of the Chelyabinsk Region, the indicators studied in Table 1 can be classified as priority research health indicators of the single-industry town population.

Table following on the next Page

Table 1: Priority indicators of public health in Magnitogorsk (Influence of environmental factors on public health. Medical and demographic situation in the Chelyabinsk region, 2018)

Category	Indicators
Children population	The incidence of children in the first year of life: - individual conditions that occur in the perinatal period; - congenital malformations; - the number of children born weighing up to 2500.
	By primary incidence: - subclinical; - hypothyroidism; - thyroiditis.
	For diseases that lead to disabilities in children and adolescents: - diseases of the circulatory system; - ear diseases; - tuberculosis.
Teenage population	By primary incidence: - multinodal (endemic). goiter; - subclinical hypothyroidism; - thyroiditis.
Adult population	By primary incidence: - asthma and asthmatic status; - urolithiasis disease; - syndrome of dependence on alcohol and drugs.
	Primary incidence of malignant neoplasms: - leukemia; - skin neoplasms; - thyroid cancer.

2.1 Air quality

One of the reasons for the negative impact on the health of the population of Magnitogorsk is the quality of atmospheric air, which is determined by the intensity of pollution by emissions, both from stationary sources of pollution and mobile (transport). The results of the study of atmospheric air for single-industry towns are presented in Table 2.

Table 2: The results of an atmospheric air study in Magnitogorsk for 2015 - 2017. (The influence of environmental factors on public health. Medical and demographic situation in the Chelyabinsk region, 2018)

Total atmospheric studies air	Exceeding the Production Complex level			Studies with Production Complex excess by 5 or more times			The main pollutants with Production Complex excess by 5 or more times
1019	2015	2016	2017	2015	2016	2017	Benz (a). pyrene; Suspended substances; Iron oxide
	130	115	67	52	47	16	

Analysis of the atmospheric air effect on the incidence of the population showed that air pollution at a level higher than hygienic standards creates a risk of non-infectious morbidity of the population with respiratory diseases, in particular, in the adult population, the primary incidence of asthma, asthmatic status - exceeds the regional average by 22.47%. Moreover, respiratory diseases in all age groups (in children - 62.15%, in adolescents - 44.76%, in adults - 20.39%). are in the first place in the structure of the primary morbidity in the city of Magnitogorsk. second place - malignant neoplasm of the trachea, bronchi, lung.

2.2 Quality of drinking water and soil

The next reason for the negative impact on the population health of the city of Magnitogorsk is the quality of drinking water, mainly polluted due to: excess in the sources of water supply of iron, manganese, general hardness; contamination of drinking water in the process of water treatment with chlorine and in the process of transportation - with iron. Drinking water that does not meet hygienic requirements for iron and manganese can cause the following diseases: diseases of the blood, central nervous system, skin and mucous membranes, immunological disorders, diseases of the digestive system, and an increased content of total hardness in the water of underground water sources can cause urolithiasis disease (Limarev, 2019, p. 1057). Contamination of the soil with chemical components, similar to the two above reasons, negatively affects the health of the population of Magnitogorsk and, as a rule, leads to the development of diseases of the skin and subcutaneous tissue. The study results of soil samples in the territory of Magnitogorsk for the period from 2015 to 2017 are presented in Table 3.

Table 3: The results of the study of soil samples in the territory of Magnitogorsk for 2015 - 2017 (The influence of environmental factors on public health. Medical and demographic situation in Chelyabinsk region, 2018)

Total soil studies	Exceeding the Production Complex level			Studies exceeding the Production Complex level by 5 or more times			Major pollutants
21 probe	2015	2016	2017	2015	2016	2017	Benz (a). pyrene; Enterococci; Salmonella.
	96	93	54	35	39	15	

Thus, pollution of such important environmental elements as air, soil and water, seriously affect the population health in Magnitogorsk. However, the results of the study conducted on the territory of the metallurgical single-industry city show that the content of hazardous substances in the environment decreased markedly in 2017, which indirectly affected the medical and demographic indicators of the population (Zaitseva, 2015).

2.3 Occupational morbidity rate

The level of occupational morbidity in Magnitogorsk is significantly affected by working conditions, as one of the main risk factors for the formation of occupational and occupationally determined pathology. At the industrial enterprises of Magnitogorsk (controlled by the territorial department), the number of workers employed in work with harmful and dangerous working conditions has increased and amounts to 42.95%. In the last three years, there is no tendency to decrease in the proportion of workers with harmful and dangerous working conditions, and even a slight increase is observed: 2015 - 42.6%, 2016 - 42.8%, 2017 - 42.95%. The state of the workplaces of industrial enterprises in terms of certain physical factors in 2017 changed compared to 2016. So, in 2017, the proportion of jobs of industrial enterprises that do not meet sanitary and hygienic requirements increased in terms of the physical factor - noise,

specific gravity of working places that do not meet sanitary and hygienic standards for vibration and microclimate, lighting decreased. The highest occupational morbidity rate per 10 thousand employees was recorded, as in previous years, at manufacturing enterprises - 3.93, which are shown in Table 4.

Table 4: Occupational morbidity indicators by main types of economic activity (Influence of environmental factors on public health. Medical and demographic situation in the Chelyabinsk region, 2018)

Types of economic activity	Index per 10,000 employees		
	2015	2016	2017
For all types of economic activity	1,72	1,81	3,19
Manufacturing	2,54	2,12	3,93
Manufacture of other non-metallic mineral products	4,31	-	-
Metallurgical production	2,71	3,11	6,60
Manufacture of fabricated metal products	-	4,54	1,13
Manufacture of machinery and equipment	1,64	0,55	2,91
Recycling	11,16	11,16	-
Building	1,99	1,33	2,24
Health and social services	-	1,37	4,11

Chronic occupational pathology in 2017 most often arose as a result of technological processes imperfection (36.65% of cases), imperfection of jobs (30.0%), constructive shortcomings of means of labor (16.65%). and sanitary installations (6, 65%), professional contact with an infectious agent (10.0%). The level of detection of chronic occupational pathology, depending on the type of medical institutions and their specialization that established the diagnosis, has not changed. In 2017, Magnitogorsk Center for Occupational Pathology established 96.67% of cases of occupational diseases (in 2016 - 95.24% of the total number of cases, in 2015 - 86.67%). A dependence analysis of occupational morbidity level on the profession, the experience of contact with a harmful production factor and the age of the employee allows us to identify individual occupational groups that are most at risk of occupational pathology. An analysis of occupational pathology, first established in 2017, allows concluding that the length of service, exposure to a harmful occupational factor and the level of occupational morbidity are related, and the maximum risk of occupational disease in industrial enterprises is manifested in male workers exposed to harmful occupational factors over 30 years, for female workers - with an experience of over 20 years. In the 20-30-year experience group, the share of registered occupational diseases among male workers is 31.82%, with the experience of 30-40 years - 63.64%. 66.67% of all occupational diseases distributed by gender are among female workers in the 20-25-year-old experience group. The workers aged 50-60 are most at risk of occupational disease: occupational diseases in men in this age category are 90.91%, in women - 66.67% of all occupational diseases by sex. Depending on the workers' professions, men and women are at the greatest risk of acquiring occupational pathology - electric gas and gas welders, refractory workers, coke oven drivers, choppers. The share of occupational diseases of workers in these professions from all newly registered in 2015–2017 is 36.21%. Most cases of occupational pathology were detected during periodic medical examinations and all chronic forms, which, as a rule, were established for workers with experience in contact with a harmful production factor for more than 30 years and over 50 years of age. Despite a decrease in the validation indicator of victims, the severity of the course of occupational disease and the degree of professional suitability loss, it remains higher than the all-Russian one and is an indicator of the low active detectability of occupational pathology in the current system of medical

examination of mandatory contingents of employees. These materials indicate that the socio-economic development of the city is directly related to the conditions and challenges of the industrial environment. Thus, it can be argued that the phenomenon of social and economic development of a single-industry town is one of the most significant phenomena of human life as part of technological civilization. For single-industry cities, the conditions of a technogenic society become obstacles to solving specific problems in the framework of socio-economic development.

3. CONCLUSION

Thus, according to the results of the study, it can be noted that a sufficient number of factors affect the sanitary and epidemiological welfare of the population - the state of the human environment and its impact on public health: the quality of atmospheric air, soil, water, food quality, working conditions of the working population.

In order to reduce the indicated negative consequences, it is advisable to propose measures:
1). In the field of atmospheric air protection:
- provide for the construction of bypass roads in order to withdraw part of the vehicle from the city center;
- prohibit the construction of facilities that are sources of air pollution, with pollution levels exceeding established hygiene standards.

2). In the field of water supply and sanitation:
- provide for the construction of treatment facilities in storm sewers;
- carry out the reconstruction of urban wastewater treatment plants;
- bring the quality of drinking water to the requirements of sanitary legislation.

3). In the field of soil protection:
- ensure the collection, transportation and disposal of mercury-containing lamps from the population of the city;
- improve the organization of the collection and removal of solid and liquid household waste in order to bring compliance with the requirements of sanitary legislation.

4). In the field of quality control and food safety:
- development of a city consumer market security program;
- solve the issue of expanding the range of products produced by local manufacturers, enriched with iodine, other macro and micronutrients;
- conduct outreach to the population in the media, aimed at preventing diseases caused by insufficient intake of micronutrients;
- carry out the promotion of a healthy lifestyle and a balanced diet.

5). In the field of ensuring healthy working conditions:
- consider the development of a targeted program “Improving working conditions and medical support for the working population of Magnitogorsk”;
- managers of transport infrastructure enterprises need to organize production monitoring of compliance with sanitary rules, hygiene standards and the implementation of preventive measures;
- organize periodic medical examinations of those working in contact with harmful production factors;
- carry out all planned measures to improve working conditions at the workplaces of industrial enterprises, as well as develop additional measures to bring working conditions at workplaces

to the requirements of hygienic standards (increase the efficiency of ventilation systems, replace technically obsolete equipment, modernize process equipment, and technology for repair of metallurgical furnaces). and aggregates.

For this reason, the primary task of any municipality is to monitor the environmental situation, food hygiene, labor protection, medical examinations.

LITERATURE:

1. Aksenova, O.I (2015). *Hygienic aspects of providing the population with benign drinking water: problems and solutions* O.I. Aksenova M.: Forum, SIC INFRA-M.
2. Alferov, I.N., Yakovenko, N.V (2016). The problem of providing high-quality drinking water to the population of the water-deficient region of the Orenburg region. *Human Ecology*. pp. 3–8
3. Alvarez-Herranz, A., Balsalobre-Lorente, D., Shahbaz, M., Cantos, J.M (2017). Energy innovation and renewable energy consumption in the correction of air pollution. *Energy Policy*. Vol. 105. pp. 386-397
4. Avaliani, S.L., Novikov, S.M., Shashina, T.A., Skvortsova, N.S., Mishina, A.L (2012). Problems of harmonization of standards in atmospheric pollution and ways to solve them. *Hygiene and sanitation*. pp. 75–80.
5. Aznar-Sánchez, J.A., Belmonte-Ureña, L.J., Velasco-Muñoz, J.F., Manzano-Agugliaro, F (2018). Economic analysis of sustainable water use: A review of worldwide research. *Journal of Cleaner Production*. Vol. 198. pp. 1120-1132
6. Belyaev, E.N., Fokin, M.V., Novikov, S.M., Prusakov, V.M., Shashina, T.A., Shayakhmetov, S.F (2013). Actual problems of improving the risk assessment of public health to ensure sanitary and epidemiological well-being. *Hygiene and sanitation*.pp. 53–55.
7. Butorina, N.N., Bychkov, A.A., Samutin, N.M., Orlova, I.G., Pozdnyakov, S.A (2017). Modern approaches to the regulation of waste management of non-canalized facilities at the regional level. *Ecology and Industry of Russia*. pp. 68–71
8. Chen Q.(2019). Sino-Russian environmental cooperation: past, present, and future. *R-economy. Electronic Scientific Economic Journal*. Vol 1, no.2, pp. 61-70
9. Federal Law of March 30 (1999). No. 52-FL “On the Sanitary and Epidemiological Well-Being of the Population”. *Collected Legislation of the Russian Federation*. Art. 1650.
10. Federal Law of November 21 (2011). No. 323- FL "On the Basics of Protecting Citizens' Health in the Russian Federation". *Russian Newspaper*. no 263.
11. Fu, Y., Cui, X., Liu, L., Zhao, J., Zhang, S (2019). Equilibrium cost of water environmental protection based on watershed sustainability. *Journal of Hydrology*. Vol. 579. Article 124216
12. Gani, A., Scrimgeour, F (2014). Modeling governance and water pollution using the institutional ecological economic framework. *Economic Modelling*. Vol. 42. pp. 363-372.
13. Jaakkola, J.J.K., Cherniack, M., Spengler, J.D., Özkaynak, H., Egorov, A., Wojtyniak, B., Rakitin, P., Katsnelson, B., Kuzmin, S., Privalova, L., Lebedeva, N.V (2000). Use of health information systems in the Russian Federation in the assessment of environmental health effects. *Environmental Health Perspectives.* pp. 589–594
14. Jiang, K., You, D., Li, Z., Shi S (2019). A differential game approach to dynamic optimal control strategies for watershed pollution across regional boundaries under eco-compensation criterion. *Ecological Indicators*. Vol. 105. pp. 229-241
15. Kolokoltsev, V.M., Vdovin, K.N., Maiorova, T.V., Ponomareva, O.S (2017). Ecological indicators in the system of non-financial re-porting at industrial enterprises. *CIS Iron and Steel Review*. pp. 4–10.

16. Kucherenko, V.Z (2014). *The legal framework of the Federal Service for Supervision of Consumer Rights Protection and Human Well-being*. M .: GEOTAR-Media.
17. Kuzmin, S.V., Gurvich, V.B., Dikonskaya, O.V., Malykh, O.L., Yarushin, S.V (2016). Methodology for assessing and managing risk to public health in the system of legislative regulation of the sanitary-epidemiological well-being of the population. *Occupational medicine and industrial ecology*. pp. 4–8
18. Leaves, G.D., Herbert, R.D (2002). Economic and environmental impacts of pollution control in a system of environment and economic interdependence. *Chaos, Solitons & Fractals*. pp. 693–700
19. Limarev, P.V., Limareva, Yu.A., Zinovieva, E.G (2019). *Comprehensive approach to research of the consumer market in montygorods of the Russian Federation*. Advances in economics, business and management research: proceedings of the International Scientific Conference "Far East Con" (ISCFEC 2018)
20. Mayorova, T.V., Ponomareva, O.S (2015). Methodology for assessing the economic efficiency of environmental management of enterprises in the metallurgical industry. *Bulletin of Nosov Magnitogorsk State Technical University*. pp. 112–116
21. Onishchenko, G.G (2012). Results and prospects for ensuring the sanitary and epidemiological well-being of the population of the Russian Federation. *Hygiene and sanitation*. no.4, pp. 4-12
22. Pacca, L., Antonarakis, A., Schröder, P., Antoniade, A (2020). The effect of financial crises on air pollutant emissions: An assessment of the short vs. Medium-term effects. *Science of The Total Environment*. Vol. 698. Article 133614.
23. Smolensky, V.Yu., Toporkov, V.P., Karnaukhov, I.G., Toporkov, A.V., Kutyrev, V.V (2012). Organizational and methodological aspects of international cooperation in ensuring the sanitary-epidemiological well-being of the population. *Problems of especially dangerous infections*. Pp. 5–13.
24. Song L.(2019). Strategic priorities of cooperation between Heilongjiang province and Russia. *R-economy. Electronic Scientific Economic Journal*. Vol 1, no.1, pp.13-18
25. Steblyanko, V.L., Zinovieva, E.G., Koptyakova, S.V (2019). The effectiveness of monitoring the sanitary-epidemiological state of Magnitogorsk. *Steel*. Pp. 80 – 83.
26. *The impact of environmental factors on public health. The medical and demographic situation in Chelyabinsk region (*2018). Retrieved http://www.mineco174.ru/files/media/doklad/2014/6-1.htm (02/03/2018).
27. Volkova, N.A.(2015). Organization of supervision of the nutrition of the population. *Ecology of Russia*. Pp. 34-42.
28. Vucovic D., Kochetkov D (2017). Defining region . *R-economy. Electronic Scientific Economic Journal*. Vol 3, no.2, pp. 76-81
29. Zaitseva, N.V., Popova, A.Yu., May, I.V., Shur, P.Z (2015). Methods and technologies of health risk analysis in the public administration system while ensuring the sanitary and epidemiological well-being of the population. *Hygiene and sanitation*. pp. 93–98.
30. Zinovyeva, E. G., Koptyakova, S. V (2019). *Integrated assessment of sanitary and epidemiological safety management efficiency of the population in Industry – based cities in the Russian Federation.* Advances in economics, business and management research: proceedings of the International Scientific Conference "Far East Con" (ISCFEC 2018).
31. Zinovyeva, E. G., Koptyakova, S. V., Balynskaya, N. R. and Stepashkov, P.Y (2019). *Assessment of monitoring efficiency for the state of sanitary and epidemiological well-being of the population of metallurgical monocities.* IOP Conf. Series: Earth and Environmental Science 350 012050 doi:10.1088/1755-1315/350/1/012050.

FINANCIAL STABILITY AS A BASIS FOR A RISK-ORIENTED ENTERPRISE MANAGEMENT IN RUSSIA

Larisa Iurieva
Ural Federal University, Ekaterinburg, Russia
l.v.iuryeva@urfu.ru

Elena Sinianskaia
Ural Federal University, Ekaterinburg, Russia
e.r.sinyanskaya@urfu.ru

Olga Savostina
Ural Federal University, Ekaterinburg, Russia
o.v.savostina@urfu.ru

Anna Pashkova
Ural Federal University, Ekaterinburg, Russia
apashkova144@gmail.com

ABSTRACT

Enterprise financial stability, also named the level of independence from borrowed capital, is one of the key performance indicators showing how effective a company is functioning. This indicator can have a huge impact on relations with counterparties and the enterprise's competitiveness in the market. The article presents the results of the authors' comparative analysis of scientific approaches to the interpretation of the economic essence of the concept of 'financial stability' as well as internal and external factors influencing the formation of financial stability key indicators. The research also establishes the expediency of the complex approach with the use of a set of coefficients characterizing various aspects of the studied process. The estimation based on statistical data of the state of risk-oriented enterprises of the Russian national economy in the context of various types of activity is carried out. According to the results of the analysis, the main directions of increasing financial stability, which can have a universal intersectoral character, have been developed.

Keywords*: Autonomy ratio, Borrowed capital, Financial stability, Own capital, Risk management.*

1. INTRODUCTION

Financial analysis of the company's activity allows to make optimal management decisions as well as to identify the factors influencing the increase or decrease of financial results. Undoubtedly, the use of financial analysis results helps to improve the enterprise's financial condition. It is extremely important to have both static accounting data about the entity's financial and ordinary activities and their comparative characteristics over time to be able to make a competent management decision. In order to plan a strategy or make a forecast, it is necessary to have a clear idea of how, why and what factors change a particular financial and economic indicator. The role of the economic analyses of a company's activities is implied in the fact that it allows us to get access to such information. Entity's financial stability is the basis for market stability and maintenance of its level of competitiveness. This indicator is compound systematizing information about the condition of a company's financial resources, which keeps the possibility of financial maneuver and ensures the sustainability of current activities. The relevance of this work correlates to the recent research (Ernst Young, 2018). According to their issue in recent years, the problem of ensuring the sustainability of businesses in Russia in

particular and in the global market in general has been extraordinarily acute due to the digitalization of the economy and political instability. It is argued that the financial capacity of any enterprise is usually limited. Therefore, the main function of ensuring financial sustainability is to use available resources in the most efficient way within this constraint. The following scientists devoted their researches to the construction of economic models based on the analysis of financial condition: Kaplan R. and Norton D (2003), Khoja L., Chipulu M. and Jayasekera R (2019), Pustylnick I (2017), Valcic S. and Samodol A (2018), Wang L (2019). and others. Approaches to the study of financial stability are presented in the works: Agarwal V. and Taffler R (2008), Altman E (1968). and Marco G., Varetto F (1994), Bauer J. and Agarwal V (2014), Hicks J (1993), Shumway T (2001), Sun J. and other (2019), and others.
The review of scientific works that were carried out as a part of the current research allowed generalizing the accumulated experience and peculiarities of financial analysis in the conditions of the market's uncertainty. It also established the insufficiency of the examinations the questions that were held so far about financial stability forecasting which can be extremely helpful in reserves revealing that are specifically aimed at efficiency increasing of enterprise activities. All of the above determines the relevance of the research topic.

2. CHAPTER I

There are different interpretations of the financial stability concept expressed in the studies of famous Russian economists. As a part of the issue, they were summarized and the results are presented below in Table 1.

Table 1: The etymology of financial stability (summarized by authors)

Author	Definition
M.I. Bakanov	Satisfactory and unsatisfactory balance sheet structure reflecting financial results of economic activity.
V.V. Kovalev	Company's stability from a long-term perspective, which is primarily related to the overall financial structure of the company; the degree of its dependence on creditors and investors.
S.I. Krylov	The degree of entity's independence of borrowed capital.
G.V. Savitskya	Entity's ability to function and develop, to maintain the balance of its assets and liabilities in the changing internal and external environment, which guarantees its permanent solvency and investment attractiveness within the limits of the acceptable level of risk.
Y.V. Sokolov	The degree of entity's dependence on borrowed capital.
A.D. Sheremet	The ratio of own and borrowed capital that indicates the company's autonomy in the market.

Analyzing Table 1, we can see that scientists have a different understanding of the economic essence of the concept. Some of them unambiguously define financial stability by the ratio of own and borrowed sources of funds. However, another group of researchers insists that the characteristic of financial stability will not be comprehensive if it is based only on the analysis of liabilities, in other words sources of funding, so it should also include the analysis of the directions of capital allocation. It is important to highlight that this study does not include the analyses of the composition and ratio of companies' assets. In our opinion, the key position in this block of analysis is occupied by the calculation of the coefficients that study the structure of liabilities, while there are other blocks of financial analysis that are responsible for the assets, or property of the enterprise analysis, which together give a complete and exhaustive view of

the company's activity. Despite the fact that the group of indicators forming the concept of 'financial stability' is primarily internal, that is, it reflects the state of affairs within a particular company, it is formed under the influence not only of internal, but also external factors.

Internal factors include the following:
– Composition, structure and technology of production line;
– The volume of fixed costs;
– Structure of the company's assets (unit weight of non-current assets in all assets);
– The financial policy of the enterprise;
– The organizational structure of the enterprise.

External factors include:
– State of the industry;
– State of the national economy;
– Government financial and tax policy;
– The political situation in the country and in the world;
– Laws and other regulatory documents that impose additional restrictions on the activities of enterprises.

The information base for the analysis of financial stability mainly consists of the accounting (financial). statements data (the balance sheet and explanations to it). Additionally, extra forms of reporting compiled in the system of the entity's management accounting can be used for the analysis. It should be emphasized that financial stability is a specific measurable indicator that can be divided into a number of financial ratios that characterize the company from different points of view and together support the information users with data about the financial stability of the company and the risk of insolvency. The system of main indicators, their calculation formula and recommended values are presented in Table 2. It should be mentioned that in addition to the indicators presented below a company can use individual indicators selected by taking into account the industry specifics. Thus, it might be expedient for production enterprises to calculate the coefficient of production purpose assets, which is characterized by the ratio of the sum of non-current assets and inventories to all assets of the enterprise.

Table following on the next Page

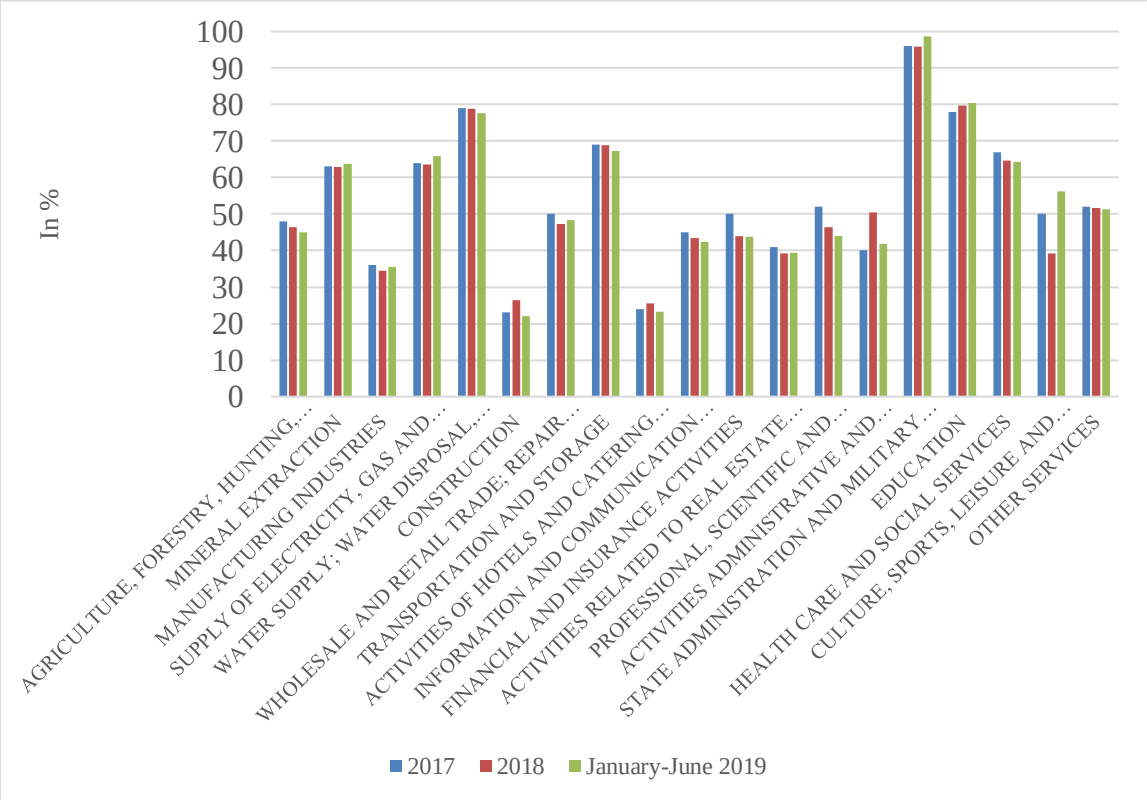
Table 2: Indicators system of financial stability (Krylov S., 2016, p. 38)

Code	Coefficient	Formula	Recommended value
K1	Financial stability coefficient (autonomy ratio)	$\frac{\text{Own capital}}{\text{Total assets}}$	≥0,5
K2	Financial dependency ratio	$\frac{\text{Total assets}}{\text{Own capital}}$	≤2,0
K3	The borrowed capital concentration ratio	$\frac{\text{Borrowed capital}}{\text{Total assets}}$	≤0,5
K4	Debt ratio	$\frac{\text{Borrowed capital}}{\text{Own capital}}$	≤1,0
K5	Own capital availability ratio	$\frac{\text{Own working capital}}{\text{Current assets}}$	≥1,0
K6	Equity capital mobility ratio (maneuverability ratio)	$\frac{\text{Own working capital}}{\text{Own capital}}$	≥0,3-0,5
K7	Self-financing ratio	$\frac{\text{Own capital}}{\text{Borrowed capital}}$	≥1,0
K8	The proportion between mobile and immobilized assets	$\frac{\text{Current assets}}{\text{Non} - \text{current assets}}$	N/A (individual calculation)

Based on the analysis of these indicators, it is possible to obtain a comprehensive assessment of an enterprise's financial stability. In particular, the first coefficient (K1). characterizes what part of the assets is formed at the expense of own capital. The higher value of this coefficient reflects the state when an entity is more stable and independent of borrowed financial sources. The second coefficient (K2). is the ratio between the company's capital and its own part. The analysis of this indicator is expedient to conduct over time as its decrease (increase). can be marked as the possibility (decrease of possibility). to carry out all sorts of a company's activities due to financial support of its own capital. It is possible to draw a conclusion on the degree of enterprise's dependence on external sources of financing based on the third coefficient (K3). The fourth coefficient (K4). gives information on the ratio of borrowed and own capitals in the whole company's capital. Thanks to the fifth coefficient (K5), the user of information can determine to what extent the current assets of the enterprise are covered by its own capital. The sixth coefficient (K6). reflects the part of equity, which is transformed into the current assets of the company. The higher this indicator is, the more a company has financial maneuverability. The seventh coefficient (K7). allows making judgments about the extent to which borrowed funds can be covered by equity. The need to calculate the eighth coefficient (K8). is that non-current assets are the most difficult type of assets for selling on the fair market. Their formation presumes the diversion of funds from the most mobile forms (cash, financial investments), which could be additionally attracted into circulation, which is into the company's current activity. Any business entity should strive to accelerate the turnover of current assets. The role of this coefficient is, respectively, to assess the degree of advance of the most mobile part of the company's assets. Based on the results of the analysis, a generalizing conclusion about the degree of the company's financial stability (absolute, normal, relative, instability). should be made. Having finished the analysis of financial stability ratios, we can judge the state of the enterprise, industry and the national economy as a whole.

3. CHAPTER II

In order to assess the state of risk orientation of enterprises of the Russian national economy, we used the federal statistics. The main available indicator presented for the analysis of the enterprises' financial stability in the different sectors of the economy is the autonomy ratio. It is not enough to form a complete picture and conduct a full-fledged financial stability analysis of the national economy. Having said that, this indicator is one of the key points in this analysis as it characterizes the degree of a company's independence from external financial sources and the level of its independence in making financial decisions. That is the reason why, based on the value of this ratio, it is possible to draw an initial conclusion about the level of financial stability as a whole. The indicator of the financial autonomy of Russian businesses, which belong to different economy industries, is presented in Figure/Chart 1 below reflecting the situation between 2017 and the 1st half of 2019. The current economic reality in the Russian Federation cannot be assessed positively when basing on the analysis of official statistical data, e.g., twelve out of nineteen major economic sectors during the investigated period were experiencing a decline in financial independence. Moreover, ten of them have a level lower than the recommended value. Needless to say, these results cannot serve as a confirmation of expert conclusions that Russia is coming out of the crisis period. The two industries with consistently high levels of financial independence are mineral extraction and state administration and military security, which can be easily explained by their strategic importance for Russia at the crossroads of political and economic reality. Despite the generally negative dynamics, the state of education and activities in the field of culture and sports deserve positive assessment. For example, the financial independence of the latter increased by 17% in the first half of 2019. These changes in the social sphere allow making an assumption about the active implementation of federal projects by the government to support priority areas of the economy.



Figure/Chart 1: The autonomy ratio in Russian national economy industries between 2017 and 1st half of 2019 (Russian Federal State Statistics Service, https://www.fedstat.ru/indicator/58045)

However, it should be emphasized that the analysis is limited and incomplete. Undoubtedly, it is necessary to have more data in order to conduct accurate research and to provide forecasts of the national economy's state. We analyzed the financial stability of several representatives of the studied sectors of the economy in order to confirm or disprove the result obtained based on the autonomy ratio investigations (Figure/Chart 1). The results of the analysis are presented in Table 3. The codes of the indicators correspond to Table 2.

Table 3: Analysis of financial stability of Russian enterprises by industries

Company	Indicator's code	2017	2018	1st half of 2019	Recommended value
Open joint-stock company 'Rostelecom' *(information and communication activities)*	К1	0,46	0,41	0,40	≥0,5
	К2	2,16	2,44	2,50	≤2,0
	К3	0,54	0,59	0,60	≤0,5
	К4	1,16	1,44	1,50	≤1,0
	К7	0,86	0,70	0,67	≥1,0
	К8	0,14	0,16	0,17	-
Joint-stock company 'Rostelecom' 'Makfa' *(agriculture)*	К1	0,86	0,64	-	≥0,5
	К2	1,16	1,56	-	≤2,0
	К3	0,14	0,36	-	≤0,5
	К4	0,16	0,56	-	≤1,0
	К5	0,82	0,45	-	≥1,0
	К6	0,75	0,46	-	≥0,3-0,5
	К7	6,25	1,78	-	≥1,0
	К8	3,60	1,87	-	-
Limited liability company 'Lenta' *(trade)*	К1	0,22	0,22	0,21	≥0,5
	К2	4,46	4,47	4,85	≤2,0
	К3	0,78	0,78	0,79	≤0,5
	К4	3,46	3,47	3,85	≤1,0
	К7	0,29	0,29	0,26	≥1,0
	К8	0,44	0,60	0,82	-
Open joint-stock company 'VGOK' *(mining and mineral extraction)*	К1	0,07	0,14	-	≥0,5
	К2	14,15	7,13	-	≤2,0
	К3	0,93	0,86	-	≤0,5
	К4	13,15	6,13	-	≤1,0
	К7	0,08	0,16	-	≥1,0
	К8	1,79	2,32	-	-

Four sectors of the economy were selected for the analysis: agriculture, mining and mineral extraction, trade and information and communications. The analysis confirms the average intersectoral trend of decreasing the financial stability of certain industries and the positive dynamics of the mining industry, obtained based on the Russian federal statistics data. The current results allow assuming that the actual direction of improvement of risk-oriented activity of enterprises within the framework of the current economic reality is the increase of financial

stability. According to the results of the current study, the following ways to improve financial stability are proposed below. The first direction includes the formation of reserves to cover unforeseen costs. However, in its formation it is important to remember that the creation of a financial reserve often involves the withdrawal of funds that could be involved in the turnover. Therefore, the size of the reserve should be calculated in such a way as not to cause harm to current activities but to be optimal to cover unforeseen expenses. The second area of focus could be the strengthening of accounts receivables control and the revision of contractual policies. Although accounts receivable are not included in the calculation of the main indicators of financial stability, it has a significant impact on them indirectly. Accounts receivable form such a concept as "cash gap" - a situation in which it is a company's turn to settle its obligations but its debtors at the time of calculation have not closed the debt to it. Since nowadays the competitive market strictly dictates its conditions, the enterprise cannot deviate from the chosen payment policy and sacrifice its image of a conscientious partner, because of which the entity is forced to attract short-term borrowed funds to cover the cash gap. Strengthening control over accounts receivable will contribute to reducing the volume of delays and rising compliance with contractual obligations on the part of debtors. The third area of focus could be the consideration of short-term financial investments. In terms of financial sustainability, this activity has two objectives. Firstly, financial investments are a source of additional gain, which in turn leads to a certain increase in financial independence. Secondly, this is a means that can reduce the impact of inflation on the capital diverted from turnover to accounts receivable. The presented recommendations are universal and can be applied in any sphere of business activities.

4. CONCLUSION

Thus, the enterprise's financial stability depends on the proportion of its own and borrowed funds in the amount of capital and qualifies the level of its independence from borrowed funds. Stability of the financial position is based on investment rationality highlighting the company's readiness for a competitive environment. In addition, financial stability indicates the amount of effectively used financial resources that an enterprise should have in order to maintain a continuous process of production and sales. The result of the financial stability analysis is presented as a conclusion about the level of financial risk. The research pays considerable attention to the synergetic effect arising from internal factors, which create the enterprise financial stability being reflected in the standard forms of financial statements, as well as external aspects, which take into account industry specifics. The authors' analysis of various approaches to the financial risk assessment derives the universal intersectoral indicators, allowing carrying out a comprehensive estimation of financial stability.

LITERATURE

1. Agarwal, V., Taffler, R (2008). Comparing the performance of market-based and accounting-based bankruptcy prediction models, *Journal of Banking and Finance*, Vol. 32, No. 8, pp. 1541-1551
2. Altman, E.I (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy, *The Journal of Finance*, Vol. 23, No. 4, pp. 589-609
3. Altman, E.I., Marco, G., Varetto, F (1994). Corporate distress diagnosis: Comparisons using linear discriminant analysis and neural networks (the Italian experience*), Journal of Banking and Finance*, Vol. 18, No. 3, pp. 505-529
4. Bauer, J., Agarwal, V (2014). Are hazard models superior to traditional bankruptcy prediction approaches? A comprehensive test, Journal of Banking and Finance, Vol. 40, No. 1, pp. 432-442
5. Ernst Young, (2018), Barometer confidence companies Retrieved DD.MM.YYYY from https://www.ey.com/Publication/vwLUAssets/ey-ccb-18/$File/ey-ccb-18.pdf (In Rus.)

6. Hicks, J.R (1993). *Stoimost' i kapita*l [Value and capital], Progress, Moscow.
7. Kaplan, R., Norton, D (2003). *Balanced scorecard: from strategy to action:* TRANS., CJSC "Olympus-Business", Moscow.
8. Krylov, S (2016). *Financial analysis: tutorial*, Ural Federal University, Ekaterinburg.
9. Krylov, S (2013). Balance sheet analysis with a help of financial indicators (edition №8), *Financial newsletter: finance, taxes, insurance, accounting*, p. 10
10. Khoja, L., Chipulu, M., Jayasekera, R (2019). Analysis of financial distress cross countries: Using macroeconomic, industrial indicators and accounting data, *International Review of Financial Analysis*, Vol. 66, article number 101379.
11. Pustylnick, I (2017). Comparison of liquidity based and financial performance based indicators in financial analysis, *OECONOMIA COPERNICANA*, Vol. 8, No. 1, pp. 83-97
12. Shumway, T (2001). Forecasting bankruptcy more accurately: A simple hazard model, *Journal of Business*, Vol. 74, No. 1, pp. 101-124
13. Sun, J., Zhou, M., Ai, W., Li, H (2019). Dynamic prediction of relative financial distress based on imbalanced data stream: from the view of one industry, *Risk Management*, Vol. 21, No. 4, pp. 215-242
14. Valcic, Sonja Brlecic; Samodol, Ante (2018). Conceptual model for analysis of financial development in the context of proposal of effective measures of monetary and fiscal policy, *Ekonomska misao i praksa-economic thought and practice*, Vol. 27, No. 2, pp. 377-398
15. Wang L (2019). Analysis of the Influence of New Accounting Standards on Enterprise Financial Accounting, *AEBMR-Advances in Economics Business and Management Research*, Vol. 76, pp. 396-400

FARMERS' UNION AS A MECHANISM TO ADOPT AGRICULTURAL DRONES IN SUB-SAHARAN AFRICA

Kitonsa Haula
Ural Federal University, Russia
kitsxauxkissule@gmail.com

Sergei Kruglikov
Ural Federal University, Russia
svk@imm.uran.ru

ABSTRACT

There is a growing urgency of food security following the rapid population growth in Sub-Saharan Africa. Food security is greatly threatened by the pest and diseases that attack the farms which are predominantly owned by small household farmers. This has resulted in a gradual decrease in crop yield due to the significant pre-harvest losses. Agricultural drones as part of precision agricultural technologies that are among the best solutions to effectively combat the pests and diseases. However their integration into the traditional practices in SSA has so far not been successful. This paper develops a technology acceptance model for agricultural drones in Sub-Saharan Africa, a conceptual framework to show a structure that can be used to adopt agricultural drones. TAM for agricultural drones proposes a strategy that ensures even opportunities to all small household farmers to benefit from the vast range of services from agricultural drone operations. By focusing on a farmers' union as the core mechanism for the adoption, the challenges and high risks associated are mitigated. Small household farmers no longer need to worry about the initial drone cost, legal requirements and need for technical skills to operate the drones since according to the model, all the responsibility is on the farmers' union. The farmers simply access services as registered members of the union. Having access to advanced technology, will gradually transform the traditional methods to precision agriculture methods hence leading to the reduction in pre-harvest crop loss, leading to increased crop yield while ensuring food security in SSA.

Keywords: *Agricultural drones, Farmer's union, Food security, Sub-Saharan Africa (SSA), Technology acceptance model (TAM), Technology acceptance model for Agricultural drones.*

1. INTRODUCTION

Increasing pressure for food security and sustainability as well as the urgency to combat environmental degradation, has focused attention on increasing the efficient use of farm resources (Yeong Sheng, 2012). Africa's demand for food is projected to more than double by 2050 (Daudi, 2017). Food insecurity in Sub-Sharan Africa is not only caused by the rapidly growing population but also by many others factors including heterogeneous systems, low soil fertility, environmental degradation, inadequate food storage; a great amount of crop is lost before and after the harvest (Abass et al., 2014). And this comes as a result due to the fact that Agriculture is still underdeveloped and many farmers entirely rely on the affordable traditional methods since the largest portion of agriculture is dominated by small-household farmers who account for an estimated 80% of all farms and produce most of the food in the region. Rain is the sole water supply for most of the Agriculture and accounts for 95% of the food produced in SSA. Enhancement of agricultural productivity is essential for SSA to ensure achievement of the triple developmental goals of food sufficiency, better nutrition and poverty reduction, there is a need to enhance the Agricultural sector (Jane, 2006). Poor handling and storage further increase post-harvest losses. Food production in SSA is vulnerable due to harsh weather

conditions (heavy rains and extreme hotness). which directly affect food production (Jane and Richard, 2019). The climate in SSA regions makes food production prone to pests and diseases. Food security is threatened by pests and diseases (Shahnila et al., 2016). Pre-harvest pests and diseases account for an average of 35 % loss of potential crop yield worldwide (Oerke, 2005). Small household farmers reckon that the reduction in food productivity is greatly caused by pests and diseases due to ineffective and outdated traditional methods used to combat this problem. Most pesticides are applied as sprays using the commonly widespread equipment called the knapsack sprayers with hand-operated pump and a nozzle(s). in developing countries. There are two major types of knapsack sprayers: lever-operated knapsack and compression sprayers (Van der Meijden, 1998). This technique of combating pests and diseases is associated with a number of challenges including health hazards against the operators since pesticides are poisonous substances and they can cause harm to all living things (Jeyaratnam, 1982). The labor costs of spraying using a knapsack on a large farming area are very high (Bjugstad & Skuterud, 2010). A lot of valuable time is lost during pesticide spraying (Rahman et al., 2014). There is significant pesticide wastage while using the dominant techniques in SSA (Matthews, 1981). Failure to precisely identify the affected areas and screen out invasive pest plants while still at the infant stage of affection is also another challenge (Hill, 1987). Furthermore, Poor terrains continue to impede agricultural activities limit farmers' movement in and out of the fields since Small households are often located in remote areas in SSA (Salami, 2017). To combat these issues, agriculture drones have emerged with tremendous capabilities which leads to an idea in mitigating the above challenges. These are part of the various technologies entailed in Precision Agriculture.

2. PRECISION AGRICULTURE

The urgent need to ensure the achievement of food security, has led to the ongoing revolution to digitalize the agricultural sector which is referred to as Precision agriculture (Adrian, et al., 2005). Precision agriculture comprises of several technologies that combine sensors, information systems, enhanced machinery and informed crop management, to collect diverse data, and effectively improve production (Gebbers & Adamchuk, 2010). Precision agriculture provides a means to monitor the food production chain and manage both the quantity and quality of agricultural produce (Seelan et al., 2003). Due to the increasing input costs and decreasing prices of the commodity, the farmers are looking at Precision farming technology as a viable alternative for new ways to increase efficiency and cut costs (Tripathi et al., 2013). Precision Agriculture technologies range from Sensor Tech, Innovation with Food; Things are Becoming Automated, Better Equipment, Hardware Telematics and Warnings, Livestock Tracking, Crop Analysis, Genetically Designed Food, Variable Rate Management Systems, Agricultural Robots, Fertigation Systems, Vertical Cultivation, Mechanical Swarms to Drones (Banu, 2015). This paper focuses on agricultural drones as one of the possible solutions.

2.1 Agricultural drones

Drones are referred to as unmanned aerial vehicles (Maekeler, 2017). Drone use in agriculture is dated way back in the late 1970s in Japan to combat pesticides (Scherer et al. 2017).
Drones are remote-controlled aircraft with no human pilot on-board. They have tremendous capabilities in agriculture ranging from delivery to a collection of vital data that help farmers in planning and decision based on evidence, since they are equipped with sensors and cameras (Bernauw, 2016).

There are various kinds of Agricultural drones including:

- Drone for spraying pesticides, herbicides and fungicides
- Drones for sowing seeds
- Drones for irrigation
- Drones for monitoring plant

2.2 Significance of drone in Stages of crop production

This paper focuses more on Crop Spraying, fertilizers and the Spot Spraying stage since a significant loss of crops happens at pre-harvest stages due to the ineffective methods of traditional methods to combat the pest and disease attack against the crops.

Crop spraying and the application of fertilizers is a very crucial stage towards crop production (Spoorthi et al., 2017). Most of the small household farmers reckon the high costs during this stage due to the traditional knapsack spraying which is predominantly used. Using drones at this stage helps to solve the health risks which are currently faced by knapsack operators. Also, labor costs are reduced hence, no need to hire a group of individuals with hand sprayers.

Other crop production stages where drones can be deployed:

- Soil and Field Analysis, Soil and Field Analysis
  Drones obtain spatial data through 3D maps and sensors, surrounding the quality of the existing soil for making proper decisions regarding the fertilization of fields (Huuskonen & Oksanen, 2018).
- Seed Planting
  The drone can shoot seedpods into prepared soil which helps to mitigate the cost, time and labor used during on-the-ground planting (Fortes, 2017). A good example is of the company called DroneSeed (https://www.droneseed.com). which operators drones that plant tree seeds.
- Crop Mapping and Surveying
  Drones provide real-time data during mapping and surveying which offers the farmers the possibility to make decisions based on real-time data as compared to the Satellite technology not outdated imagery, or best-practice guesswork. The data captured can be used in a wide variety of surveying and mapping applications (McNeil & Snow 2016).
- Irrigation Monitoring and Management
  Drones can help to spot areas that are receiving too little or excessive moisture using thermal cameras mounted on them hence affected areas can be spotted before they become a big problem (Petrović et al., 2016).
- Real-Time Livestock Monitoring
  With the help of thermal imaging cameras mounted on the drones, a single person is able to monitor and maintain livestock with under traditional methods, its costly and time-consuming (Horton & Vorpahl, 2017).

2.2 Challenges to adopting Agricultural drones

Like any other technology, drones are also subject to challenges and resistance including:

Initial drone cost: A fully equipped agricultural drone for spraying ranges from $9000 – $10,000 (Sale announcement, 2018). and full package drone with an onboard camera, sensors, navigation features and all necessary software ranges from $20,000 upwards for a fixed-wing drone on the market.

Regulation concerns: Drones in general have a substantial number of regulations due to their features which pose a threat to the civil environment (Wolf, 2017). Hence in most countries drones are banned completely whereas in Sub-Sharan Africa, some countries don't have drone

laws at all, while in others, the laws still pending (Jeanneret & Rambaldi, 2016). Operating a drone requires the approval of the aviation authority and for a commercial application like crop spraying; the laws are even more limiting and exemption.

Drone education, knowledge, and skill: Substantial Technical skills are required before operating a drone (Lidynia, 2017). The operator must have proper skills to ensure proper deployment and operation to ensure safe and effective flight with the achievement of desired goals.

Connectivity and coverage issues: Despite having tremendous capability and amazing performance drones are highly dependent on weather conditions (Lidynia, 2017). Hostile weather conditions can swiftly affect the overall performance of a drone, reckoning rain and strong winds as among the most problematic.

Short flight range and time: Since the initial cost of a fully equipped Agricultural drone is very high, Drone manufacturers designed cheaper drones but with less capabilities and features including short flight times resulting in many unsatisfactory remarks from agricultural producers who desire a long endurance drones that stay powerful in the air with a substantial range as showcased in the flyers or advertisements (Kardasz et al., 2016).

Privacy Data: The issue of violation privacy tops up the concerns raised against the operation of a drone in the civil environment (Cavoukian, 2012). Drones are equipped with onboard cameras and sensors collect data during the flights. Concerns are on whereabouts of this data in terms of storage and who accesses that data.

3. THE TECHNOLOGY ACCEPTANCE MODEL (TAM)

The technology acceptance model (TAM). (Davis 1989; Davis et al. 1989). is an adaptation of the theory of reasoned action (TRA), to explain the acceptance and usage of information technologies. TAM is a widely cited and influential model and has been used in numerous studies regarding technology acceptance (Lee et al. 2003). TAM postulates that perceived usefulness and perceived ease of use determine an individual's intention to use a system with the intention to use serving as a mediator of actual system use. Perceived ease of use has a direct impact on perceived usefulness (Davis et al., 1992). Whilst both perceived usefulness and perceived ease of use have a jointly direct effect on the attitude towards use.

TAM postulates that the perceived usefulness (PU). and perceived ease of use (PEOU), together with attitude toward using, are the main determinants of behavioral intention to use IT. Behavioral intention refers to the strength of one's intention to perform a specified behavior (Fishbein & Azjen, 1977). To present a stronger predictive ability to the model, various researchers suggest the need to add variables in the TAM (Legris et al., 2003).

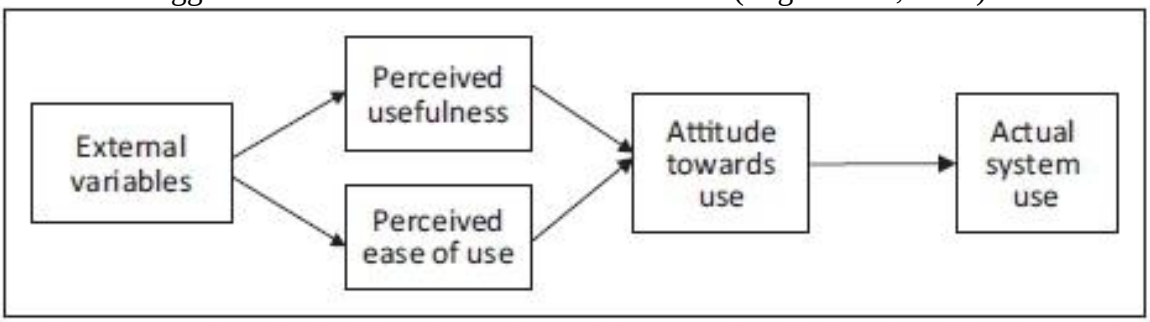


Fig. 1: Original technology Acceptance model (Adapted from Davis, F.D., 1989, Perceived ease of use and user acceptance of information tech ology, MIS Quarterly 13 (2), 319-340. https://doi.org/10.2307/249008)

3.1 Research model and hypotheses

The theoretical model of this study is based on Davis technology acceptance model and adding a variety of external variables: Legal implications, Initial costs, User knowledge, weather conditions and farm size to explain the farmers' union direct influence on the attitude and intention toward the adoption of Agricultural drones. The perceived ease of use and attitude of confidence were respectively considered as independent variables and moderator variables (Fig. 1).

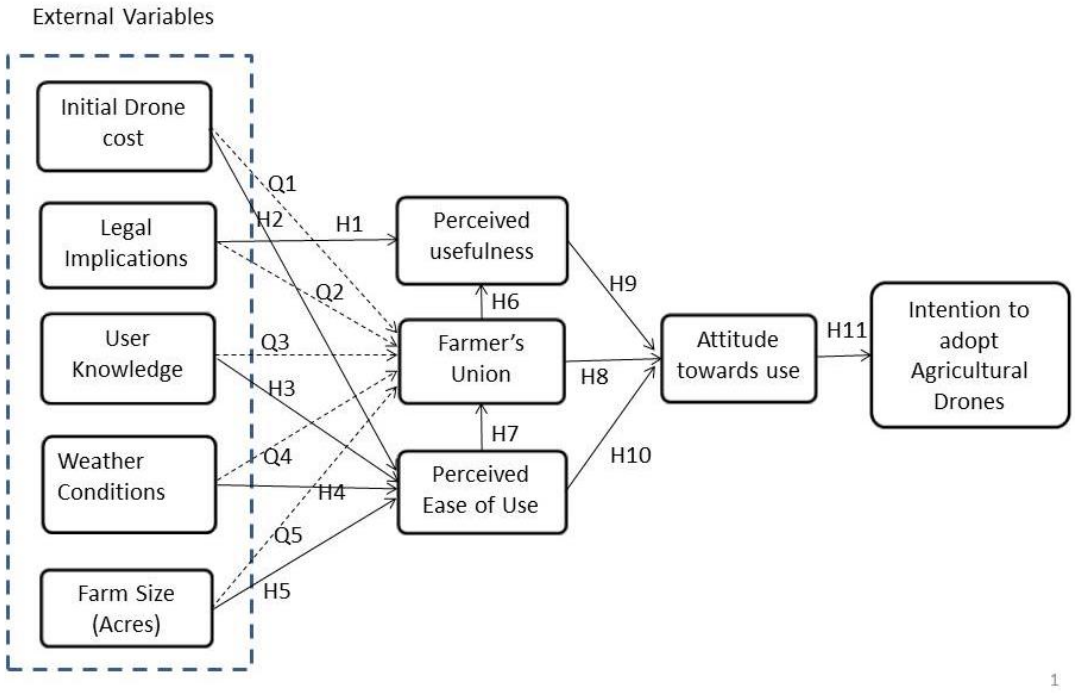


Fig. 2: Technological Acceptance Model for the adoption of agricultural drones

According to the presented model, the following hypotheses were postulated:
H1 = Legal implications have a positive effect on perceived usefulness **(H1).** and they are the responsibility of the farmer's union to persuade the authorities to grant them the commercial permit to fly the drones in the civil environment **(Q2).** Legal implications are a quantitative measure of how technology helps with work.
H2 = Initial drone costs have a positive effect on perceived Ease of use **(H2).** and the farmer's union has a mitigating effect on the initial costs **(Q1).**
H3 = User Knowledge confidence has a direct effect on perceived Ease of use **(H3).** and the farmer's union is responsible for all technical knowledge to operate and maintain the drones **(Q3).**
H4= Weather conditions have a direct effect on perceived Ease of use **(H4).** and the farmer's union takes full responsibility on issues regarding weather conditions and safety of the drones **(Q4).**
H5 = Farm size (Acres). has a direct effect on perceived Ease of use **(H5).** and regardless of how small or big the farm size, it's the responsibility of the farmer's Union to ensure the all small household farmers have equal access to the technology **(Q5).**
TAM for agricultural drone model hypothesizes that the Attitude toward Use depends critically on three variables to exploit technology, Perceived Usefulness *(PU)***(H9),** Farmer's Union **(H8).** and Perceived Ease of Use *(PEOU).* **(H10).** and that the Intention to adopt Agricultural drones depends on the attitude towards use **(H11).**

External variables shape behavior through their impact on their beliefs. External variables were added such as legal implications (Upchurch, 2015), Initial costs (Wadud, 2017). Organization features such as User knowledge (Luppicini & So, 2016). Environmental elements such as Weather conditions (Joseph et al., 2016). Regardless of the type of external variables, PEOU and PU are expected to fully mediate their impact on behavioral intention.

Farmer's Union in SSA refers to a group of small household farmers working together towards a common goal of significant crop yield, developing each, sharing experiences and engages in a more stable relationship with suppliers, customers (market). and traders. Unions are widely perceived as one mechanism of improving Small household farmers' access to agricultural services especially unions with commercial potential (Stringfellow et al., 1997).

4. DISCUSSION AND CONCLUSION

With the increasing food insecurity in SSA, the digitalization of the agricultural sector is one of the core strategies to ensure food security following the fact that the traditional methods are no longer effective in combating the various problems that lead to a decrease in crop production. There is an urgent need to adopt technologies that are easily acceptable in terms of investment, user friendly, with a comparative advantage, compatible with existing farming practices with appropriate, in terms of simplicity, since 80% of the farms in SSA is under the control of Small household farmers with limited resources and may not have the ability to afford technologies that very expensive, complex, with no comparative advantage. The ability of a farmer to adopt new technologies is highly influenced by their socioeconomic characteristics, such as farmer's income; a farmer wealthy farmer is more like to be interested in researching and learning about new technologies since he or she has the capability to invest in them. And also, level of education; an educated farmer is more likely to find ease in learning and adopting to new technologies regardless of the complexity unlike the uneducated farmer. Precision agricultural technologies are the key to tackling problems that lead to a shortage of crop yield in SSA. Small household farmers incur a significant loss of crop during pre-harvest stages especially the crop spraying and health monitoring of the crops. Pests and diseases are inevitable at this stage and the farmers lack an effective mechanism to combat them. However, the technologies are available such as Agricultural drones which are ideal in mitigating all the issues and challenges during this stage. But their adoption is associated with various hurdles including legal implications, initial drone costs, User knowledge, weather conditions and farm size, which cannot be easily overcome by an average farmer in SSA. This paper suggests a mechanism that is appropriate for the integration of the drones which is "Farmers' union". Since the majority of the farmers in SSA belong to a farmers' union, they have improved access to agricultural services. Unions in SSA are highly funded by donor funds or by the government hence making it a suitable channel for the adoption of agricultural drones. Small household farmers do not need to worry about the initial costs of the drones since through the union; donors or the government can easily incur all the costs as a group. Agriculture drones are categorized as commercial hence a must to acquire a special license from the legal authorities to operate them in the civil environment, so since most of the unions are officially recognized, acquiring a license is not complex unlike it would be for a single average farmer. Operators must have specific skills and knowledge prior to flying drones which is costly, so having a union team of operators, saves the costs that individual farmers would incur in gaining skills to operate them. The maintenance costs of drones are very high since they are constantly affected by the weather conditions, so an average farmer will not concern him or herself with the state of the drones. An average farmer with less than 5 acres of land wouldn't have a profitable strategy to invest in drones but through the union, he or she can also benefit from drone services regardless of the farm size. Through farmers' unions in SSA, farmers will have access to Agricultural drone services including; Drone spraying, Forecasting, Drone sowing, Drone irrigation, Drone health

monitoring, Drone surveying and Drone soil Analysis. Through these services, Farmers will greatly benefit in terms of; Faster detection of disease outbreaks and pests, Precise Harvest estimation, Precise monitoring and cultivation, Time and money saving, Safer spraying grounds, precise use of pesticides, herbicides and fertilizers. Many precision agricultural technologies can be easily adopted through unions. With adequate access to new technologies, farmers can easily combat a number of problems in the agricultural sector which in turn will lead to a tremendous increase in food production in SSA to cope up with the rapidly growing population hence food security.

LITERATURE:

1. Abass, A. B., Ndunguru, G., Mamiro, P., Alenkhe, B., Mlingi, N., & Bekunda, M (2014). Post-harvest food losses in a maize-based farming system of semi-arid savannah area of Tanzania. *Journal of stored products research*, 57, 49-57.
2. Adrian, A. M., Norwood, S. H., & Mask, P. L (2005). Producers' perceptions and attitudes toward precision agriculture technologies. *Computers and electronics in agriculture*, *48*(3), 256-271.
3. Banu, S (2015). Precision agriculture: tomorrow's technology for today's farmer. *Journal of Food Processing & Technology*, *6*(8), 1.
4. Bernauw, K (2016). Drones: the emerging era of unmanned civil aviation. *Zbornik PFZ*, 66, 223.
5. Bjugstad, N., & Skuterud, M (2010). Test performance of handheld pesticide application equipment or knapsack sprayers in practical use in Norway. *Julius-Kühn-Archiv*, (426), 76.
6. *Business Consulting, September* (2017), Retrieved 07.05.2018 from https://www.ipsos.com/en/commercial-drone-adoption-agribusiness-disruption-opportunitiy
7. Cavoukian, A (2012). *Privacy and drones: Unmanned aerial vehicles* (pp. 1-30). Ontario: Information and Privacy Commissioner of Ontario, Canada.
8. Davis, F. D (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.
9. Davis, F. D., Bagozzi, R. P., & Warshaw, P. R (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management science*, 35(8), 982-1003.
10. Fishbein, M., & Ajzen, I (1977). *Belief, attitude, intention, and behavior: An introduction to theory and research.* MA: Addison-Wesley
11. Fortes, E. P (2017). Seed plant drone for reforestation. *The Graduate Review*, 2(1), 13-26.
12. Gebbers, R., & Adamchuk, V. I (2010). Precision agriculture and food security.*Science*,*327*(5967), 828-831.
13. Hill, D. S (1987). *Agricultural insect pests of temperate regions and their control.* CUP Archive..
14. Horton, C. V., & Vorpahl, S. R (2017). U.S. Patent Application No. 14/864,245.
15. Huuskonen, J., & Oksanen, T (2018). Soil sampling with drones and augmented reality in precision agriculture. *Computers and electronics in agriculture*, 154, 25-35.
16. Islam, S., Cenacchi, N., Sulser, T. B., Gbegbelegbe, S., Hareau, G., Kleinwechter, U., ... & Wiebe, K (2016). Structural approaches to modeling the impact of climate change and adaptation technologies on crop yields and food security. *Global Food Security*, *10*, 63-70.
17. Jeanneret, C., & Rambaldi, G (2016). *Drone governance: a scan of policies, laws and regulations governing the use of unmanned aerial vehicles (UAVs). in 79 countries*. CTA Working Paper;16/12. Wageningen: CTA.
18. Jeyaratnam, J. "Health hazards awareness of pesticide applicators about pesticides." *In Studies in Environmental Science*, vol. 18, pp. 23-30. Elsevier, 1982.

19. Joseph, W., Aerts, S., Vandenbossche, M., Thielens, A., & Martens, L (2016). Drone based measurement system for radiofrequency exposure assessment. *Bioelectromagnetics*, 37(3), 195-199.
20. Kabubo-Mariara, J., Mwabu, G., & Kimuyu, P (2006). Farm productivity and poverty in Kenya: The effect of soil conservation. *Journal of Food Agriculture and Environment*, *4*(2), 291.
21. Kardasz, P., Doskocz, J., Hejduk, M., Wiejkut, P., & Zarzycki, H (2016). Drones and Possibilities of their Using. *Journal of Civil Environmental Engineering*, 6(3), 1-7.
22. Lee, Y., Kozar, K. A., & Larsen, K. R (2003). The technology acceptance model: Past, present, and future. *Communications of the Association for information systems*, 12(1), 50.
23. Legris, P., Ingham, J., & Collerette, P (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information & management*, 40(3), 191-204.
24. Lidynia, C., Philipsen, R., & Ziefle, M (2017). *Droning on about drones—acceptance of and perceived barriers to drones in civil usage contexts. In Advances in Human Factors in Robots and Unmanned Systems* (pp. 317-329). Springer, Cham.
25. Luppicini, R., & So, A (2016). A technoethical review of commercial drone use in the context of governance, ethics, and privacy. *Technology in Society*, 46, 109-119.
26. Maekeler, N (2017): Spielregeln am Himmel. Überblick über die neue Drohnenverordnung. In: *c`t - Magazin für Computer Technik* (15), pp. 86-89
27. Matthews, G. A (1981). Developments in pesticide application for the small-scale farmer in the tropics. *Outlook on agriculture*, 10(7), 345-349.
28. McNeil, B., & Snow, C (2016). The truth about drones in mapping and surveying. Skylogic Res, 200, 1-6.
29. Ngowi, A. V. F., Mbise, T. J., Ijani, A. S. M., London, L., & Ajayi, O. C (2007). Smallholder vegetable farmers in Northern Tanzania: Pesticides use practices, perceptions, cost and health effects. *Crop Protection*, 26(11), 1617-1624.
30. Oerke EC (2005). Crop losses to pests. J Agr Sci 144:31–43. Doi: 10.1017/S0021859605005708
31. Petrović, I., Marjanović, M., Ćosić, M., Savić, S., & Cvijanović, G (2016). Infra-red thermography for detecting drought in agricultural crops and scheduling irrigation. *Economics of Agriculture*, 63(2), 461-469.
32. Rahman, A. E., Tarek, A., Dar, R. A., & Hiekel, N. S (2014). Comprehensive Assessment Of Two Compounds And Spraying Equipment For Controlling Citrus Brown Mite Eutetranychus orientalis (Klein)(Acari: Tetranychidae). On Citrus Trees At Qalubia Province. *Egyptian Academic Journal of Biological Sciences, F. Toxicology & Pest Control*, 6(1), 25-33.
33. Salami, A., Kamara, A. B., & Brixiova, Z (2017). *Smallholder agriculture in East Africa: Trends, constraints and opportunities*. African Development Bank Tunis, Tunisia.
34. *Sale announcement: 15 Litres High Payload Sprayer Drone Agricultural Farm Machinery* (2018). Retrieved 07.08.2018 from https://detail.en.china.cn/provide/p140851550.html
35. Scherer, M., Chung, J., Lo, J (2017): *Commercial Drone Adoption in Agribusiness – Disruption and Opportunity*. Ipsos
36. Seelan, S. K., Laguette, S., Casady, G. M., & Seielstad, G. A (2003). Remote sensing applications for precision agriculture: A learning community approach. *Remote Sensing of Environment*, 88, 157–169.
37. Spoorthi, S., Shadaksharappa, B., Suraj, S., & Manasa, V. K (2017, February). Freyr drone: Pesticide/fertilizers spraying drone-an agricultural approach. In 2017 2nd International Conference on Computing and Communications Technologies (ICCCT). (pp. 252-255). IEEE.

38. Stöcker, C., Bennett, R., Nex, F., Gerke, M., & Zevenbergen, J (2017). Review of the current state of UAV regulations. *Remote sensing*, 9(5), 459.
39. Stringfellow, R., Coulter, J., Hussain, A., Lucey, T., & McKone, C (1997). Improving the access of smallholders to agricultural services in sub-Saharan Africa. *Small Enterprise Development*, 8(3), 35-41.
40. Tripathi, R., Shahid, M., Nayak, A. K., Raja, R., Panda, B. B., Mohanty, S., ... & Kumar, (2013). A. Precision Agriculture in India: Opportunities and Challenges.
41. Upchurch, E. K (2015). *Drone on the Farm: The Benefits and Controversies Surrounding the Future of Unmanned Aircraft Systems in Agriculture*. Drake J. Agric. L., 20, 309.
42. Van der Meijden, G (1998). *Pesticide application techniques in West-Africa*.
43. Wadud, Z (2017). Fully automated vehicles: A cost of ownership analysis to inform early adoption. *Transportation Research Part A: Policy and Practice*, 101, 163-176.
44. Wolf, H. G (2017). *Drones: Safety risk management for the next evolution of flight. Routledge*., p.172

EXPLORING THE RELATIONSHIP BETWEEN E-GOVERNMENT AND SUSTAINABLE DEVELOPMENT

Yana Lopatkova
Graduate School of Economics and Management, Ural Federal University, Russia
iana.lopatkova@urfu.ru

Ebenezer Agbozo
Graduate School of Economics and Management, Ural Federal University, Russia
eagbozo@urfu.ru

Zhanna Belyaeva
Graduate School of Economics and Management, Ural Federal University, Russia
zh.s.belyaeva@urfu.ru

ABSTRACT

In recent decades, digital transformation has been underway thereby influencing the global economy. Digitalization and sustainable development are the most important trends in modern life, but the intersection of these aspects remains a largely unexplored area. The opinion that the use of e-government technologies can provide an integrated approach to the implementation of sustainable development is widely accepted among scholars and government representatives. Governments are finding new ways to effectively create public value through innovative, effective, inclusive, collaborative, open and human-centric service delivery and public policy decision-making leveraging the potential of modern technologies. The digitalization of government can provide the necessary tools to ensure the development and integration of economic, social and environmental aspects. However, there are opponents who believe that information and communication technologies (ICT). provide new challenges for traditional areas of information policies and moreover can negatively affect the resources of countries. Research methods include a literature review and regression analyses. Regression analysis was used to measure the impact of e-government factors on sustainable economic, social and environmental development. The following indicators are considered as a part of sustainable development: sustainable development goals (SDGs), Human Development Index, GDP per capita and Environmental Performance Index. The results of this study indicate that the concept of government digitalization can be an effective factor for sustainable development. At the same time, there are significant limitations, such as differences in access to technology; poverty and inequality of the population, resource costs that do not allow people to fully use the potential of ICT and e-government for sustainable development. The results of this study disclose new directions for further research.

Keywords: *Digital economy, digitalization, Human Development Index, E-government, government agencies, Public service provision, Political benefits, Public accountability, Public information, Sustainable development.*

1. INTRODUCTION

Digitalization and sustainable development are the most important trends in modern life. (Kiron and Unruh, 2018), but the intersection of these aspects remains a largely unexplored area due to the emergence and improvement of new digital tools. The opinion that the use of e-government technologies can provide an integrated approach to the implementation of sustainable development is widely accepted among scholars, industry professionals, and government representatives. The electronic government for the past two decades has served citizens and residents of many countries by easing the process of public service provision and

performing civic duties (Twizeyimana and Andersson, 2019). The goal and vision of e-government are to enhance the delivery of value-added online public services effectively and efficiently of services provided by the government to citizens and residents (Muthu et al., 2016). There are three important categories of benefits of e-government: technical, organizational and political. The listed examples of political benefits such as, a better appreciation for government-wide goals, increased public accountability, greater comprehensive and increased quality public information, in conjunction with integrated planning and service delivery (Alenezi et al., 2015). To say the least, e-government has undoubtedly come a long way in fostering socio-economic development (Meso et al., 2009). and vice versa (Ziemba et al., 2018). However, there is an opposing opinion which indicates that information and communication technologies (ICT). provide new challenges for traditional areas of information policies and moreover can negatively affect the resources of countries. Digital technologies reveal new threats such as cybercrime, loss of privacy, a threat to environmental sustainability (resources and energy). (Seele and Lock, 2017; Reichel, 2018; Ovchinnikov and Grishin, 2011). A critical look at problems and prospects for e-government demonstrates that e-government is not a dangerous enthusiasm, but it requires caution in planning and implementing e-government projects (Dale, Gauld and Goldfinch, 2006), interaction of government agencies with business and citizens, and introduction of new mechanisms that can guarantee freedom of information, protection of personal data (Ovchinnikov and Grishin, 2011). Thus, sustainable development is at the heart of present-day socio-economic development. Research has not delved much into evaluating the performance of e-government as an avenue for sustainable development realization. As such, this research seeks to contribute to the body of knowledge within this novel but the growing sphere of scientific research. Due to the contrasting strands of arguments, we aim to re-investigate the impact of the role of e-government on sustainable development.

2. E-GOVERNMENT AND SUSTAINABLE DEVELOPMENT LINKAGE - THEORETICAL BACKGROUND

A large body of research has explored the benefits of e-government, developed models and architecture for effective implementation, investigated the factors for adoption of e-government with regards to local government, cities, countries, regional blocks and continents (Sandoval-Almaźan et al., 2017; Pérez et al., 2019). There is an ongoing paradigm shift from the initial provision of public electronic services (e-services). which were motivated by several positive factors (digital transformation and quality service delivery). and questionable motivations such as obtaining an image of legitimacy and demonstrate modernity in response to foreign globalization as well as local legitimation pressures (Maerz, 2016). E-government implementation is currently shifting towards a more people-centered/citizen-centric/user-centric/human-centric approach (Sigwejo and Pather, 2016). Emphasis on value creation is being placed by a number of governments. Governments are realizing that the attainment of the United Nations Sustainable Development Goals (SDGs). is a possibility with the parallel implementation of quality human-centric e-government services. The selected studies on sustainable development and digitalization (in particular e-government). reveal and explain a positive correlation in applying *e-government and SDGs* (Lopatkova et al., 2019; Jovanović et al., 2018; Malhotra, 2018; Janowski, 2016). In studying the digital government – aspiration-capacity gap with respect to SDG attainment, e-government must play a key role in the implementation of the SDG agenda and that UN member state governments must embrace this role by developing strong e-government capabilities. The author reveals that for 69% of the UN member states, there exists a gap between aspiration and capacity concerning e-government readiness for implementing SDGs (Janowski, 2016). This indicates a positively wide-acceptance of the desire to attain the SDGs while developing e-government and improving electronic participation (e-participation).

According to the work of researchers who have made the analysis of digitalization factors affecting sustainable development based on a sample of 157 countries with different socio-economic levels of development (Lopatkova, Belyaeva, Sohag, 2019), e-governance play crucial role to enhance the global sustainability. The concept of digitalization can also be an effective factor of sustainable development, so it should be embedded into the business, government and society core statement. In the case of India, Malhotra et al (2018). compare SDGs with the Mission Mode Projects (MMPs). of the Digital India initiative, which is a clear indication of the fact that governments are on course with setting targets for sustainable future efforts to create e-governance models and drive local innovativeness so as to satisfy specific localized needs. The authors are of the persuasion that big data analytics as an underlying foundation for E-Government is capable of driving SDG realization. A separate pool of scientific research is devoted to the relationship *between e-government and individual indicators of social, environmental, economic sustainability*. Zidanšek et al (2014). prove that sustainability indicators have been intensively studied in the past decades, but there is still no common approach to measure sustainability. The authors discover a strong and positive correlation between indicators of sustainability (Environmental Sustainability Index and Environmental Performance Index), indicators of technological development (Internet and computer development). and subjective indicators of Happiness in Nations and Life Satisfaction.
Aniscenko et al (2017). discover e-government development has positive effects on better and transparent governance and lead to the sustainable development of Andeans countries. The authors use the following indicators for the model specification: E-Government Index; GDP per capita for economic development; two indicators: 1). the policy and institutions for environmental sustainability rating and 2). the public-sector management and institutions clusters for social development and CO2 emissions for environment sustainability. The authors emphasize the advancement of e-government serves as an enabler for the sustainable development of both developed and developing countries (Aniscenko et al., 2017). Jovanović et al (2018). confirm the digitalization and society's sustainable development linkage (indicators: Digital Economy and Society Index, Global Competitiveness Index, Global Innovation Index, Good Country Index, SDGI, Hofstede's cultural dimensions).

The authors prove that digitalization significantly correlates with sustainable development components. Jovanović et al. have discovered that GDP is higher in more digitalized countries. The digitalization level correlates with economic development by higher competitiveness, innovation, and entrepreneurial activities. It is worth noting that the development of electronic public services helps to improve the business environment and the one in turn contributes to sustainable development. The private sector (small and large). is a key player influencing the successful e-government by creating the system environment and supporting e-participation with respect to e-government (Agbozo, 2019). Scientific studies specify the nature and drivers of sustainable development in applying digital tools both in global corporations and in SMEs (Lopatkova and Belyaeva, 2019). Besides, the social aspect is also positively influenced by digitalization. Cultural differences strongly affect the process of digitalization (Jovanović et al., 2018). Thus, the digitalization of the government is an essential condition for the implementation of the sustainable development agenda. We aim to re-investigate the impact of digitalization on social, environmental and economic sustainable development focusing on the role of e-government. Taking into account the process of digital transformation, the importance of sustainable development issues and the role of government we proposed the research question to answer the main hypothesis of the study: *whether and to what extent e-government affects sustainable development and its components?*

3. RESEARCH METHODOLOGY

To answer the research question posed, it is necessary to employ methodological techniques to reveal the scientific findings. The conceptual basis of the study (figure 1). is based on the following data. All data were collected from the official reports and databases, and the sources are given in brackets:

1. E-Government Index – EGDI (UN E-Government Survey, 2018);
2. Sustainable Development Goals – SDGI (UN Sustainable Development Goals, 2018);
3. Human Development Index – HDI (UNDP Human Development Index, 2018);
4. Environmental Performance Index – EPI (Yale University (YCELP). and Columbia University (CIESIN), 2018);
5. GDP per capita (World Bank, 2018);
6. Total population (World Bank, 2018);
7. Public sector spending (World Bank, 2018);
8. Trade turnover (World Bank, 2018);
9. Political stability and the absence of violence/terrorism (World Bank, 2018).

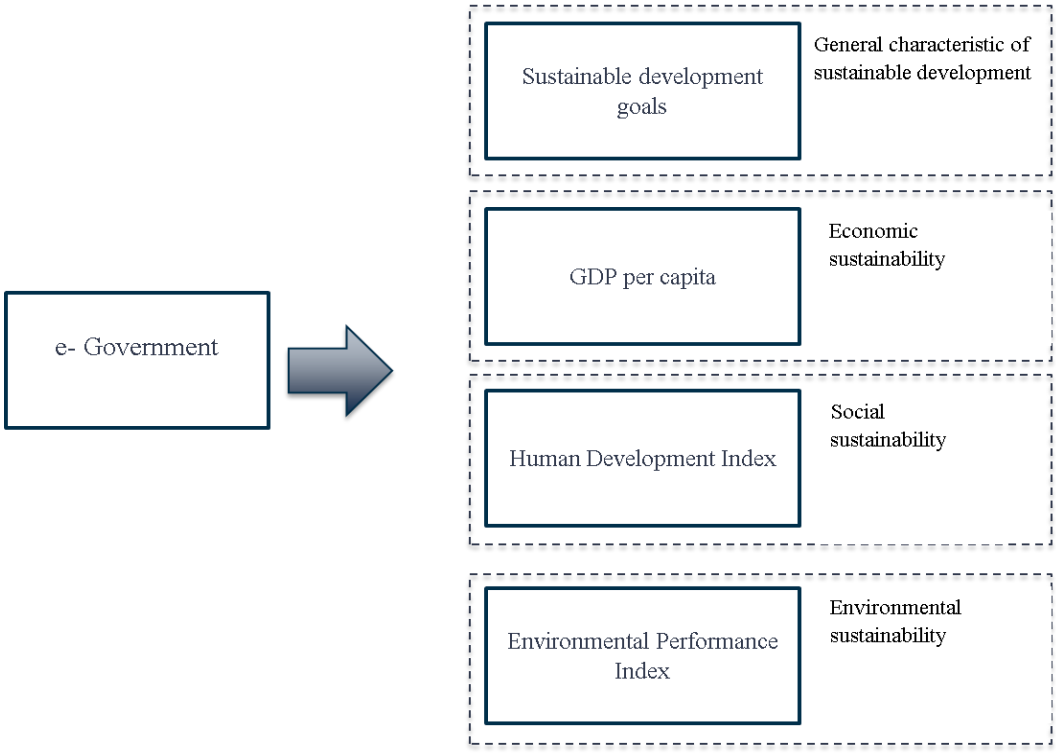


Figure 1: Research Design

The e-government index is based on the weighted average of three indices: Telecommunication Infrastructure Index (TII), Human Capital Index (HCI). and Online Services Index (OSI). The research approach takes the e-Government Index as an independent variable.

The SDG index presents an assessment of countries in their achievement of sustainable development goals. In the study, this index is taken as a dependent variable (model 1).

(Model 1). $SDG_i = \beta_0 + \beta_1 EGOV_i + \beta_2 GE_i + \beta_3 TO_3 + \beta_4 Popul_i + \beta_5 IQ_i + \varepsilon_i$

Gross domestic product per capita is the purchasing power parity of all final goods and services produced in the country for a given year, divided by the average population for the same year. GDP per capita is used as an economic component of sustainable development and is considered as a dependent variable in model 2.

$$\text{(Model 2). } GDP_i = \beta_0 + \beta_1 EGOV_i + \beta_2\, GE_i + \beta_3 TO_3 + \beta_4 Popul_i + \beta_5 IQ_i + \varepsilon_i$$

Human Development Index is an integral indicator characterizing key aspects of human potential: standard of living, literacy, education and longevity. The index takes a social component of sustainable development as a dependent variable in model 3.

$$\text{(Model 3). } HDI_i = \beta_0 + \beta_1 EGOV_i + \beta_2\, GE_i + \beta_3 TO_3 + \beta_4 Popul_i + \beta_5 IQ_i + \varepsilon_i$$

The Environmental Performance Index is a combined indicator that measures the country's achievements in terms of the state of ecology and natural resource management. The index characterizes environmental sustainability as a dependent variable in model 4.

$$\text{(Model 4). } EPI_i = \beta_0 + \beta_1 EGOV_i + \beta_2\, GE_i + \beta_3 TO_3 + \beta_4 Popul_i + \beta_5 IQ_i + \varepsilon_i$$

The following indicators are used as control variables: total population, public sector spending, trade turnover, political stability and the absence of violence/terrorism. Though simplistic, a regression analysis approach was best suitable for our study due to its ability to disentangle the relative effects on a dependent variable of two or more independent variables by incorporating multiple explanatory variables (Allen, 2004). The next section reveals the results of our analysis.

4. RESEARCH RESULTS

As indicated earlier, the purpose of this study is to empirically analyze the impact of e-government on sustainable development. The paper attempts to assess the impact of digitalization on global sustainable development based on a sample of 114 countries within the context of the year 2018. The model was evaluated using the Stata software package. Descriptive analysis reveals the digitalization is correlated with sustainable development (table 1). Table 1 points out that EGDI strongly correlates with: sustainability index SDGI (0.9063), economic sustainability factor GDP per capita (0.8759), social sustainability index HDI (0.9405), and environmental sustainability index EPI (0.8099).

Table1: Correlation analysis (authors' research findings)

(1). EGDI and SDGI		
EGDI	1.0000	
SDGI	0.9063	1.0000
P-value	0.0000	
(2). e-Government and GDP		
EGDI	1.0000	
GDP	0.8759	1.0000
P-value	1.0000	
(3). e-Government and HDI		
EGDI	1.0000	
HDI	0.9405	1.0000
P-value	1.0000	
(4). e-Government and EPI		
EGDI	1.0000	
EPI	0.8099	1.0000
P-value	1.0000	

The regression model was used to analyze the relationship between EGDI and sustainable development factors (table 2). Robust regression was tested in model 3 due to heteroskedasticity.

Table 2: E-Government and Sustainable development linkage (authors' research findings)

Model	Variable	Coefficient	Description
Model 1 (SDG)	E-Government	41,8*** (2,76)	E-government positively impacts SDGs
Model 2 (GDP)	E-Government	5,22*** (0,4)	Factors have a positive effect on GDP
	Government expenditures	0,031*** (0,001)	
	Institutional Quality	0,2* (0,1)	
Model 3 (HDI, robust)	E-Government	0,72*** (0,04)	E-government has a positive effect on the HDI
	Population	-0,012*** (0,00007)	Population growth negatively impacts HDI
Model 4 (EPI)	E-Government	45,5*** (5,23)	E-government positively impacts EPI
	Population	-1,107* (0,6)	Population growth negatively impacts EPI

*** 1% significance level; * 10% significance level. In brackets - standard errors, model 3 - corrected errors
Model 1 Number of observations: 109; VIF: 1.30; R2: 0.85.
Model 2: Number of observations: 114; VIF: 2.01: R2: 0.85
Model 3: Number of observations: 104; VIF: 1.96: R2: 0.92
Model 4: Number of observations: 112; VIF: 1.93: R2: 0.70

The results from table 2 demonstrate that the EGDI positively and substantially explains global sustainability. These findings are in line with the researchers (Aniscenko et al., 2017; Janowski, 2016; Jovanović et al., 2018; Lopatkova et al., 2019; Zidanšek et al., 2014). that there is a positive correlation between technological development and socio-economic development. Thus, we infer empirically that e-government as a technological development initiative influences socio-economic development represented by sustainability. This implicates that more digitalized countries tend to perform better in achieving sustainability goals. In addition, the results of testing model 3 and model 4 show that the increase in population negatively affects the sustainable development of social and environmental aspects. Thus, we answered the research question: e-government explains and strongly affects sustainable development and its components The results indicate e-government is (must be). designed to ensure the provision of efficient public services and affordable way to the needs of people, to increase citizen and business participation in the decision-making process, to increase transparency and accountability of public institutions by using digital tools.

4. CONCLUSION

As the countries have been and are still embracing digitization of their public services and the global clarion call to sustainable livelihood has been trumpeted – despite existent socioeconomic disparities – it is vital that research examines the impact of both phenomena and

assess whether the change desired by the masses is underway. The main objective of the study was to assess the impact of e-government on sustainable development. The literature review revealed that digitalization is a prerequisite for long-term sustainability. To answer the posed question, we analyzed the cross-countries data for the year 2018 by applying the standard regression framework. Our finding demonstrates that e-government positively and significantly explains economic, environmental and social sustainability. The findings of this study indicate that if e-government plays a crucial role in enhancing global sustainability, digitalization should be embedded into the business, government and society core statement. The positive results of this study also indicate that it is necessary to conduct research in the field of sustainable development and digitalization in order to fill the gap in theoretical and practical knowledge. This study theoretically and practically contributes to the discussion on digital transformation and its influence on the attainment of sustainable development. Recommendations are made to policymakers to focus on strengthening the lacking areas of the society in which they are given the mandate to oversee by introducing technological innovations and transformation which is centered at developing livelihoods as well as protecting the individuals' constitutional and human rights and freedoms. At the same time, e-government should increase citizen participation, provide more effective access to information and communication technologies and improve the quality of electronic services to achieve sustainable development. It is worth noting that the methodology used to measure both digitalization and sustainability is not developed enough. There is no common understanding of the factors that can be used for evaluating the digitalization level and social, environmental and economic development. Also, we based our conclusions integer indexes without evaluating sub-indexes. We did not capture a comprehensive timespan of data over a lengthy period of time. With respect to the limitations of the study, we recommend future research to investigate a time series analysis as well as consider how individual goals are being impacted by e-government development.

LITERATURE:

1. Agbozo, E (2019). The private sector as an e-government enabler. *ACM International Conference Proceeding Series*, 2019 (No F148155), pp. 508-509.
2. Alenezi, H., Tarhini, A. and Masa'deh, R (2015). Exploring the Relationship between Information Quality and e-Government Benefits: A Literature Review. *International Review of Social Science and Humanities*, 2015 (Vol. 9, No. 1), pp. 33-50.
3. Allen, M. P (2004). *Understanding regression analysis*. USA: Springer Science & Business Media.
4. Aniscenko, Z., Robalino-López A., Escobar, T., Escobar, B (2017). Regional Cooperation in Dealing with Environmental Protection. E-government and Sustainable Development in Andean Countries. *Proceedings of the 11th International Scientific and Practical Conference: Environment. Technology. Resources.*, 2017 (Vol. 1), pp.13-19.
5. Dale, T., Gauld, R. and Goldfinch Sh (2006). Dangerous Enthusiasms: E-government, Computer Failure and Information System Development. New Zealand: Otago University Press.
6. Environmental Performance Index (2018). Retrieved 20.10.2019 from: https://epi.envirocenter.yale.edu/
7. Hu, G., Yan, J., Pan, W., Chohan, S. R., & Liu, L (2019). The Influence of Public Engaging Intention on Value Co-Creation of E-Government Services. *IEEE Access*, 2017 (Vol. 7), pp.111145 – 111159.
8. Human Development Index (2018). Retrieved 20.10.2019 from: http://hdr.undp.org/en/content/human-development-index-hdi

9. Janowski, T (2016). Implementing Sustainable Development Goals with Digital Government–Aspiration-capacity gap. *Government Information Quarterly*, 2016 (Vol. 4, No. 33), pp. 603-613.
10. Jovanović, M., Dlačić, J., and Okanović, M (2018). Digitalization and society's sustainable development – Measures and implications. *Proceedings of Rijeka School of Economics*, 2018 (Vol. 36, No. 2), pp. 905-928
11. Kiron D., and Unruh G (17.01.2018). The Convergence of Digitalization and Sustainability. *MIT Sloan Management Review*. Retrieved 11.04.2019 from https://sloanreview.mit.edu/article/the-convergence-of-digitalization-and-sustainability/
12. Lopatkova Y.A., and Belyaeva Zh.S (2019). The electronic commerce influence on the social responsibility of small and medium-sized businesses in the world economy. *Bulletin of Ural Federal University. Series Economics and Management*, 2019 (Vol. 18, No 1), pp. 48-68.
13. Lopatkova, Y., Belyaeva, Zh., Sohag, K (2019), Global sustainability and digitalization linkage. *12th Annual Conference of the EuroMed Academy of Business: Business Management Theories and Practices in a Dynamic Competitive Environment, (pp.*1719 – 1722). Retrieved 05.11.2019 from https://euromed2019.com/book-of-proceedings/
14. Maerz, S. F (2016). The electronic face of authoritarianism: E-government as a tool for gaining legitimacy in competitive and non-competitive regimes. *Government Information Quarterly*, 2016 (Vol.33, No 4), pp. 727-735
15. Malhotra, C., Anand, R.., and Singh, S (2018). Applying Big Data Analytics in Governance to Achieve Sustainable Development Goals (SDGs). in India. *Data Science Landscape*, 2018 (Vol. 38), pp. 273-291.
16. Meso, P., Musa, P., Straub, D., & Mbarika, V (2009). Information infrastructure, governance, and socio-economic development in developing countries. *European Journal of Information Systems*, 2009 (Vol. 18, No 1), pp.52-65.
17. Muthu, P. P., Thurasamy, R., Alzahrani, A. I., Alfarraj, O., and Alalwan, N (2016). E-Government service delivery by a local government agency: The case of E-Licensing. *Telematics and informatics*, 2016 (Vol. 33, No 4), pp. 925-935
18. Ovchinnikov, S.A., and Grishin, S.E (2011). Threats to the individual, society and the state in the implementation of information technology. *Information Security of Regions*, 2011 (No 2), pp. 26-31
19. Pavlyutenkova M.Yu., Gerdichuk Yu.V (2017). E-government in the implementation of sustainable development policies. *PolitBook*, 2017 (No 2), pp. 6-21
20. Pérez, S., Cabrera, J., Rodríguez, J., & Raymundo, C (2019). E-Government Adoption Model Extended with Public Value in Peru. *8th International Conference on Industrial Technology and Management (ICITM)*, 2019, pp. 338-342
21. Sandoval-Almazán, R., Luna-Reyes, L. F., Luna-Reyes, D. E., Gil-Garcia, J. R., Puron-Cid, G., and Picazo-Vela, S (2017). Building Digital Government Strategies Principles and Practices. *Public Administration and Information Technology*, 2017 (Vol. 16), pp. 7-20
22. Seele P., and Lock I (2017). The game-changing potential of digitalization for sustainability: possibilities, perils, and pathways. *Sustainability Science*, 2017 (Vol. 12, No 2), pp. 183–185
23. Sigwejo, A., and Pather, S (2016). A citizen-centric framework for assessing e-government effectiveness. *The Electronic Journal of Information Systems in Developing Countries*, 2016 (Vol. 74, No 1), pp. 1-27
24. Silvestre, B. S., and Ţîrcă, D. M (2019). Innovations for sustainable development: Moving toward a sustainable future. *Journal of Cleaner Production*, 2019 (Vol.208), pp. 325-332
25. Twizeyimana, J.D., and Andersson, A (2019). The public value of E-Government – A literature review. *Government Information Quarterly*, 2019 (Vol. 36), pp.167-178

26. UN E-Government Survey (2018). Retrieved 20.10.2019 from: https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2018
27. World Bank Data (2018). Retrieved 20.10.2019 from: https://data.worldbank.org/indicator/ny.gdp.pcap.cd
28. Zidanšek, A., Limbek, M., and Šlaus, I (2014). Contemporary Crises and Sustainability Indicators. *Journal of Sustainable Development of Energy, Water and Environment Systems,* 2014 (Vol. 2, No 2), pp. 100-107
29. Ziemba, E., Papaj, T., Grabara, D (2018). Influence of Socio-Economic Factors on Regional e-Government Maturity in Poland. *18th European Conference on Digital Government ECDG,* 2018, pp. 267

CAN PRODUCTIVITY EXPLAIN REVENUE GROWTH OF THE CROATIAN MANUFACTURING FIRMS: BEFORE AND AFTER 2013?

Andrey Pushkarev
UrFU GSEM, Russia
a.a.psukarev@urfu.ru

Valeria Zadorina
UrFU GSEM, Russia
zadorinav.zadorina96@gmail.com

Alexey Zhukov
UrFU GSEM, Russia
a.n.zhukov@urfu.ru

ABSTRACT

In this research, we aim to answer the question: how well productivity can explain the revenue growth dynamics of Croatian firms. We also try to compare the role of productivity in two periods: before Croatia has become an official EU member in 2013 and after. For this, we employ a dataset of 1784 Croatian manufacturing firms, observed from 2010 to 2017. We construct an econometric model of revenue growth on the firm level and estimate the share of the revenue growth variance explained by productivity and its components: static productivity level and dynamic productivity change. We draw several conclusions from the analysis. First, we find weak explanatory power of the productivity and its components, which persists across both periods. Such a result is also evidence of weak market selection mechanism and has been observed in other countries as well. It also should be noted that the static component of productivity can only explain 1-2% of the revenue growth variance. That suggests that levels of productivity and their differences between firms are not as important for revenue growth as the dynamics of productivity. Again, similar results have been observed before, even for more developed countries. The last finding is that after Croatia has become an official EU member, the explanatory power of the firm-level productivity has decreased. We theorize that some other, more informal, factors may have determined the revenue growth in the second period, after Croatia has become an official member of the EU. It also may be a sign of the increased importance of the productivity of firms from other countries.

Keywords: *Market selection, Productivity, Revenue growth.*

1. INTRODUCTION

Growth is an important condition for the survival of an enterprise because it is growth that helps strengthen market positions and produces other positive effects (Rauch & Rijskik, 2013). According to Penrose (1959), growth is the result of an internal process of enterprise development and expansion. For a long time, the market selection was considered one of the main factors of productivity growth and economic growth because it allows excluding companies with low efficiency from the market through the competition. It is generally agreed that the company's growth and its efficiency are positively correlated at a high level. Indeed, the neoclassical (Jovanovic, 1982; Hopenhayn, 1992; Ericson and Pakes, 1995). and evolutionary approaches (Winter and Nelson, 1982; Silverberg et al., 1988; Dosi et al., 2010). are based on the assumption that companies with high by efficiency they gain a larger market share, while ineffective ones gradually lose their positions and leave the market. In this research we aim to understand more deeply how productivity is connected to the revenue growth of Croatian manufacturing firms and what share of the revenue growth it can explain. Apart from

that are looking at how the connection between these indicators has changed after Croatia has become a full EU member. For this, we employ a dataset of 1784 Croatian manufacturing firms, observed from 2010 to 2017. We construct an econometric model of revenue growth on the firm level and estimate the share of the revenue growth variance explained by productivity and its components: static productivity level and dynamic productivity change. The main factors that we consider are: revenue growth, labor and total factor productivities, number of employees. Some research has already been done in this field. Bottazzi et al (2010), using data from French and Italian companies, indicate that productivity and profitability can be accounted only for 3-5% of the firm growth. Dosi et al (2015). conducted an analysis of German, French, UK and US companies, showing that productivity may be able 10-20% of the revenue growth variance, which is still rather low. As Coad & Hölzl (2012). and Storey (2011). show, even if there are strong and statistically significant relationships, the aggregate explanatory power models assessing the revenue growth, which is measured using R2, is rather low. Similar results were obtained for the Ural Federal District in Russia (Savin et al., 2019). The remaining part of the work is structured as follows. In Section 2, we present the data and methods that are used for the research. Section 3 contains the results of the econometric estimation and their interpretation. In Conclusion, we sum up the results, discuss the limitations of the work and further research prospects.

2. DATA AND METHODS

In this research, we employ a firm-level dataset of 1784 firms located in Croatia from the manufacturing sector (we exclude the tobacco industry and petroleum refinement industry from the analysis, as our dataset lacks a sufficient number of observations for them). The dataset covers a period from 2010 to 2017. The data is obtained from the Amadeus database, provided by Bureau van Dijk. The second revision of NACE is used for the classification of industries. Before estimation, we apply several transformations to the data. First, using the producer price indexes on the level of industries, all financial indicators are converted to real prices with 2010 being the base year. Second, all firms with less than 20 employees are excluded from the analysis, as they bring a lot of heterogeneity to the productivity levels and growth dynamics. Additionally, such limitations will allow direct comparison with the results for other EU countries and Russia. Last, due to the methodology used, we have to exclude all firms that have less than two consecutive years of observation. The main descriptive statistics for revenue growth, productivity level and employment are presented in Table 1.

*Table 1. Descriptive statistics (*own estimations based on the Amadeus data*)*

	Revenue growth			**Productivity**			**Size. less than 250 employees**			**Size. over 250 employees**		
	Obs	Mean, %	Median, %	Obs	Mean, th. EUR	Median, th. EUR	Obs	Mean	Median	Obs	Mean	Median
Overall	9551	6.4%	4.8%	11538	3.39	1.01	10552	61	41	986	647	437
2010-2013	5981	8.5%	6.5%	6472	3.72	1.55	5933	61	40	539	652	430
2014-2017	3570	2.9%	1.1%	5006	2.98	0.97	4619	62	42	447	640	446

The average firm in the dataset has revenue growth of 6.4% and the labor productivity of 3.39 thousand EUR. The productivity estimate is close to the official statistics of Eurostat, which reported average labor productivity in the manufacturing sector of 4.86 thousand EUR. According to the descriptive statistic, there is a difference between considered periods. We observe lower rates of revenue growth and productivity during the second period (2014-2017). compared to the period from 2010 to 2013. At the same time employment indicators are stable over two periods, thus the change cannot be attributed to the changes in firm sizes.

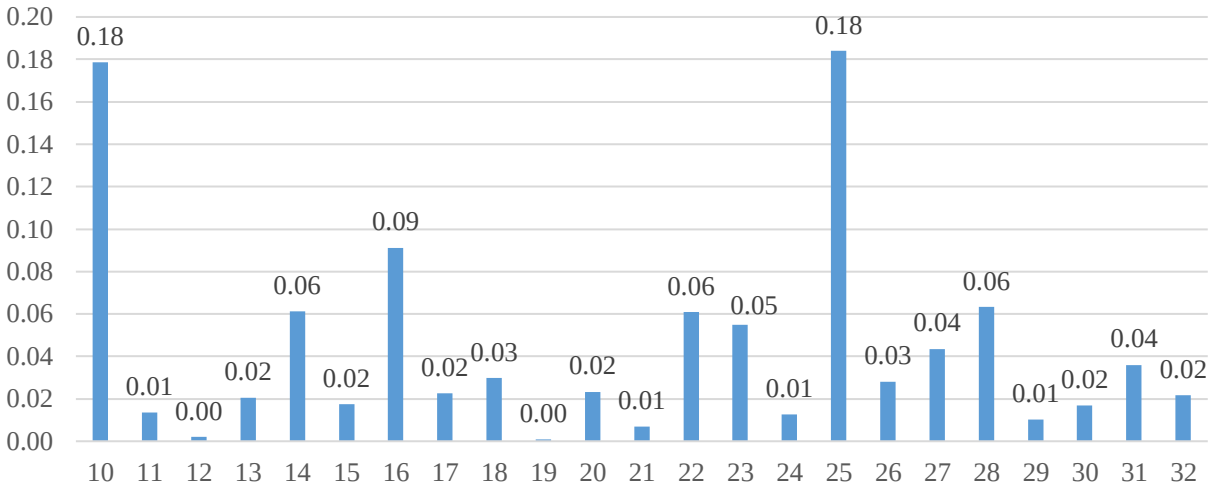


Figure 1. Industrial distribution of the Croatian firms, NACE 2 (own estimations based on the Amadeus data)

Figure 1 presents the industrial distribution of firms under consideration. Two largest industries are manufacture of fabricated metal products, except machinery and equipment and food production with both taking approximately 18% of observation each, other larger industries are manufacture of wood and wooden products (9%), rubber and plastics industry (6%), machinery and equipment manufacture (6%), manufacture of wearing apparel (6%). These estimates are in line with the official statistics reporting that the largest industry in Croatia is food and beverage production (NACE 2 codes 10 and 11), taking up 24% of the manufacturing sector. It is followed by metal processing and machine industry (NACE 2 codes 24 and 25), taking 20%. Shares for other industries are similar as well. Overall, we can conclude that our sample is representative in terms of productivity levels, growth and industrial distribution. Main analysis method in this research a regression analysis. To be more precise, our goal is to estimate the explanatory power of productivity and its components for revenue growth. For that, the model with correlated random effects is used. The general model is the following:

$$g_{i,t} = a + b_t + \beta_{\Delta}\Delta\pi_{i,t} + \beta_m\bar{\pi}_{i,t} + \beta_{\Delta a}\overline{\Delta\pi_{\iota,t}} + \beta_{ma}\bar{\bar{\pi}}_i + c_i + \epsilon_{i,t}, \quad (1)$$

where $g_{i,t}$ is revenue growth of a firm I in period t; $\Delta\pi_{i,t}$ is a logarithm of the productivity difference between two consecutive years; $\bar{\pi}_{i,t}$ is an average productivity level for periods *t* and *t-1*, which represents productivity differences between firms. We also add an average dynamic component, $\overline{\Delta\pi_{\iota,t}}$, and average static component, $\bar{\bar{\pi}}_i$.

The model also includes dummy-variable of the period, b_t, and firm-level fixed effects, c_i.Correlated random effects are applied following Mundlak (1978). and Wooldridge (2019). Equation (1). is estimated for each of the industries.

Then, to estimate the market selection strength, we compute the share of variance explained by the productivity factors:

$$S^2 = \frac{Var(\beta_\Delta \Delta\pi_{i,t} + \beta_m \bar{\pi}_{i,t} + \beta_{\Delta a}\overline{\Delta\pi_{\iota,t}} + \beta_{ma}\bar{\bar{\pi}}_i)}{Var(g_{i,t})}. \quad (2)$$

Some additional details of the described methodology are presented in Dosi et al (2015).

3. RESULTS

The estimation results for equations (1). and (2). for labor productivity in Croatian firms are presented in Table 4.

Table 4. Productivity growth and productivity levels S^2, labor productivity

	Overall				2010-2013				2014-2017			
NACE2	S^2_{static}	$S^2_{dynamic}$	$S^2_{overall}$	$R^2_{overall}$	S^2_{static}	$S^2_{dynamic}$	$S^2_{overall}$	$R^2_{overall}$	S^2_{static}	$S^2_{dynamic}$	$S^2_{overall}$	$R^2_{overall}$
Food	0,00	0,01	0,01	0,03	0,02	0,14	0,17	0,16	0,00	0,00	0,00	0,01
Beverages	0,02	0,12	0,15	0,30	0,23	0,55	0,78	0,76	0,08	0,05	0,13	0,29
Textile	0,03	0,04	0,07	0,13	0,03	0,00	0,04	0,14	0,00	0,07	0,07	0,11
Apparel	0,02	0,08	0,09	0,16	0,05	0,18	0,24	0,24	0,01	0,09	0,09	0,19
Leather	0,05	0,04	0,09	0,29	0,08	0,00	0,08	0,59	0,06	0,04	0,10	0,10
Wood	0,00	0,05	0,05	0,09	0,00	0,07	0,07	0,08	0,01	0,06	0,07	0,12
Paper	0,01	0,04	0,05	0,14	0,02	0,35	0,37	0,38	0,05	0,03	0,08	0,17
Printing	0,00	0,04	0,04	0,10	0,13	0,01	0,14	0,21	0,02	0,06	0,08	0,12
Chemicals	0,01	0,15	0,16	0,43	0,04	0,05	0,09	0,30	0,00	0,21	0,21	0,31
Pharmaceuticals	0,03	0,16	0,19	0,38	0,16	0,27	0,43	0,60	0,02	0,05	0,07	0,53
Rubber and Plastic	0,02	0,02	0,04	0,13	0,00	0,02	0,02	0,08	0,04	0,03	0,07	0,09
Other non-metallic	0,00	0,02	0,02	0,12	0,02	0,00	0,02	0,02	0,01	0,04	0,06	0,09
Metals	0,03	0,20	0,23	0,35	0,00	0,42	0,42	0,92	0,05	0,12	0,17	0,26
Fabricated metals	0,01	0,07	0,08	0,09	0,01	0,15	0,16	0,15	0,01	0,08	0,09	0,09
Computers and electronics	0,03	0,14	0,17	0,28	0,01	0,07	0,08	0,38	0,03	0,15	0,17	0,25
Electrical	0,01	0,02	0,03	0,06	0,05	0,07	0,11	0,15	0,00	0,02	0,02	0,04
Machinery	0,00	0,06	0,07	0,09	0,02	0,08	0,10	0,19	0,00	0,05	0,05	0,07
Transport	0,08	0,05	0,13	0,29	0,26	0,64	0,90	0,79	0,21	0,03	0,24	0,40
Other transport equipment	0,01	0,00	0,01	0,21	0,31	0,12	0,43	0,46	0,18	0,24	0,42	0,51
Furniture	0,03	0,05	0,08	0,15	0,02	0,00	0,03	0,05	0,08	0,18	0,26	0,25
Other	0,01	0,06	0,07	0,14	0,06	0,04	0,11	0,33	0,01	0,10	0,11	0,15
Mean	0,02	0,07	0,09	0,19	0,07	0,15	0,23	0,33	0,04	0,08	0,12	0,20
Median	0,01	0,05	0,07	0,14	0,03	0,07	0,11	0,24	0,02	0,06	0,09	0,15

Source: own estimations based on the Amadeus data

Results indicate the overall low explanatory power of the productivity for the revenue growth with the overall explanatory power of the components being 0.09 on average. Such an estimate is significantly lower than for other EU countries. For example, for Germany, this indicator was estimated at 0.18 on average; 0.18 – for France, 0.13 – for the UK. That indicates a lower power of market selection in Croatia, compared to the more developed EU members (see Dosi et al (2015)). As with the other EU countries, we observe the dominance of the dynamic component of productivity in most industries and on average. The mean and median values for this indicator are 0.02 and 0.01 respectively. It means that absolute levels of productivity are almost not important for explaining revenue growth. What matters is how the productivity of the company changes over time.

The explanatory power of productivity and its components are higher for the period from 2007 to 2013 and lower for the second period. The same is observed for the median values. Implications of such results are open for interpretation. We theorize that the decrease in the explanatory power of the productivity may be due to direct exposure of the Croatian market to more productive foreign competitors. Thus, other more informal factors may have determined the revenue growth in the second period.

As a robustness check, we repeat the estimations for the total factor productivity computed following the methodology suggested by Van Beveren (2012). Namely, first, we estimate the following econometric model:

$$y_{i,t} = \beta_0 + \beta_l l_{i,t} + \beta_k k_{i,t} + e_{i,t}, \quad (3)$$

where $y_{i,t}$ is a logarithm of value-added for a firm I, $l_{i,t}$ – the logarithm of the number of employees of the firm I, $k_{i,t}$ – real total assets for form I. Therefore, the TFP estimation $\widehat{\omega}_{i,t}$ is computed as

$$\widehat{\omega}_{it} = y_{i,t} - \hat{\beta}_l l_{i,t} - \hat{\beta}_k k_{i,t}. \quad (4)$$

TFP estimations are conducted for each industry separately. We then use the estimated TFP $\widehat{\omega}_{i,t}$ instead of labor productivity in formulas (1). and (2). The obtained results are presented in Table 5.

Table 5. Productivity growth and productivity levels S^2, TFP

	Overall				2010-2013				2014-2017			
NACE2	S^2_{static}	$S^2_{dynamic}$	$S^2_{overall}$	$R^2_{overall}$	S^2_{static}	$S^2_{dynamic}$	$S^2_{overall}$	$R^2_{overall}$	S^2_{static}	$S^2_{dynamic}$	$S^2_{overall}$	$R^2_{overall}$
Food	0,00	0,01	0,01	0,02	0,02	0,14	0,16	0,15	0,00	0,00	0,00	0,01
Beverages	0,03	0,13	0,16	0,32	0,26	0,57	0,83	0,79	0,04	0,02	0,07	0,27
Textile	0,02	0,09	0,10	0,15	0,01	0,00	0,01	0,12	0,00	0,07	0,07	0,11
Apparel	0,02	0,07	0,09	0,15	0,06	0,19	0,26	0,25	0,01	0,09	0,09	0,18
Leather	0,09	0,07	0,16	0,37	0,09	0,00	0,09	0,60	0,07	0,05	0,13	0,13
Wood	0,00	0,05	0,05	0,09	0,01	0,07	0,08	0,08	0,01	0,06	0,07	0,11
Paper	0,02	0,04	0,05	0,14	0,04	0,33	0,37	0,37	0,05	0,03	0,08	0,17
Printing	0,00	0,04	0,04	0,10	0,12	0,01	0,12	0,19	0,01	0,06	0,07	0,12
Chemicals	0,00	0,12	0,12	0,39	0,03	0,05	0,09	0,30	0,01	0,20	0,21	0,29
Pharmaceuticals	0,11	0,23	0,34	0,55	0,21	0,33	0,54	0,66	0,03	0,06	0,09	0,57
Rubber and Plastic	0,02	0,02	0,05	0,13	0,00	0,02	0,02	0,08	0,05	0,03	0,08	0,10
Other non-metallic	0,00	0,02	0,02	0,13	0,03	0,01	0,04	0,04	0,01	0,04	0,06	0,09
Metals	0,02	0,15	0,16	0,36	0,00	0,35	0,36	0,92	0,05	0,13	0,18	0,26
Fabricated metals	0,02	0,07	0,09	0,10	0,01	0,14	0,15	0,14	0,02	0,07	0,09	0,09
Computers and electronics	0,02	0,15	0,17	0,27	0,02	0,07	0,09	0,37	0,02	0,15	0,17	0,24
Electrical	0,01	0,02	0,03	0,05	0,06	0,06	0,12	0,17	0,00	0,01	0,02	0,04
Machinery	0,02	0,05	0,07	0,09	0,03	0,09	0,12	0,20	0,00	0,06	0,07	0,07
Transport	0,06	0,05	0,11	0,32	0,26	0,76	1,03	0,86	0,18	0,03	0,21	0,43
Other transport equipment	0,02	0,05	0,07	0,17	0,49	0,08	0,57	0,61	0,15	0,24	0,39	0,49
Furniture	0,03	0,11	0,14	0,20	0,02	0,01	0,03	0,05	0,08	0,19	0,27	0,26
Other	0,01	0,05	0,06	0,13	0,01	0,04	0,05	0,26	0,02	0,13	0,15	0,18
Mean	0,02	0,08	0,10	0,20	0,08	0,16	0,24	0,34	0,04	0,08	0,12	0,20
Median	0,02	0,05	0,09	0,15	0,03	0,07	0,12	0,25	0,02	0,06	0,09	0,17

Source: own estimations based on the Amadeus data

All conclusions that were made for the explanatory power of labor productivity hold true for the TFP as well. We still see overall low explanatory power of the productivity, the dominance of the dynamic component, lower values of the explained variance shares for the second period. We also observe slightly higher values of estimates, compared to the labor productivity ones. This is to be expected, as TFP takes into account more factors of production, and not only labor. We can conclude that the robustness check confirms the results of the initial estimations both on the level of industries and on average. The same is observed for other EU countries as presented by Dosi et al (2015).

4. CONCLUSION

In this research, we have conducted an analysis of the revenue growth of the Croatian firms for the period from 2010 to 2017 and estimated how good productivity and its components could explain these dynamics. We also compared the results before the EU integration in 2013 and after. For that, regression analysis was used. First, we find the overall low explanatory power of productivity and its components. This result suggests that market selection is weak in Croatia and does not determine the growth dynamics of the firms. In other words, we conclude that not only the most productive firms (or the with the higher productivity growth). are able to increase their revenue, so some other factors may be in play. Similar results have been acquired for other countries, including other EU members. We find that most of the productivities explanatory power comes from its dynamic component, rather than form the static one. Meaning that just the productivity level can hardly determine the revenue growth dynamic, so even less productive firms can achieve fast revenue growth. Again, a similar result has been obtained for other EU countries. Results suggest that there are some differences in the market selection between two considered periods. Namely, the explanatory power of productivity has been higher during the 2010-2013 period, when Croatia has not been the official member of the EU yet. We theorize that some other, more informal, factors may have determined the revenue growth in the second period, after Croatia has become an official member of the EU. There are some limitations to this research. First, in order to better understand the explanatory power of market selection, the analysis considers only productivity. At the same time, this can be a reason for the distortion of estimates, since other possible control variables, such as the age of the company, R&D costs, or the quality of resources will have the same sign as the performance variables. In this case, the assessments of the role of productivity obtained during the study will be overestimated, which only reinforces our conclusions about the low role of the impact of productivity on revenue growth. Second, the distortion of estimates may arise due to the "inverse relationship", implying that the growth of firms determines the dynamics of productivity (and not vice versa). In addition, the Croatian economy is rather small, so it is natural that Croatian firms should also compete with firms from nearby countries, which is not accounted for in this research. As a prospect for further research, we will look into other countries of the Balkan region and study connections between them in more detail.

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LITERATURE:

1. Bottazzi, G. Dosi, G., Jacoby, N., Secchi, A. and Tamagni, F (2010). Corporate performances and market selection: Some comparative evidence, *Industrial and Corporate Change*, 19, 1953–1996.
2. Coad, A., & Hölzl, W (2012). *Firm Growth: Empirical Analysis. In Handbook on the Economics and Theory of the Firm. Cheltenham*, UK: Edward Elgar Publishing

3. Dosi, G., D. Moschella, E. Pugliese & Tamagni, F (2015). Productivity, market selection, and corporate growth: comparative evidence across US and Europe. *Small Business Economics*, 45, 643–672
4. Dosi, G., D. Moschella, E. Pugliese and Tamagni, F (2015). Productivity, market selection, and corporate growth: comparative evidence across US and Europe. *Small Business Economics*, 45, 643–672.
5. Ericson, R., Pakes, A (1995). Markov-Perfect Industry Dynamics: A Framework for Empirical Work, *Review of Economic Studies*, 62, 1, 53-82.
6. Hopenhayn, H. A (1992). Entry, exit, and firm dynamics in long run equilibrium. *Econometrica*, 60, 1127–50.
7. Jovanovic, B (1982). Selection and the evolution of industry. *Econometrica*, 50, 649–70.
8. Mundlak, Y (1978). On the pooling of time series and cross section data. *Econometrica*, 46, 69–85.
9. Nelson, R. R., & Winter, S. G (1982). *An evolutionary theory of economic change*. *Cambridge*, MA: Harvard University Press.
10. Penrose, E (1959). *The Theory of the Growth of the Firm. New York*: Oxford University Press
11. Rauch, A. & Rijskik, S.A (2013). The effects of general and specific human capital on long-term growth and failure of newly founded businesses. *Entrepreneurship Theory and Practice* (3), 923-941.
12. Savin I., Mariev O., Pushkarev A (2019). Survival of the Fittest? Measuring the Strength of Market Selection on the Example of the Urals Federal District. *HSE Economic Journal*, 23, 1, 90–117.
13. Silverberg, G., Dosi, G., & Orsenigo, L (1988). Innovation, diversity and diffusion: A self-organisation model. *Economic Journal*, 98, 1032–1054.
14. Storey, D. J (2011). Optimism and chance: the elephants in the entrepreneurship room. *International Small Business Journal*, 29(3).
15. Wooldridge, J (2009). Correlated random effects models with unbalanced panels. *Journal of Econometrics*, 211, 1, 137-150

THE IMPACT OF THE TRANSFER OF THE CAPITAL TO THE DEVELOPMENT OF ALMATY CITY

Aksana Panzabekova
Institute of Economics and science, Ministry of education and science of the Republic of Kazakhstan, Almaty, Republic of Kazakhstan
aksanat@mail.ru

Gulmira Nurlikhina
Almaty University, Almaty, Republic of Kazakhstan
gnurlihina@mail.ru

Gulmira Uakhitova
The Consortium "Zhasampaz», Astana, Republic of Kazakhstan
uakhitova_g@mail.ru

ABSTRACT

The article presents the results of a study devoted to the analysis of the development of Almaty after the loss of the capital's functions to identify key problems, justify the advantages and determine the priority directions of the city's development. Foreign experience is analyzed from the position of identification and systematization of the main reasons for the movement of capital. The factors of decision-making on the division of the political and economic center of Kazakhstan and the transfer of the capital from Almaty to Akmola (now Nur-Sultan). are substantiated. Special attention is paid to the study of the preservation of the characteristic features of the capital environment of Almaty: uniqueness, reference and prestige. The attention is focused on the strengthening of social inequality of Almaty residents, which is manifested both in the growth of crime and in the social and urban segregation of the city. The paper notes that since the loss of the capital's functions, the appearance of Almaty has significantly changed: the urban space has become more heterogeneous, multifaceted, unbalanced; the structure of the city has been transformed, new functional territorial structures have been formed. Taking into account the economic and resource potential of Almaty, the following priority directions of development of the city are identified: solving the problems of segregation of urban space; improving public safety; developing a broad-spectrum service economy; encouraging investment in culture and sports.

Keywords: *Capital, Capital functions, City, Economic development.*

1. INTRODUCTION

The transfer of capital functions is always a significant event in the life of the country. This is especially true of the transfer of functions from the city, which is the leader in the country in all respects: economic, political, cultural, scientific. There is a shift in priorities and a decrease in the centralization of socio-economic and political processes in the country, and the city is forced to restructure its activities. It was in this situation that the transfer of capital functions from the city of Almaty to the city of Akmola (now Nur-Sultan). took place. The appeal to the analysis of a domestic and foreign experience of moving capitals is due to the emergence and active spread of this phenomenon in the XX century, the formation of new centers of political, economic and cultural influence. The second half of the twentieth century as a whole was marked by an unprecedented increase in the number of capitals of newly formed States. If in 1900 there were only 40 capitals in the world, by 2000 there were already more than 200, that is, in a hundred years the total number of capitals of sovereign States has grown more than five times. Other significant moments of this century were quite frequent transfers of old capitals to new places, which happened on all

continents. Examples of capital transfers can be noted in many countries around the world. So, for more than 300 years, the capital was moved to 69 countries.

The purpose of this study is to identify key problems and identify priority areas of development of the city of Almaty after the transfer of the capital of Kazakhstan.
To achieve the goal, the following tasks were set:
1. Analyzing of the foreign experience of capital transfer and identify its main causes;
2. Justifying the need to move the capital in Kazakhstan;
3. Assess of the impact of the transfer of capital functions on the socio-economic development of the city of Almaty;
4. Determination of the priority directions of development of the city of Almaty.

2. MATERIALS AND METHODS

The article uses the data of the Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan, scientific and electronic information resources. The multiplicity of factors that determine the development of a modern city after the transfer of capital functions allows us to explore them in an interdisciplinary context, using different approaches and methods. Retrospective analysis of the movement of capitals in a number of countries of the world allowed identifying and systematizing the main reasons for the transfer of capital functions. To identify the reasons for the transfer of the capital of Kazakhstan, the analysis of documentary and historical materials, and the interpretation of statistical data were used. In order to identify the key problems, determine and justify the prospects of development of Almaty after the loss of the capital's functions, the analysis of the state and dynamics of the most important socio-economic indicators of the city was carried out.

3. REVIEW OF PREVIOUS STUDIES.

The issues of capital, the role and functions of capitals, as well as the movement of capital functions in the scientific literature are considered in the works of foreign and Kazakh scientists. The key characteristics of the capital, the comparison of the contents of the concepts "capital city", "global city", "Primate city", "Metropolitan city" are considered in detail in the work of Russian scientists (Turgel I. D., Khusnutdinova S. R., 2018, pp. 662-668). Campbell S. presented a comparative study of capitals and described the change in their role and identity in the era of globalization. The existing urban hierarchy in the world today and the weakening of the dominance of capital cities are associated, according to Campbell, with the change in the status of nation States and the restructuring of the world economy (Campbell S., 2013, pp. 57-106). The work of the Armenian scientist M. Manasyan presents methodological approaches to the analysis of the influence of the capital on the development and functioning of the city. The author identifies the structural-functional, territorial-functional and socio-ecological types of the impact of the capital on the structure of the city (Manasyan M. G., 2016, pp. 119-128).

The study of the causes and patterns of capital transfers in different countries, the features of the formation of new capitals, as well as factors that determine their geographical location, the specifics of architecture and iconography is presented in the work of the French urbanist Gottman. The study also analyzes the role of former capitals in the internal dynamics of cultures and States (J. Gottman, 1990, pp. 63-82). One of the fundamental works in the field of research of capital functions transfer is the book of V. Rossman "Capitals: their diversity, regularities of development and movement", in which typologies are given, functions are generalized and the experience of capital cities transfer is systematized (V. Rossman, 2013).

A group of scientists from Argentina led by Chisari O. examined the impact of the transfer of Metropolitan functions on the activities of the state apparatus (Chisari, Omar & Ramos, Maria & León, Sonia &Basante Pereira, Gonzalo &Mastroscello, Laura, 2015). Kovalskaya S. I. and Akanov K. G. we analyzed the transfer of the capital from Almaty to Astana as an instrument of nation-building policy. The authors focus on the consequences of the transfer of the capital, as a result of which the internal migration dynamics has increased, significantly changing the demographic appearance of both the new capital and all regions of Kazakhstan in General (Kovalskaya S. I., Akanov K. G., 2016, pp. 54-64). Schatz E. considered the transfer of the capital from the point of view of state-building, recognizing it as one of the most innovative tools for the formation of civil and national identity (Schatz E., 2013, pp. 109-142). In general, we can talk about quite significant scientific results and the transition from describing the current trends in the development of individual capital cities to their theoretical understanding, but, in our opinion, the methodology of the study of the movement of capital functions remains insufficiently studied. An interesting subject of study is the Economics of former capitals, for this it is necessary to determine how the reduction of non-productive sectors of urban economy, such as administration and diplomacy, affects their socio-economic development. Studies of this kind, as well as the identification of their impact on the effectiveness of management decisions in the urban context of former capitals are very insignificant. An important methodological issue in the study of the transfer of capital is the justification of how the loss of capital affects the city as an integral entity and what the territorial resonances of this impact are. It allows developing scientifically grounded approaches to the definition of prospects of development of the city after the loss of capital functions.

4. RESULTS AND DISCUSSIONS

A retrospective look at the transfer of capital in different countries of the world allows us to identify several reasons why capitals change their position. The first reason *is the desire for the uniform economic development of the state and the strengthening of the economic situation of the lagging territories.* As a rule, the capital territory attracts labor resources, leading industries and trade, infrastructure is developing. They are the main economic, cultural, transport, trade centers of the countries, while the rest of the territory does not receive proper economic development. The governments of the countries make the decision on the transfer of capitals for the more uniform economic development of the state, and also for raising the economy of internal backward territories. There is an acceleration of the development of those territories where new capital is created. An example of such a move is the relocation of capital in Brazil. With the aim of developing the interior areas of the capital was moved from Rio de Janeiro to Brasilia. The second reason *is the return of capital functions to cities located in the historical centers of the state*. An example is the transfer of the capital from Bonn to Berlin in Germany. The third reason is *the desire to strengthen the overall security of the state, i.e. military-strategic goals.* Being the most important city, where the main resources are concentrated: political, military, medical, educational, etc. - the capital should be protected from the military threat as much as possible. The fourth reason *is the compromise of various political forces and parts of the state*. Thus, the capital of Canada moved several times in the 40-50s of the XIX century, migrating between English-speaking Ontario and French Quebec. After unsuccessful transfers, the British Queen Victoria ordered to make the capital right on the border of the territories. Such a place was the small city of Ottawa. After the transfer of government agencies here, the problem was solved once and for all. Just like Washington on the border between the North and the South of the United States, it is a "compromise of the Civil war". The next reason is t*he protection of the capital from adverse natural and anthropogenic factors*. Due to seismic hazard, the capital of Malaysia was moved. We cannot say that only one specific reason is the main one in the transfer of the capital. Most often, the transfer of the capital is caused by several reasons. For example, it happened with the transfer of the capital of Kazakhstan from Almaty. *Firstly*, the transfer of the capital was due to the geographical location of the cities: Almaty

is located in the South of Kazakhstan, while Akmola was in the center of the Republic. *Secondly*, from the point of view of safety: Almaty is located in a seismogenic zone, where destructive earthquakes can occur, and Akmola is not dangerous in environmental and seismic terms. *Thirdly*, the problems of foreign policy security. Almaty is located near the Chinese border, near the Xinjiang Uighur Autonomous Region of China, where the national Uighur movement for independence does not stop. Akmola is located at an optimal distance from neighboring countries. *Fourth*, the desire to achieve a regional ethnic-demographic balance, the involvement of the Kazakh population in the industrial and agricultural production of Central and Northern Kazakhstan. *Fifth*, stimulating migration from the labor-surplus southern regions to the industrialized Northern cities. In addition, it should be borne in mind that the combination within one city of political power and the economic center of the country – especially in the conditions of large States - can create many conflicts and often leads to over-centralization of the country. Based on all the above reasons, it was decided *to divide the political and economic centers of the state*.

Currently, Almaty has a strong economic, intellectual and creative potential, providing 20.9% of GRP, 25% of the total volume of services in Kazakhstan, more than 30% of tax revenues, 41% of all trade operations. Almaty provides jobs for about 15% of the country's employed population and remains a financial donor to the country. Indicators of socio-economic development of Almaty over the past 10 years indicate that the gross regional product has increased 4 times, the volume of investment has increased almost 2 times, the population and labor force have grown at almost the same rate-more than 30%, which indicates the preservation of the labor force/population ratio (table 1). However, the unemployment rate fell by 33% or 2.5 %. Life expectancy at birth has increased by 4.1 years in ten years. Natural and migration growth of the population, as well as per capita income also increased: by 50%, 115% and 95%, respectively. Also noteworthy is a significant increase in crime-almost five times. In General, socio-economic indicators are improving in almost all areas.

Table 1: Indicators of socio-economic development of Almaty
(Express information. The Committeeon Statistics of MNE RK)

Indicator	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
GRP (billiontenge)	3175,2	3923,4	4860,2	5715,9	7127,9	8143,6	9100,0	10601,3	11893,2	12132,60
Population (million)	1390,6	1413,2	1449,4	1474,8	1506,9	1641,4	1702,7	1751,3	1802,0	1854,7
Laborforce (thousandpeople.)	706,8	722,4	740,9	774,7	787,5	809,2	885,1	916,3	939,2	961,7
Unemploymentrate(%)	7,7	6,3	5,6	5,6	5,6	5,5	5,3	5,3	5,3	5,2
Investmentvolumes (milliontenge)	382684,0	398408,0	415419,0	458276,0	482877,0	511598,0	533370	581574	644406	732930
Expectedprod. life (years)	71,4	71,0	71,7	72,8	73,6	73,8	75,3	75,78	76,01	75,5
Naturalpopulationgrowth (pers.)	14285	13709	13749	15608	16492	18623	20580	20910	20488	21581
The balance of migration (persons)	14448	8833	22465	9875	15558	21992	40742	27632	30197	31082
Registeredcrimes (ed.)	12694	19002	29695	52022	55482	61391	73505	68702	63797	62646
Nominal per capita monthly income (tenge)	71012	67190	76846	86733	95095	104832	111530	124281	129581	138927
Retailturnover (billiontenge)	899,3	968,2	1068,6	1245,8	1407,6	1641,3	1786,6	2193,7	2458,5	2973,4
Consumerpriceindex (%)	107,5	108,0	106,8	106,1	104,4	107,0	114,8	108,0	107,1	105,2

According to the intensity of economic, social and cultural life, Almaty is a capital city and has not lost the main characteristic features of the capital's environment-uniqueness, prestige and reference. The concentration of institutions and organizations, which by their nature and diversity are the only ones in the country that allow Almaty to *preserve its uniqueness*. This uniqueness is achieved both due to the long historical development as the capital, and hence the cultural, scientific and economic center of the Union Republic, but also due to the geographical location. It is possible to mention a set of the objects forming unique shape of the city, among them:

1. The Medeu high-altitude skating rink, being the highest located skating rink with the largest area of the artificial ice field in the world, became the place for many world records, for which it was called the "factory of records". It is an architectural monument of national importance.
2. State Opera and ballet theatre. Abaya is a monument of style "Stalin Empire" with the addition of traditional Kazakh elements in architecture – one of the most famous attractions in the city center. It is one of the largest theaters in Eurasia, accommodates 793 people, on the stage of which are staged both classical, traditional and innovative productions.
3. The Holy Ascension Cathedral is the tallest wooden Orthodox Church in the world and is located in the Central part of the city, attracting cultural tourists with its facade and interior decoration.
4. State Museum of Art named after A. Kasteev introduces the culture of Kazakhstan, Europe and Asia with a collection of twenty-three thousand exhibits.

The above places a list of unique places not limited to: mention a decent high-mountainous ski resort "Shymbulak", the State Museum, musical instruments Museum, TV-tower "Kok-Tobe", Big Almaty lake and many places, giving the city of Almaty special uniqueness. For the Asian Winter Games in 2010, the international ski jumping complex "Sunkar" was built. The springboard is made in the Art Nouveau style and meets the requirements of the International ski Association. The presence of unique sports facilities in the city allows positioning Almaty as a venue for international sports competitions. An important factor in increasing the attractiveness of the capital's environment is the *prestige*, which is manifested in the desire of people not only to live in the capital, but also to be able to enter universities, use the services of cultural institutions and other facilities of the service sector. in Almaty, 60% of secondary and higher educational institutions of Kazakhstan, as well as a third of all students are located (Table 2). In addition, the southern capital is home to 35% of the country's organizations engaged in research and development work, and a quarter of all theaters of the Republic.

Table 2: Higher education institutions of Almaty (Express information.TheCommitteeonStatisticsof MNE of RK)

Numberofuniversities	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
RK, un.	148	149	146	139	128	126	127	125	122	124
Almaty, un.	52	52	47	45	41	40	42	40	40	41
Share, %	35,1	34,9	32,2	32,4	32,0	31,7	33,1	32,0	32,8	33,1
Numberofstudents	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
RK, thousandpeople.	610,3	620,4	629,5	571,7	527,2	477,4	459,4	477,1	496,2	542,5
Almaty, thousandpeople.	187,2	186,5	183,2	158,5	148,5	133,7	128,7	130,8	131,3	143,9
Share, %	30,7	30,1	29,1	27,7	28,2	28,0	28,0	27,4	26,5	26,5

Thus, universities, cultural institutions, research organizations that contribute to the formation of the intellectual elite and its professional self-realization have united in the urban space of Almaty. Almaty is a "forge of personnel" and is considered the cultural center of Kazakhstan. Reference defines the qualitative side of the metropolitan environment. It is in the capitals that new forms of labor organization, new types of behavior and communication of people, living standards are formed in the first place. As the country's largest scientific and educational center, Almaty plays a leading role in the development of human potential and the formation of professional labor resources of the country. In addition, the city is the first in the Republic to create conditions for the formation of a "creative class", which, in turn, makes a significant contribution to the development of the qualitative side of the urban environment of Almaty (table 3).

Table 3: indicators of concentration of creative class in the cities of Kazakhstan in 2017 (units per 1000 people). (Digel I., 2019, pp. 597-607)

Region	**Employed R &D**	**Engaged in culture, entertainment and recreation**	**Students**	**Active SP and small enterprises**	**The creative class**
Almaty city	5,4	8,8	75	96,4	**185,5**
Nur-Sultan city	3,2	12,3	53,8	99,6	**168,9**
West Kazakhstan	0,7	9,8	48,9	49,2	**108,6**
Atyrau	0,8	7,8	19,8	66,7	**95,1**
Karaganda	1	7,9	30,8	51,6	**91,3**
Aktobe	0,4	7,5	25,8	53,2	**86,9**
Mangistau	1,1	7,4	8	70,4	**86,9**
Pavlodar	0,7	12	19,2	50,2	**82,1**
Kostanai	0,7	6,7	23,4	48,9	**79,6**
Akmola	1	11,6	12,9	51	**76,5**
East Kazakhstan	1,7	4	21,1	47	**73,8**
Turkestan	0,3	5,1	27,6	37,7	**70,8**
Kyzylorda	0,3	6,9	12,9	41,8	**61,9**
North Kazakhstan	0,2	7	10,7	43,1	**61**
Zhambyl	0,3	3,4	18,7	38,2	**60,5**
Almaty region	0,5	8,3	4,7	32,7	**46,3**

As we can see, the degree of concentration of the creative class of Almaty is the leader in Kazakhstan. A small lag is Nur-Sultan, which is ahead of Almaty in terms of concentration of workers of culture, entertainment and recreation, as well as small businesses and individual entrepreneurship (IP). At the city level, the creative potential affects the development and functioning of cultural industries, as its content provides new methods of work, new technologies and services, thanks to which unique innovative projects arise in the urban environment of Almaty. The city authorities pay great attention to creating a favorable environment for young startups and the commercialization of their projects. The program for the development of innovations "Almaty innovations" has been launched, various innovation forums, festivals, exhibitions of innovative projects are held annually. This leads to the development of tourism and an increase in the flow of foreign visitors, attracting investment in various social, cultural and other areas. However, it should be borne in mind that the high economic potential of Almaty attracts more migrants. On the other hand, there is an outflow of skilled labor from the city to the far abroad.

Consequently, the positive balance of migration is associated with the influx of the less educated part of the population, which may affect the increase in crime rates. Thus, Almaty has a very high ratio of crime to the population. Here, the ratio is equal to 3.64%, and this is almost 5 times the average of Japan and 20 times more than in Paris. The analysis of migration flows shows a significant increase, for the incoming flow – more than 2.3 times, for the outgoing-more than 5 times. In this case, the incoming flow prevails throughout the year except 2015 (figure 1).

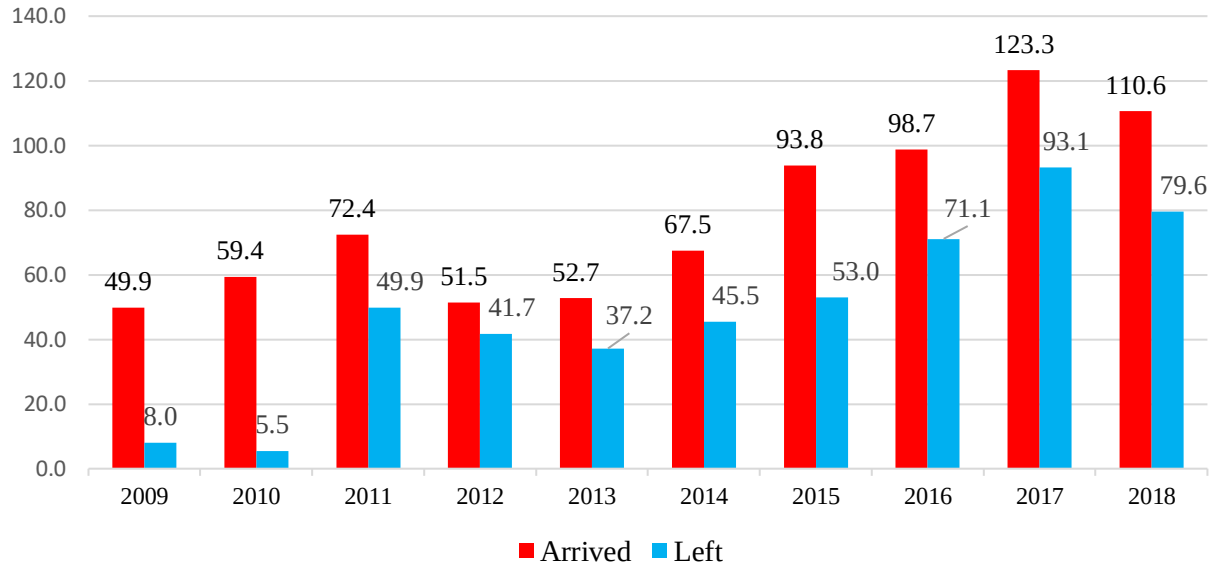

Figure 1: Migration flows of Almaty city (thousand people). (Express information. The Committee on statistics of MNE of RK)

A significant increase in the population of Almaty in the future can create problems for infrastructure. Despite the increase in income, crime is also growing, which indicates the strengthening of the economic inequality of the city's residents. With regard to cities, economic inequality is evident in the socio-urban segregation that determines the status of urban areas, which implies the presence of special areas characteristic of the most affluent part of the city's inhabitants, and the so-called sleeping or working quarters, which are the places of settlement of the majority of citizens. In our opinion, the processes of segregation of the urban space of Almaty are also influenced by structural changes in the employment of residents of the city, the main business activity of which is provided by small and medium-sized businesses, mainly in the sphere of retail and wholesale trade. Thus, over the past decade and a half, the appearance of Almaty has significantly changed, the boundaries of the city have expanded, while the urban space has become more heterogeneous, multifaceted, unbalanced. The structure of the city was transformed, new functional territorial structures were formed.

At the moment it is possible to allocate 4 types of territories of Almaty:

– historic center integrated with the adjacent business center;
– neighborhoods construction of mass housing (residential districts);
– old areas of low-rise buildings and private households;
– the newly annexed areas, which were characterized by unregulated individual housing construction, are now being developed into social housing estates.

The first type was formed in the urban planning traditions laid down in the 1920s. The configuration of the center with a clearly defined rectangular layout of quarters is a great advantage from the point of view of the organization of life, it provides good transport and walking accessibility throughout the quarter.

The second type of urban space was actively developed from the second half of the twentieth century to the 1990s. The disadvantages of neighborhoods or "sleeping areas" are remoteness from the city center, low employment opportunities, a rigid schedule, which is associated with leaving the center in the morning and returning home by late evening, insufficient traffic within neighborhoods. Houses in residential areas were built according to certain projects, with clear standards, with the presence of kindergartens, schools, hospitals and shops. Therefore, despite the shortcomings of the practice of forming micro districts or "sleeping areas", in General, they have created a basic infrastructure to support the social functions of the territory.

The third type – extensive areas of old low-rise and industrial buildings and the private sector in Turksibsky and Zhetysu districts, as well as quite large areas preserved in the territories of the three Central districts-Almaty, Medeu, Bostandyk. These territories are difficult to transform by the private business. Part of the exception can be considered Turksibsky district, which has become a zone of active development of auto business - here are the largest car dealerships of the city. The proximity of these areas to densely populated and busy areas (including to the expected in the near future points of application of labor in the new industrial zones). carries great potential for the transformation of urban space and business development in them.

The fourth type of territories - new non-central areas, areas of unregulated development as a result of large-scale migration of the population, the weakening of the role of the state in housing, the lack of an integrated approach to the development of urban space.

To solve the problems of urban segregation, the draft strategy "Almaty 2050" provides measures for polycentric development of the city, mainly in the lower part of the city and on the outskirts. Instead of industrial sites, dilapidated housing will be built new buildings and commercial space. The development is planned to be compact, so that houses, offices, shops, kindergartens, parks are within walking distance of residents of the suburbs. In the future, the city needs to reduce the share of trade and develop scientific and technical services, Finance and insurance, information and communication technologies. That is, it is necessary to develop the economy of a wide range of services, in which the most popular and popular industries should be consulting, financial services, management, advertising, software, administration. Almaty should regain its position as a financial center. To do this, it is advisable to develop remote services to global companies, issue municipal bonds to finance projects in the sphere of housing and communal services, construction of urban infrastructure and social facilities. The cultural component and the presence of unique sports facilities have a significant impact on the development of the city of Almaty, including the development of the economic base, as events in the field of culture and sports are not only prestigious, but also profitable events. In this context, it is advisable to position Almaty as a venue for international sports competitions. The development of such a promising direction as tourism determines the need to stimulate investment in culture and sports, namely in the creation and development of museums, galleries, exhibitions and concert halls, sports infrastructure.

5. CONCLUSION

For almost 70 years Almaty held a high status of the capital of Kazakhstan. This allowed the city to become exactly what it is now, but it is obvious that for its further development this status is no longer needed, moreover, the preservation of the status of the capital would strengthen the

centralization of the country and the chaotic development of the city, since it would remain, in fact, the only attractive place for internal migration. While today there are two such centers: the current capital Nur-Sultan and Almaty. The transfer of capital functions from Almaty obviously affected its perception in urban culture and changed political processes, however, according to the results of the study it can be argued that this did not affect its socio-economic development and cultural potential. Moreover, the "unloading" of the city, that is, the release of infrastructure from the performance of part of the capital's functions, allowed the use of this infrastructure for other purposes: the development of economic, cultural and scientific potential. Reflecting on the development prospects of Almaty, it should be noted the high investment attractiveness, significant economic and resource potential to maintain a leading position in the country. Almaty's development prospects are linked to its positioning as a global business center, a significant transport, logistics and tourism hub on the new Silk Road. To do this, Almaty needs to improve public safety and reduce crime in the city, develop the economy of a wide range of services, restore its position as a financial center, stimulate investment in culture and sports.

LITERATURE:

1. Gottman J (1990*). Capital Cities. Since Megalopolis. The Urban Writings of Jean Gottman.* Baltimore: Johns Hopkins Press,. Ch. 3. P. 63–82.
2. Rapoport A., Taylor J., Jean G., Caroline A (1993). *Capital Cities/Les Capitale: Perspectives Internationales/International Perspectives*, (p. 40). Ottawa: Carleton University Press,.
3. Chisari, Omar & Ramos, Maria & León, Sonia & Basante Pereira, Gonzalo & Mastroscello, Laura (2015). *The impact of relocation of government activities: a CGE model for the city of Buenos Aires.* Argentine University of Business (UADE). Retrieved 14.08.2018. from https://www.researchgate.net/publication/281558677
4. *Almaty: the city as a cultural space* (2015). Analytical group "Cyprus". Retrieved 05.09.2019 from http://agkipr.kz/archives/484
5. Digel I (2019). Creative human capital as a factor in improving the quality of life of the population of the city of Almaty. *Materials of the international scientific-practical conference "The economy of Kazakhstan: from the present to the future."* Almaty, p.597-607
6. Kovalskaya S.I., Akanov K.G (2016). The transfer of the capital as an instrument of nation-building policy and the migration dynamics of the population of Astana. *Bulletin of Tomsk State University,* No. 412, p.54-64. DOI:10.17223/15617793/412/9
7. Campbell S (2013). Identity and the changing role of capitals in the era of globalization. Philosophical and literary magazine "Logos", №4 (94). p.57-106
8. Manasyan M.G (2016). *Some approaches to the analysis of the influence of capital on the development and functioning of the city.* Bulletin of Tver State University. Series: Geography and Geoecology, No. 2., p. 119-128
9. Migration of the population (2019). *Express information. Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan*. Retrieved 07.27.2019 from http://old.stat.gov.kz/getImg?id=ESTAT101381
10. The main socio-economic indicators for the districts of the city of Almaty (2019). *Express information. Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan.* Retrieved 10.29.2019 from http://old.stat.gov.kz/getImg?id=ESTAT333589
11. Rossman V (2013). *Capitals: their diversity, patterns of development and movement.* M .: Publishing house of the Gaidar Institute, p. 336
12. Turgel I.D., Khusnutdinova S.R (2018). On the issue of defining the concept of a capital city. *XII International Conference "Russian Regions in the Focus of Changes: collection of reports. Yekaterinburg: Publishing House UMTS UPI*, Part 2., p. 662-668

13. *The number of students in higher education. Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan* (2019). Retrieved 07.27.2019 from http://old.stat.gov.kz/getImg?id=ESTAT094365
14. *Number of higher education institutions. Express information (*2019). Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan Retrieved 11.11.2019 from http://old.stat.gov.kz/getImg?id=ESTAT094363
15. Schatz E (2013). When capitals suffer the political geography of national and state building. *Philosophical and literary journal Logos*, No. 4 (94), P.109-142.

ADVANCED PRODUCER SERVICE FIRMS EXPANSION IN THE FORMER SOVIET UNION: GLOBAL AND REGIONAL HEADQUARTERS

Maria Podkorytova
Institute of Design and Urban Studies
ITMO University, Russia
mpodkorytova@itmo.ru

ABSTRACT

During globalization transnational corporations (TNCs). perform as global decision-makers, in some cases more influential than states. Their localization strategies mirror the global urban hierarchy and demonstrate the concentration of global decision-making in a small number of cities. While the geography of TNCs' global headquarters (HQs). is widely studied, the regional scale is under-researched, especially beyond developed countries. The current research is focused on TNCs expansion in the Former Soviet Union (FSU). region, specifically on the expansion of advanced producer service firms, that are considered as indicators of involvement in the global economy (Taylor & Derudder, 2015). The rapid globalization of the FSU, occurring simultaneously with hasty space fragmentation, led to the transformation of urban hierarchy in new conditions of the market economy. The paper aims to uncover localization strategies for global and regional headquarters (HQs). of advanced producer service companies within the region of the former Soviet Union, depicting the patterns of involvement in the global economy for FSU cities. The data has been collected and analyzed twice: in 2015 and in 2018. An interconnection between global and local HQs of the global advanced producer service companies (APS firms). has been traced throughout the analysis. Overall, the patterns of involvement of FSU cities into the global economy correspond to global trends. For example, companies with global HQs in London and New York are most pronounced in the FSU space too. As for the dynamics between 2015 and 2018, a number of Chinese companies significantly increased, though, it has not impacted the geography of regional HQs, because Chinese companies tend to have external coordination of the regional performance. Also, a considerable fall in the total number of regional HQs is reported in 2018. Moscow and Kyiv, most apparent locations for global businesses in FSU witnessed a significant decrease in many regional HQs in 2018, which might be explained by the political uncertainty. Generally, the dynamics of APS firms' performance in the FSU region, observed through the statistics of their headquarters, supports the idea of significant coherence between political disturbances and economic interaction.

Keywords: *APS firms, Gateway cities, Globalization, FSU region.*

1. INTRODUCTION

After the collapse of the USSR, two opposing trends have emerged in world economic and geographical research. On the one hand, the expansion of global interaction, the involvement of new actors in it shaped the idea of economic globalization as a process that overcomes political contradictions and erodes state borders (Ohmae, 1990; Friedman, 2005; Kobrin, 2001; Fukuyama, 1992). On the other hand, in many research papers the global has been perceived in the local context, taking into account, inter alia, the historical and political characteristics of the region (Paasi, 2019; O'Dowd, 2010; Kobrin, 2017). Rethinking the interdependence between global and local has led to the emergence of the term "glocalization" (Robertson, 1995). The rejection of the "ideal categories" global and local in favor of the idea of their relationship as a matrix of probabilities poses new questions for economic and geographical research (Bauman, 1998; Drori, 2018). Simultaneously, the idea of the state as the major political and economic

actor is challenged by the globalization process. States are claimed to adjust themselves to global market conditions, interacting through the global division of labor, which is similar to corporate interaction in production chains. At the same time the size and global reach of transnational corporations (TNCs). make them into political actors (Mikler, 2018). However, the influence of the state on global businesses' performance is also pronounced. The study of the heterogeneity of corporate strategies in developed market economies after the collapse of the USSR became the "starting point" for the formation of variegated capitalism theory, based on the idea of the interdependence between the specifics of local state institutions and the activities of global companies, mutual influence between government institutions and corporations. In this research agenda state institutions are considered as a product of culture and the historical past, resistant to the influence of global processes and partly determining the corporate strategies (Peck & Theodore, 2007). Reconsideration of scientific approaches to globalization was accompanied by reconsidering the concept of urbanization. In 2008, according to the UN, the urban population of the Earth exceeded the rural population. Migration from rural areas; continuous growth of the importance of cities as centers of innovation and economic development; population growth in the largest cities, especially in developing countries; increased intra-urban inequality are among the key characteristics of world economic geography (Bloom & Khanna, 2007; Kourtit, Nijkamp, & Partridge, 2013; Dicken, 2003). The rapid growth of cities is perceived simultaneously as a threat and an opportunity. The key negative consequences of urbanization are environmental challenges (Rodriguez Martin, De Arana, Ramos-Miras, Gil, & Boluda, 2015; Cao, et al., 2016). and growth of intra-urban inequality, which lead to increase of conflict risks in an urban environment (Nijkamp & Kourtit, 2013; Ostby, 2016). Positive perception of urbanization is associated with an increase in per capita incomes, better access to healthcare and education, and opportunities for innovative development in the urban spaces (Glaeser, Kominers, Luca, & Naik, 2018; Glaeser E., 2011). Theoretical rethinking of urbanization in the 21st century is strongly intertwined with a reconsideration of scale and transformation of the city from the research object into a paradigm, the "lens" through which global processes are to be studied (Brenner, 2009; Brenner & Schmidt, 2015; Dicken, 2003; Dicken, Kelly, Olds, & Yeung, 2001). Cities are also perceived as centers of global decision-making, provided by headquarters of the TNCs (Sassen, 2005; Taylor & Derudder, 2015). Assuming that TNCs share information within their corporate networks, researchers constructed diverse intercity networks. The network approach to urban studies employed infrastructural and political interurban networks, illustrating the inequality reproduction in global urban hierarchy (Derudder & Witlox, 2008; Derudder, Devrient, & Witlox, 2007; Neal, 2017; Taylor & Derudder, 2015). One of the most important has been P. Taylor's assessment of the connectivity between cities through the structures of global service companies. Focusing on the analysis of the corporate structures, Taylor and co-authors consider the dynamics of global urban hierarchy, currently lead by New York and London (Taylor & Derudder, 2015; Taylor, Walker, Catalano, & Hoyler, 2002). Criticism of such an approach to urban research includes not only a dispute on major hypotheses and calculation methodology (Neal, 2012; Liu & Derudder, 2012), but also a research focus on developed countries (Robinson, 2002). The space of the former USSR in this context turns out to be a region of "double exclusion", poorly involved both in the main body of research on a global scale, and in critique focused on the developing countries (Tuvikene, 2016). For example, in the databases provided by P. Taylor and co-authors, the number of cities of the former USSR in 2000 was only 8, and in 2016 increased to 14 (Frost & Podkorytova, 2018). Meanwhile, in the former USSR both globalization and urbanization have a pronounced specificity. This is the ideological content of Soviet urbanization, its inevitable connection with industrialization, and the incorporation of the legacy of the socialist system into capitalist neoliberal logic, which reinforces spatial inequality (Golubchikov, Badyina, & Makhrova, 2013; Golubchikov, 2017).

The current research aims to expand the existing studies on cities in globalization into regional scale through localization of global and regional headquarters of TNCs, operating in the post-Soviet space. The approach of the current study sheds light on globalization patterns in the FSU region, specifically their dynamics and transformation in conditions of political uncertainty.

2. DATA COLLECTION

The current research considers the post-Soviet space in terms of the location of offices of the largest global service companies on its territory. The database of offices of global service companies in the region of the former USSR includes two periods: 2015 and 2018. In 2015, the list of companies included 96 advanced producer service (APS). corporations, 16 from each sector: accountancy, advertising, banking, insurance, law, management (consulting). In 2018, due to mergers in the advertising sector, the total number of companies decreased to 94. The main source for forming the list of companies was the Forbes rating of the largest companies (Forbes Global 500 List). The approach to data collection is precisely discussed in Frost & Podkorytova, 2018. Since the research has been focused on the geography of the global and regional headquarters, corporations that did not have global headquarters were excluded at the analysis stage. Thus, 92 companies in 2015 and 89 companies in 2018 have been analyzed. Cities where the intraregional coordination of TNCs performance is provided are described as gateway cities (Short, Breitbach, Buckman, & Essex, 2000). In many studies, Moscow is claimed to be a city of this type for the post-Soviet space (Derudder, Devrient, & Witlox, 2007; Rosenblat, 2012; Frost & Podkorytova, 2018; Taylor, Walker, Catalano, & Hoyler, 2002). However, in conditions of political contradictions and disruption of the interaction between countries, other cities of the former USSR may be attractive locations for global companies, which might indicate continued fragmentation of space, gradual destruction of intercity relations that existed in the Soviet period and the emergence of new patterns of interaction (Frost & Podkorytova, 2018)

3. DATA ANALYSIS

The collected data has been analyzed by the location of both global and regional corporate headquarters. As soon as the database is relatively small it does not require advanced qualitative metrics and can be analyzed manually. However, it provides a unique scope of knowledge on the interconnection between local and global headquarters within a region. Tables 1-3 and figure 1 demonstrate the aggregation of data on the location of global and regional headquarters. As can be seen from table 1, the headquarters of most global service companies operating in the region of the former USSR are located in London and New York. This corresponds to the global trend, obtained by P. Taylor et al. According to their data, it is London and New York that are the leading decision-making centers, and the connection between them through the flows of information is most significant on a global scale. Tokyo, the “Third City” on a global scale according to the research of P. Taylor lags behind the two leaders in the post-Soviet space and shares its position with Paris (Taylor & Derudder, 2015). Several trends are observed during the comparison of the 2015 and 2018 data. Firstly, the number of locations of global headquarters has significantly decreased: from 31 in 2015 to 26 in 2018. Secondly, the distribution of headquarters in the regions of the world has changed. The share of Asian companies in the region increased from 11 to 19 percent.

Figure following on the next Page

Figure 1. Location of headquarters for global APS firms operating in the post-Soviet region (the figure is compiled based on corporate websites data)

Table 1: Global headquarters of APS companies operating in the post-Soviet region (the table is compiled based on corporate websites data)

City	State	Number of headquarters in 2015	Number of headquarters in 2018
London	UK	23	21
New York	USA	15	16
Paris	France	6	8
Tokyo	Japan	6	8
Zurich	Switzerland	4	3
Beijing	China	3	4
Chicago	USA	4	2
Munich	Germany	4	1
Amsterdam	Netherlands	2	3
Dublin	Ireland	2	2
Vienna	Austria	2	1
Berlin	Germany	1	2
Washington D.C.	USA	1	2
Seoul	South Korea	0	3
Boston	USA	2	0
Bangalore	India	1	1
Brussels	Belgium	1	1
Charlotte	USA	1	1
Hannover	Germany	1	1
Philadelphia	USA	0	2
Atlanta	USA	1	0
Brighton	UK	1	0
Frankfurt am Main	Germany	1	0
Hague	Netherlands	1	0
Los Angeles	USA	1	0
Madrid	Spain	1	0
Montreal	Canada	1	0
Richmond	USA	1	0
Singapore	Singapore	1	0
St. Petersburg	USA	1	0
Stockholm	Sweden	1	0
Sydney	Australia	1	0
Vancouver	Canada	1	0
Milan	Italy	0	1
Turin	Italy	0	1
Warsaw	Poland	0	1
Helsinki	Finland	0	1
Pittsburg	USA	0	1
Omaha	USA	0	1
Shenzhen	China	0	1

Table 2: Regional headquarters of APS companies in the post-Soviet region in 2015 (the table is compiled basing on corporate websites data)

Global headquarter	Number of regional headquarters									
	Moscow	Kiev	Tallinn	Riga	Vilnius	Almaty	St. Petersburg	Baku	Tbilisi	Tashkent
London	7	3	0	1	1	1	1	1	0	0
New York	8	4	1	0	0	2	0	0	0	1
Paris	3	3	0	1	0	1	1	1	1	0
Tokyo	2	0	0	0	0	0	0	0	0	0
Zurich	1	0	1	0	0	0	0	0	0	1
Chicago	2	0	0	0	1	1	0	0	0	0
Munich	2	0	0	0	0	0	0	0	0	0
Amsterdam	2	0	0	0	0	0	0	0	0	0
Vienna	1	2	0	0	0	0	0	0	1	0
Berlin	1	0	0	0	0	0	0	0	0	0
Hannover	1	0	0	0	0	0	0	0	0	0
Atlanta	1	1	0	0	0	0	0	0	0	0
Hague	0	1	0	0	0	0	0	0	0	0
Singapore	1	1	0	0	0	0	0	0	0	0
Stockholm	0	0	0	1	0	0	0	0	0	0
Total	**32**	**15**	**2**	**3**	**2**	**5**	**2**	**2**	**2**	**2**

Table 3: Regional headquarters of APS companies in post-Soviet region in 2018 (the table is compiled basing on corporate websites data)

Global headquarter	Number of regional headquarters									
	Moscow	Kiev	Tallinn	Riga	Vilnius	Almaty	St. Petersburg	Chisinau	Baku	Tbilisi
London	5	1	1	1	1	0	0	0	0	0
New York	7	3	0	0	0	3	1	0	0	0
Paris	4	2	0	0	0	0	2	1	1	0
Tokyo	1	0	0	0	0	0	0	0	0	0
Zurich	1	0	0	0	0	0	0	0	0	0
Munich	2	0	0	0	0	0	0	0	0	0
Amsterdam	1	0	0	0	0	0	0	0	0	0
Vienna	0	1	1	1	1	0	0	0	0	1
Berlin	1	0	0	0	0	0	0	0	0	0
Hannover	1	0	0	0	0	0	0	0	0	0
Milan	1	0	0	0	0	0	0	0	1	0
Turin	1	1	0	0	0	0	0	1	0	0
Warsaw	0	1	0	0	1	0	0	0	0	0
Total	**25**	**9**	**2**	**2**	**3**	**3**	**3**	**2**	**2**	**1**

Though, Asian companies rarely place their regional headquarters in the region, which may indicate their high centralization. In 2015, only 3 companies deployed large offices in the former USSR: two with global headquarters in Tokyo and one in Singapore. In 2018, only one Japanese company had a regional office in the post-Soviet space. Chinese and South Korean companies, which are actively expanding into the region, do not deploy large offices here and prefer to coordinate their activities outside the post-Soviet space. Overall, analysis of the localization of APS companies' regional headquarters (see tables 2 and 3). demonstrates a decline in global business interest to the FSU region. In 2015, regional headquarters for 37 global service companies have been located in the post-Soviet space. In 2018, only 31 companies deployed their regional headquarters in the FSU region. The decrease affected most of the FSU cities. Only Vilnius, St. Petersburg and Chisinau are characterized by an increase in the number of regional headquarters in 2018. Moscow and Kyiv have housed most of the regional headquarters both in 2015 and 2018.

Those cities may be considered as leading gateways to the FSU space. They also faced the most significant decline in the number of regional headquarters due to their gateway position. The capital status of the city is assumed to be a significant factor for headquarters localization in the post-Soviet space. Only two FSU cities represented in tables 2 and 3 - Almaty and St. Petersburg - are not capitals of their states. Coming back to the global headquarters localization, it may also be considered in terms of the variegated capitalism approach. In the classical work of J. Peck and N. Theodore, two types of market economies are observed: coordinated and liberal. Coordinated economy, as opposed to a liberal one, is characterized by the higher interconnection between different sectors, greater importance of trade unions and a lower propensity for risky investments. Basing on previous research, Peck and Theodore provide a list of classic examples of states for each type of market economy. So, as an example of a coordinated economy, Germany, other countries of Western Europe, as well as Japan and South Korea, are cited. The United States is a key example of the liberal type; in addition, Great Britain and some of its former colonies are included (Peck & Theodore, 2007; Hall & Soskice, 2001). All these countries belong to the category of economically developed, their cities are housing headquarters of global service companies. Companies with regional headquarters in the post-Soviet space have been analyzed according to the location of their global headquarters in the coordinated or liberal type of market economy. Belonging to any type was determined by the country of origin of the global headquarters, based on the list provided by Theodore and Peck (Peck & Theodore, 2007). Singapore and Poland were not taken into account in the analysis, since they cannot be unambiguously assigned to any of the groups for this indicator.
The calculation showed that in 2015, in the post-Soviet space clearly dominated the offices of companies related to the liberal type of market economy. In 2018, the number of regional headquarters of these companies decreased by 1.5 times, while the number of regional headquarters of companies of the coordinated type remained almost unchanged. This confirms the hypothesis that companies are more flexible in a liberal type of market economy.

4. CONCLUSION

The post-Soviet region is characterized by a decrease in presence of global service companies, a decrease in the role of intra-regional management, and a breakdown in the relationship between large global centers and leading cities in the region. The decrease in the number of regional headquarters in 2018, which mainly affected Moscow and Kyiv, may be considered as a consequence of political uncertainty in the region and the ongoing conflict between Russia and Ukraine. Additional qualitative research is required to study the localization patterns of global APS firms' offices in the Baltic countries. On the one hand, Vilnius, Riga and Tallinn are connected with Moscow through the structures of global service companies, since in many cases for subsidiaries, located there, the performance is coordinated by the regional headquarters in Moscow. On the other hand, they are attractive locations for regional headquarters themselves and could be observed as intermediaries in the economic interaction between Russia and the European Union. The results of the study also illustrate the inequality that exists in the region. For example, in Russia, all regional headquarters are located in Moscow and St. Petersburg, and none of the million-plus cities is included in the database. This underlines the gap between the “two capitals” and all other cities in the country, emphasized by regional economists (Turgel & Ulyanova, 2019).

LITERATURE:

1. Bauman, Z (1998). On Glocalization: or Globalization for some, Localization for some Others. *Thesis Eleven*, *54*(1), 37-49.
2. Bloom, D., & Khanna, T (2007). The Urban Revolution. *Finance & Development, 44*(3).
3. Brenner, N (2009). What is critical urban theory? *City*, *13*(2-3), 198-207.

4. Brenner, N., & Schmidt, C (2015). Towards the new epistemology of the urban? *City, 19*(2-3), 151-182.
5. Cao, C., Lee, X., Liu, S., Schultz, N., Xiao, W., Zhang, M., & Zhao, L (2016). Urban heat islands in China enhanced by haze pollution. *Nature Communications*(7).
6. Ceglowski, J (2000). Has Globalization Created a Borderless World? B P. O'Meara, H. D. Mehlinger, M. Krain, & R. Ma Newman (Ред.), *Globalization and the Challenges* (p. 101-112). Bloomington, Indianapolis: Indiana University Press.
7. Derudder, B., & Witlox, F (2008). Mapping world city networks through airline flows: context, relevance, and problems. *Journal of Transport Geography, 16*(5), 305-312.
8. Derudder, B., Devrient, L., & Witlox, F (2007). An Empirical Analysis of Former Soviet Cities in Transnational Airline Networks. *Eurasian Geography and Economics, 48*(1), 95-110.
9. Dicken, P (2003). *Global Shift: Reshaping the Global Economic Map in the 21st Century.* London: SAGE Publications.
10. Dicken, P., Kelly, P., Olds, K., & Yeung, H.-C (2001). Chains and networks, territoties and scales: towards a relational framework for analysing the global economy. *Global Networks, 1*(2), 89-112.
11. Drori, G (2018). Glocalization: A Critical Introduction. *Contemporary Sociology, 47*(4), 493-495.
12. *Forbes Global 500 List* (б.д.). Accessed 3 March 2019 г., https://fortune.com/global500/2019/
13. Friedman, T. L (2005). *The world is flat: A brief history of the twenty-first century.* New York: Farrar, Straus and Giroux.
14. Frost, I., & Podkorytova, M (2018). Former Soviet cities in globalization: an intraregional perspective on interurban relations through networks of global service firms. *Eurasian Geography and Economics, 59*(1), 98-125.
15. Fukuyama, F (1992). *The end of history and the last man.* New York: Free Press.
16. Glaeser, E (2011). *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier.* London:Macmillan.
17. Glaeser, E., Kominers, S., Luca, M., & Naik, N (2018). Big data and big cities: The promises and limitations of improved measures of urban life. *Economic Inquiry, 56*(1), 114-137.
18. Golubchikov, O (2017). The post-socialist city: insights from the spaces of radical societal change. B J. R. Short (Ред.), *A Research Agenda for Cities* (стр. 266-281). Cheltenham, Northampton, MA: Edward Elgar Publishing.
19. Golubchikov, O., Badyina, A., & Makhrova, A (2013). The Hybrid Spatialities of Transition: Capitalism, Legacy and Uneven Urban Economic Restructuring. *Urban Studies, 51*(4), 617-633.
20. Hall, P., & Soskice, D (2001). *An Introduction to varieties of capitalism.* Oxford: Oxford University Press.
21. Hoyler, M (2011). External Relations of German Cities through Intra-Firm Networks - A Global Perspective. *Raumforschung und Raumordnung, 69*(3), 147-159.
22. Kobrin, S. J (2001). Soverignity@Bay: Globalization, multinational enterprise and the international political system. B A. M. Rugman, & T. L. Brewer (Ред.), *Oxford Handbook of international business* (стр. 181-205). Oxford: Oxford University Press.
23. Kobrin, S. J (2017). Bricks and Mortar in a Borderless World: Globalization, the Backlash, and the Multinational Enterprise. *Global Strategy Journal, 7*(2), 159-171.
24. Kourtit, K., Nijkamp, P., & Partridge, M (2013). The New Urban World. *European Planning Studies, 21*(3), 285-290.

25. Liu, X., & Derudder, B (2012). Two-mode Networks and the Interlocking World City Network Model: a Reply to Neal. *Geographical Analysis, 44*(2), 171-173.
26. Neal, Z (2012). Structural Determinism in the Interlocking World. *Geographical Analysis, 44*(2), 162-170.
27. Neal, Z (2017). Well connected compared to what? Rethinking frames of reference in world city network research. *Environment and Planning A, 49*(12), 2859-2877.
28. Nijkamp, P., & Kourtit, K (2013). The "New Urban Europe": Global Challenges and Local Responses in the Urban Century. *European Planning Studies, 21*(3), 291-315.
29. O'Dowd, L (2010). From a 'Borderless World' to a 'World of Borders': 'Bringing History Back in'. *Environment and Planning D: Society and Space, 28*(6), 1031-1050.
30. Ohmae, K (1990). *The Borderless World: Power and Strategy in the Interlinked Economy.* New York: Harper Business.
31. Ohmae, K (2000). *The Invisible Continent: Global Strategy in the New Economy.* Harper Information.
32. Ostby, G (2016). Rural–urban migration, inequality and urban social disorder: Evidence from African and Asian cities. *Conflict Management and Peace Science, 33*(5), 491-515.
33. Paasi, A (2019). Borderless worlds and beyond: Challenging the state-centric cartographies. B A. Paasi, E.-K. Prokkola, J. Saarinen, & K. Zimmerbauer (2018), *Bordeless worlds for whom? Ethics, moralities and mobilities.* Abingdon, New York: Routledge.
34. Peck, J., & Theodore, N (2007). Variegated capitalism. *Progress in Human Geography, 31*(6), 731-772.
35. Robertson, R (1995). Glocalization: Time-Space and Homogeneity-Heterogeneity. B M. Featherstone, S. Lash, & R. Robertson (Ed.), *Global Modernities* (p. 25-45). London: SAGE Publications.
36. Robinson, J (2002). Global and world cities: a view from off the map. *International Journal of Urban and Regional Research, 26*(3), 531-554.
37. Rodriguez Martin, J., De Arana, C., Ramos-Miras, J., Gil, C., & Boluda, C (2015). Impact of 70 years urban growth associated with heavy metal pollution. *Enviromental Pollution, 196*, 156-163.
38. Rosenblat, C (2012). Cities in the regionalized world of multinational firm networks (Working Paper No. 3). Lausanne, Switzerland: University of Lausanne.
39. Sassen, S (1991). *The Global City:New York, London, Tokyo.* Princeton: Princeton University Press.
40. Sassen, S (2005). The global city: introducing a concept. *Brown Journal of World Affairs, 11*(2), 27-43.
41. Short, J., Breitbach, C., Buckman, S., & Essex, J (2000). From world cities to gateway cities: Extending the boundaries of globalization theory. *City, 4*(3), 317-340.
42. Taylor, P., & Derudder, B (2015). *World City Network.* London: Routledge.
43. Taylor, P., Walker, D., Catalano, G., & Hoyler, M (2002). Diversity and power in the world city network. *Cities, 19*(4), 231-241.
44. Turgel, I., & Ulyanova, E (2019). Russia's Largest Regional Capitals. The Settlement System and the Economy of the Country. B B. Sergi (Ред.), *Tech, Smart Cities, and Regional Development in Contemporary Russia* (стр. 55-79). Emerald Publishing Limited.
45. Tuvikene, T (2016). Strategies for Comparative Urbanism: Post-socialism as a De-territorialized Concept. *International Journal of Urban and Regional Research, 40*(1), 132-146

CROSS-BORDER COOPERATION BETWEEN KAZAKHSTAN AND RUSSIA

Aida Myrzakhmetova
al-Farabi Kazakh National University, Kazakhstan
myrzakhmetova@mail.ru

Dina Alshimbayeva
Satbayev University, Kazakhstan
d.alshimbaeva@gmail.com

Kulyash Turkeyeva
Institute of Economics of the Ministry of Education and Science of the Republic of Kazakhstan, Kazakhstan
turkeeva21@mail.ru

ABSTRACT

The article is devoted to the development of cross-border and inter-regional cooperation between Kazakhstan and Russia, which form an integral part of bilateral cooperation between these countries. The topic is very relevant, since historically our countries have much in common and are closely related in economic, political, cultural, social, humanitarian and other aspects. The toughening of competition in the world market objectively determines the need for uniting the efforts of interconnected and interdependent national economies of Kazakhstan and Russia. The purpose of the article is to analyze the state of cross-border cooperation between the economies of the Republic of Kazakhstan and the Russian Federation based on a multivariate study of the directions and economic potential of development of border regions, determining the prospects for its implementation in the context of deepening world economic relations. Development of border areas is a natural process of the evolution of productive forces at a qualitatively new level of production relations, which require complex interaction, innovation, use of advanced scientific technologies and educational services and other necessary advantageous conditions for the development of individuals, businesses, the state and neighboring regions. The features and prospects of cross-border cooperation in the field of trade, industrial cooperation, joint ventures in metallurgy, engineering, chemical, oil and high-tech industries, transport, logistics, etc. are studied. The authors justified its necessity and developed the proposals for effective cross-border and inter-regional cooperation between Kazakhstan and Russia.

Keywords: *Cross-border cooperation, Foreign trade, Industrial cooperation, Investment, Kazakhstan, Russia.*

1. INTRODUCTION

The purposes of cross-border and regional cooperation are to expand and enhance partnership relations between the regions of Russia and Kazakhstan, improve the standards of life of the population of the regions of both countries by developing cooperation and strengthening trade and economic, investment, humanitarian and scientific relations and by solving interregional problems. Our countries that occupy together an enormous part of the Eurasian continent form a special geopolitical situation by connecting Europe and rapidly developing countries of the Asia-Pacific region. The border areas play an important role as they should become the centers of economic activity and promote the successful integration of their countries to the world economic system. Russian-Kazakhstani border that is 7512,8 km is the longest of all the borders that Russia shares with 16 other countries. Kazakhstan shares borders with 12 regions of Russia. Kazakhstan has

7 regions bordering with Russia. 12 border regions of Russia make a significant contribution to the economy of Russia. 20.1% of total GRP of all Russian regions is formed in the border regions, 25.6% of industrial goods are manufactured there, 17.2% of all construction works are executed there and 20.7% of investment to the main capital is utilized in the border regions. Now let us refer directly to the problem of comparative advantages and competitiveness that forms the basis of dynamic development of countries. The issue of comparative advantage of countries was risen and developed by David Ricardo in 1817 in his work "The Principles of Political Economy and Taxation" (D. Ricardo, 2001.). He proves that if countries specialize in the production of goods that they can produce with relatively low costs comparing to other countries, then the trade is mutually beneficial, even if one country has an absolute advantage over other countries in all areas of production. Swedish neoclassic economists Eli Heckscher and Bertil Ohlin developed the theory of comparative advantage of David Ricardo and created the theory of correlation of factors of production. The theory claims that a country exports goods for the production of which it has relatively excessive factors of production, and imports goods for the production of which it has a shortage of factors of production. B. Olin, developing the theory of international trade of E. Hackscher, published his work "Interregional and International Trade" in 1933, where he introduced the definition of the Hackscher-Olin theory and formulated the Hackscher-Olin model in general. According to it, in the conditions of free competitiveness facilitates the balance of prices of factors of production in various countries and general economic equilibrium are achieved (B. Ohlin, 2004, 416 p.). All these classical and neoclassical theories are relevant today and to some extent find confirmation in practice. The concept of competitiveness is based on the theory of using comparative advantages of national economies (cheap labor, rich natural resources, etc.), which means using the international division of labor for exporting goods to countries that have no such advantages, and importing products from countries that have advantages over the national economy of the importing country. Some researchers put national capital control over the business around the world at the forefront of measuring international competitiveness. For example, R. Hackman applies this concept for the quantitative analysis of relations of foreign direct investment, world trade positions, the export of subsidiaries abroad and export of subsidiaries by sectors of the economy. At the same time, he provided a comprehensive overview of US foreign direct investment (FDI). from the World War II till the present time, as well as a survey of 100 leading US companies in terms of FDI by sectors (R. Hackmann, 1997, 490 p.). Porter, having examined the basic facts about regional economic indicators, the structure of regional economies and the role of clusters in the US economy from 1990 to 2000, found out that the effectiveness of regional economies varies markedly in terms of wages, wage growth, employment growth, and innovation (M. Porter, 2003, P. 549-578.). The concept of regional competitive advantage is popular in Western literature. In particular, M. Viassone adapted the Delphi method (Iterative process of collecting expert opinions using questionnaires). to assess regional competitiveness and compile the "Regional Competitiveness Index" RCI (M. Viassone, 2008). According to M. Kitson, the key elements in assessing regional competitiveness are human capital, depth and focus of social networks and institutional forms, presence of innovative and creative capital, scale and quality of infrastructure capital (M. Kitson, R. Martin, 2004, 38p.). L. Fleming devoted a major role in assessing competitiveness factors to innovations (L. Fleming, C. King III, A. Juda, 2007, pp. 938–954). To assess the comparative advantages of a product, they often appeal to the concept of B. Balassa, according to which this advantage is in a sufficiently large share occupied by the product in the international market, respectively, the absence of a comparative advantage lies in the low share of this product in the export markets. B. Balassa developed the theory of intra-industry international trade, which explains the exchange between countries of differentiated products of one industry (B. Balassa, 1998). The purpose of the article is to analyze the state of cross-border cooperation between the economies of the Republic of Kazakhstan and the Russian Federation based on a multivariate study of the directions and economic potential of development of border regions, determining the

prospects for its implementation in the context of deepening world economic relations. In the process of the survey the methodology of system approach of analysis of economic events and processes was used which includes studying causal, structural and functional, hierarchical, forward and backward linkages. Their cognition gives an opportunity to comprehend complex processes of development of the economic system and determine the nature of various economic processes and phenomena.

2. TRADE

The Intergovernmental Commission for Cooperation (IGC). has been operating between the Republic of Kazakhstan and the Russian Federation since 1997. In consists of 7 subcommissions on various areas of cooperation: interbank and investment; transport, inter-regional and cross-border; military-technical; in the fuel and energy field, in the field of science and new technologies; in industry. The Plan of Joint Actions for 2019-2021approved on 09.11.2018 by the Presidents of Russia and Kazakhstan at the XV Forum of Interregional Cooperation between Russia and Kazakhstan is the evidence of the mutual interest of further rapprochement. It defines the priority tasks of bilateral interaction (Forum of interregional cooperation between Russia and Kazakhstan, 2018). At both regional and local levels, the interaction of participants of cooperation is based on legal acts: agreements, memoranda, agreements and contracts. These documents form the legal basis and conditions for the cooperation of all entities. Today, the subjects of Russian-Kazakh cross-border cooperation are the state and municipal authorities, businesses, public organizations, and ordinary citizens (V.N. Ivanov, M.K. Zhundubaev, 2015, pp. 38-51). Traditionally close trade and economic ties unite countries. Russia ranks first among the main trade partners of Kazakhstan with a share in the country's foreign trade exceeding 20%. The share of the main trading partners in the export of Kazakhstan in 2018 shows that Russia takes fourth place after Italy, China and the Netherlands. The share of the main trading partners in the import of Kazakhstan during the same period shows that Russia has the first place followed by China, Germany, the USA and Italy. In 2018 turnover between Kazakhstan and Russia amounted to 18.517 billion USD - 11.58% (2.14 billion USD). more than in 2017. Kazakhstan's total turnover in 2018 reached 94.77 billion USD, in 2017 - 78.1 billion USD, the growth is 17.6%. The share of Russia in the total foreign trade turnover of the country amounted to 19.5% in 2018 compared to 21% in 2017. For eight months of 2019, turnover between Kazakhstan and Russia amounted to 12.245 billion USD. Russia's share in the total volume of foreign turnover has already amounted to 19.7%, which is higher than in 2018.

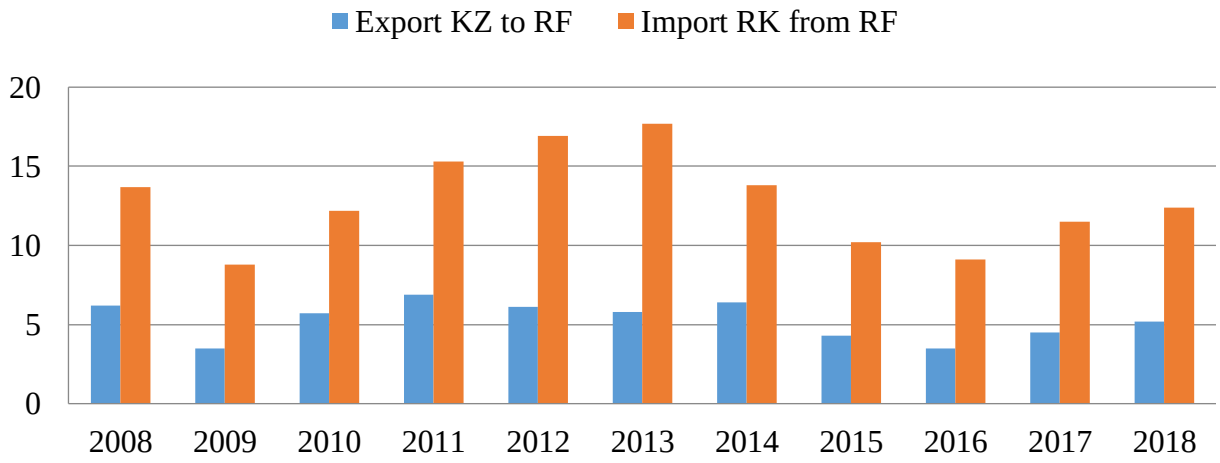

Chart 1: The structure of turnover between Russia and Kazakhstan (billion USD). (Data by the RK Statistics Committee, 2019)

Russia and Kazakhstan are characterized by a similar structure of exports (with a predominance of products of fuel and energy industry and mineral raw materials). and imports. In the commodity structure of Kazakhstan's export to Russia, the main share falls on mineral products (47.4%): products of the fuel and energy complex, rolled ferrous metals, pellets and iron ore concentrates, rare-earth metals, chemical products, plastics, rubber, base metals and products thereof, machinery, equipment, transport, appliances, food products and raw materials. Export from Kazakhstan to Russia in 2018 increased by 13.8% and amounted to 5.279 billion USD (2017 - 4.639 billion USD). For Kazakhstan, Russia is the main source of imports, its share was 39.6% in 2017, 39.3% in 2018. For Russia, the share of exports to Kazakhstan is only 3% of the total exports. But if raw materials are removed from Russian exports, Kazakhstan is the main export market for a number of non-resource sectors. In general, Kazakhstan consumes about 15-20% of Russian non-oil exports. The main goods imported to Kazakhstan from Russia are petroleum products, cars, coke and semi-coke, natural gas, railway freight cars, pipes, seamless profiles made of ferrous metals, tires, non-alloy steel profiles. Kazakhstan's imports from Russia in 2018 increased by 11.3% and amounted to 13.237 billion USD against 11.732 billion USD in 2017. The decrease in trade with Russia in 2014-2016 was caused by the depreciation of national currencies of Russia and Kazakhstan, the policy of sanctions against Russia and the situation in the world markets. In 2017-2018, there was an increase in turnover between Russia and Kazakhstan, which is due primarily to the growth in demand and prices for oil and other resources. Cooperation of Russian and Kazakhstan border regions in the fuel and energy sector is an important part of bilateral trade. Almost half of the total volume of oil refining in Kazakhstan at the three largest refineries goes on the processing of Russian raw materials. Pavlodar refinery and Shymkent refinery are partially oriented towards the processing of West Siberian oil. There is currently almost no processing of Kazakhstani oil in Russia, there is a practice of offsetting countries for oil supplies: Russian oil is delivered to Kazakhstan via Omsk-Pavlodar pipeline, and an equivalent amount of Kazakhstani oil is goes to Russia via Atyrau-Samara pipeline. Part of Kazakhstani gas is processed in Russia at the Gazprom Dobycha Orenburg LLC plant. The joint venture KazRosGas, founded on a parity basis by KazMunayGas and Gazprom, acquires crude gas from the Karachaganak field and sends it for processing to the Orenburg gas processing plant. Part of the processed gas is sent to the Kazakhstan market, another part is exported. Metals and metal products are the next by importance in the export and import of countries after the products of the oil and gas sector. The volume of metal exports significantly exceeds the volume of imports. A number of metallurgical enterprises in Orenburg and Chelyabinsk regions use iron ore from Kazakhstan largely.

3. INVESTMENTS

International cooperation between Kazakhstan and Russia is usually carried out in the form of a joint venture (JV). Among successful projects there are such large joint ventures as Ekibastuz GRES-2 Station JSC, Nova Zinc LLP, Caspian Pipeline Consortium JSC, Aktobe Copper Company LLP, KAMAZ-Engineering JSC, UTLC ERA JSC, etc. KazMunayGas and Lukoil companies concluded an agreement on the development of the Zhenis project on the Kazakhstani section of the Caspian shelf (Civilian helicopters will be assembled, and military equipment repair centers will be established In Kazakhstan, 2019). KAMAZ-Engineering JSC is the largest Kazakh-Russian joint venture in Kokshetau for the assembly of trucks, dump trucks and special equipment on the KAMAZ chassis. Those cars are made for Kazakhstani consumers. Now, KAMAZ-Engineering is one of the most technically equipped manufacturing plants in the Republic of Kazakhstan (Data by the official website of KAMAZ-Engineering JSC, 2019).

JSC “United Transport and Logistics Company - Eurasian Railway Alliance” was established in 2018 in order to increase the volume of transit container Europe-China traffic through the territories of Kazakhstan, Russia and Belarus. But there is still the unrealized potential of transit-transport interaction, which is an important competitive advantage of the two countries (Data by the official website of JSC "UTLC Eurasian Railway Alliance", 2019). Analysis of foreign investment in the economy of border regions shows that Russia has a clear orientation to the raw materials of Kazakhstan. Often raw materials are processed on Russian territory and imported to Kazakhstan in the form of finished products. Close relations with Kazakhstani partners are supported by the constituent entities of Russia, the leaders among them are Tatarstan, Sverdlovsk, Chelyabinsk and Orenburg regions. In each of these regions turnover with Kazakhstan exceeds 1 billion USD. Kazakhstani raw materials go to the mining and metallurgical and chemical enterprises of the South Urals in exchange for their finished products (T. B. Vladislavleva, 2016, pp. 216-225). Cross-border cooperation accounts for more than 70% of trade between Kazakhstan and Russia. The internal regional product (GRP). of Kazakhstani border regions is 40% of the GDP of Kazakhstan, and the GRP of Russian border regions is 20% of the GDP of Russia. By the end of 2018, 9952 joint ventures were registered in the Republic of Kazakhstan, of which 6138 are active (F. Koloskov, 2019). The implementation of joint investment projects is one of the main areas of cross-border cooperation. Mutual investments between Russia and Kazakhstan are characterized by positive dynamics.

Table 1: Gross inflow of FDI to RK from RF, million USD.
(Data of the National Bank of the RK)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
RF	663,6	951,6	1000,1	1069,5	1299,2	1583,8	533,6	872,6	1226,6	1499,2
Total	**21 437**	**22 246**	**26 467**	**28 885**	**24 098**	**23 809**	**15 368**	**21 367**	**20 960**	**24 263**

Table 2: Gross inflow of FDI to RF from RK, million USD.
(Data of the National Bank of the RK)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
RF	118,6	164,6	182,8	49,6	188,7	118,2	401,2	558,2	373,9	380,8
Total	**5 416**	**10 490**	**8 034**	**3 021**	**8 691**	**3 355**	**6 930**	**4 290**	**1 993**	**1 318**

According to the data of the National Bank of the Republic of Kazakhstan gross inflow of direct investment from Russia to Kazakhstan in 2018 was 1499,2 million USD. In total – 24262,7 million USD, which is 6,18%. The peak of investment from Russia was in 2014 – 1583,8 million USD, which is 6,7% of the whole portfolio. The gross outflow of direct investments from Kazakhstan to Russia in 2018 was 380,8 million USD. In total – 1318 million USD, which is 28,9%. The biggest amount of investments from Kazakhstan to Russia was in 2008 – 610,5 million USD and in 2016 – 558,2 million USD. During the years of independence FDI from Russia to Kazakhstan has amounted up to 14 billion USD and from Kazakhstan to Russia – more than 4 billion USD. More than 60 large investment projects for 10 billion USD have been implemented by this day. 57 projects for 6 billion USD are on the stage of consideration (Data by the News portal of the "Khabar" Agency, 2018). The key sector receiving Russian investment in Kazakhstan is fuel and energy complex. The second place was taken by non-ferrous metallurgy. One of the most important issues for the border regions is the

implementation of investment projects on creating Special Economic Zones (SEZ). However, they are not included in the plans of interregional and cross-border cooperation yet and being executed in the framework of the economic development of those regions. At present time, the sphere of mutual interest is the establishment of joint ventures in science-related, high-tech sectors, manufacture of equipment for oil and gas industry, energy and fuel complexes, medical sector, housing and communal services. There are favorable prospects of cooperation in the automotive sector, railway and transport mechanical engineering, aviation industry, nuclear energy sector and chemical industry.

4. CONCLUSION

For the development of inter-regional cooperation between Kazakhstan and Russia, it is necessary to focus on the following key areas. The first is the diversification of sector-specific products of industrial cooperation. Thus, for the Pavlodar region, the development of the chemical industry, energy and transport engineering using the cluster approach is of great importance. The second is that industrial cooperation involves increasing the capacity of existing backbone enterprises. The third is a technological update. It is advisable to develop cooperation between business incubators and technology parks and to increase joint projects in high-tech industries with high added value. It is necessary to develop partnerships in science-intensive projects like aviation, mechanical engineering, space, composite materials, rare-earth metals. Creation of international and interregional Russian-Kazakhstani industrial clusters, expansion of transport and logistics cooperation may be promising forms of cooperation. Stimulation of scientific and technical cooperation and development of joint targeted technological programs are more difficult areas of cooperation, but they will create the basis for subsequent production cooperation. Besides, the synchronization of social and economic development programs of our countries in the medium term will allow implementing many joint projects more effectively.

The study of cross-border cooperation between the two countries reveals the following problems:

1. The border zone is composed of regions of different sizes and scale of economy that vary greatly in terms of economic development, human capital, export potential and structural features.
2. In terms of absolute values of GRP, the border areas of Russia noticeably surpass those of Kazakhstan.
3. Investment potential lags far behind trade interaction. Most border regions characterized by low-capacity regional markets and poorly developed infrastructure.
4. The border regions still have weak innovation potential.
5. Management policies of large companies that are guided more by commercial rather than national interests.
6. Problems of local government.
7. Different state and legal status of the border areas, which means different power of authority.
8. Underdeveloped transport and logistics infrastructure with a significant length of the common border with large distances between settlements.
9. Differences in the legislative base of countries.
10. The regions are unevenly involved in the system of cross-border cooperation.

The effectiveness of cross-border cooperation will largely depend on the state of transport infrastructure, level of development of small and medium-sized businesses, and government support for joint projects. Today, the border regions have the necessary personnel, production, innovation and infrastructure potential capable of ensuring the restructuring of the economy

and bringing it to a competitive level. Effectiveness of interregional cooperation determined not only by economic parameters. Social and environmental indicators of interregional cooperation become especially significant. Practice shows that ignoring regional characteristics and interests weakens cross-border economic ties and creates contradictions in relations between republican and regional authorities. It is necessary to develop cross-border economic cooperation based on the rational use of its natural and socio-economic resources, taking into account the costs of placing production infrastructure facilities, population and social infrastructure facilities, creating nature conservation zones, etc. That is the only way to ensure an increase in the effectiveness of cross-border cooperation, improve the economy and social sphere of the border regions, and raise the living standards of their population. The results of 2018 show that the removal of barriers has a beneficial effect not only on mutual trade between the two countries in general, but also on the cooperation of particular regions. Moreover, the potential for further mutual development is far from exhausted.

LITERATURE:

1. Balassa, B (1998). Intra-Industry Trade and the Integration of Developing Countries in the World Economy. *International Economic Integration*. London: Routledge. Vol.3.p.43
2. *Civilian helicopters will be assembled, and military equipment repair centers will be established In Kazakhstan (*2019). Retrieved 03.04.2019 from https://ru.sputniknews.kz/economy/20190403/9732499/kazakhstan-russia-sovmestnoye-proizvodstvo.html
3. Data by the official website of KAMAZ-Engineering JSC. Retrieved 23.10.2019 from http://kamazkamaz.kz/inzhiniring/
4. Data by the official website of JSC "UTLC Eurasian Railway Alliance". Retrieved 27.10.2019 from: https://www.utlc.com/about/
5. Data by the News portal of the "Khabar" Agency (2018). Retrieved 29.10.2018 from https://24.kz/ru/news/policy/item/274358-xx-zasedanie- mezhpravitelstvennoj-komissii-kazakhstan-rossiya-sostoyalos-v-kazani
6. Fleming, L., King III C. & Juda, A (2007). Small Worlds and Regional Innovation. *Organization Science*. Vol. 18, No. 6, 938–954
7. Forum of interregional cooperation between Russia and Kazakhstan (2018). *New approaches and trends in the development of tourism in Kazakhstan and Russia.* Retrieved 9.11.2018 from http://kremlin.ru/events/president/news/59075
8. Hackmann R (1997). *U.S. trade, foreign direct investments, and global competitiveness.* New York and London: Haworth Press (490 p.), International Business Press
9. Ivanov V.N., Zhundubaev M.K (2015). Interregional and cross-border cooperation between Russia and Kazakhstan: main priorities. *National interests: priorities and security*, No. 7 (292), 38-51.
10. Koloskov F (2019*). Russia and Kazakhstan: the potential for trade growth is far from exhausted.* Retrieved 25.01.2019 from http://mirperemen.net/2019/01/rossiya-i-kazaxstan-potencial-dlya-rosta-torgovli-daleko-ne-ischerpan
11. Ohlin B (2004). *Interregional and International Trade* (416 p.). (Interregional and International Trade, 1933).
12. Porter M. E (2003). The economic performance of regions. *Regional Studies*, 37, P. 549-578.
13. Ricardo D (1817). (Third edition 1821). On the Principles of Political Economy and Taxation. Batoche books: Kitchener, 2001. Retrieved 26.10.2019 from https://socialsciences.mcmaster.ca/econ/ugcm/3ll3/ricardo/Principles.pdf

14. Viassone M., (2008). Regional Competitive Index as a tool to improve regional foresight: theory and evidence from two Western-Europe Regions. *8th Global Conference on Business & Economics*. October 18-19th, 2008. Florence, Italy
15. Vladislavleva T. B (2016). Interregional cooperation as a factor in the intensification of cooperation between modern states (on the example of relations between the Russian Federation and Kazakhstan). *Knowledge. Understanding. Skill.* 2016. No. 1, 216-225.

REALIZATION OF RESOURCE POTENTIAL OF THE OLDER GENERATION IN A REGIONAL SOCIETY

Galina Barysheva
National Research Tomsk Polytechnic University, Russia
30, Lenin Avenue, Tomsk, Russia, 634050
ganb@tpu.ru

Olga Nedospasova
National Research Tomsk Polytechnic University, Russia
30, Lenin Avenue, Tomsk, Russia, 634050
olgaeconomy@mail.ru

Irina Pavlova
National Research Tomsk Polytechnic University, Russia
30, Lenin Avenue, Tomsk, Russia, 634050
iapav@mail.ru

ABSTRACT

Elderly people are the most vulnerable social group during the process of implementation of economic, social, cultural and personal rights. The aim of this work is to identify sustainable socio-economic trends in the implementation of resource potential in the regions of the Siberian Federal District (Russia) basing on the Active Ageing Index methodology. Analysis of the realization of resource potential in a regional society involves measuring the employment of older people of different age groups and assessing the level of their social activity. We assessed the realization of the older generation's resource potential in terms of employment and participation in social life. This assessment is based on relevant statistics and a comprehensive survey of living conditions in Russia according to the methodology of the Active Longevity Index (taking the Siberian Federal District). Gender characteristics and settlement aspects are important in assessing the implementation of resource potential. This allows us to relate the social and economic roles of the older generation and to carry out regular social monitoring of the regions.

Keywords: *Active Ageing Index, Assessment, Employment, Involvement, Older generation, Region, Resource potential, Society.*

1. INTRODUCTION

Global demographic changes and the revolutionary increase in a life time are reflected in all socio-economic aspects of human life. Along with huge enormous advantages of these processes, they increase the pressure on socio-economic institutions, significantly escalate the problem of resource limitations of modern society. They need special approaches to ensure social integration, and maximum realization of the resource potential of each person. A scientific approach to assessing the ability of subjects to construct their own life paths is currently conceptually undeveloped. There is no concept of the involvement of older people in social life. No methodology has been created for measuring the effectiveness of various involvement trajectories from the point of view of the individual, employer and society as a whole. For this reason, today it is not possible to operationalize in full the process in dynamics in a system of quantitative and qualitative indicators. We should note that both foreign and domestic scientific research in the field of social policy clearly demonstrates a new trend in the transition from the concept of helping people with special needs to the concept of effective use of their resource potential. Since the 60s of the twentieth century a new point of view on the

aging process begins – a scientific criticism of the dominant concept of the exclusion of the older generation from socio-economic life. However, at that time this approach could not be spread widely due to the lack of relevant technological changes and socio-economic institutions (Cumming, 1961). In modern social sciences, the assessment of the role of the older generation shifts from passive recipients of social aid to active participants in socio-economic life. That characterizes the further development of the concept of active longevity (Rowe, 1997, pp. 433-440; Didino, 2019, p. 293). People with special needs include people with disabilities, older people, young mothers, migrants, and other social groups. They are often a discriminated group, actually or potentially excluded from the system of social and labor activity because of the "special" relation to them from society, they also suffer from insufficient socialization. Their personal and economic potential is not used completely. There is no integration into regional society, and involvement in socio-economic relations based on shared social values and culture (Iwamasa, 2011, pp 261-278). Research in this area is more focused on the medical problems of rehabilitation of the elderly or disabled people, while their social support is seen primarily through the prism of material aid and care. Very little attention is paid to the problems of professional adaptation of various social groups (Abashidze, 2014, pp. 219-223). The relevance of this problem is further enhanced by the fact that with aging, a person has a deficit of socio-economic roles, and there is a narrowing of the spectrum when choosing worthy trajectories of socio-economic activity. The vast number of elderly people in Russia live mainly in small and medium-sized cities, regional centers and remote settlements, where socially significant patterns of activity of older people usually fall out of the field of wide public discussion, giving way to the paternalistic tradition of helping and caring for older people as socially unprotected and mainly passive group of the population.

2. METHODOLOGICAL APPROACH

For a long time, a quantitative assessment of various parameters of the realization of a person's resource potential was difficult to carry out methodologically due to the lack of regular statistical data and opinion polls. Over the past seven years, they have received a significant push for development, which is associated with expanding the base of primary and secondary data of sociological studies for 2014, 2016, 2018, which characterize the state of social groups of older people (Grigoryeva, 2015, p. 336; Nedospasova, 2015, p. 290; Pavlova, 2017, p. 286). Today, the Active Ageing Index is the most famous and productive methodological approach to assessing the parameters of implementation of the resource potential of older people. This index was developed based on the actual data of the European sociological surveys of the quality of life of older people. This technique is based on wide coverage of territories, longevity parameters both at the level of the country as a whole, and at the level of regions and local settlements. It also allows you to identify imbalances in the implementation of the human resource potential due to gender, ethnic and demographic factors as well (Barysheva, 2018, P. 409-435). Assessment of active aging parameters by Active Ageing Index methodology in Russia was firstly performed in parallel by two independent research groups. The first one is from the Higher School of Economics, and the second is from the National Research Tomsk Polytechnic University (in the International Scientific and Educational Laboratory "Lifelong Wellbeing Lab"). (Varlamova, 2017, p. 41-71). It should be noted that these two research groups obtained similar close scientific results regarding development trends, despite the fact that some of the indicators were calculated basing on different primary sources. At the same time, serious methodological difficulties were identified to ensure the comparability of the results obtained in Russia with the results of a study in European countries. This is due to the clear lack of primary data in a detailing technique in modern Russian statistics as compared to the European one.

3. DIRECT AND INDIRECT ASSESSMENT PARAMETERS

Assessment of the implementation of resource potential in a regional society is carried out basin on direct and indirect parameters. Direct parameters allow to measure: the level of employment of people in different age groups and the level of their social activity (volunteering, caring for children and grandchildren, caring for elderly relatives and people with disabilities, participating in political activities). The weight of such parameters in the Active Ageing Index is about 70%. Indirect parameters allow evaluating the conditions developed in the region so that older people can realize their resource potential. These parameters show the medical care infrastructure, the achieved level of material well-being, physical safety, accumulated human capital, existing social relations and skills in using modern information technologies. It should be noted that during the period from 2012 to 2016 the situation of the older generation in the Russian Federation as a whole and in many regions has worsened significantly. That is primarily due to indirect parameters reflecting the infrastructure for involving older people in society. That is mainly caused by decreasing the material well-being of older people and their access to health services. Our analysis showed that among all the Russian macro-regions, the Far Eastern Federal District stands out and demonstrates positive dynamics, which is caused by the growth opportunities for implementation of human resource potential. When analyzing employment, we found significant differences in the degree of participation of older people of different age groups in paid activity (full and part-time employment). We estimated the degree of involvement of older people in paid activity basing on the data of the Comprehensive Monitoring of Living Conditions (2016). on the subjects of the Siberian Federal District in the context of urban and rural settlements, as well as taking into account the gender factor (Comprehensive... 2017).

4. GENDER, URBAN AND SETTLEMENT ASPECTS OF EMPLOYMENT

As a result of the study, we found the following important and sustainable socio-economic trends:

- The highest level of employment was in the age group of 55–59 years (on average in the Siberian Federal District this is 47.8% among all persons over 55). This is due to the specific features of the mandatory pension insurance system in the Russian Federation, since this group includes women who officially retire after 55 years of age, but who can continue to work, and men whose official retirement age begins at 60, but some of them retire earlier as preferential pensioners.
- The Novosibirsk region and Krasnoyarsk region are the leaders in the employment of the age group of 55–59, which is caused by specifics of the sectoral and territorial structure of their population and a higher level of urbanization and concentration of production potential.
- The Republic of Tuva is significantly lower in employment (28%). of people over 55 than the other regions of the Siberian Federal District. This is caused by the low real incomes in the region and the lack of jobs for the people of retirement and pre-retirement age (Fig. 1).
- In most regions of the Siberian Federal District, employment in urban areas is significantly higher than rural employment in the 55–59 age group. The most significant difference is observed in the Tomsk region (more than 30%), in other regions the difference is less significant. At the same time the situation in the Republic of Khakassia is fundamentally different – employment in rural areas exceeds the employment of older people in cities in this age group by almost 15%
- Men are more in demand in the labor market, while women, upon reaching retirement age, are more often to focus on family and other social activities. In some regions of the Siberian Federal District, the situation is contradictory. For example, gender equality in the labor market is observed in the Irkutsk region and the Altai Republic, while in the Altai Territory,

the Transbaikal Territory, Omsk region, and the Republic of Buryatia, significant gender disparities in the labor market take place for people aged 55–59. In the Republic of Tuva, we found an excess (more than 20%). of the number of employed women compared with the number of employed men of the same age. The employment of men in the Altai Territory is just less than in the Novosibirsk region, which is the leader. The Altai Republic, in turn, is catching up with the Novosibirsk Region in terms of the employment rate of women of this age group.

- With increasing age, the involvement of older people in paid activities is predictably reduced due to physical, socio-economic and other reasons. We identified significant regional differences in employment. For example, the highest employment in the Tomsk region is observed among people of 70–74 compared with the same indicator in other regions. This may be caused by the specifics of the industrial structure of production and the high value of scientific and educational complex, where most of the human resources are older age people.
- Urban areas have higher employment rates for older people. This may indicate the presence of vacant positions on the labor market of cities and closer family ties among residents of rural settlements, as well as an additional activity in daily activities in household plots. We note a significant excess of employment in cities in all age groups in the Novosibirsk region, the Altai Republic, and the Tomsk region.

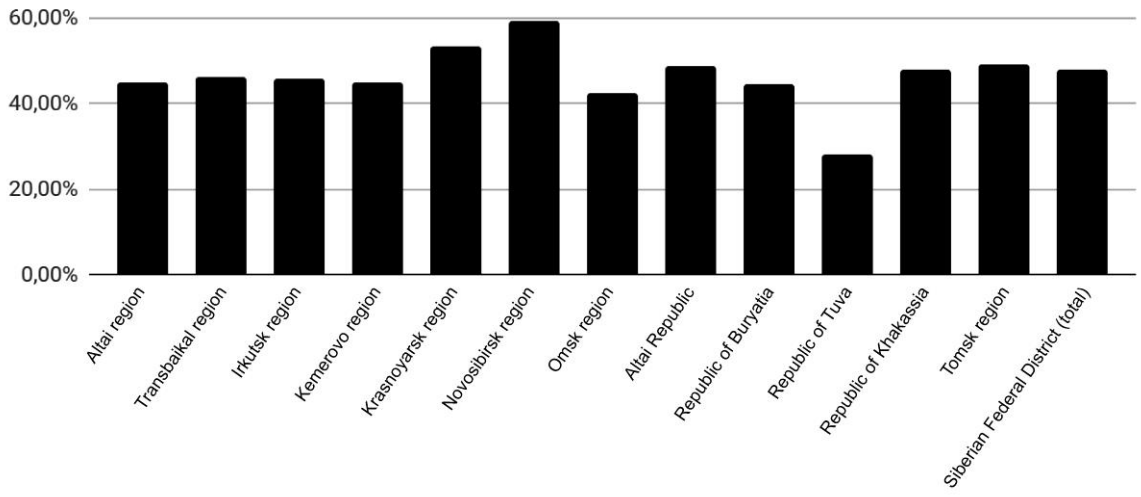

Figure 1: The share of employed among people of 55–59 in the regions of the Siberian Federal District (Selective..., 2016)

Thus, the implementation of the resource potential of older people through involvement in paid activities may depend on the following factors:

1. external factors (tension in labor market, training and retraining infrastructure, professional and territorial mobility, marital status and living conditions of the older generation, level of real wages);
2. internal factors (motivation to work as a condition for maintaining demand, intra-family relations, personal preferences).

5. PARTICIPATION IN SOCIAL LIFE

The combination of these factors will determine individual strategies for ensuring involvement in regional society. Activities related to participation in the life of society is an alternative to paid employment. Such activities include: volunteering, political activity, helping children and

grandchildren, and caring for other elderly family members and persons with disabilities. Volunteering is one of the least widespread forms of involving older people in society, which is often due not only to a lack of time and resources, but also due to the lack of unified and accessible information on the forms of implementation of volunteer activity. Additional limitations are the difficulties in mastering the information and communication space that most elderly people have, while traditional communication channels for volunteer recruiting are almost never used (Ibarra F., 2016, p. 58-65). In the context of urban and rural settlements, there is a clear predominance of rural residents in various types of volunteer activities. The most active city volunteers were noted in the Irkutsk region and the Transbaikal Territory, while in all other regions volunteering is more common in rural areas. The predominance of women is natural in volunteering. The potential for involving older people in volunteer activities in Russia as a whole is very high. In this context, the experience of the Netherlands is especially remarkable, where more than 25% of the population over 55 of both sexes are actively involved in such activities. Various practices of assisting family members are the most popular mechanism for realizing the resource potential of older people in Russia. The collectivist type of housekeeping is a sustainable mechanism for organizing social interaction and a mutual assistance system. Employment and care practices for loved ones complement each other. Employment reduction by region in the Siberian Federal District is accompanied by an increase in the participation of older people in care practices, but we cannot state that this is a steady situation. In certain regions (for example, the Altai Republic, the Republic of Khakassia), a high level of the economic and social activity takes place. Our assessment of the role of urbanization in strengthening family ties shows a strong interdependence of the place of residence of older people and their willingness to aid children and grandchildren. In most regions of the Siberian Federal District, rural residents interact more actively with their descendants. In our approach, we managed to assess the care of elderly relatives and other persons in need of aid. Our research has shown that on average 6% of older people in the regions of the Siberian Federal District regularly provide such aid. In the Kemerovo region and the Altai Republic, this practice is significantly less, which is associated with a shorter lifetime, and problems of family relations, as well as with the higher level of independence and autonomy of older people. Usually the main burden of caring for elderly relatives falls on the shoulders of women. This significantly reduces their quality of life and provokes intra-family conflicts. Among the regions of the Siberian Federal District, there are territories where the main part of such a burden is taken by men (Altai and Zabaykalsky Krai, Altai Republic, and Tomsk region). However, in the Republic of Buryatia and the Republic of Tuva, just women only are involved in this process.

6. CONCLUSION

Thus, we have to note the significant progress that has taken place in recent years in actual data acquisition. These data allow assessing the scope and individual forms of the process of realizing the resource potential of older people, taking into account gender and settlement aspects. We believe that ensuring the regularity of comprehensive surveys of living conditions for comparative assessments is a very important task. The representativeness of the sample and the coverage of different aspects of the life quality of the population provide a good factual basis for further monitoring, quantitative and qualitative studies of various forms of older people's involvement in social life. At the same time, we have to note the lack of reliable factual data in a number of public databases. Few subjective assessments and non-quantitative parameters have been accumulated. There are not enough personal assessments and psychological characteristics of respondents in regions. The composition of the indicators of different waves of the Comprehensive Monitoring of Living Conditions does not match in full. This complicates the comparative analysis significantly. Meanwhile, abroad, subjective assessments of well-being are long-term in nature and are carried out on a regular basis for all

categories of the population. Such studies become more and more in demand in state social policy (especially in Canada, Australia, Great Britain, and Sweden). In these countries, the least-protected communities among older people are studied separately to provide targeted support to these narrow groups. The scientific importance of solving this problem is to overcome the contradictions between the high potential of socio-economic activity of older people in different age groups and the existing institutional constraints of its implementation. Advanced social policy is based on the wide use of the potential accumulated by older people and on the development of social infrastructure, which allows older people to feel independent, responsible and full members of society, as well as to involved in solving regional problems and territorial development (Barysheva, 2017, pp. 676-690; Mallett, 2015, pp. 250-266). That contributes to an increase in life expectancy and subjective well-being.

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LITERATURE:

1. Abashidze, A. H. and Malichenko, V. S (2014). International and national legal mechanisms of ensuring social justice for the elderly. *Advances in Gerontology*, 4(4), 219-223 (in Rus)
2. Barysheva, G. Frolova, E., Malanina, V., Taran E (2018). Active Ageing Index: A Russian Study. In Zaidi, A. et al (ed.), *Building Evidence for Active Ageing Policies* (pp.409-435). Singapore: Palgrave Macmillan.
3. Barysheva, G. A. and (2017). Regional initiative to improve the well-being standard of the older generation: evidence from the Tomsk oblast. *Regional Economics: Theory and Practice*, 15(4), 676-690 (in Rus)
4. *Comprehensive Monitoring of Living Conditions of the Population in 2016 [Kompleksnoe nabliudenie uslovii zhizni naseleniia v 2016 godu]* (2017). Retrieved 22.11.2019 from https://www.gks.ru/free_doc/new_site/kouz16/index.html (in Rus).
5. Cumming, E. and Henry, W (1961). *Growing Old: The Process of Disengagement* (p.293). New York: Basic Books.
6. Didino, D., Taran, E. A., Barysheva G. A. and Casati F (2019). Psychometric evaluation of the Russian version of the flourishing scale in a sample of older adults living in Siberia. *Health and Quality of Life Outcomes*, 17(1), no. 34, 2-12
7. Grigoryeva, I. A. et al (2015). *Elderly in Modern Russia: Between Employment, Education and Health [Pozhilye v sovremennoi Rossii: mezhdu zaniatost'iu, obrazovaniem i zdorov'em]* (p.336). St. Petersburg: Aleteia (in Rus)
8. Ibarra, F. et al (2016). Tools enabling online contributions by older adults. *IEEE Internet Computing*, 20(5), 58-65
9. Iwamasa, G. and Iwasaki M (2011). A new multidimensional model of successful aging: perceptions of Japanese American older adults. *J. Cross Cult. Gerontol*., 26(3), 261-278
10. Mallett, O. and Wapshott, R (2015). Making sense of self-employment in late career: understanding the identity work of olderpreneurs. *Work, Employment and Society*, 29(2), 250-266
11. Nedospasova, O. P. et al (2015). *Multi-Subject Approach to Well-Being: A View From Perspective of the Theory of Human Capital [Mnogosub"ektnyi podkhod k obespecheniiu blagopoluchiia: vzgliad s pozitsii teorii chelovecheskogo kapitala]* (p.290). Tomsk: Tomsk State University (in Russian)

12. Pavlova, I. A (2017). *Composite Indicators as Comprehensive Assessments of the Elderly Population Well-Being [Integral'nye indeksy kak kompleksnye sposoby otsenki blagopoluchiia starshego pokoleniia]* (p.286). Tomsk: STT (in Russian).
13. Rowe, J. W. and Kahn, R. L (1997). Successful aging. *The Gerontologist* , 37(4), 433-440
14. *Selective monitoring of incomes and participation in social programs [Vyborochnoe nabliudenie dokhodov naseleniia i uchastiia v sotsial'nykh programmakh]* (2016). Retrieved 22.11.2019 from https://www.gks.ru/free_doc/new_site/vndn-2016/index.html (in Rus)
15. Varlamova, M., Ermolina, A. and Sinyavskaya, O (2017). Active Ageing Index as an Evidence Base for Developing a Comprehensive Active Ageing Policy in Russia. *Journal of Population Ageing* , 10(1), 41-71

COMPARISON OF OBJECTIVE AND SUBJECTIVE DATA FOR ASSESSING OLDER PEOPLE QUALITY OF LIFE (EXAMPLE OF TOMSK REGION)

Ilya Gumennikov
Tomsk Polytechnic University, Tomsk, Russian Federation
gumennikov@tpu.ru

Evgeny Monastyrny
Tomsk Polytechnic University, Tomsk, Russian Federation
e.monastyrny@gmail.com

Irina Pavlova
Tomsk Polytechnic University, Tomsk, Russian Federation
iapav@mail.ru

ABSTRACT

Currently, the main indicators of the socio-economic progress of society are changing. Their essence takes on a more and more subjective nature. Thus, the per capita GDP indicator gives way to indicators of the quality of life and well-being of the population. Comprehensive assessments are used to study and evaluate multi-structured phenomena. In the last few decades, the scientific community has been trying to offer a tool for assessing the quality of life and well-being of people. At present, we understand that this tool should contain both objective data describing the assessed phenomenon and subjective assessments designed to take into account the internal attitude of people. At the same time, in modern society there is a process of decreasing the share of the working-age population and an increase in the number of older people. Therefore, in this work, we focused on people who have reached retirement age. The paper compares statistical data and sociological survey data to assess the quality of life of older people in the Tomsk region. Sources of information: the analytical report «The senior generation of the Tomsk region: demography and participation in the labor market» published by Tomskstat in 2019 and the sociological survey «Problems of the older generation», which was conducted at the Tomsk Polytechnic University (TPU) Lifelong Well-being Lab in 2019. The results show that based on statistical data, the quality of life of pensioners over the past few years has not changed or increased slightly, while, based on sociological data, it remained at the previous level or somewhat decreased.

Keywords: *Older adults, Objective indicators, Quality of life, Subjective assessments, Tomsk region, Well-being.*

1. INTRODUCTION

The quality of life is one of the main indicators of the well-being of social groups and society as a whole. Since 2014, the International Scientific Educational Laboratory for the Improvement of Well-being Technologies of Older Adults (Lifelong Well-being Lab). of Tomsk Polytechnic University has been assessing the situation of senior citizens. In addition to regular sociological surveys and analysis of statistical information to determine the standard of living in this social group, the Russian Elderly Well-being Index (REWI). (Pavlova et al., 2018). has been developed, which provides an integrated assessment of the well-being (Diener et al., 2010; Boarini et al., 2014). of people who have reached the retirement age. The methodology of this tool involves the joint use of objective indicators and subjective assessments to obtain a more complete, close to reality assessment (Costanza et al., 2007; MacLeod, 2015). In this paper, an attempt is made to describe some components of the quality of life, evaluating them

both in terms of official statistics and in terms of value judgments. The information base for such a description was the data of a series of analytical reports (The older generation of the Tomsk region: demography and participation in the labor market), prepared jointly with the Territorial Authority of the Federal State Statistics Service for the Tomsk Region (Tomskstat). and the sociological survey "Problems of Older Generation" conducted by the Lifelong Well-being Lab in 2019. The sample was 450 people aged 50 years and older living in the city of Tomsk and other areas of the Tomsk region. Over the past decade, the index of self-esteem of the material situation of Russians, calculated by the Russian Public Opinion Research Center, had several changes in its trend development. Until 2008, there was a steady positive trend, with the onset of the crisis period in 2008, the proportion of people reporting a worsening financial situation began to grow. Nevertheless, until 2014, the index of self-esteem of material conditions showed steady growth, but since the spring of 2014, the first negative trends have been observed, which have turned into a sharp decline in respondents' assessments. Starting from 2014, a decline in the well-being of the older generation was recorded by the REWI.

2. CHAPTER

In the Tomsk region, as well as throughout the country, the main source of income for the older generation is a pension. Thus, according to the 2010 All-Russian Population Census, more than 60% of the population over working age lived primarily on pension income. The second main source of livelihood for many was the personal subsidiary plots, and the third was the income from labor activity, for which 16% and 14% of older people lived, respectively. The survey data show that pension and benefits are the main sources of income for the vast majority of respondents (80%). The significance of this source is highly dependent on age. In the pre-retirement period (up to 54 years), the first place among sources of income is occupied by wages (76%). Although at this age, one in four respondents (27%). indicated retirement orientation. At the age of 55-59 years (which is pre-retirement for men and active retirement for women), dependence on income sources is gender. Men more often indicate salaries, women - retirement, which in total leads to a high significance of both sources at the same time - several options could be chosen in the question. Thus, 56% of respondents aged 54-59 are guided by wages, and 74% by retirement.

2.1. Objective data

According to the data of the branch of the Pension Fund of the Russian Federation in the Tomsk Region, as of January 1, 2019, 260.1 thousand people received an old-age pension, which is 31.2 thousand more than at the beginning of 2011 (table 1).

Table 1. The main indicators of the provision of pensioners receiving old-age pensions (Tomskstat, 2019, p. 7)

	2010	2015	2016	2017	2018
The number of pensioners registered in the Pension Fund of the Tomsk Region[1)], thousand people	228.9	251.4	254.9	257.3	260.1
of them working, thousand people	95.7	119.5	67.3	65.4	65.3
Average amount of assigned pensions[1)], rubles	8832	13875	14241	15271	16133
The actual amount of the assigned monthly pensions, in% to the previous year	112.7	101.9	97.6	104.7	100.2
The value of the living wage of a pensioner, rubles	4766	8470	8557	8604	8718
The ratio of the average monthly pensions assigned, percent:					
with the cost of living	181.3	166.8	172.9	183.7	189.5
with average accrued size salary	41.6	43.6	41.7	40.3	41.6

1. As of January 1 of the year following the reporting year.

The average amount of the assigned monthly old-age pensions as of January 1, 2019 amounted to 16133 rubles, compared to January 1, 2011, it increased in nominal terms by 1.8 times, in real terms (including inflation). - by 7.8%. Between 2010 and 2018 twice there was a decrease in the real amount of the assigned monthly old-age pensions in 2014 and 2016 (by 5.7% and 2.4%). (Fig. 1). In general, since 2014, the actual amount of pensions granted has slightly increased.

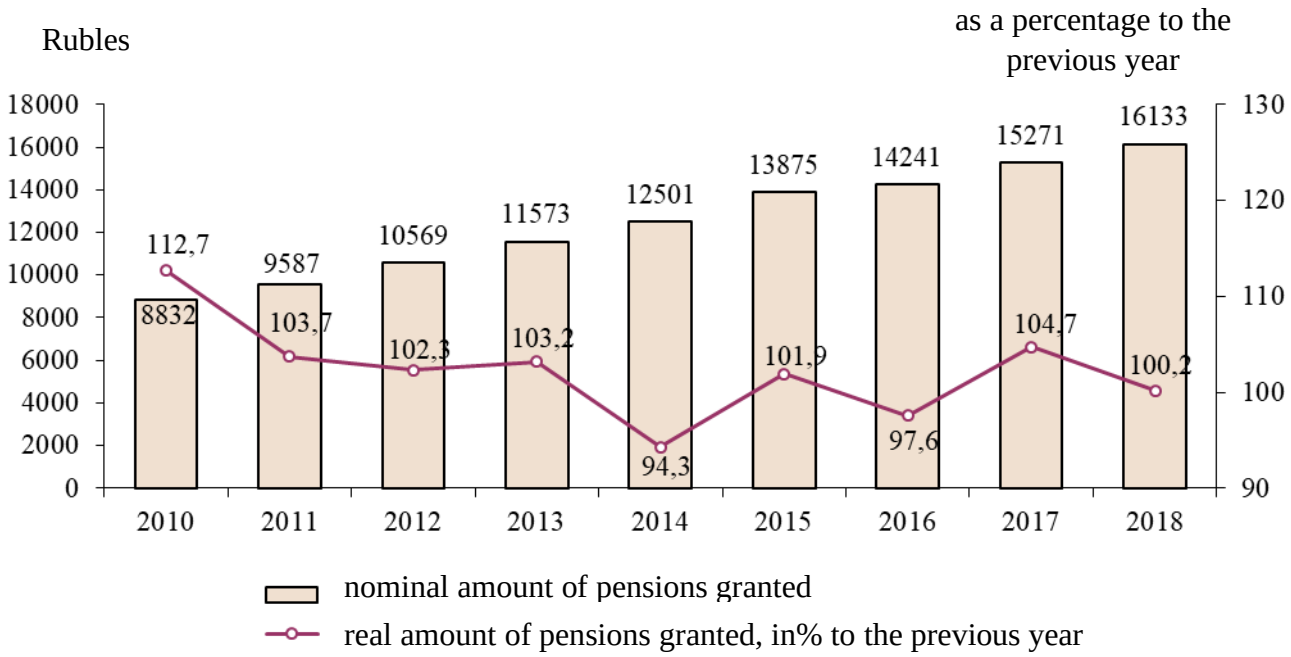

Fig. 1. The dynamics of the nominal and real size of the prescribed monthly old-age pensions on January 1 of the year following the reporting (Tomskstat, 2019, p. 8)

2.2. Subjective data

Every third respondent replied that on average per family member their income is from 13 to 18 thousand rubles. Every fifth respondent's income is from 19 to 25 thousand. In these income groups, the level of material support is comparable for men and women. Men were twice as likely to record large amounts (from 26 thousand rubles). than women, who, in turn, more often indicated low-income groups - from 6 to 12 thousand and below 6 thousand rubles. Income above 19 thousand rubles was more often noted by respondents of pre-retirement age (Fig. 2). However, among those older than 73 years, 30% also indicated that their average monthly income is over 19 thousand. Persons under 54 years of age most often referred to the lowest-income group: 13% of them replied that the average per capita income in their family was less than 6 thousand rubles.

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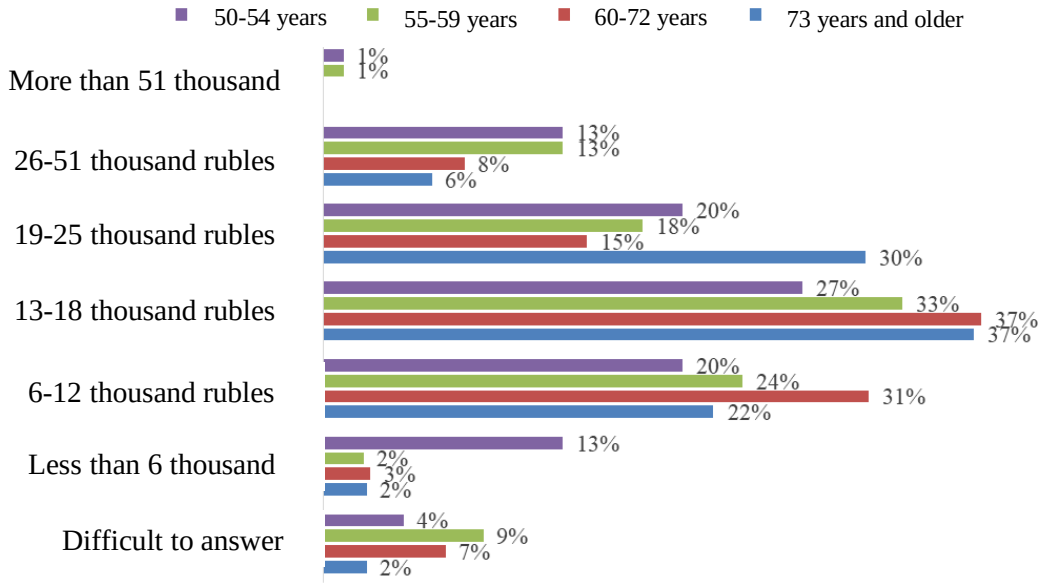

Fig. 2. Self-assessment of income by age groups (in %). (Survey «Problems of the older generation», 2019)

As shown in Figure 3, more than half of those who indicated that on average his income is from 26 to 50 thousand rubles, noted that they could buy a lot, but large acquisitions are not available to them (58%). Most of those who indicated income ranges of 13-18 thousand and 6-12 thousand, mainly noted that all the money goes to food (42-43%). In the lowest-income group (income below 6 thousand), every second said that there was not enough money even for food (52%).

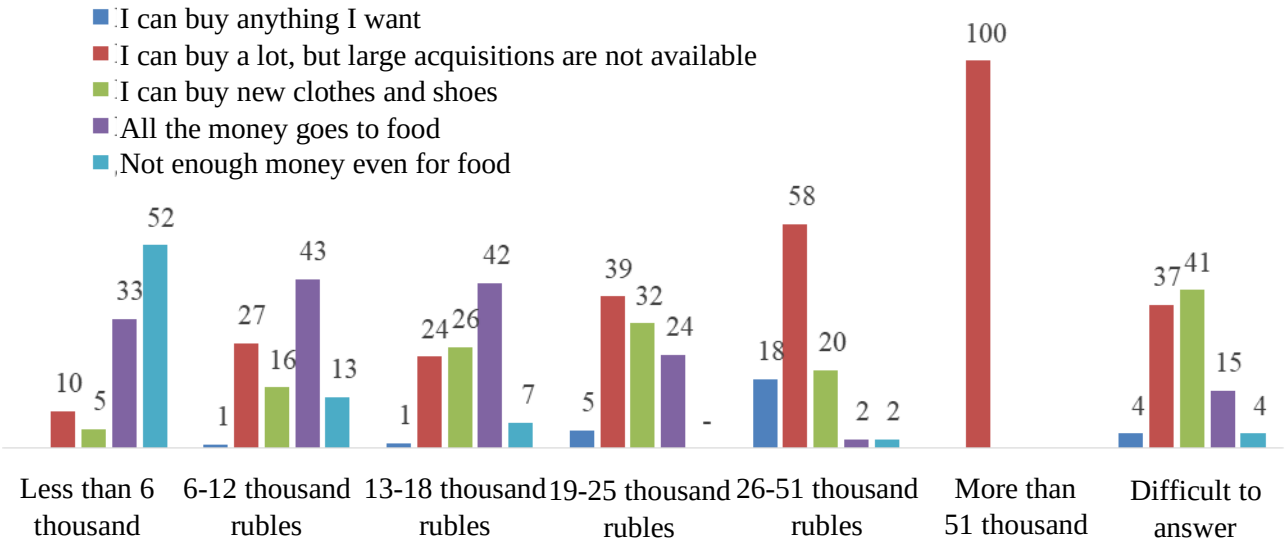

Fig. 3. Self-assessment of income and financial situation (in %). (Survey «Problems of the older generation», 2019)

The standard of living of pensioners is significantly lower than that of the working population. In 2018, the average old-age pension amounted to 41.6% of the average wage in the region. The differentiation is confirmed by the ratio of wages and pensions to the cost of living. In 2018, the average old-age pension was 1.9 times higher than the pensioner's living wage, while wages were 3.6 times higher than the living wage of the able-bodied population (Fig. 4).

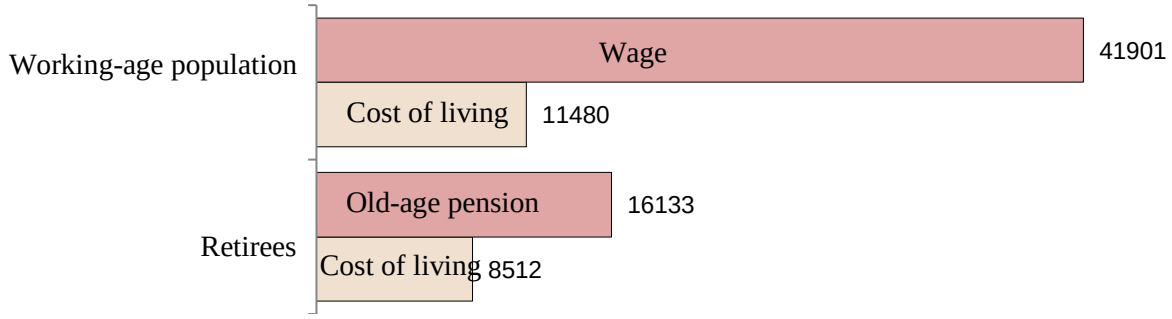

Fig. 4. The main sources of cash income of certain groups of the population and the amount of the subsistence minimum established for them for 2018, rubles per month (Tomskstat, 2019, p. 8)

After retirement, many retirees continue to work due to a lack of funds for current consumption, a desire to be involved in society, and aspirations to create savings for the future.
The difference in the quality of life between workers and retirees is well reflected in the self-assessment of income. Figure 5 shows the difference in the level of consumption depending on age. Under the age of 60, the proportion of people who can buy a lot, except for large acquisitions, is higher than in older ages and among those who spend all their money on food, people over the age of 60 dominate (Fig. 5).

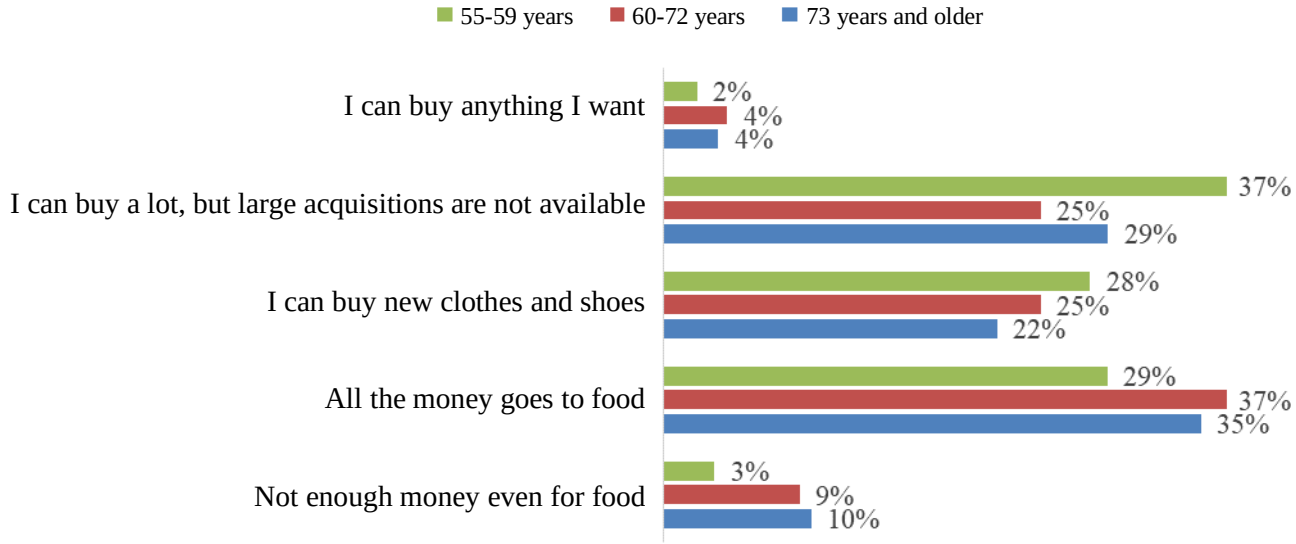

Fig. 5. Self-assessment of the level of financial situation by age groups (in %). (Survey «Problems of the older generation», 2019)

As part of a sociological survey, respondents were asked the question: “How do you assess the general conditions of your life over the past two or three years?” (Fig. 6). Self-assessment of the current state of living conditions is rather neutral: 45% said that nothing had changed. The remaining respondents more often indicated a worsening of the situation than an improvement. Thus, only 3% of respondents indicated a significant improvement, while 10% indicated a deterioration. No obvious trends were revealed by gender and age, with the exception that older pensioners more often indicated the absence of any changes in their living conditions over the past 2-3 years (57%).

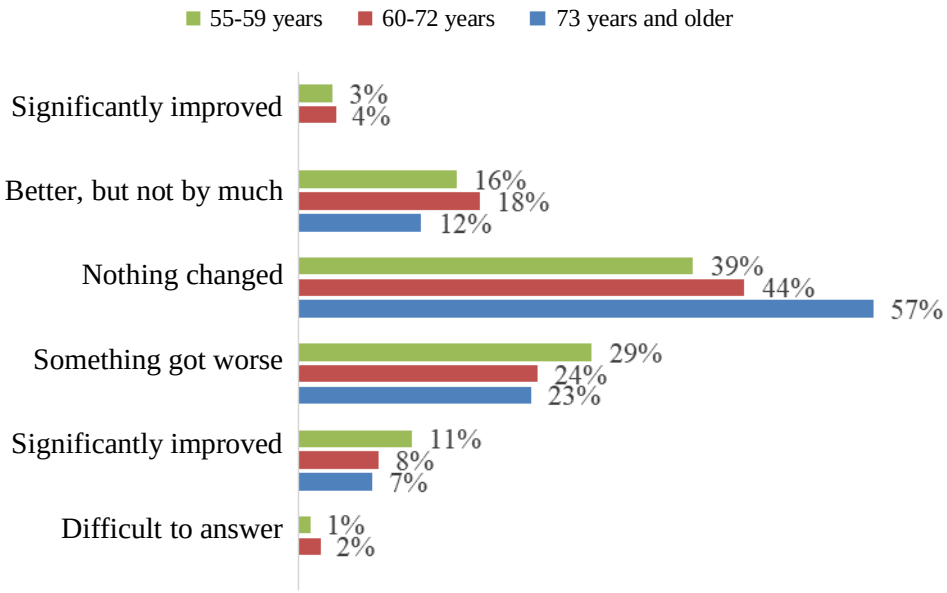

Fig. 6. Assessment of living conditions by age groups (in %). (Survey «Problems of the older generation», 2019)

3. CONCLUSION

An integrated approach is currently the most optimal method for assessing complex socio-economic phenomena, because it allows you to deepen understanding of socio-economic development and progress. An example of this is the global initiative to assess the development of countries through the Sustainable Development Goals Index (Hák et al., 2007; Lafortune et al., 2018; Sachs et al., 2018). The use of an integrated approach implies the inclusion of both objective and subjective data, which is reflected in the indices of assessing the well-being of the older generation. The Active Ageing Index, for example, consisting of four domains: Employment, Participation in Society, Independent, Healthy and Secure Living and Capacity and Enabling Environment for Active Ageing (Zaidi et al., 2013; Varlamova, 2015; Active Ageing Index: Analytical Report, 2019). Based on the information collected, it is worth noting that subjective indicators have greater dispersion compared to objective ones and are more sensitive to changes over time. From a comparison of objective and subjective data to assess the quality of life of older people in the Tomsk Region, we can conclude that, based on statistical data, the quality of life of pensioners over the past few years has not changed or increased slightly, while, based on sociological data, it remained at previous level or somewhat decreased. It should be noted that integral indices have a number of limitations for use. Firstly, it is impossible to say exactly which indicators to consider in order to describe the processes being evaluated (Ciegis et al., 2009). The second major problem is the limitations of the data itself (George, 2010). In our case, the selection of variables was based on the principle of publicly available data for the age group in question. Conclusions based on the analysis must be done taking into account the listed limitations. We would recommend using complex indices, combining objective and subjective data, in the initial stages of analysis (Self et al., 2012).

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LITERATURE:

1. *Active Ageing Index: Analytical Report*. Analytical Report (2019). UNECE/European Commission, p 93
2. Boarini R., Kolev A., & McGregor A (2014). *Measuring Well-Being and Progress in Countries at Different Stages of Development: Towards a More Universal Conceptual Framework.* OECD Development Centre Working Papers.
3. Ciegis R., Ramanauskiene J., & Startiene G (2009). Theoretical Reasoning of the Use of Indicators and Indices for Sustainable Development Assessment. E*ngineering Economics*, 63 (4), 33–40
4. Costanza R., Fisher B., Ali S., Beer C., Bond L., Boumans R., & Gayer D. E (2007). Quality of Life: An Approach Integrating Opportunities, Human Needs, and Subjective Well-being. *Ecological Economics*, 61 (2), 267–276
5. Diener E., Wirtz D., Tov W., Kim-Prieto C., Choi D. W., Oishi S., & Biswas-Diener R (2010). New Well-Being Measures: Short Scales to Assess Flourishing and Positive and Negative Feelings. *Social Indicators Research*, 97 (2), 143–156
6. George, L. K (2009). Still happy after all these years: Research frontiers on subjective well-being in later life. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 65(3), 331-339
7. Hák T., Moldan B., & Dahl A. L (eds.). (2007). *Sustainability Indicators: a Scientific Assessment*. Vol. 67. Washington: Island Press
8. Lafortune, G., Fuller, G., Moreno, J., Schmidt-Traub, G., & Kroll, C (2018). *SDG Index and Dashboards-Detailed Methodological paper*. New York (US): SDSN
9. MacLeod A. K (2015). Well-Being: Objectivism, Subjectivism or Sobjectivism? *Journal of Happiness Studies*, 16 (4), 1073–1089
10. Pavlova, I., Monastyrny, E., Gumennikov, I., & Barysheva, G (2018). The Russian Elderly Well-Being Index (REWI): Methodology, Methods, Approbation. *Journal of Social Policy Studies*, 16(1), 23-36
11. Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., & Fuller, G (2018). *SDG Index and Dashboards Report 2018. Global Responsibilities*. International Spillovers in Achieving the Goals.
12. Self, A., Thomas, J., & Randall, C (2012). *Measuring national well-being: life in the UK, 2012*. Office for National Statistics
13. *The older generation of the Tomsk region: demography and participation in the labor market*. Analytical report (2019). Tomsk: Tomskstat.
14. Varlamova M., Ermolina A., & Sinyavskaya O (2017). Active Ageing Index as an Evidence Base for Developing a Comprehensive Active Ageing Policy in Russia. *Journal of Population Ageing*, 10 (1), 41–71
15. Zaidi A., Gasior K., Hofmarcher M. M., Lelkes O., Marin B., Rodrigues R., Schmidt A., Vanhuysse P., & Zolyomi E (2013). *Active Ageing Index 2012. Concept, Methodology and Final Results*. Vienna: European Centre.

ANALYSIS ON JAPANESE SHRINKING CITIES AS A PART OF ITS INTERNATIONAL COMPARATIVE RESEARCH

Takashi Yamamoto
Takushoku University, Japan
ytakashi@ner.takushoku-u.ac.jp

ABSTRACT

This paper analyzed issues in Japanese shrinking cities, and evaluated policies that intend to mitigate the impact of shrinkage. The analytical section of this paper discussed the definition of a shrinking city, Japan's depopulation in the coming decades at the national level as well as the municipality level, and the vicious circle of the population loss and the change of economic structure in shrinking cities in Japan. The second section of the paper examined desired policy goals for shrinking cities, along with strategies and approaches to achieve such goals. This paper discussed that the strategies that the Japanese national government has taken since 2014 have been inadequate and ineffective to achieve such a goal. Thus, an alternative initiative, such as Economic Gardening, which focuses on the empowerment of SMEs in the cities, should be employed to complement the government initiative in terms of job creation and income generation. The case study section of this paper analyzed one of the shrinking cities in Japan, which has been implementing Economic Gardening, based on a proposed framework for international comparative case studies. The final section proposes that future research, involving academics in Russia, Japan, and other resource-reliant economies such as Australia, will contribute to the residents of shrinking cities through insightful suggestions for adequate policy formulation and implementation.

Keywords: *Depopulation, Economic Gardening, Regional Cities, Shrinking Cities, Small-and-Medium-sized Enterprises (SMEs).*

1. INTRODUCTION

This paper has three purposes. First, this paper analyzes the issue of shrinking cities. I will discuss the definition of a shrinking city to be used for international comparative analysis. A brief literature review follows to clarify the research question on shrinking cities. Then comes the discussion on the shrinkage of Japanese cities. I will clarify the characteristics of Japanese shrinking cities and discuss the causes of the loss of population and economic activities there. Second, this paper examines desired goals for shrinking cities, along with strategies and approaches to achieve such goals. I will discuss that economic resilience should be enhanced in shrinking cities rather than simply increasing the income or employment of the residents. I will also argue that the strategies that Japan's national government took since 2014 have been inadequate and ineffective to overcome the issue of city shrinkage. I will then discuss an alternative approach, which focuses on areas that the Japanese government has not paid much attention to. In this sense, this paper intends to contribute to further economic development in shrinking cities in Russia by introducing a non-traditional/alternative approach that has been implemented in the US, Australia, and Japan. Comparative analysis of economic development strategies for shrinking cities in Russia and Japan will lead to promoting non-political and functional cooperation between the two countries. Third, intending to contribute to scholars in Russia, this paper proposes a framework for international comparative case study analysis on shrinking cities. Research on shrinking cities in resource-reliant regions is urgently needed especially for promoting sustainable development for the cities. This paper will contribute to filling the gap by proposing a framework for comparative analysis. This paper will also present a case study of one of the Japanese cities based on the proposed framework.

The city has been employing the alternative approach, which has been mentioned above, and achieves at least partial success. I will introduce the basic information of the city and the program that they have employed, then discuss the challenges that they have.

2. ANALYSIS

2.1. Definition of a shrinking city

One of the difficulties in the international comparative discussion on shrinking cities is that each country has a different background on the issue of city shrinkage, and therefore, clarification on the issue itself provides a problem. For example, the issue of depopulation and loss of community sustainability in Japan was mentioned as "kaso", which literally means "being overly-sparsely populated", from the mid-1960s. However, an application of the definition in Japanese law to the international discussion would not be beneficial to anybody. Therefore, this paper employs the definition of a shrinking city provided by the Shrinking Cities International Research Network (SCIRN): "a densely populated urban area with a minimum population of 10,000 residents that has faced population losses in large parts for more than two years and is undergoing economic transformations with some symptoms of a structural crisis." (Hollander et al., 2009).

2.2. Research questions

Existing literature has already covered various aspects of research questions on shrinking cities. One of them discussed global, supra-national, and national issues of the shrinkage of large cities, and analyzed cities in the US, Germany, Italy, and the UK as a case study (Richardson & Nam, 2014). Their discussion included the classification of causes and consequences of urban shrinkage as well as measures for improvement of the current situation. Shrinking cities in the eastern part of Germany show multi-dimensional interaction of different challenges (Kühn & Fischer, 2011). First, demographic problems have been caused by a decline in population due to a lack of birth, migration of the youth, and the aging of residents. Second, urban economic problems involve the loss of employment due to de-industrialization, and job losses linked to de-industrialization could not be compensated for by growth within the service sector. Third, urban problems include an overcapacity of public infrastructure, large brownfield areas, and vacant residential and commercial property. Finally, these demographic and socio-economic processes of decline have resulted in weakened financial conditions within the affected municipalities, which have intern greatly limited the local government's scope of action. Taking the national and local contextual conditions into account and focusing on the causes of shrinkage, there are three types of shrinkage: (1). "imposed shrinkage"; (2). "shrinkage due to comparative disadvantage"; and (3). shrinkage due to "societal and global changes" (Wu et al., 2014). A study on the shrinkage of urban and rural areas in Chinese municipalities compared the different types of causes in different regions in China (Yang & Dunford, 2018). Their contribution to the discussion is important because they show that there are different reasons for city shrinkage even in the same country.

2.3. The issue in Japan (1): demographic change at the national level

As of 1 October, 2018, the population of Japan is 126.4 million, lower than the previous year by 263 thousand people. The number of senior citizens of the age 65 or older is 35.6 million, and the seniority rate reached to the historically highest level of 28.1%. A recent report estimates, based on the National Population Census of 2015, that the total population of Japan in 2045 will decline to 106.4 million (National Institute of Population and Social Security Research, 2018, p.47). That means that 16.3% of the population will be lost in 30 years. The loss of population is mainly due to the continuing lower birth rate. The same report also estimates that the seniority rate will become higher in all of the 47 prefectures in Japan (*ibid.*,

pp. 50-52). The national average of the seniority rate will be 36.8% in 2045, but the variance is large. The highest seniority rate in 2045 will happen in Akita Prefecture (50.1%), and the lowest in Tokyo Metropolitan (30.7%). Loss of working population combined with increasing senior citizen population will cause lower consumption and production in domestic markets, causing severer burdens of welfare payment in the public sector, and difficulties in maintaining communities. A comparison of the population in 2050 with that in 2010 in terms of 1 square kilo-meter mesh shows that only 2% of the Japanese land will experience gain in the population (Spatial Policy Research Group, 2014). On average, Japan will lose about 24% of the population between 2010 and 2050. Ordinance-designated cities, which have a population over 1 million, will lose 15% of its population, while municipalities with less than 10 thousand population will lose as much as 48% of its population. These estimates indicate that Tokyo, Nagoya (the capital city of Aichi Prefecture), and Yokohama (the capital city of Kanagawa Prefecture). will attract population and then financial and human capital from other parts of the country. Municipalities with a small population of young women are likely to lose their residents in the future, and 523 municipalities in Japan (29.1% of all the municipalities). will only have a population of less than 10 thousand in 2040, becoming unsustainable (Masuda, H. & Depopulation Research Group, 2013). Large cities in Japan will become more convenient and prosperous, and will have relative gains in population, while small cities will lose population in both absolute and relative terms.

2.4. The issue in Japan (2): shrinkage of municipalities and local SMEs

Depopulation, the comparative disadvantage of local firms, loss of local amenities, and the shrinkage of a city affect each other in a complex manner. Based on the Establishment and Enterprise Census, the characteristics of manufacturing SMEs and their business environment became different "as though they were in different countries" before and after the bubble economy (Seki, 2017, p. 197). Before 1985, manufacturing SMEs were characterized by dependence on exporting to US markets, limited business challenges of cost reduction and production expansion, and young and entrepreneurial firm owners. The Plaza Accord was signed in 1985, when the US dollar was made depreciated in exchange for appreciating Japanese Yen and Deutsche Mark. Exporters to the US markets suffered. The appreciation of the Japanese Yen was an indirect cause of the bubble economy, which had collapsed by 1992. After 1992, business characteristics of manufacturing SMEs looked different in many aspects: focus on China and Asian countries as production sites and markets, wider challenges such as environment-friendliness, recycling, utilization of new technologies like ICT, and difficulty in business succession. The loss of employment and difficulty in business succession in manufacturing industries accelerated economic shrinkage in regional cities. Based on the data in National Population Census, which has been implemented in the 5-year interval, there were two major depopulation cycles in Japanese regional municipalities: one started around in 1985, and the other was after 2000 (Kondo, 2011, p. 147). Both years marked the turning points of the Japanese economy, which impacted the regional economies as well. Establishing of shopping malls, DIY stores, large-scale discount stores and home electric appliance stores had strongly negative impacts on regional economies since the late 1990s. Those large stores do not have headquarters in regional cities. Therefore, profits went out of the region, no longer staying inside, when customers started to buy at those stores instead of at local shops. The impact became prominent early in 2000, when local construction business started to shrink because of less procurement in public investment projects. Construction business at that time functioned as a quasi-system of income redistribution. Thus, loss of employment in the construction industry led to the reduced income of the residents (*ibid.*, pp. 49-50).

3. GOAL AND INITIATIVES

It will be impossible to stop shrinkage of regional cities so long as the total population of Japan is becoming smaller. However, it is possible, and in fact necessary, to reduce the rate of depopulation in regional cities so that they can "buy time" to establish values, norms, and rules that will enable them to create societies sustainable with less population. For this purpose, it is important to create jobs in regional cities that lead to increase income for people living there. The term "initiative" used here means a set of consistent ideas from which and in which actions are generated. In other words, an initiative includes strategies and projects to solve issues and / or to achieve goals.

3.1. The goal for Shrinking Cities: Enhancement of Economic Resilience

Sustainable planning models for shrinking communities is one of the seven areas of notable policy and strategic focus for sustainable local economic and job development because of demographic change scenarios: "addressing the issue of sustainable development models that move away from the growth paradigm requires different instruments and strategies strongly anchored to the local situation and the manifestations of shrinkage. " (Martinez-Fernandez & Weyman, 2012, p. 30). It is necessary to increase the employment of local firms, to raise the income of local residents, and to promote fund circulation at the local level so that impacts of the shrinkage can be mitigated and economic resilience can be enhanced. Young people will have to move out without attractive jobs in local towns. The local economy cannot be sustained if residents' income is kept low or funds continue to leak out of the area.

The ability to import replacement in a city is the key to understand the rise and decline of the city's wealth and its sustained growth. Successful cities have good pro-business "eco-system":

> "*Economies producing diversely and amply for their own people and producers, as well as for others, are better off than specialized economies like those of supply, clearance, and transplant regions. In a natural ecology, the more diversity there is, the more flexibility, too, because of what ecologists call its greater numbers of 'homeostatic feedback loops,' meaning that it includes greater numbers of feedback controls for automatic self-correction. It is the same as our economies.*" (Jacobs, 1985, p. 224)

It is important that unique strategies should be designed and introduced for economic development in shrinking cities:

> "*Designing skills and employment strategies for these cities requires different approaches from cities that are growing and where skills shortages relate to strong industrial demand. Declining cities need to work much harder at offering lifestyle choices together with a dynamic business environment that can attract and keep knowledge workers and their families.*" (Martinez-Fernandez et al., 2012, p. 221)

3.2. Governmental Initiatives in Japan

The Japanese Government recognized that Japan would face with the structural crisis of nation-wise depopulation and aging, and established the Headquarter for Regional Revitalization under the Cabinet in September 2014 to engage with the issue by the Government as a whole. Mr. Shigeru Ishiba, one of the strong leaders in the government party at the time, was appointed as the first Minister of State for Regional Revitalization. The Headquarter issued in December 2014 the Long-term Vision for Regional Revitalization (the Vision), and the Five-Year Comprehensive Strategy for Regional Revitalization (the Comprehensive Strategy). The Comprehensive Strategy described goals, fundamental approaches, and projects of regional revitalization during the period of 2015 through 2019. Four goals were set in the Strategy: (1). creating jobs in regional cities; (2). creating new flows to regional cities; (3). supporting

marriage and childcare for the young generation; and (4). protecting citizens from disasters and connecting regions. The national government enacted a new law, the Law for Regional Revitalization, in 2014, which demanded that all the prefectural and municipal governments should exercise their best to prepare the Long-term Population Vision, and the Prefectural / Municipal Comprehensive Strategy for Revitalization, so that the local governments would start projects by themselves. The national government supported the local governments in terms of information, human resources, and budgetary assistance (Machi et al., 2019). Currently, all the prefectural and municipal governments, except for one municipality, have the Prefectural / Municipal Comprehensive Strategy for Revitalization. Almost all of the local government (100% of prefectural governments and 91.8% of municipal governments). evaluated the effectiveness of their Comprehensive Strategy. Their evaluation finds that more than 90% of the local governments prepared the Comprehensive Strategy with the assistance of advisors in their regions, while some municipalities have not exercised strong leadership and instead they have let consulting firms prepare their Comprehensive Strategy because of the time constraints in preparation(Interim Report, 2019).

3.3. Economic Gardening - Empowerment of Local SMEs

The governmental initiative is not the only approach applicable for shrinking cities. An alternative initiative, which focuses on the empowerment of SMEs in the cities, will complement the government initiative in terms of job creation and income generation.

"Economic Gardening" was created in 1987 and implemented from 1989 in the City of Littleton, Colorado, US by Christian Gibbons and his supporters, and some best practices were starting to emerge by the late 1990s. Littleton has outperformed in employment growth when Economic Gardening was in operation.

Littleton experienced outstanding performance in job creation thanks to Economic Gardening:

> "*Since its introduction of economic gardening principles in 1989, the number of new jobs in Littleton has grown from 14,907 to 35,163, or 136 percent. These numbers include wage-and-salary jobs plus self-employment. This growth is approximate twice the rate of the Denver region, three times that of Colorado, and six times that of the United States.*" (The US Small Business Administration, 2006, p. 173)

Economic Gardening is different from traditional economic development strategies in many aspects:

1. It is based on an idea that economies are driven by entrepreneurial growth and by innovative place rather than the cheapest place to do business;
2. It focuses on growth companies, especially at Stage II (10-99 employees);
3. It uses sophisticated corporate tools, such as database searching, geographic information systems (GIS), search engine optimization (SEO), web marketing, social media research tools, and network mapping;
4. It focuses on front-end and strategic issues of business, such as core strategy, market dynamics, marketing, teams, and finance;
5. It depends on a highly-skilled Economic Gardening staff working in an iterative manner with business owners; and
6. Its organization is as entrepreneurial as the companies with which it works (Gibbons, 2010, pp. 6-7).

Economic Gardening has been implemented in cities outside the US. The City of Shellharbour in New South Wales, Australia started its Economic Gardening in 2006. Cities of Wollongong and Kiama joined later, and currently the beneficiaries of Economic Gardening are open to local businesses of the three cities (Grace, 2013).

Local governments in Japan started Economic Gardening in the last ten years: Fujieda City from 2011, Naruto City from 2012, Osaka Prefecture from 2014, and Sammu City from 2016.

4. CASE STUDY

4.1. A proposed framework for comparative case study analysis

This paper proposes a framework for comparative case study analysis on shrinking cities in Russia and Japan. It is beneficial for the scholars in Russia and Japan to have a common framework, because it becomes easier to identify similarities and differences. Here is a set of components for the framework, on which the paper analyzes a shrinking city in Japan: (1). profile of the city with the history of city shrinkage; (2). characteristics of local SMEs; (3). institutional aspect of the programs; (4). business support activities; and (5). evaluation and future development.

4.2. The Case of Sammu City

(1). City profile: Sammu City is located in the northwestern part of Chiba Prefecture, approximately 70 km away from central Tokyo. The population of the city is about 51,600 as of April in 2019, but it has been losing about 2% of its population every year since the 1990s. Their major industries are manufacturing, services, and construction. Agriculture is not prominent in terms of output and employment, but people in the city are very proud of their agriculture-based culture and their superior agricultural products such as rice and strawberry. Sammu City is one of a few municipalities in Japan, where Economic Gardening has been implemented.

(2). Characteristics of local SMEs: Based on the recommendation by the Sammu Economic Gardening Preparatory Committee, Sammu City Government conducted a comprehensive survey on SMEs in the city to understand its business environment that affected local businesses. The following information was taken from the internal survey report published by Sammu City Government in March 2016: *Shinai Chushokigyo Shokibojigyosha Jittaichosa Hokokusho (Survey Report on Small- and Medium-sized Enterprises and Sole Proprietors in the City).* Survey questionnaires were sent to 1,758 businesses (firms and sole proprietors). 841 of them (47.8%). responded (a). Company size: businesses with 10 employees or less share 67.1% of the respondents. (b). Age of business owners: more than half (57.3%). of business owners is 61 years old or above. (c). Location of current clients: clients of a quarter of respondents are located in Sammu City, while more than half of them have clients outside the city. (d). Change of sale revenues compared with 3 years ago: almost half (48.9%). of respondents decreased their sales revenues in the last 3 years, while a small number of firms increased their sales revenue significantly. (e). Current business issues: six major concerns for respondents are having new clients and new employees, raising sales, reducing material costs, upgrading machinery/building, and making a stronger and more stable financial base.

(3). Institutional aspect: Sammu City Government and the Youth League of the Sammu City Society of Commerce and Industry jointly organized the Sammu Economic Gardening Preparatory Committee in 2014 so that both organizations could cooperate more and better in providing more effective support for SMEs in the city. Members of the Committee shared information on demographic changes in the past and the future, industrial structure, and best practices in other municipalities. They also discussed how public support for local SMEs should be improved. By 2016, Members of the Committee shared a view that their economy had been shrinking and would shrink further with a smaller and aging population. They also had common recognition that there needed to be better serviced for business development for local firms and sole proprietors. In April 2016, the Preparatory Committee was transformed

into the Sammu Economic Gardening Promotion Committee, which coordinates business development support projects for local businesses. The Small- and Medium-Sized Enterprise Promotion Basic Ordinance was enacted in April 2018. The Ordinance provides an institutional justification to continue Economic Gardening as an official policy. The purpose of Economic Gardening Sammu is to establish a business environment in which local firms with entrepreneurship will live long and prosper. As of December 2018, there were 73 members of Sammu Economic Gardening Promotion Committee: 36 in commerce, 15 in manufacturing, 13 in finance and public services, and 9 farmers (Sammu City Council Bulletin, 2018). What is special about Sammu Economic Gardening Promotion Committee is that a private sector organization (the Society of Commerce and Industry). takes the lead. One of the Society's senior directors serves as the Chairman of the Committee, and deputy mayor of the city serves as the Vice-Chairman. The Committee delegates its substantial decision-making power to a standing council, which is held bi-monthly, so that they can flexibly respond to requests from members and beneficiaries of the business support services.

(4). Business support activities: As mentioned above, practical business support measures are provided through working groups, where business owners participate. Seven Working Groups (WG). are currently active: (1). local resource utilization WG; (2). "Chat Biz" WG; (3). job fair WG; (4). local tourism WG; (5). local food promotion WG; (6). tourism content development WG; and (7). Businesses and banks WG.

(5). Evaluation and future development: Sammu City has not implemented post-program surveys on the current situations of SMEs to identify and confirm the effectiveness of the Economic Gardening initiative, and the official statistics are not available yet. Members of the Economic Gardening Committee said, however, that sales and employment of their companies have been improved or at least maintained. Thus, it is necessary to pay attention to networks of businesses and to rules for the network, whether written or customary, in planning SMEs' support programs.

5. CONCLUSION

First, this paper examined issues in shrinking Japanese cities and evaluated policies that intend to mitigate the impact of shrinkage. This paper examined Japan's depopulation in the coming decades at the national level as well as at the municipal level, and illustrated that the population loss in regional cities and their change of economic structure have been closely related as a vicious circle. This paper claimed that restoring and improving business activities by local SMEs is a necessary condition, if not a sufficient condition, for the revitalization of shrinking cities in Japan. Second, this paper examined desired policy goals for shrinking cities, along with strategies and approaches to achieve such goals. The strategies that Japan's national government employed since 2014 have been inadequate and ineffective to achieve such goals. An alternative initiative, which focuses on the empowerment of SMEs in the cities, was proposed in this paper which would have complimented the government initiative in terms of job creation and income generation. This paper proposed that Economic Gardening, which has been implemented in the US, Australia, and Japan, can be a good strategy for further economic development in shrinking cities in Russia. Third, this paper provided a case study of Sammu City, one of the shrinking Japanese cities, which has been implementing Economic Gardening. The case study is based on a proposed framework for comparative case study analysis on Russian and Japanese shrinking cities.

Finally, this paper proposes that future research will examine the effectiveness of programs for vitalizing shrinking cities in resource-reliant regions. International joint research, involving academics in Russia, Japan, and other resource-reliant economies such as Australia, will contribute to the residents of shrinking cities through insightful suggestions for adequate policy formulation and implementation.

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LITERATURE:

1. Gibbons, C (2010). Economic Gardening - An Entrepreneurial Alternative to Traditional Economic Development Strategies. *The IEDC Economic Development Journal*, 9(3), 5-11.
2. Grace, J (2013). Building Entrepreneurial Culture in a "Company Town": Innovative Initiatives in the Illawarra. In Kinnear, S., Charters, K. & Vitartas, P (Eds.), *Regional Advantage and Innovation* (pp. 319-337). Heidelberg: Springer-Verlag.
3. Hito D, Shigoto S. *Basic Approach for Regional Revitalization* (2019). Retrieved on 7 July 2019 from https://www.kantei.go.jp/jp/singi/sousei/info/pdf/r01-06-21-kihonhousin2019hontai.pdf
4. Hito D., Shigoto S., Seiri K. *Interim Report from the Review Council on Comprehensive Strategy for Regional Revitalization* (2019). Retrieved on 7 July 2019 from https://www.kantei.go.jp/jp/singi/sousei/meeting/senryaku_kensyou/r01-05-31_chuukan.pdf
5. Hollander, J.B., Pallagst K., Schwarz, T. & Popper F.J (2009). Planning Shrinking Cities. *Progress in Planning*, 72, 4, 223-232.
6. Jacobs, J (1985). *Cities and the Wealth of Nations*, Vintage Book Edition. New York: Random House.
7. Kondo, S (2011). *Jungen Dantai (Municipalities with Net Depopulation)*. Tokyo: Shin-hyoron. (In Japanese)
8. Kühn, M. & Fischer, S (2011). Strategic Planning - Approaches to Coping with the Crisis of Shrinking Cities. In Müller, B (Ed.), *German Annual of Spatial Research and Policy 2010* (pp. 143-146). Heidelberg: Springer-Verlag.
9. Martinez-Fernandez, C. & Weyman, T (2012). The Crossroads of Demographic Change and Local Development. In Martinez-Fernandez, C., Kubo, N., Noya, A. & Weyman, T (Eds.), *Demographic Change and Local Development: Shrinkage, Regeneration and Social Dynamics* (pp. 15-35). Paris: OECD Publishing.
10. Martinez-Fernandez, C., Audirac, I., Fol, S & Cunningham-Sabot, E (2012). Shrinking Cities: Urban Challenges of Globalization. *International Journal of Urban and Regional Research*, 36, 2, 213–25.
11. Masuda, H. & Depopulation Research Group (2013). 2040 nen Chiho Shometsu Kyokuten Shakai ga Torai suru (Local Cities Disappear in 2040 - Coming of Polar Society). *Chuo Koron*, December 2013, 26-27. (In Japanese)
12. National Institute of Population and Social Security Research (2018). *Regional Population Projections for Japan: 2015-2045*. Population Research Series No.340. Retrieved on 11 July 2019 from http://www.ipss.go.jp/pp-shicyoson/j/shicyoson18/6houkoku/houkoku.pdf. (In Japanese)
13. Richardson, H.W. & Nam, C.W (2014). *Shrinking Cities - A Global Perspectives*. London: Routledge.

14. Sammu City Council Bulletin (Response to Mr. Kazunobu Namiki, a City Councilor, by the Director-General of the Department of Economic and Environmental Affairs, Sammu City Government). (2019). No. 51, p.10. Retrieved on 11 July 2019 from https://www.city.sammu.lg.jp/uploaded/attachment/21914.pdf.
15. Seki, M (2017). *Nihon no Chusho Kigyo (Japanese Small- and Medium Enterprises).* Tokyo: Chuko Shinsho. (In Japanese)
16. Spatial Policy Research Group, under the Ministry of Land, Infrastructure, Transportation, and Tourism (2014). *"Kokudo no Gurando Dezain" ga Egaku Kono Kuni no Mirai (The Future of the Nation, which "the Grand Design of National Spatial Development towards 2050" Illustrates).* Tokyo: Taisei Shuppansha. (In Japanese)
17. The US Small Business Administration (2006). Economic Gardening: Next Generation Applications for a Balanced Portfolio Approach to Economic Growth. *The Small Business Economy for Data Year 2005: A Report to the President* (pp. 157-193). Washington, D.C.: United States Government Printing Office.
18. Wu, C.T., Zhang, X.L., Cui, G.H. & Cui, S.P (2014). Shrinkage and Expansion of Peri-Urban China. Pallagst, K., Wiechmann, T. & Martinez-Fernandez, C (Eds.), *Shrinking Cities - International Perspectives and Policy Implications* (pp. 164-185). London: Routledge.
19. Yang, Z. & Dunford, M (2018). City Shrinkage in China: scalar process of urban and *hukou* population losses. *Regional Studies*, 52, 8, 1111-1121.

SPATIAL ASPECTS IN THE STRATEGIES OF MAJOR RUSSIAN CITIES

Ivan Antipin
Ural State University of Economics, Russian Federation
aia87@mail.ru

Natalia Vlasova
Ural State University of Economics, Russian Federation
nat-vlasova @yandex.ru

ABSTRACT

The article discusses problems of strategic planning and management in the Russian Federation, in particular the lack of unified methodology. The conceptual framework of the study is based on the theoretical principles of strategic management, regional and spatial economics. Approaches of Russian and international scholars to strategic planning, preparation and updating of strategic planning documents of territories are analyzed by applying a set of methods, including the dialectical and cause and effect methods. The article compares strategic and territorial planning in the USSR and Russian Federation. The empirical part of the study focuses on the current versions of socio-economic development strategies of major (million-plus) Russian cities. The analysis of priorities specified in these documents, in particular the way they address questions of spatial development, has shown that at the moment there is no universal agreement concerning the nature of spatial development processes: in each Russian city these processes are different and are interpreted differently. The major Russian cities were divided into three groups depending on how the current versions of their socio-economic development strategies deal with spatial development. The theoretical and practical significance of the study resides in the fact that it stresses the need to develop a more unified approach to strategic planning in Russia and enhance its efficiency. It is shown that for efficient spatial development it is important to optimize priority-setting decisions and devise adequate mechanisms of strategy implementation. These findings can be of interest to undergraduate and postgraduate students, researchers, specialists in the field of socio-economic development strategies of territories of various levels, public servants and other audiences.

Keywords: *Largest City, Spatial Development, Spatial Planning, Strategic Planning, Strategy, Territorial Planning, Urban Planning.*

1. INTRODUCTION

Spatial planning in its general understanding is a state function aimed at shaping the future distribution of activities across specific territories. Spatial planning is conceptualized as a form of multi-level governance activity. The purpose of spatial planning is to ensure a more rational organization of land uses and the linkages between them for a more balanced and sustainable socio-economic development of territories. Modern spatial planning strategies are aimed at integrating the territory into global networks of production and trade. Large-scale infrastructure projects link resource boundaries and subnational urban systems, often across national boundaries, in such a way that they form spatially articulated value chains focused on logistic integration (Schindler, Kanai, 2019). Spatial planning comprises measures meant to coordinate and enhance the effects of spatial policies implemented in other sectors of the economy for a more balanced economic development of a specific territory, which otherwise would be left at the mercy of market forces. Thus, territorial and spatial planning plays a key role in sustainable

urban development and enhancement of the quality of life (Meerow, Newell, 2017; Solecka, 2019). There is a vast body of research on urban territorial planning (Cortinovis, Haase, Zanon, & Geneletti, 2019; Di Ludovico, D'Ascanio, 2019; Smith, 2014; Tsilimigkas, Derdemezi, 2019). Spatial planning is commonly understood as a complex of practices and policies aimed at influencing the distribution of people, activities and objects across territories of different sizes – from settlements and their parts to groups of countries or regions. While European countries mostly use the term 'spatial planning' (Alexander, 2016; Miessner, 2018), in Russia the preferred term is 'territorial planning' (*territorialnoye planirovaniye*). Spatial planning is directly connected to urban strategic development since it is impossible to plan an activity of this or that kind without considering the specific characteristics of the town or city. Strategic planning is, therefore, often associated with spatial planning since it determines the main areas of urban development. In the USSR, there was a comprehensive and consistent system of urban planning based on a clear-cut hierarchy of principles and factors of urban development. One of the key indicators which shaped all the other parameters of such development was the estimated population. This indicator was used to devise plans in all other spheres of urban life such as housing, public amenities, transport infrastructure and so on. The development of each locality was seen as a part of more general schemes of development of the corresponding mesoregion, economic region and the country as a whole. The planning system had a long-term character and ensured continuity. After the collapse of the Soviet Union, this coherent system was almost entirely destroyed. Over the last two decades, a new ideology and methodology of planning for urban development were created in all post-soviet countries to meet the new challenges of the time (Varró, Faragó, 2016).

Not only in post-Soviet countries, but also in market economies the system of spatial planning faced some serious shocks and changes. In many market economies, these transformations were caused by the changing concepts in territorial development and planning. D. McGuinness and J. Mawson examine the reorganization of subnational planning in England in 2010, which was associated with the termination of regional spatial strategies and left England without an effective sub-national spatial planning structure (McGuinness, Mawson, 2017). C. Colomb and J. Tomaney highlighted the contentious distribution of power among several layers of government in states with inherited centralized governance structures that now face increasing regional and nationalist grievances. They illustrated the interconnected growth in demand for new governance and strategic planning tools in large metropolitan areas with fragmented administrative and institutional boundaries (Colomb, Tomaney, 2016). The European territorial development policy also had some conflicting elements which occurred during the transition from one planning period (2007-2013). to another (2014-2020). At the new stage of planning, it is urgent to use effective mechanisms to stimulate integrated national development, including both horizontal and vertical cooperation. These mechanisms help harmonize territorial development, achieve territorial integrity and increase territorial cohesion from the local level to the level of the European Union (Marques, Saraiva, Santinha, Guerra, 2018). Some European countries already have second and third generations of territorial planning systems: for example, the evolution of national spatial planning in Ireland is linked to the approval of Ireland's second National Spatial Development Strategy in 2018 and represents a further transition from traditional land use regulation to broader strategic spatial planning (Lennon, Scott, Russell, 2018). The discourse about the ratio of different territorial levels in planning has been developing for a long time. Whereas in the USSR the principle of rigid centralization was applied, in European countries the concept of a city as a self-organized system, which leaves the state with a limited range of opportunities to control and plan its development, was more popular. The critics of these ideas based on new localism and liberal individualism, however, point out that in planning practice they can lead to fragmentation and disaggregation

of cities-regions (Savini, 2016). Russia has a complex system of planning, which requires all territorial units – municipalities and regions – to have strategic and city-planning documents. The stage of territorial planning is supposed to be preceded by that of strategic planning aimed at defining common priority areas, goals and objectives in the development of certain territories, long-term strategic orientations for regional and local authorities, businesses and the public. The goals set in the process of strategic planning are then projected onto a specific territory with its established structure of land use, engineering and social infrastructure and other features. At the moment these two document types co-exist on the municipal level: on the one hand, all municipalities are supposed to develop their strategies of socio-economic development; on the other, almost all municipalities have general plans that determine their spatial development. In some municipalities, attempts are made to align these two document types in order to coordinate the strategy of socio-economic development with priorities of spatial development.

The purpose of this paper is not only to analyze the presence of territorial planning elements in the strategies of the largest Russian cities, but also to identify the key problem areas that are considered in the documents of territorial planning. It was important for us to understand how the way that Russia is going in the planning system development corresponds to world and European trends. Y. Lin and S. Geertman discuss the relationship between smart city technologies and spatial planning. Smart city elements provide new types of analysis, new forms of public participation in planning processes, blurring the boundaries between smart cities and urban planning. Special attention is paid to the tripartite relationship between smart governance as one of the areas of smart cities, joint planning as a modern form of spatial planning and planning support systems as a specific form of ICT designed for planning tasks. Smart management adds ICT-related components to the concept of collaborative planning (e.g. effective communication; data exchange). (Lin, Geertman, 2015).

2. CHAPTER I

In recent years, such terms as 'spatial development', 'spatial planning' and so on have been increasingly gaining popularity in the Russian research literature and in official documents. The popularity of such terms can be partially explained by the fact that the Strategy of Spatial Development of the Russian Federation until 2025 has been recently approved by the Decree of the Government of the Russian Federation of 13.02.2019 № 207-p. It should be noted that the Federal Law of 28.06.2014 № 172-ФЗ 'On Strategic Planning in the Russian Federation' requires the development of a strategy of spatial development only on the federal level. Since there are no unified methodological approaches and legislation that would require regions and municipalities to present their own spatial development strategies, Russian territories are left to make their own decisions. Million-plus Russian cities have traditionally played a pioneering role in this sphere. Thus, it is important to look at how the current versions of their socio-economic development strategies reflect the modern trends in spatial development. To this end, let us divide the million-plus Russian cities into several groups depending on the way their strategies address the questions of spatial development. The first group of cities is those whose strategies provide elaborate descriptions of specific priority areas, goals, KPIs, implementation mechanisms and so on. The Strategic Plan of Development of Ekaterinburg (adopted by the Decree of Ekaterinburg City Duma of 25.05.2018 № 12/81). comprises a detailed section entitled 'Strategy of Spatial Development'. Ekaterinburg's strategy elaborates on the main concepts, principles and scenarios of spatial development as well as the three strategic priorities ('Development of the City Transport Network', 'Development of Urban Territories' and 'Development of Urban Environment'). For each of these priority areas their current state, expected outcomes and KPIs are clearly defined. 'The Strategy describes the trajectory of the

city's spatial development as well as the principles for determining spatial parameters of the urban planning structure and territorial zones within the city boundaries which city planners should adhere to'. The Strategy also takes into consideration the previously formulated goals and objectives set by the four main strategic projects – 'Urban Land', 'Ekaterinburg Agglomeration', 'Development of Built-Up Areas', and 'System of Recreation and Public Areas'. In Ekaterinburg, it was proposed to synchronize the development of the spatial development strategy with updating of the Strategic Plan of Development of Ekaterinburg and the General Plan of Development of the Urban Municipal District 'City of Ekaterinburg'. Therefore, the documents of strategic and territorial planning for Ekaterinburg are expected to be aligned (see Fig.1). Such an approach will enable the local authorities to manage all aspects of the city's development more efficiently and create a spatial and territorial foundation for further realization of municipal programs and strategic projects. This approach can be also applied to other municipalities.

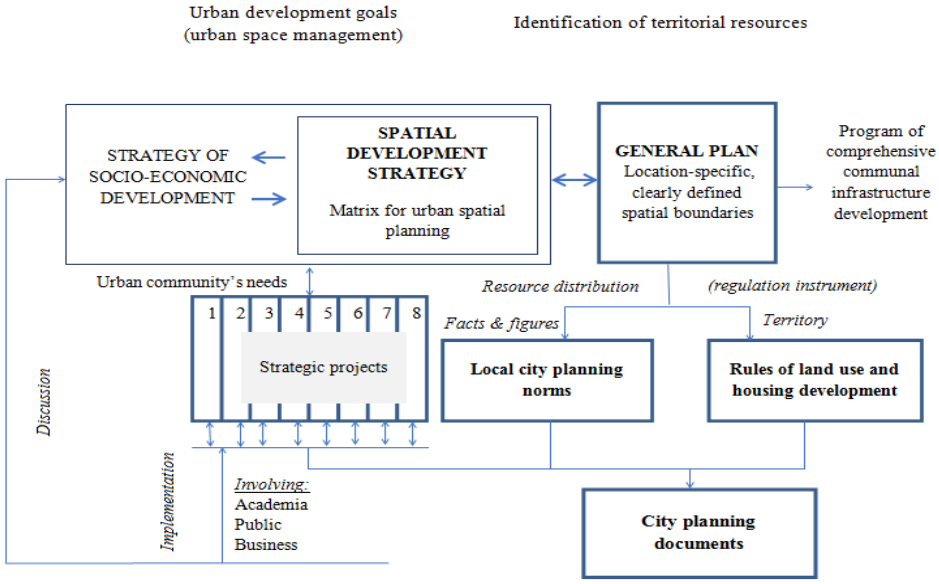

Figure 1: The proposed scheme of alignment of strategic and territorial planning documents in a municipal district (Antipin, Kazakova, 2016)

One of the seven strategic goals described in the Strategy of Socio-Economic Development of the Municipal District of Kazan until 2030 (adopted by the Decree of Kazan City Duma of 14.12.2016 №2-12). is as follows: 'a high quality of living in the entire territory of the city achieved through polycentricity, which is ensured through transport connectivity, development of the mechanical, electrical and plumbing infrastructure and by taking into consideration the unique characteristics of the existing city districts. The city's environment is people-friendly and safe. It stimulates health-saving behaviour'. One of the three priority areas in Kazan's strategy is 'Space, Infrastructure and Natural Resources'. The document also considers the ways to link the key areas, including spatial development, with image-building projects and includes an analysis of the city's current state of spatial development. The Strategy of Socio-Economic Development of the City of Rostov-on-Don until 2025 (adopted by the Decree of Rostov-on-Don City Duma of 18.12.2012 № 372). comprises three strategic goals, one of which is 'balanced and efficient spatial organization of the city'. The latter, in its turn, includes three strategic areas: 'Spatial organization of the city of Rostov-on-Don – new opportunities for socio-economic development'; 'Agglomeration "Big Rostov" and its resources for integration and enhancement of the urban economic competitiveness'; and 'Development of the intra-city transportation system' (section 3.3). For each strategic area the document specifies the main goal, objectives and means of achieving them.

The Strategy of Socio-Economic Development of the Urban District of Ufa, Republic of Bashkortostan, until 2030' (adopted by the Decree of the Council of the Urban District of Ufa, Republic of Bashkortostan, of 19.12.2018 № 35/2). includes a number of priority areas, one of which is 'Harmonious Living Space' (section 3.3). with the main goal 'to ensure balanced spatial development'. The priority area 'Harmonious Living Space' comprises seven key areas with the corresponding projects:

1. Balanced functional urban zoning and use of urban territory;
2. Stimulation of housing development;
3. Enhancement of connectivity of urban areas;
4. Creation of comfortable public and recreational spaces, including embankments; development of the pedestrian network;
5. Enhancement of the efficiency of the urban district's land and property use;
6. Formation of the city planning system for the city and the municipal districts within Ufa agglomeration;
7. Inner-city development.

The document also includes an overview of the city's current state of development (section 1.2.3.). The second group of cities consists of those whose strategies cover some aspects of spatial development but only to a limited extent (for example, their documents do not specify measurable outcomes or implementation mechanisms). The Strategy of Socio-Economic Development of Volgograd until 2030 (approved by the Decree of Volgograd City Duma of 25.01.2017 № 53/1539). contains strategic analysis of socio-economic development, in particular section 'Spatial Development and the Quality of Urban Environment'. There are such sections as 'Development of the Integral Education Space' (priority area 'Human Capital Development'); 'Improvement of Public Amenities in Volgograd and Creation of Modern Public Spaces' (priority area 'Enhancement of Urban Environment'); and 'Development of the Integral Information Space' (priority area 'Development of Local Self-Government'). The document, however, does not specify the goals of spatial development. The Strategy of Socio-Economic Development of the Municipal District of Krasnodar until 2020 (adopted by the Decree of Krasnodar City Duma of 27.12.2007 № 35, Article 2). includes four strategic areas, one of which is 'Enhancement of state regulation of socio-economic processes in the region by creating systems of strategic management, spatial and territorial planning'. Section 11 of the Strategy comprises a spatial development analysis and SWOT-analysis. Among other things, the document mentions the development of information space, Internet-space and courtyard spaces but does not specify the mechanisms or means of achieving these goals. The Strategy of Socio-Economic Development of the City of Krasnoyarsk until 2030 (adopted by the Decree of Krasnoyarsk City Council of Deputies of 18.06.2019 № 3-42). elaborates on certain aspects of spatial development, including the following: 'ensure the city's spatial development necessary for comprehensive development of urban environment and enhancement of the living conditions' (a second-tier goal in the hierarchy of urban strategic development goals). The document also takes into account the city's potential and resources available for the distribution of functional zones across its territory. The SWOT-analysis contains a section 'Analysis of Spatial Development'. The strategy, however, includes neither any indicators of spatial development nor ways and means for achieving the above-described goal. The Strategy of Socio-Economic Development of the City of Nizhny Novgorod for 2017-2022 (adopted by the Decree of the City Administration of 25.01.2017 № 190). provides an overview of the city's current state of spatial development (housing, land use, population density, the spatial structure of the territory, and so on). One of the four subgoals for the key strategic goal is 'spatial and environmental development and urban infrastructure', which includes 'balanced spatial development of urban territories'. Goals and expected outcomes are also defined. Nevertheless,

the document does not provide any information about the algorithms or mechanisms of achieving these goals. The Strategy of Socio-Economic Development of the Municipal District of Perm until 2030 (adopted by the Decree of Perm City Duma of 22.04.2014 № 85). has six priority areas, including spatial development. This section specifies the goals of the city's development as well as its strengths (opportunities). and weaknesses (threats). The document, however, provides no answers as to what is the main aim of the city's spatial development and how it is planned to achieve it. The Strategy of Socio-Economic Development of the City of Novosibirsk until 2030 (adopted by the Decree of the Council of People's Deputies of the City of Novosibirsk of 24.12.2018 № 726). includes a section 'Enhancement of Urban Environment'. Goal 5.1 'Spatial City Development' is of particular interest: for instance, Novosibirsk is envisioned as 'a research and innovation center; a city with diversified economy, developed industry, trade and services, dynamically developing science and education, information space and the financial services market'; 'the cultural capital of Siberia, providing its residents with ample opportunities for cultural and creative self-realization while preserving the unique and distinctive character of its urban space'. The document, however, fails to shed light on the mechanisms of achieving spatial development goals. In the Strategy of Comprehensive Development of the Urban District of Samara until 2025 (approved by the Decree of the Duma of the Urban District of Samara of 26.09.2013 № 358), the term 'space' is mentioned frequently (83 times). One of the first-tier goals in the hierarchy of strategic goals is 'Spatial Development and Formation of Creative Urban Environment'. Moreover, all other parts of the strategy also include spatial components, which means that spatial development is presented as an integral element of almost all the goals, objectives and reference points of the city's strategic development. Such terms as 'communicative space', 'urban living environment', 'public space' and 'art space' are widely used. However, the mechanisms (algorithms). for achieving these objectives are not specified. The third group consists of cities whose strategies provide insufficient or no information on spatial development. The Strategic Plan of Socio-Economic Development of the Urban District of Voronezh until 2020 (adopted by the Decree of Voronezh City Duma of 20.12.2017 № 740-IV). includes three strategic goals, one of which is 'innovative economic development, integration of the city’s economy into the national and global space'. The document makes virtually no mention of the city's spatial development, except for a few professional terms such as 'recreational space', 'intended spatial use of the municipal district', and 'spatial information'. The Strategy of Socio-Economic Development of the City of Omsk until 2025 (adopted by the Decree of the Administration of the City of Omsk of 09.07.2014 № 938-п). does not contain any information about spatial development. The term 'space' is used only once in the description of the strategic goal 'Development of Transport Infrastructure' included in the initiative 'Development and Realization of the Project of the Intelligent Transportation System (Parking Space Management System)'. The Strategy of Development of the City of Chelyabinsk until 2020 (approved by the Decree of Chelyabinsk City Duma of 26.11.2009 № 8/1). contains no references to spatial development except for such terms as 'educational space', 'social space', 'cultural space', 'working space', 'air space' and so on.

4. CONCLUSION

Our analysis of the current versions of socio-economic development strategies of million-plus Russian cities focused on how these cities address and interpret different aspects of spatial development. General tendencies and agenda priorities declared as a part of strategic and territorial planning of large Russian cities correspond to the current international and national practices, political and economic trends. In the majority of large Russian cities, strategic planning documents in one way or another deal with the topics of agglomeration processes, problems of efficient use of land, water and energy, transport, environmental protection and sustainable development. It should be noted, however, that mechanisms, approaches and

methods of decision-making are often determined by preferences of municipal managers, specific needs and characteristics of this or that city and a number of other factors. In the light of the above analysis, it may be concluded that more unified methodological approaches to the development and updating of such documents are necessary in order to enhance the efficiency of strategic planning in the Russian Federation. It is also essential that such an integral methodological framework should cover, among other things, coordination of strategic and territorial planning and development. Such an attempt was made in the Sverdlovsk region, where methodological guidelines for the development (updating). of socio-economic development strategies were devised and approved (by the Decree of the Government of Sverdlovsk Region of 30.03.2017 № 208-ПП). These strategies are primarily intended for municipalities of the Sverdlovsk region. It is recommended that municipal strategies should include the section 'Strategy of Spatial Development', which should specify the following:

a) Goals and objectives of the spatial development of the municipal district;
b) Quantifiable performance indicators (they help understand whether the strategic goals are achieved);
c) Analysis of territorial development of the municipal district;
d) Description of the priority scenario of the spatial development of the municipal district;
e) Indicators for spatial development strategy implementation, which determine the requirements and criteria of successful development for specific functional zones;
f) List of graphic materials.

Similar practices have already been adopted in other Russian regions. This section is aimed at maximizing the coordination of priority setting for socio-economic and territorial development of municipalities, at identifying and taking into account the specific needs of territories, which is precisely what makes theoretical and empirical studies in the field of spatial development particularly relevant. Comprehensive socio-economic development of municipalities can be ensured only if feasible strategies of socio-economic development taking account spatial aspects are designed and implemented.

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LITERATURE:

1. Alexander, E. R (2016). There is no planning – only planning practices: Notes for spatial planning theories. *Planning Theory*, 15(1), 91-103.
2. Antipin I. A., & Kazakova N. V (2016). Conceptual framework for the spatial development strategy elaboration in the municipality. *Rossiiskoe predprinimatelstvo = Russian Journal of Entrepreneurship*, 17(8), 1011-1026.
3. Colomb, C., & Tomaney, J (2016). Territorial politics, devolution and spatial planning in the UK: Results, prospects, lessons. *Planning Practice & Research*, 31(1), 1-22.
4. Cortinovis, C., Haase, D., Zanon, B., & Geneletti, D (2019). Is urban spatial development on the right track? Comparing strategies and trends in the European Union. *Landscape and urban planning*, 181, 22-37.
5. Di Ludovico, D., & D'Ascanio, F (2019). European cross-scale spatial planning and Territorial Frames in the Italian Median Macroregion. *European Planning Studies*, 1-22.
6. Lennon, M., Scott, M., & Russell, P (2018). Ireland's new national planning framework: (Re). balancing and (re). conceiving planning for the twenty-first century? *Planning practice & research*, 33(5), 491-505.

7. Lin, Y., & Geertman, S (2015). *Smart governance, collaborative planning and planning support systems: A fruitful triangle?. In Planning Support Systems and Smart Cities* (pp. 261-277). Springer, Cham.
8. Marques, T. S., Saraiva, M., Santinha, G., & Guerra, P (2018). Re Thinking Territorial Cohesion in the European Planning Context. *International Journal of Urban and Regional Research*, 42(4), 547-572.
9. McGuinness, D., & Mawson, J (2017). The rescaling of sub-national planning: can localism resolve England's spatial planning conundrum? *Town Planning Review*, 88(3), 283-303.
10. Meerow, S., & Newell, J. P (2017). Spatial planning for multifunctional green infrastructure: Growing resilience in Detroit. *Landscape and Urban Planning*, 159, 62-75.
11. Miessner, M (2018). *Spatial planning amid crisis. The deepening of neoliberal logic in Germany*. International Planning Studies, 1-20.
12. Savini, F (2016). Self Organization and Urban Development: Disaggregating the City Region, Deconstructing Urbanity in Amsterdam. *International Journal of Urban and Regional Research*, 40(6), 1152-1169.
13. Schindler, S., & Kanai, J. M (2019). Getting the territory right: infrastructure-led development and the re-emergence of spatial planning strategies. *Regional Studies*, 1-12.
14. Smith, M (2014). Integrating policies, plans and programmes in local government: An exploration from a spatial planning perspective. *Local Government Studies*, 40(3), 473-493.
15. Solecka, I (2019). The use of landscape value assessment in spatial planning and sustainable land management—a review. *Landscape Research*, 44(8), 966-981.
16. Tsilimigkas, G., & Derdemezi, E. T (2019). *Spatial Planning and the Traditional Settlements Management: Evidence from Visibility Analysis of Traditional Settlements in Cyclades*, Greece. Planning Practice & Research, 1-21.
17. Varró, K., & Faragó, L (2016). The politics of spatial policy and governance in post-1990 Hungary: The interplay between European and national discourses of space. *European Planning Studies*, 24(1), 39-60.

THE REGIONAL SPECTRA FOR THE ENTREPRENEURIAL MOTIVES AND THE DISSEMINATION OF ENTREPRENEURS` KNOWLEDGE IN THE CONTEXT OF MODERN DISCURSIVE FORMATION OF ENTRENEURSHIP

Aleksey Baryshev
National Research Tomsk State University, Russia
baeishevnp@mail.ru

ABSTRACT

Entrepreneurship is conventionally defined as the dynamo of economic growth and social development in country-wide and regional aspects. Meanwhile, the policies to stimulate entrepreneurship often do not reach the goal because of the oversight of entrepreneurs as policymakers not only in relation to each other but also to the government and pro-government businesses. That poses the problems about the political and discursive nature of entrepreneurship and necessitates the research of the basic set of meanings ascribed by the entrepreneurs to their occupations as a special object within entrepreneurial and regional studies. The paper is aimed at singling out phenomenological features of the entrepreneurs` perception of their walk of life from the perspective of regional development of the entrepreneurship as the political and discursive wholeness. Hence, the research is subject to social constructionist methodology rendered by the Foucauldian analysis of discursive formations. The results obtained are as follows. Firstly, the classical discourse of entrepreneurship is shown as justifying the existence of the entrepreneurs and indifferent to the entrepreneurs` life world. Secondly, the modern discourse, instead, is concerned with the entrepreneurs` attitudes to their role and is formed by the confluence of traditional opportunity-oriented issues with the values-based distinction between causal and effectual logics representing the antithetic comprehensions of the means-ends relations. Thirdly, the discursive formation of the entrepreneurship bounded by the specified discursive flows is comprised of the basic meanings of the entrepreneurship as the inherently valued phenomenon. The entrepreneurs are distinguished according to these meanings as entrepreneurial actors drove, respectively, by the values of profession, autonomy, emancipation, and power over the future.

Keywords: *Discursive approach, Effectuation, Entrepreneuring, Entrepreneurship, Formation of discourse, Material-discursive practices.*

1. INTRODUCTION

Entrepreneurship has traditionally been defined as the driver of economic growth and social development in its integral and structural (regional, sectoral). aspects. This instrumental understanding of entrepreneurship contains risks associated with the variety of entrepreneurs' responses to actions officially aimed at the development of entrepreneurship. Policies to engage in entrepreneurship and stimulate its growth often do not reach the goal. The reason is that the game in this case is not one-sided. Entrepreneurs are policymakers, when it comes to partners, government, pro-government businesses, etc. The comprehension of these counter-policies is becoming urgent as they turn out to be the very fabric of economic life. This practical need for flexibility of all economic agents in relation to each other runs into the failure to reckon upon reliable definitions of entrepreneurship. This is due to the fact that the entrepreneurship by virtue of its creativity and the just-noted politicism always strives to go beyond the limits set for it and to refute any definition given to it. This is manifested in the rapid growth of definitions of entrepreneurship and definitions of its peculiar types. In this situation, a wording conflict is

inevitable. The plurality of the definitions of entrepreneurship is the evidence of the struggle to establish meanings in a particular field of activity. The possibility of the affirmation of these meanings is determined by the success of the practices based on them. In this context, the definition of the entrepreneurship proves to be a political process (Dey, 2018). of its construction by all the participants of a particular discourse, which includes not only scientists and researchers, but primarily entrepreneurs themselves as well as consumers of their commodities, politicians, legislators, representatives of supervisory authorities and media. Thus, it is not an intradisciplinary or technical issue of defining an object but a complex process delineating the interests of a great number of actors. It stipulates the impossibility of the creation of purely «objective» definitions, which could claim to retain the very essence of entrepreneurship in its finality and universality. Instead, entrepreneurship resists all the attempts to fit it into the framework of essentialist representations. As a result, the relevant method to study entrepreneurship is the social constructionist approach, which proceeds from the active role of speech (discursive). practices in the creation of social reality. The significant contributions to the development of the discursive method for the entrepreneurial studies are made by Pascal Dey (Dey,2016)Chris Stayart (Stayart, 2004 a), Simon Teasdale (Teasdale,2012). Now, the discursive analysis is the most popular with the researches engaged in the studies of the social and hi-tech entrepreneurs` identities. In this context, the investigation of identity practices in the field of the social entrepreneurship conducted by K. Berglund and B. Schwartz (Berglund, 2010). and the comparative research of two famous hi-tech entrepreneurs by D. Boje and R. Smith (Boje, 2010). are worthy to be mentioned as a successful application of the discursive approach in the empirical study of the entrepreneurial identity. In 2004 C. Steyaert and J. Katz developed the agenda for the amalgamation of discursive, social and geographical visions of entrepreneurship (Steyaert, 2004 b). The notable example of such amalgamation is R.Gill and G. S. Larson`s inquiry into the identity of high-tech entrepreneurs (Gill, 2014). Despite the wide expansion of the discursive approach in the recent entrepreneurial studies it is now rather a technique than a philosophy not only of the investigation of the entrepreneurship but of the entrepreneurship itself. It is so because of the disparate characters of entrepreneurs obtained beyond the context of the entrepreneurs` walk of life on the background of their whole entrepreneurial milieu. D. Higgins et al (Higgins, 2015), D. Hjorthet al (Hjorth, 2003), A. Baryshev and O. Lukianov (Baryshev, 2017). focus on the phenomenological comprehension of the entrepreneurship as an intrinsically valuable phenomenon. The first step toward the realization of this agenda consists of the transit from the studies of fragmented discourses to the research of the discourses of the entrepreneurship as concrete-historical formation. This approach develops the analysis of the discursive formations presented in the works by M. Foucault. The present article is designed as an essay on the substantiation of an approach to entrepreneurship as a self-restricted material-discursive formation engendering the basic meanings of the entrepreneurship for the entrepreneurs themselves within the regional frameworks.

2. THE FORMATIONAL ANALYSIS OF THE DISCOURSE AND ITS APPLICATION FOR THE CLASSICAL DISCOURSE OF THE ENTREPRENEURSHIP

In the Foucauldian tradition, the discourse is material and formational. The materiality of the discourse is manifested in that, on the one hand, a lot of «things» (texts, instructions, practical demonstrations). participate in its production and that, on the other hand, the discourse acts as a material force that makes one recognize certain statements as correct. The relations of words and things are turned over against common sense: not things in themselves endow words with true meaning, but speech practices in their materiality make the relevance of certain things and organize the production and dissemination of knowledge about them. Hence, not any statements are meant as the «words», but those which are authoritative in the given socio-historical

conditions and have the right to be expressed. That is ensured by a second property of discourse - its boundedness, that is, its propensity to exist as a certain formation with definite outlines. In those cases that Foucault investigated (sexuality, madness), the discourse, that is, the system of statements, through which these phenomena were singled out and defined (endowed with existence within the " true" boundaries), was limited by the "social order" (Foucault 1971). Under the conditions of our time, the "social order", of course, also seeks to limit the discourse of entrepreneurship in its own way, however, as already noted, entrepreneurship is actively resisting this, which makes it possible for this discourse to establish its own boundaries (evidently, with the participation of scientists and other mentioned actors). So, the self-restrain of a certain historical discourse of the entrepreneurship is a pragmatic alternative to naturalized social phenomena expressed by essentialist definitions. In response to the increasing blur of their subject matter researchers of entrepreneurship commence competing not for better comprehension of the essence of the entrepreneurship but the autonomism of their own research domains within the attenuated area of entrepreneurial studies (Veciana, 2007). The demarcation of research domains does not break free of essentialism because instead of the single essence we have now a multitude of its aspects through knowing which we supposedly can infinitely move closer to it. The social constructionist approach (especially in its "post-foundational" version). proposes another agenda. It focuses on the discourses of entrepreneurship as self-organizing and self-limiting formations, their coexistence, replacement, as well as their interpenetration, juxtaposition, and interaction in the process of the emergence of relatively autonomous formations (Marttila, 2017a). In this vein, the classical discourse of entrepreneurship shows through a strong limiting influence of the "social order" its self-organization in the coordinates (axes). "persons/things" and "close-range/long-range activities" (Fig1.). The resulting quadrants are marked with the well-known basic functions of the entrepreneur. Being essentialist, classical theories of entrepreneurship are characterized by latentconstructionism legitimizing the entrepreneurs through the justification of the productive nature of their income and the economy as a sphere of their activities governed by natural laws.

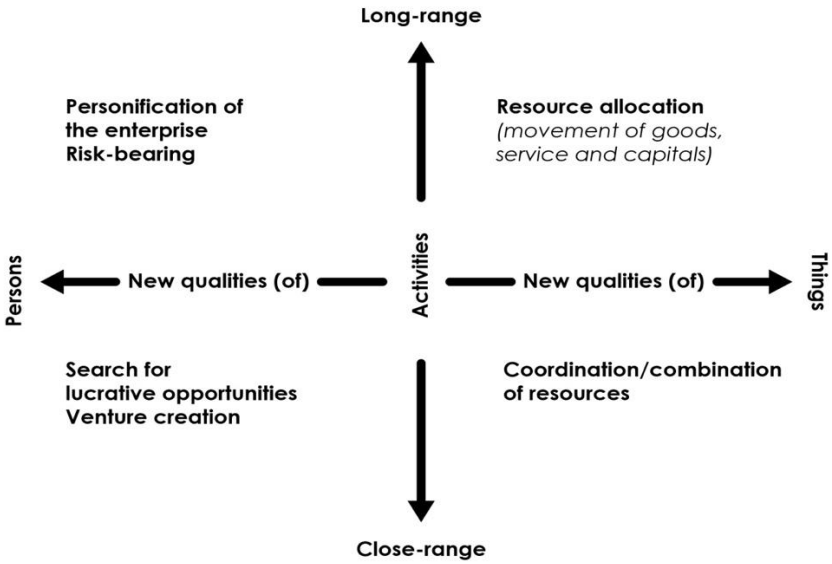

Figure 1: The formation of the classical discourse of the entrepreneurship (The figure created by the author)

3. THE BURGEONING MODERNITY OF THE ENTREPRENEURIAL DISCOURSE

The "modern" discourse of entrepreneurship also experiences difficulties in ensuring its own internal homogeneity. On the one hand, it is subjected to the inertia of the classics. On the other hand, it is overlapped by neoliberal ideas of the general "entrepreneurialization" (Marttila, 2017b) of society (its education, culture, religion, art, morality, law) and the "responsibilization" (Berglund, 2017) of individuals who must independently organize their lives without requiring any expenses from the state. These ideas, depriving the entrepreneurs of their capabilities for social creativeness and turning them into a creatures of the state, are now just at the stage of asserting their right to exist, therefore it is premature to talk about the neoliberal nature of the modern discourse of entrepreneurship, which is still imbued with the spirit of liberalism and does not seek to give up its positions. What are the guiding axes of modern discourse that allow it to weed out extraneous statements? One of these axes has long been accustomed to theories and practices of entrepreneurship. It is about the formation and exploitation of new opportunities. The discussion on the subjective or objective nature of these opportunities was quite satisfactorily resolved by fixing two types of opportunities– discovered and specially created (Alvarez, 2007). Accordingly, the expansion of discourse took place along the line defined by these polarities. Note the paradox typical of this extension. The concept of "discovering" objectively existing, but unnoticed by others entrepreneurial opportunities, has given rise to subjective – up to the radical (Chiles, 2010). –theories of entrepreneurship dealing with " alertness" (Foss, 2010)"subjective judgments" (Foss, 2007), the entrepreneurs` immersion in the daily routine of their enterprises, which allows redefining the properties of the elements of capital with its subsequent reassembly, "reshuffling" (Chiles, 2010), as consistent with this new vision. At the same time, the concept of subjective opportunities, in which they are artificially created on the basis of a far-reaching plan, is primarily dealing with such material things and processes as increasing investments to create advantages inaccessible to competitors. Given one line of organizing and expanding the discourse of entrepreneurship, it is premature to talk about it as an independent formation. The organization and expansion of the discourse along one axis does not guarantee from its "spreading in breadth " (in the most favored by the neoliberals areas as education, culture, etc.). This is on the one hand. On the other hand, a "narrowed" vision of entrepreneurship is being formed, which is confined to the ascent from pure arbitrage to the creation of cumbersome corporate-bureaucratic organizational structures. This functionalist vision does not suppose any variety of the social nuances of the entrepreneurship. This leads to the transformation of entrepreneurial knowledge and knowledge about entrepreneurship into organizational and economic (with the consequent impossibility of the institutionalization of theories of entrepreneurship into an independent scientific discipline). Dissatisfaction with this situation led to the opposition of entrepreneurship with the standard scheme of "discovery/creation of opportunities–exploitation of them" (Shane, 2003). and "entrepreneuring" (Rindova, 2009). with the task of discovering the logic of working with opportunities. As a result, two such logics were revealed. The merit in this belongs to S.Sarasvathy (Sarasvathy, 2001). The first logic of "causation" proceeds from goals, while the second logic of "effectuation" deals with means. Both do not contradict the project nature of the entrepreneurial activity. The difference is what is projected onto what. In the first case, the goals are projected onto means, in the second – means are projected on possible options for an uncertain future. In terms of expanding the discourse of entrepreneurship, this distinction correlates with the concepts of endogenous and exogenous economic growth. At present, the dichotomies "effectuation-causation" and "discovery-creation" coexist as the foundations of parallel theoretical approaches with the obvious hegemony of the former. However, the main feature of these pairs is not their alternativeness, but complementarity. The inclusion of this complementarity in the practices of entrepreneurial discourse provides for its "closure" into an independent self-organizing

formation, expanding in the coordinates specified by the axes of discovery and creation of opportunities for value growth and "effectuation-causation". It is easy to notice that the represented space is a relevant receptacle for statements that relate both to the structural components of entrepreneurship and to its procedural, ones connected with the meaning of the entrepreneuring for "the entrepreneuring Self" (Bührmann, 2005). In fact, in this space all the statements about entrepreneurship can be constructed simultaneously on the basis of the unity of the "what"-question and "how"-question, showing the entrepreneurial activity in its reality. This is precisely what is needed to ensure the above-mentioned flexibility of policies.

4. FROM THE SPECTRUM OF ENTREPRENEURIAL ATTITUDES TO THE GENERAL ENTREPRENEURIAL INTELLECT

What is the range of entrepreneurial practices that become visible through a combination of the above questions? Here, we confine ourselves to the key metaphors of entrepreneurship. They are "profession/occupation", "power over the future", "emancipation", 'autonomy" (Fig 2). These metaphors represent the spectrum of entrepreneurs` attitudes as the immediate expressions of their life experience. Different entrepreneurial attitudes feel about all spheres of life both of individuals and society as a whole. That provides a wealth of knowledge required for survival and development as the manifestations of life. So, common life implies the differentiation of knowledge about the same things – value-creation, learning, motives for activity etc. For instance, the dissimilarities of the motives in the different parts of the entrepreneurial spectrum are stipulated by these cognitive causes. As a result, images of well-being such as wealth, superiority over others, freedom (for), independence (from). range in accordance with basic metaphors of entrepreneurship. In other words, these motives are the embodiment of different knowledge rendered by the discursive formation of the entrepreneurship. On the other hand, the discourse does not provide the required knowledge if it is not complete, if it lacks an internal struggle between its parts.

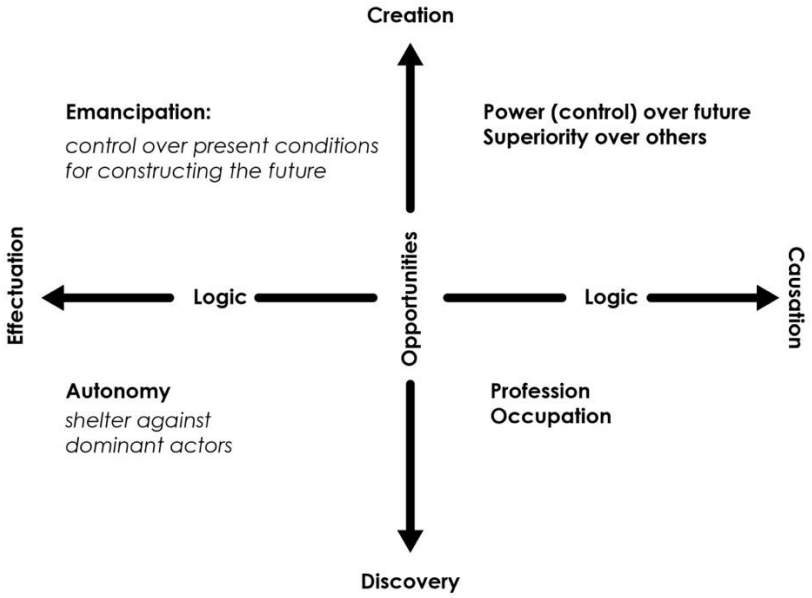

Figure 2: The formation of the modern discourse of the entrepreneurship
(The figure created by the author)

In recent literature, all discursive practices characterized by these metaphoric are quite fully reflected. The relatively new metaphor of emancipation is under conceptualization now. Its appearance is associated with the emergence of the new e practices of the entrepreneurship associated with bringing to the forefront self-realization motives that focus not on creating an enterprise, but on forming new heterogeneous networks by the new entrepreneurs, so-called "manterprisers" (Neklessa,2019), who capture the most daring ideas and solutions in the field of one or several areas of modern socio-economic development. V. Rindova notes that one of the problems, to which researchers` attention is directed by the metaphor of emancipation, is the preservation of the freedom for the individual entrepreneurial creativity under conditions of increased investment attractiveness of the projects of such people (Rindova, 2009). Each of the mentioned parts of the spectrum of entrepreneurial practices implies conceptualization of specific social role practices and policies that are characteristic to entrepreneurs which represent them both in the country and in the regional context. In this context, the revival of entrepreneurial research in Russia, which is currently in a stagnant state (Chepurenko,2013), is an urgent problem. Currently, research and political focus are shifted towards entrepreneurial practices based on exogenous factors of creating opportunities. While the hegemonic discourse of entrepreneurship as a form of employment (the metaphors of profession and occupation). receives at least some kind of scientific coverage, the practices of entrepreneurship as projection of the future, implying power over this future, which is ensured by the affiliation of entrepreneurs with the state, remain a riddle wrapped up in an enigma. Studies of entrepreneurship under metaphorics of autonomy (independence and self-sustainability), which in Russia take shape of the "art of the autonomous life" (Pavlov, 2018). as shelter against the complexities and severities of the life under the domination of bureaucratic structures of the state and corporations and the "garage economy" (Vishnevetskaya, 2016). as the grass-root entrepreneurship in the face of de-industrialization of regional economies, are very scarce and behind the scenes. The cases of the "garage economy" and the "art of the autonomous life" show the insufficiency of grass-root knowledge for the existence of the society. General entrepreneurial intellect is needed which appears in the case of equal rights for all attitudes to come to fruition. It means that autonomy is not the same as the underground.

5. SUMMARY AND CONCLUDING REMARKS

According to the basic assumption of the article entrepreneurship can function as an autonomous social system. That poses the specific problem of the endogeneity of the development of entrepreneurship connected with the fundamental paradox of the entrepreneurship which strives to be clearly defined but perpetually violates any established boundaries. That stipulates the necessity of the transition from defining entrepreneurship to revealing the boundaries of material-discursive practices of entrepreneurship. The methodology of analysis of entrepreneurship as a self-organizing discursive system implies the application of the conception of discursive formation by M. Foucault. The classical and modern formations of the discourse of entrepreneurship have similar mechanisms of functioning based on the tensions between their complementary axial principles. The classical discourse is organized by the axes connecting both new qualities of people (self-reliance, resourcefulness, openness to changes). with new qualities of things (commodity, capital, exchange). and immediate actions with far-ranging activities. The mechanism of self-organization of the modern discourse of entrepreneurship is based on the complementarity of two determinants of the entrepreneurial practices: the discovered and created opportunities for profit and the logic of effectuation and causation as means-ends relations. The quadrants within the space of the discursive formations single out four areas of entrepreneurial motives having occupational, powerful, emancipating and isolating meanings. The regional completeness of the obtained spectrum serves as the driver of the dissemination of entrepreneurs` knowledge and entrepreneurial development of the

territory. Local entrepreneurial milieu as a discursive community, which provides a full range of role models, is the best entrepreneurial university due to that facilitates the creation and dissemination of entrepreneurial knowledge not through training programs, business courses and promotional events, but daily interactions. That poses a big problem of the readiness of government bodies to solve issues of entrepreneurship development politically by entering the discourse of entrepreneurship not as its inspector and the encourager of pro-government businesses, but as its participant.

LITERATURE:

1. Alvarez, S. A., & Barney, J. B (2007). Discovery and creation: Alternative theories of entrepreneurial action. *Strategic entrepreneurship journal*, 1(1-2), 11-26.
2. Baryshev. A. A., & Lukianov, O. V (2017). Aksiologicheskiy sdvig v analize predprinimatelskoy identichnosti i predprinimatelskogo deystviya. *Sibirskiypsikhologicheskiyzhurnal*,66, 82-96.
3. Berglund, K., & Schwartz, B (2010). *The discursive construction of the social entrepreneur: Solving dilemmas and moving forward as identity practices. In FEKIS, Företagsekonomiskämneskonferens* 2010, Linnéuniversitetet, Växjö/Kalmar, 1-2 december–"Entreprenörskapetsolikadräkter".
4. Berglund, K., Lindgren, M., &Packendorff, J (2017). Responsibilising the next generation: Fostering the enterprising self through de-mobilising gender. *Organization*, 24(6), 892-915.
5. Boje, D., & Smith, R (2010). Re-storying and visualizing the changing entrepreneurial identities of Bill Gates and Richard Branson. *Culture and Organization*, 16(4), 307-331.
6. Bührmann, A. D (2005)*The emerging of the entrepreneurial self and its current hegemony. Some basic reflections on how to analyze the formation and transformation of modern forms of subjectivity.*Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 6 (1). Art. 16.
7. Chepurenko A. Yu., Yakovlev A. A (2013)Teoriyapredprinimatelstva: vazhnostkonteksta. *Rossiyskiyzhurnalmenedzhmenta*. 11 (2), 51–60
8. Chiles, T. H., Tuggle, C. S., McMullen, J. S., Bierman, L., & Greening, D. W (2010). Dynamic creation: Extending the radical Austrian approach to entrepreneurship. *Organization Studies*, 31(1), 7-46
9. Dey, P (2016). *Probing the power of entrepreneurship discourse: an immanent critique. In A Guide to Discursive Organizational Psychology* (pp. 123-145). Edward Elgar: Cheltenham, Northampton.
10. Dey, P., &Steyaert, C (2018). *Myth in social entrepreneurship research: an inquiry into rationalist, ideological and dialectic practices of demystification. In Social Entrepreneurship: An Affirmative Critique* (pp. 100-126). Edward Elgar: Cheltenham, Northampton.
11. Foss, K., Foss, N. J., & Klein, P. G (2007). Original and derived judgment: An entrepreneurial theory of economic organization. *Organization Studies*, 28(12), 1893-1912.
12. Foss, N. J., & Klein, P. G (2010). *Entrepreneurial alertness and opportunity discovery: Origins, attributes, critique. In The historical foundations of entrepreneurship research* (pp. 98-120), Edward Elgar: Cheltenham, Northampton.
13. Foucault M (1971). *L'Ordre du discours. Leconinaugurale au College de France prononcee le 2 decembre 1970.*Paris: Gallimard.
14. Gill, R., & Larson, G. S (2014). Making the ideal (local). entrepreneur: Place and the regional development of high-tech entrepreneurial identity. *Human Relations*, 67(5), 519-542.

15. Higgins, D., Trehan, K., McGowan, P., & Berglund, H (2015). Between cognition and discourse: Phenomenology and the study of entrepreneurship. *International Journal of Entrepreneurial Behavior & Research,*32(3), 472-488
16. Hjorth, D., Johannisson, B., &Steyaert, C (2003). *Entrepreneurship as discourse and life style.* In B. Czarniawska& G. Sevón (Eds.), Northern light—organization theory in Scandinavia (pp. 91–110). Malmö: Liber.
17. Marttila, H. T (2017a). *Neoliberalism, Knowledge-Based Economy and Metaphorization of the Entrepreneur to the Subject of Creativity.* In SAGE Handbook of Neoliberalism. Sage: Thousand Oaks.
18. Marttila, T (2017b). *Die wissensbasierteWirtschaft und die Entrepreneurialisierung der Gesellschaft. In Dispositiv und Ökonomie* (pp. 305-326). Springer VS: Wiesbaden.
19. Neklessa A (2019). *Popytkiotluchitnarodotvlasti – etogosudarstvennayaizmena*. «BIZNES Online». Retrieved 16.03.2019 from https://www.business-gazeta.ru/article/416929
20. Pavlov A., Evchenko T (2018). *Iskusstvoavtonomnoyzhizni. Lyudi i gosudarstvosushchestvuyut v raznykhvselennykh*.InLiberty. Retrieved 09.08.2018 from https://www.inliberty.ru/article/escape-garage/
21. Rindova, V., Barry, D., & Ketchen Jr, D. J (2009). Entrepreneuring as emancipation. *Academy of management review*, 34(3), 477-491.
22. Shane, S. A (2003). *A general theory of entrepreneurship: The individual-opportunity nexus.* Edward Elgar: Cheltenham, Northampton
23. Sarasvathy, S. D (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of management Review*, 26(2), 243-263.
24. Steyaert, C (2004a). *The prosaics of entrepreneurship. In D. Hjorth& C. Steyaert (Eds.), Narrative and discursive approaches in entrepreneurship* (pp. 8–21). Edward Elgar: Cheltenham.
25. Steyaert, C., & Katz, J (2004). Reclaiming the space of entrepreneurship in society: geographical, discursive and social dimensions. *Entrepreneurship & regional development*, 16(3), 179-196.
26. Teasdale, S (2012). What's in a name? Making sense of social enterprise discourses. *Public policy and administration*, 27(2), 99-119.
27. Veciana, J. M (2007). *Entrepreneurship as a scientific research programme. In Entrepreneurship* (pp. 23-71). Springer: Berlin, Heidelberg.
28. Vishnevetskaya Yu (2016). *Garazhnayaekonomika: lyudi. kotoryyeobkhodyatsyabezgosudarstva.* Retrieved 25.06.2016from https://www.dw.com/ru/garazhnaya-ekonomika-lyudi-kotoryye-obkhodyatsya-bez-gosudarstva/a-19353022

DIFFUSED URBANIZATION, AND INDUSTRIAL CLUSTERS IN NORTHEASTERN ITALY: WHY TERRITORY STILL MATTERS IN THE GLOBALIZED WORLD ECONOMY?

David Celetti
University of Padua – Department of Historical and Geographical Sciences and of the Antiquity, Italy
david.celetti@unipd.it

ABSTRACT

The paper tackles the scientific question if, and to what extent "territory" matters in explaining economic development processes in times of increasing globalization. The territory is considered as a complex structure of urban and rural spaces, landscapes, social and economic practices, institutional framework, and, broadly speaking, cultural features. Economic development is analyzed focusing on the case study of North-Eastern Italy industrial district-issued from processes of "diffused industrialization". An in-depth analysis of this development model in terms of resilience and innovation shows in fact that its genesis and transformation are the results of long term adaptation, linking in a diachronic interpretation early modern agricultural practices, to current successful strategies in the global market. The entrepreneurial approaches of "mixed agriculture" – family-based labor specialization, pluri-activity, a juxtaposition of artisanal/industrial and rural work, small land-ownerships – actually represented the material, and cultural base on which emerged the diffused industrialization of the 1950s and 1960s. Widely spread in the countryside, spontaneously grouped into homogeneous sectors (industrial districts), diffused industrialization positively reacted to exogenous opportunities, as the reconstruction period after the war, the outsourcing strategies of the 1970s and -80s, or the early globalization of the 1990s, which enhanced concurrence, but also opened new markets, and opportunities. Diffused industrialization also managed to react positively to the long term stagnation characterizing our economies in the new century, showing, in particular during and after 2008-09 crises, remarkable capacities of deep transformation. Successful firms in all industrial districts, in fact, elaborated new strategies capable of insuring development in a globalized world largely exploiting namely their specificities embedded in traditional territorial assets. Stressing this result as evidence of the relevance of the "territory" in economic development, the paper also opens new paths of research, highlighting how territorial studies could be extremely relevant for analyzing economic growth processes, and opportunities.

Keywords: *Diffused city, Economic Development, Industrialization, Industrial Cluster, Italian Economy, Territory.*

1. INTRODUCTION

Within intensifying globalization it is widely questioned if and to what extent territory matters in explaining businesses' success in the world market. This aspect appears even more relevant in relation to small, and medium firms often lacking the managerial, and financial structure theoretically necessary for operating internationally. The paper tackles this question taking the North-Eastern Italy cluster model as a case study to clarify aspects of the tense and strong links between territory and firms' competitiveness. The focus on the Veneto region is based on three arguments. First of all the area has witnessed in the last 40 years rapid "diffused industrialization", which in turn presents strong links with territory. Secondly it entails a large number of medium and small businesses, representing the core of its current industrial structure. Finally it has been deeply touched, and to some extent transformed by the 2008 crisis, which on the one hand allowed insight analysis of its resilience capabilities, and, on the other, opened

the way to a number of scientific studies, significantly enlarging available literature. Within this framework, our main hypothesis is that territory, identified as a complex set of environmental, social, economic, cultural features emerging from long term adaptation both to external shocks and internal transformations constitute an essential element for explaining businesses' success (Camagni, 2013; Lacquement, 2016, Antipin, 2019). It is assumed that, especially in the context of small and medium enterprises successful firms are those able to exploit territorial uniqueness within the global market often using up-to-date technologies to break the space, and time boundaries. This, in turn, confirms the link, widely questioned from the 1990s onwards, between industrial districts, and territory (Coro', 2018, Akhmetzianova, Turgel, 2018). It also highlights some features of excellence that might go behind the regional focus of the present analysis to assume universal significance (Barzotto, 2018). The paper is structured in four parts. Firstly it will critically present the date state of the art, and its limits. Secondly we will present our findings, reconstructing the origins of Veneto's industrial districts, highlighting how their roots, and mainly, and mainly features, are strictly connected with 18th and 19th-century local rural structures. Finally we will conclude discussing the model's strengths, and weaknesses in light of the globalization process, and of the 2008 crisis, stressing how the regional economy suffered from such exogenous transformation, but also successfully adapted to exploit new opportunities in transforming competitive horizons. The field studies on selected firms will give empirical evidence of our analysis.

2. DATA AND METHODOLOGY

The crisis of the years 2008-09 has widely contributed to renewing the scientific attention on the peculiarities of the industrial structure of the Venetian region. If on the one side crisis showed fragilities and made evident the potential consequences on the regional economy and society of global financial speculations, on the other hand it also highlighted relevant differences in terms of resilience and reaction among districts, and single firms offering the opportunity of updating otherwise consolidated interpretation of regional industrial clusters' performances (Becattini, 2009). Studies traditionally explained clusters' development building on the peculiarities of the social and productive structure of the Veneto region. The importance of the family as base for solidarity and mutual support; diffused sense of entrepreneurship; proximity and interrelationship between economic operators specialized in different, yet contiguous sectors; shared culture, and ideological values; territorial features have all been considered essential characters of Veneto's clusters, having helped companies in the past as well as in the present to reach success and react effectively to exogenous shocks (). The negative trends of 1973-74, for example, and the restructuring process of the largest companies that followed, have been a stimulus to small and medium enterprises acting within the national market as subcontractors thanks to high degree of flexibility built on family and local networks (Crestanello, 1999; Roverato, 1996; Roverato, 2004). During the late eighties the opening of foreign concurrence at European level spurred firms enhancing quality, efficiency, and specialization, processes that have been explained by most scholars stressing the positive role of both the territory, and the collaborative relations between entrepreneurs (Belfanti, 1997). The crisis of 1992, partially determined by changing monetary rules and by the opening of the world market then, emphasized the relevance of international networks for allowing firms building global value chains, and reaching higher efficiency and quality in a globalizing market (Corò 1998; Corò, 1999; Caroli, 2000; Corò 2003; Rossetti, 2003; Corò, 2004). Again human capital based on the specific regional environment, and the values embedded in the "made in Italy" emerged as central assets (Fortis, 1998; Lees-Maffei, 2014; Bettiol, 2015). Many scholars, however, also emphasized the limits of a model that seemed unable to respond effectively to the transformations partially induced by European monetary unification and by the opening of the global markets (Leoncini, 2008). Weak financial backbone, lack of

professional managers in family-based structures, difficulties in moving towards high-technology (Arora, 2001), and high-quality niches would have determined the exclusion of certain sectors (as textile, clothing, ceramics), and certain firms, above all the smaller ones, from the competitive arena (Baldone, 2002). Dimension was interpreted as a limit, and not just as a factor of flexibility. These forecasts were expected to be widely confirmed by the severity of the 2008-09 crises (Coro' 2007; Coro' 2009). Medium-term results, however, were much more articulate. If Veneto's industrial structure was hardly defined as a hit[1], pieces of evidence showed that firms of all sizes, including the smaller ones, and operating in all sectors found innovative ways for dealing effectively with falling demand and world trade. Researches on recent evolution and adaptation of Veneto's clusters stressed, in particular, diverging trends within clusters, successful firms were those able to develop new products, and innovative commercial strategies, to renovate themselves in terms skills and capabilities, to move into high-quality niches at global level often exploiting up to date information technology to overcome space and time limits at competitive costs. They exploited, in particular, the fast-growing demand for high quality/luxury products, that, paradoxically enough, emerged as a major trend namely during the crisis. The crisis, in other words, selected firms in measure to promote reach the very highest layers of the global demand, and highlighted how this goal could be reached also by small and medium enterprises (Coro' 2010; Busatto 2011; Anastasia, 2011, Volpe, 2012). If scholars convincingly explained the core transformation of the regional economy, they only partially considered that the strong resilience showed by regional clusters, and the ability of many firms to viably compete in complex markets are also the heritage of long term transformations that have built, and are building, the peculiar features of the regional industrial landscape. Starting from these premises the papers explores the link between territory, and firms' successful reaction to market transformations and crisis in the context of North-Eastern Italian clusters. Paper's methodological approach juxtaposes the analysis of available scientific literature and statistical data with an "on the field" research based on interviews to selected entrepreneurs, and on the reconstruction of success stories at the company level.

3. ANALYSIS AND RESULTS

Starting from the evidence that most districts are actually located outside the cities (Indovina, 1990), scholars recently re-discovered the role of the territory as a competitive factor (Coro', 2015). The so-called "diffused industrialization" – also seen by urban planners and geographers as "diffused urbanization" or "urbanized countryside" (Ferrario 2019; Brogiolo, 2016). – has then been interpreted as a specificity of the middle and higher part of Veneto's Po plain (figure 1). giving to local actors advantages in terms of flexibility, integration, and resilience. Defined as a deeply intertwine of urban, industrial and farming space, diffused industrialization creates articulate networks, juxtaposes different activities within adjacent spaces, set up creative processes for mastering complexity through unformal sharing of information (Coro' 2015). Diffused industrialization builds therefore a competitive advantage for economic development deeply embedded in a particular territory (Hausmann, 2014; Buciuni, 2018). This results, however, is not to be simply considered as an autonomous effect of territorial structures (namely the spontaneous diffusion of industrial activities in the countryside), but also as a result of long term transformations that impacted on the social features of its inhabitants, including their approaches to entrepreneurship. The historical reconstruction of the processes determining current territorial structures entails therefore particular heuristic potentials for uncovering ongoing economic trends.

[1] Veneto's industrial system lost 4000 firms in the year 2008-09, and 8000 more in the years 2012-13 (Corriere della Sera, 14.01.2019)

Figure 1: Veneto Region (http://www.treccani.it/enciclopedia/veneto/)

3.1. Heterogeneous Agriculture

Diffused industrialization has developed on a territory structured by the particular form of land exploitation that historically characterized most part of the middle and higher Veneto's plain, the so-called "heterogeneous – or mixed - agriculture" (Figure 2). The term indicates an approach to agriculture based on the harmonious coexistence of various cultivations. Single fields were typically organized on cereals bordered by vineyards leaned on fruit trees. This option allowed maximizing land exploitation, obtaining both cash crops (cereals), and productions to be destined both to the market and to auto-consumption, like fruits, and wine. It entailed high labor intensity, task diversification, and the overall autonomy of the peasant family in terms of food necessities. It perfectly adapted to a form of agriculture structured on mixed land tenures – peasant working its own small plots, but also rented land; on contiguous settlements of independent farmers; and on family-based, rather than village-based, rural activity (Ferrario, 2019). Already diffused in the Middle Ages, this agricultural approach persisted all though the Early Modern time to reach unaltered the late 19th century. Even though waves of land concentration progressively reduced the number and dimension of small and medium independent exploitation, enlarging the class of poor tenants, mixed agriculture remained the most diffused option, as land-lords generally opted for renting small plots, rather than large ones (Celetti, 2009). From the mid - 19th century industrialization offered, paradoxically enough, new life to heterogeneous agriculture, an option that due to positive demographic dynamics, was reaching its limits in terms of economic viability. Peasants, could resort to different activities to balance their budgets (the "pluri-activity" model). Families diversified the tasks of their members and summed worker's salaries in agricultural profits. This emerged as a crucial process, explaining both the success of the early regional industrialization, and its polarization in the countryside – and not in the cities. It also emerged as a factor at the core of the "diffused industrialization" of the 1950s' (Celetti, 2014; Celetti, 2008). Industrial plants were created from the late 18th century above all in the pre-alpine areas, and long the major rivers to exploit water energy, coal representing a costly, imported resource. Obviously resorting to local labor, entrepreneurs rapidly discovered that the "worker-peasants" could offer clear advantages in terms of low salaries, the "vital minimum" being set at a family level, and budgeted summing on a plurality of revenues. Industry and agriculture complemented each other (Celetti, 2015). The dissemination of factories – often of large dimensions as, eg, the Rossi and Marzotto textile companies - in the countryside, yet within a relatively small regional area, changed the landscape, fostered the construction of networks of roads, softened the

otherwise sharp division between rural and industrial landscape. It also changed society, workers and peasants living side by side very often within the same household. Habits, know-how, skills, attitudes were disseminated among large layers of the population, enhancing, in the long run, its entrepreneurial potential (Celetti, 2009; Id. 2015; Fontana, 2004). Diffused industrialization was, especially from the late 19th century, actively sustained by the provincial administration, and by the Catholic Church. The later was deeply concerned both by emigration and urbanization processes, as they would have diverted people from "traditional values". It favored therefore "local development", and backed initiatives meant to increase job opportunities in the countryside, mainly through rural and artisanal credit, and the creation of professional schools (Fontana, 2004b). Local and national authorities also supported this approach as an alternative to large industrial poles mainly for political reasons, as they feared workers' concentration, and related socialist movements (Franzina, 1990). Within these framework families found in the "pluri-activity" model a resilient way for increasing revenues, and, eventually, for financing the initial phases of their industrial business. Major companies profited from low salaries, but also acted as incubators, disseminating know-how, capabilities, and, which might be even more relevant, the habit of industrial work. Institutions limited social turbulence. This context formed the premises of the "diffused industrialization". It created in fact the favorable environment on which positively mostly act exogenous "starting moments of entrepreneurship". Apparently enjoyed of three major "starting moments", namely in the "reconstruction years" after the Second World War, during the so-called "economic miracle", and, in the 1970s and 1980s, when outsourcing became a core management strategy of major firms for reducing costs, and enhancing flexibility (Rullani 1998, Camuffo 2017, Graziani 1998). By early 1970 the juxtaposition of rural and industrial occupation was widely rooted in the central and higher Veneto's Po plain, re-shaping territories and societies (Bernardi, 1991). Namely the area characterized by "heterogeneous agriculture" where transforming themselves in territories of "diffused industrialization". A myriad of small business was emerging in the countryside up to the pre-alpine areas spontaneously organized around poles of firms specialized in similar activities giving birth to the industrial clusters (Figure 2 - 3).

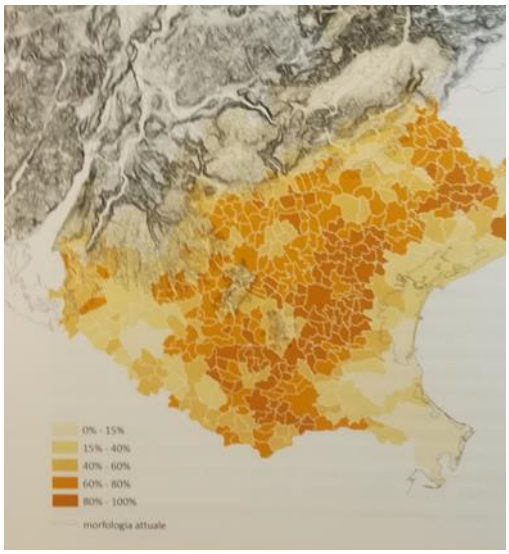

Figure 2: Concentration of "heterogeneous agriculture" settlements in the Veneto Region (Ferrario, 2019, 112)

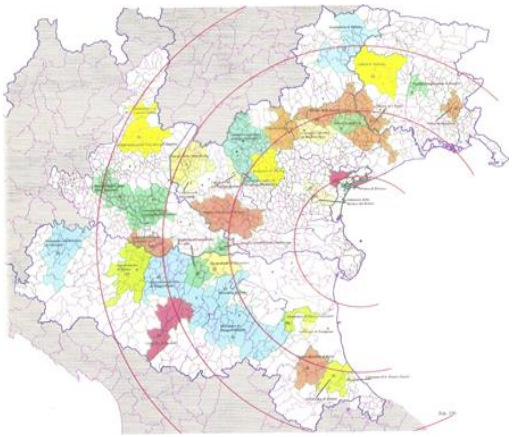

Figure 3: Main Industrial Clusters' (https://www4.istat.it/it/archivio/150320)

3.2. Diffused industrialization

As shown by figures 2 and 3, there is a clear juxtaposition between certain forms of land tenure and agricultural practices, and diffused industrialization. The later appears, therefore, deeply rooted in territorial embedded features, whose potentialities were set up by several independent, yet synergic processes. Mixed agriculture performed by small independent farmers helped the emergence of "entrepreneurial mentality", factories and rural pluri-activity contributed in disseminating know-how and skills, the growing demand for cheap goods of the 1950s, and the evolution of industrial-organizational approaches during the years of "Italian mature capitalism" offered increasing business opportunities. Thanks to the above-mentioned processes, by the mid-1960s North-Eastern Italian clusters reached their "mature" configuration, characterized by two distinctive features. First of all they presented clear territorially embedded factors. Pluri-activity remained, at least at the family level, widely present, agriculture and industry complement each other initially mainly as a source of revenue, then mostly as a cultural factor. Though acquiring leisure motivation, work on the fields was not abandoned even when affluence was secured, which proved the strong cultural, and social links with the territory, its history and tradition. It also affected the landscape, as it contributed to preserving agriculture even when and where it was not economically viable. Diffused industrialization and diffused agriculture shaped each other, giving birth to a particular territory, the so-called "agropolitana", where cultivation, industrial plants, and urban areas are in a homogeneous continuum (Ferrario, 2011). Production activities, on the other hand, spontaneously specialized on a territorial basis, building a "chain of factories" linked by sectorial affinities. The origins of such a configuration have been diverse, as the spill-overs major company, sources of raw material, environmental factors. They all contributed to shaping a peculiar productive configuration characterized by territorially based similarities. Within this framework, industrial clusters consolidated and grew to exploit to a set of "developing factors". Having a sufficient and potentially increasing number of participants always represented a necessary step for growth. It created positive relationships between workers, spreading know-how and skills, and among firms, building up specialization and fostering networks all along the supply chain. In the time territorial specialization set up processes enhancing division of labor, single firms focusing on extremely narrow options of production, which, in turn, increased complexity, quality, and technical innovation. Territorial proximity, and shared social values created mutual trust, diminished transaction costs, and reinforced institutional action. Flexibility, insured at the district level by a large number of participants, and ever-increasing quality, determined mainly by "positive competition" among local entrepreneurs, represented the core competitive advantage ensuring districts' success.

3.3. Crisis and Transformation

Generally speaking North Italian industrial districts profited not only of the rising demand for basic goods – that determined their emergence and growth from in the 1950s – and of the "outsourcing movement", representing the pulling factor of the 1970s and 1980s, but also of the early globalization process that started in 1990s. Though initially perceived as a thread – increasing concurrence of imported, especially Chinese goods within a context of "orthodox" monetary policy hardly limiting the possibility of "competitive devaluation" – it did actually enhance competitiveness and internationalization. Early globalization might also be considered as the starting point of broader transformations that became clear in all their significance of the 2008-09 crisis. Namely during the 1990s firms started looking for new strategies to counteract increasing competitiveness. Many tried delocalizing in emerging countries, or outsourcing. In the end, however, it emerged that territory, with its embedded culture, knowledge, skills, and structural complexity, represented a primary competitive advantage (Hartman, 2014; Hidalgo, 2015). The latter aspect was even more highlighted during the 2008-09 world crisis. Global economic slowdown particularly affected the North-Eastern Italy cluster economy. Actually, the "Veneto system" lived in those years the most acute moment of a transitional crisis that already started in 1992, with the collapse of the old "political and economic order" that had ruled the country since the end of the war. Namely in those years, recognizing the amplitude of ongoing transformation, Veneto "entrepreneurial capitalism" started looking for new solutions, checking different possibilities of conducting business. Such tentative behavior, often conducted empirically, and without clear strategic views, led nevertheless to innovative practices, that resulted in different, and sometimes contradicting effects, such as outsourcing, delocalization, territorial valorization, but also integrative effects, in the sense that on a district, and sometimes even on a single business level they juxtaposed, and not substitute each other.

During that decade emerged in fact the features that characterized successful companies during, and after the 2008-09 crisis, and that can be identified through three broad parameters:

1. Quality and complexity seen both in its material (compliance to standards and personalization). and immaterial (cultural meanings, tradition, imaginary). meanings became a central feature of industrial production, which, in turn, opened sub-segmentation in terms of perceived artisanal authenticity (Gilmore, 2007), accessible luxury, imaginative and cultural meaning of production. The later aspect appeared relevant even for firms working as sub-contractors or in highly technical segments (as robotics or mechatronic technologies). where the quality value associated to "made in Italy' resumed, namely after the crisis, significance in terms, for example, of highly specialized services, flexibility, innovation.
2. Technology became a core instrument not only in the framework of labor substitution processes, as it has been from the 1980s onwards, but also as a mean for innovating traditional processes, and for moving towards knowledge-intensive productions. Technology, in other words, offered new opportunities even when it was not actually reducing labor costs. Information technology, for example, was used to get "nearer to client", develop personalization, get into "collaborative relation" in projecting and realizing the product itself. On the other hand it might also be an instrument for realizing "artisanal production" at a level of precision far behind human capabilities. Or, again, to build a competitive advantage on exploiting highly specialized machines (Celetti, 2019).
3. Finally successful companies deeply reviewed internationalization strategies. If until the late 2000s the most common way for getting into the international markets through was through subcontractors, buyers, or joint-venture with local firms, after the crisis they opted for becoming global themselves, reaching their foreign clients directly, and developing communication, marketing, and selling strategies at world level. Falling prices in information technologies, and long-range transport, opened new possibilities for medium

and small firms willing to operate globally. They understood that they could be present in the global market while remaining deeply rooted in the local context. Territorial peculiarities could therefore not only be preserved, but they also became a relevant competitive advantage, as they started being used as a differentiating brand. Veneto's culture, aesthetic, century-long artisanal history was communicated through the "made in Italy" as well as firms' logos distinguishing regional high-quality products (Celetti, 2019).

The three above mentioned characteristics build a common thread uniting firms operating in different sectors, at different points of the "value chain", in different markets, but united by common success in times of stagnation in most of the European markets. These results have been also empirically checked and confirmed by empirical analysis conducted in the frame of the ongoing research projects on Veneto's industrial clusters' global competitiveness "The Economy of Excellence", conducted by a research group of the Department of Historical, Geographical Sciences and of the Antiquity of the University of Padua (IT). The project, which entails on the fieldwork through qualitative interviews of 25 selected medium and small entrepreneurs of five different industrial clusters, showed so far that businesses best reacting to the 2008-09 crisis were namely those actively working on the three above mentioned strategic paths.

4. CONCLUSION

Our analysis confirms the active role of the territory, interpreted as a complex social construction where material and immaterial features, endogenous and exogenous processes combine giving birth to an ever-changing reality, is a primary factor in determining economic development. This assumption has been analyzed with reference to the Veneto region case study, which still provides a clear example of successful industrial districts "diffused" in the territory. It has been stressed that the origins of the Veneto's diffused industrialization lay back into a peculiar form of agricultural exploitation, and tenure organization based on "mixed farming". These century-old practices created the material and cultural background that made it possible to exploit pluri-activity schemes at the family level, and then the opportunities offered by the "diffused industrialization". Consolidated in the 1960s into industrial districts, the model showed a high degree of resilience, emerging very clearly after the crisis of 2008-09, when a number of enterprises transformed themselves into "global players" strongly based on their traditional territorial roots. Generalizing the study conducted on the Veneto case, the study highlights the relevance of the diachronic analysis of homogenous territories to understand the current economic mechanism, and provide guidelines for further, long term development into an ever more complex, and dynamic world market.

LITERATURE:

1. Akhmetzianova O., Turgel I (2018). The role of industrial factors in socio-economic development of Sichuan province in the context of 'One belt, one road' initiative. *Electronic Scientific Economic Journal R-Economy*, vol.4, no.2, pp.67-71
2. Anastasia B., Corò G (2011). Dopo lo schock: i rischi di una decrescita infelice. In *Nord Est 2011 - Rapporto sulla societa' e l'economia* (p.39-64). Venezia: Marsilio.
3. Antipin I (2019). Implementation mechanisms of strategies of socio-economic territorial development: methodological approach. *Electronic Scientific Economic Journal R-Economy*, vol.5, no.3, pp.115-122
4. Arora A., Fosfuri A., Gambardella A (2001). *Markets for Tecnology: The Economics of Innovation and Corporate Strategy*. Cambridge, Mass. London: MIT.

5. Baldone S., Sdogati F., Tavoli L (2001). Patterns and Determinants of International Fragmentation of Production. Evidence from Outward Processing Trade between the EU and the Countries of Central-Eastern Europe. *In Weltwirtshaftliches Archiv*, 137, 1, pp.80-104.
6. Barzotto M., G. Corò, M. Volpe (2018). Global value chains and the role of MNEs. In *Local Production Systems , Local Clusters in Global Value Chains. Linking Actors and Territories Through Manufacturing and Innovation* (pp.94-114). New York, NY 10017: Routledge.
7. Becattini G., Bellandi M., De Propris L (2009), *A Handbook of Industrial Districts*. Cheltenham: Edward Elgar.
8. Belfanti C.M., Maccabelli T (1997). *Un paradigma per i distretti industriali*. Brescia: Università di Brescia.
9. Bettiol M (2015). *Raccontare il Made in Italy: un nuovo legame tra cultura e Manifattura.* Venezia: Marsilio.
10. Brogiolo G., A. Leonardi, C. Tosco, (2016). *Paesaggi delle Venezie,* Venezia: Marsilio.
11. Buciuni G., Pisano G (2018). Knowledge Integrtors and the Survival of Manufacturing Clusters. *Journal of Economic Geography* ,pp.1-21
12. Busato A., Corò' G (2011), I distretti nella crisi: declino, adattamento o innovazione? In *Argomenti* 32, pp.71-84.
13. Camagni R., Capello R (2013), Regional Competitiveness and Territorial Capital: a Conceptual Approach and Empirical Evidence from the European Union. In *Regional Studies* 47, 9, pp.1383-1402.
14. Camuffo A (2017). *Lean transformations for small and medium enterprises : lessons learned from Italian businesses*. Boca Raton, FL: CRC Press.
15. Caroli M.G., Fratocchi L (2000). *Nuove tendenze nelle strategie di internazionalizzazione delle imprese minori*. Milano: Franco Angeli.
16. Celetti D (2008). Lo sviluppo economico e sociale. In G.L. Fontana (ed), *Carmignagno di Brenta nel Novecento* (pp.157-254). Padova: Cleup.
17. Celetti D (2009). Aspetti e problemi dell'assetto agrario nell'alta provincia padovana nel primo Ottocento. Il caso di Carmignano di Brenta. *Archivio Veneto*, 172, 2009, pp.93-129.
18. Celetti D (2009). Popolazione ed economia. In G.L. Fontana, G. Bressan (eds), *Trissino nel Novecento* (pp.103-255). Padova: Il Poligrafo.
19. Celetti D (2015). Destins paysans. Familles rurales et changements économiques. In Frabrice Boudjaba (ed.). *Travail et familles paysannes* (pp.225-244). Rennes: PUR.
20. Celetti D (2019). Italian Handicrafts in the Eurasian Markets. A Case Study from the Ceramic Cluster of Nove-Bassano (Vicenza-Italy). In *The Journal of Economic Research and Business Administration*, 128, 2, pp.189-197.
21. Coro' G (1998). Morfologia economica e sociale del Nordest. In *Idee del Nordest. Mappe, rappresentazioni, progetti* (pp.221-308). Torino: Fondazione Giovanni Agnelli.
22. Coro' G (2004). Servizi alle imprese e competitività del territorio. In F. Di; G. Dini; R. Palmieri R (eds). *Oltre l'economia dei distretti* (pp.149-156). Milano: Franco Angeli.
23. Coro' G (2018). Italian industry in the new globalization. In *L'industria*, 39,pp. 347-356.
24. Coro' G. De anomalìa a modelo de desarollo? Prueba de madurez del noreste italiano. In D. Valcarcel (ed), *Economia Exterior. Estudios De Politica Exterior*. 25. pp.21-40.
25. Coro' G., Anastasia B (2009). La crisi e il Nord Est. In D. Marini, S. Oliva (eds). *Nord Est 2009. X Rapporto Sulla Società e L'economia* (pp.41-62). Venezia: Marsilio.
26. Coro' G., Grandinetti R (1999). Evolutionary patterns of Italian industrial districts in *Human Systems Management*, 18, pp. 117-129.
27. Coro' G., Dalla Torre R (2015), *Spazio Metropolitano per la complessita' del Nord – Est.* Venezia: Marsilio.

28. Coro' G., Grandinetti R (2010). Frontiere e attori dello sviluppo oltre la crisi: il laboratorio del nord est in economia e società regionale. In *Oltre il Ponte*., pp. 43-63.
29. Coro' G., Schenkel M., Volpe M (2007). Nord-Est: alla ricerca del modello perduto. In *L'industria*, 3, pp.441-461.
30. Crestanello P. *L'industria veneta dell'abbigliamento. internazionalizzazione produttiva e imprese di subfornitura*. Milano: Franco Angeli.
31. Drucker, P (1993). *Managing in Turbulent Times.* New York: Harper & Row.
32. Ferrario V (2011). *Landscapes of urbanism*. Roma: Officina.
33. Ferrario V (2019). *Letture geografiche di un paesaggio storico. La coltura promiscua della vite nel Veneto*. Verona: Cierre.
34. Fontana G.L (2004), Introduzione. In Fontana G.L (ed), *L'industria vicentina dal Medioevo ad oggi* (pp.13-20). Padova: Cleup.
35. Fontana G.L (2004b). Imprenditori, imprese e territorio dalla prima alla seconda rivoluzione industriale. In Fontana G.L (ed), *L'industria vicentina dal Medioevo ad oggi*, (pp.347-454). Padova: Cleup.
36. Fortis M (1998). *Il made in Italy*. Bologna: Carocci.
37. Gilmore J.H, Pine J (2007), *Authenticity: what Consumers Really want.* Boston: Harvard Business School Press.
38. Graziani A (1998). *Lo sviluppo dell'Economia Italiana.* Torino: bollati Boringhieri.
39. Hartmann D (2014), *Economic Complexity and Human Development: how Economic Diversification and Social Networks Affect Human Agency and Welfare.* Hohenheim: Routledge.
40. Hausmann R., Hidalgo C.A., et alii, (2014). *The Atlas of Economic Complexity. Mapping Paths to Prosperity.* Cambrridge MA: MIT Press.
41. Hildalgo C (2015). *Why Information Grows: the Evolution of Order, from Atoms to Economies.* London: Allen Lane.
42. Lacquement G., Chevalier P (2016), Territorial et developpement des territoires locaux, enjeux theoriques et methodologiques de la transposition d'un concept de l'economie territoriale a l'analyse geographique, *Annales de geographie*, 711, 5, 490-518.
43. Lees-Maffei G., Fallan K (2014). *Made in Italy: Rethinking a Century of Italian Design.* London: Bloomsbury.
44. Leoncini R., Montresor S (2008). *Dynamic Capabilities Between Firm Organization and Local Systems of Production*. Routledge: London.
45. Rossetti S., Schiattarella R (2003). Un approccio di sistema all'analisi della delocalizzazione internazionale. Uno studio per il settore del made in Italy. In N. Acocella, E. Sonnino (ed.). *Movimenti di persone e movimenti di capitale in Europa*. Bologna: Il Mulino.
46. Roverato G (1996). *L'industria nel Veneto: Storia economica di un caso regionale*. Padova, Padova: Cleup.
47. Roverato G (2004). L'industria vicentina nel Novecento. In G.L. Fontana (ed.). *Storia dell'industria vicentina dal Medioevo ad oggi* (pp.455-543). Padova: Cleup.
48. Rullani E, Romano L (1998), *Il postfordismo: idee per il capitalismo prossimo venturo,* Milano ETAS.
49. Volpe M., Corò G., Schenkel M (2012). Apertura internazionale e cambiamento strutturale nel sistema manifatturiero del Nord Est. In *L'industria*, 1, pp. 193-204.

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