Analysis of the Industry Specialization of Russian Monotowns (On the Example of the Arkhangelsk and Vologda Regions)

Akinfeeva E.V.
Researcher Institute of Economic Forecasting of the Russian
Academy of Sciences,
Central Economics and Mathematics Institute of the Russian
Academy of Sciences,
Moscow, Russia,
tyusha08@gmail.com

Ivanova O.P.
Yaroslav-the-Wise Novgorod State University,
Veliky Novgorod, Russia,
prof-ivanova@mail.ru

Nikonova M.A.
Institute of Economic Forecasting of the Russian Academy of Sciences,
Central Economics and Mathematics Institute of the Russian Academy of Sciences,
Moscow, Russia,
flowerchek1982@mail.ru

Abstract—**The article is a continuation of a series of publications devoted to the analysis of the industry specialization of Russian monotowns. The purpose of the paper is to analyze the sectoral structure of the industry of a monotown and assess its importance for the economic development of a monotown. The object of the paper is the sectoral structure of a monotown. The paper examines the sectoral specialization of the industry of two constituent entities of the Northwestern Federal District (NWFD), namely the Arkhangelsk and Vologda regions, and also analyzes the monotowns located in these regions. As a result of the research, the authors come to the conclusion that the sectoral specialization of the Northwestern Federal District is heterogeneous and the main branches of specialization are manufacturing, mining, and trade. It is concluded that the level of socio-economic development of a single-industry town does not depend on the sectoral specialization of the town-forming enterprise. The problems common to the monotowns considered in the paper are highlighted: low living standards of the population and its outflow, lack of qualified personnel, as well as insufficient attention from the state and business. The results of the study can be used to develop measures to diversify the economy of single-industry towns, strategize their development, form state and regional policies in the field of modernization of single-industry towns.**

Keywords—monotown, industry structure, industry specialization

I. INTRODUCTION

A monotown is a settlement of a special kind. The specificity of the concept of "monotown" is determined not only by the criteria for distinguishing monotowns, but also by the special characteristics and content of the socio-industrial complex of a monotown, the relationship of problems characterizing the economy of a monotown [1, 2]. The study of towns begins, as a rule, with their classification. At the same time, it makes sense to take into account the profile, specialization, main industry of the town. So, for example, P. Hagget [3] considered the index of specialization of the town, using which such settlements can be divided into groups: 1) industrial, 2) agricultural, 3) administrative, 4) commercial, 5) university, 6) resort. Industrial towns, created on the basis of one or several enterprises, grew out of workers' settlements as a result of the concentration of industrial facilities on their territory. It is these towns that have mining and processing industries as industries of specialization. The town's specialization in the extractive industry means limiting the sphere of production to the initial links of the technological cycle. A monotown [4] is a settlement, the well-being of which depends largely on one enterprise that provides all or most of the necessary services or functions of urban life. Its residents are dependent on the economic situation of one company. As a rule, such a city was built primarily for the employees of the given enterprise.

H. Green [5], explaining the interpretation of the definition of "single-company community", pointed to the social status of the city-forming enterprise and its defining interaction with society. The industrial essence of a monotown, the system of its functions was studied by O. Denius and A. Vergara [6]. The definition of "company-

dominated town" was used by L. Klarlson [7], while studying and systematizing the experience of forming a monotown "built by the boss". H. Green [5] described the key models of monotowns: oriented towards profit and expenditures on the welfare of personnel ("exploitationville") and the model of a socially responsible town ("socially benign"). The model of a socially responsible town means an orientation in its development towards the construction of schools, hospitals, parks, and the provision of housing for the employees of the town's enterprise. The same characteristics underlie Pullman's "urban model" [6]. E. Burgess, L. Wirth [7], R. Park studied the city as a social laboratory. R. Park [8] considers town as a social organism, the level of development of which is influenced not only by factors based on the basic human needs for life resources, but also by norms, laws, institutions and customs. And the development of a town is interpreted by him as an increase in population, an increase in migration, division of labor, the emergence of new institutions. According to R. Park, the city is beneficial for the study of social life, since the evolution of social institutions can be investigated through observation and experiment. Foreign researchers focused on the study of how the opposing interests of business and the population of a monotown are coordinated, how relations between people in cities are formed.

II. PRESENTATION OF RESULTS

The Northwestern Federal District includes 11 constituent entities of the Russian Federation: the Republic of Karelia and Komi; Arkhangelsk, Vologda, Kaliningrad, Leningrad, Murmansk, Novgorod, Pskov regions, as well as St. Petersburg; Nenets Autonomous Okrug. A large number of industries are represented in the industry of the Northwestern Federal District, from machine building and timber producing to fish farming and power engineering.

Due to the fact that Rosstat data for the period of 2018-2019 are absent, Fig. 1. shows the sectoral structure of the gross value added of the regions of the Northwestern Federal District for 2017.
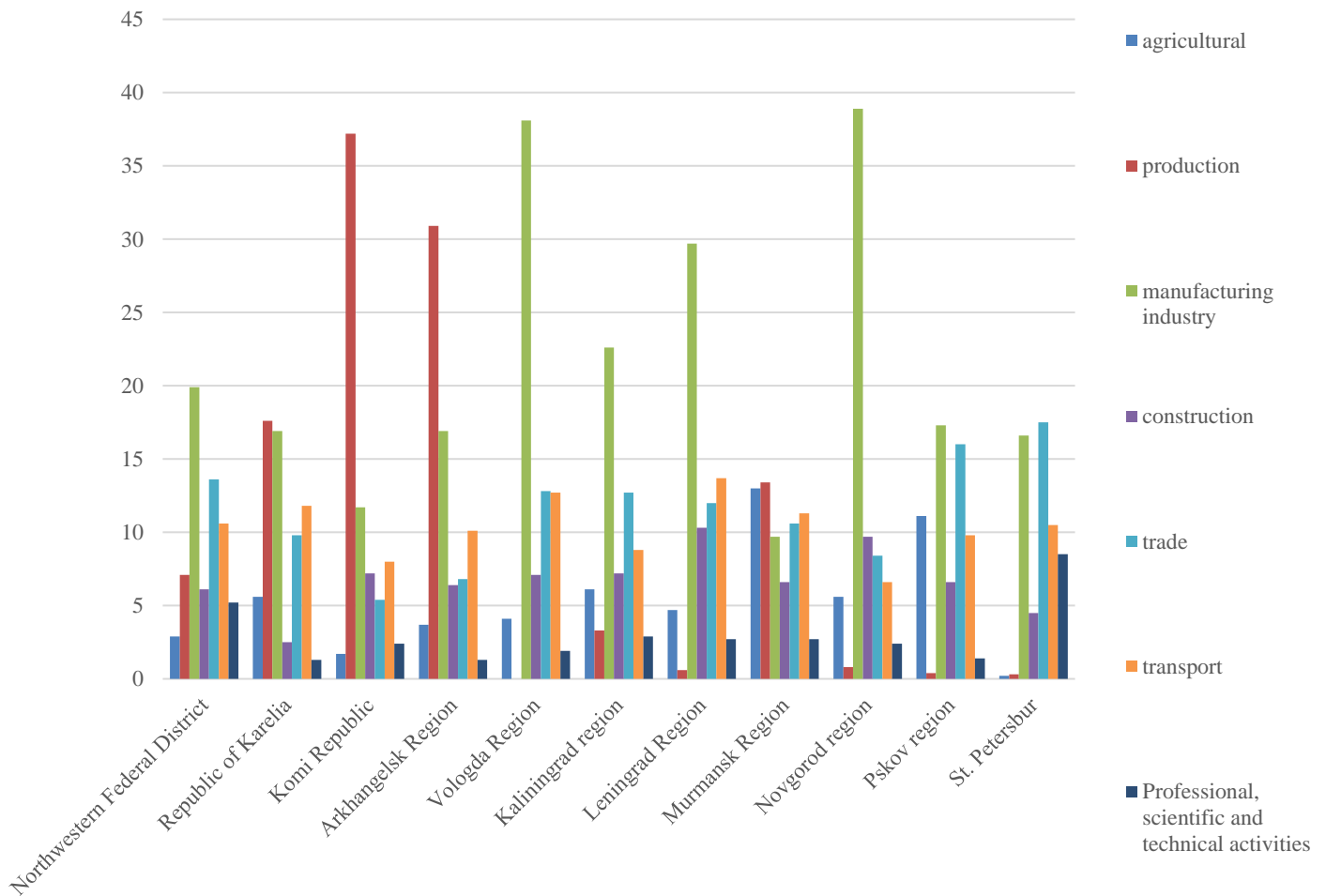

Fig. 1. Sectoral structure of gross value added in the regions of the Northwestern Federal District in 2017, %. Source: compiled by the authors based on Rosstat data [1]
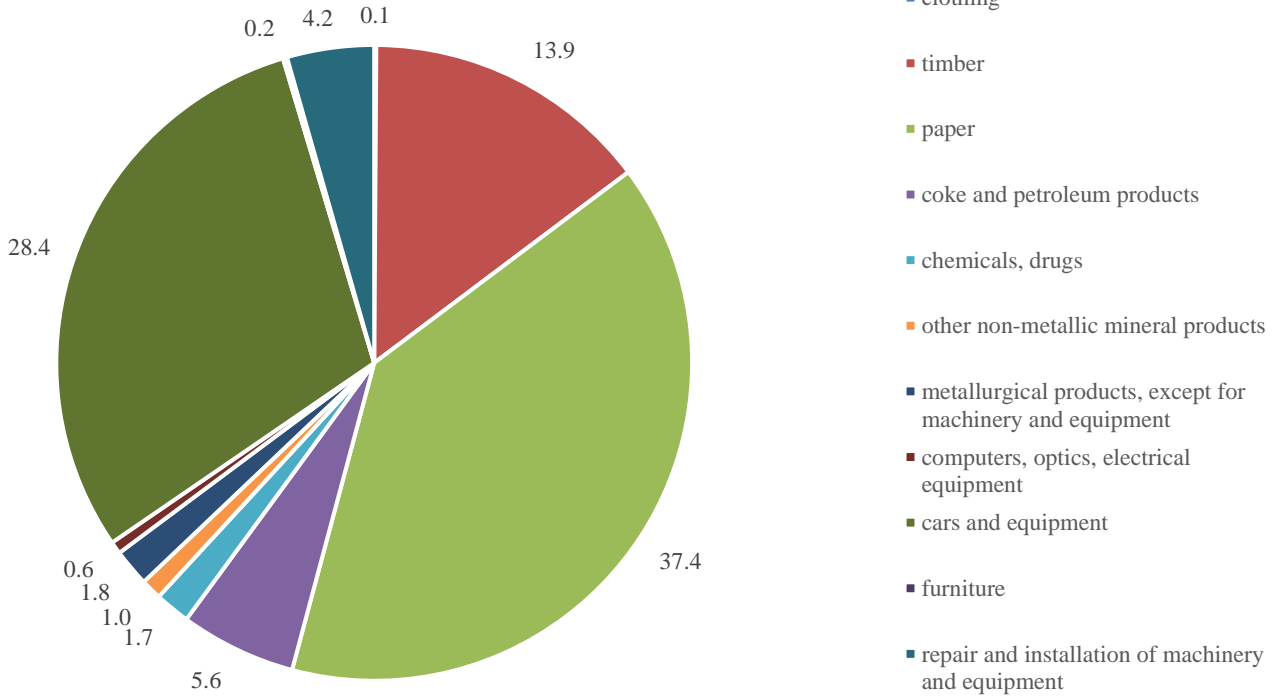
As seen from Fig. 1, the Arkhangelsk region can be attributed to the mining regions (the share of the mining industry in them in 2017 was 30.9%). Despite the fact that the share of the mining industry in the Arkhangelsk region is rather high (the region contains about 20% of the stock of Russian diamonds), the region also has a developed manufacturing industry. Thus, many defense industry enterprises operate in the region, including enterprises of the state corporation Roscosmos [2].

The Vologda Region can be classified as a region with a developed manufacturing industry (its share in 2017 was 38.1%) [3].

Before turning to the analysis of the sectoral specialization of single-industry towns in the Arkhangelsk and Vologda regions, below we present a brief description of the industry of these regions.

Arkhangelsk Region (excluding the Nenets Autonomous Okrug) The following main industries are distinguished in the region: manufacturing (22.7%), trade (11.1%), transportation and storage (13.7%), public administration (8.5 %). The main industry in the region is manufacturing, so let's consider its structure in more detail (Fig. 2.).

- clothing
- timber
- paper
- coke and petroleum products
- chemicals, drugs
- other non-metallic mineral products
- metallurgical products, except for machinery and equipment
- computers, optics, electrical equipment
- cars and equipment
- furniture
- repair and installation of machinery and equipment

Fig. 2. The structure of the manufacturing industry in the Arkhangelsk region in 2018,%

Analysis of the structure of the manufacturing industry in the Arkhangelsk region in 2018 showed that the main industries are:

- mechanical engineering – the share in the structure of the manufacturing industry is 28.4%,

- pulp and paper industry – the share in the structure of the manufacturing industry is 37.4%,

- wood production – the share in the structure of the manufacturing industry is 13.9%,

- production of coke and petroleum products – 5.6%,

- food industry – 5.1%,

- repair and installation of machinery and equipment – 4.2%,

- chemical and pharmaceutical industries – 1.7%.

The shares of other industries did not exceed 1%.

Thus, the main industries of the Arkhangelsk region are mechanical engineering, pulp and paper industry and wood production.

Vologda Region.

The following main industries are distinguished in the region: manufacturing (38.1%), trade (12.8%), transportation and storage (12.7%), construction (7.1%), public administration (5.1%). The main industry is manufacturing. The structure of the manufacturing industry in the Vologda Oblast is shown in Fig. 3.

As can be seen from Fig. 3 the main manufacturing industries in the region are:

- production of metal products (except for machinery and equipment) – 60.6% (the industrial production index in 2019 compared to 2018 was 101.2%),

- production of chemical products and medicines – 19.4% (index – 103.7%),

- food production – 6.9% (index – 98%),

- timber – 6.1% (index – 119.6%, the growth rate of this industry was the highest among the manufacturing industries [5]).

The shares of other manufacturing industries did not exceed 2%.
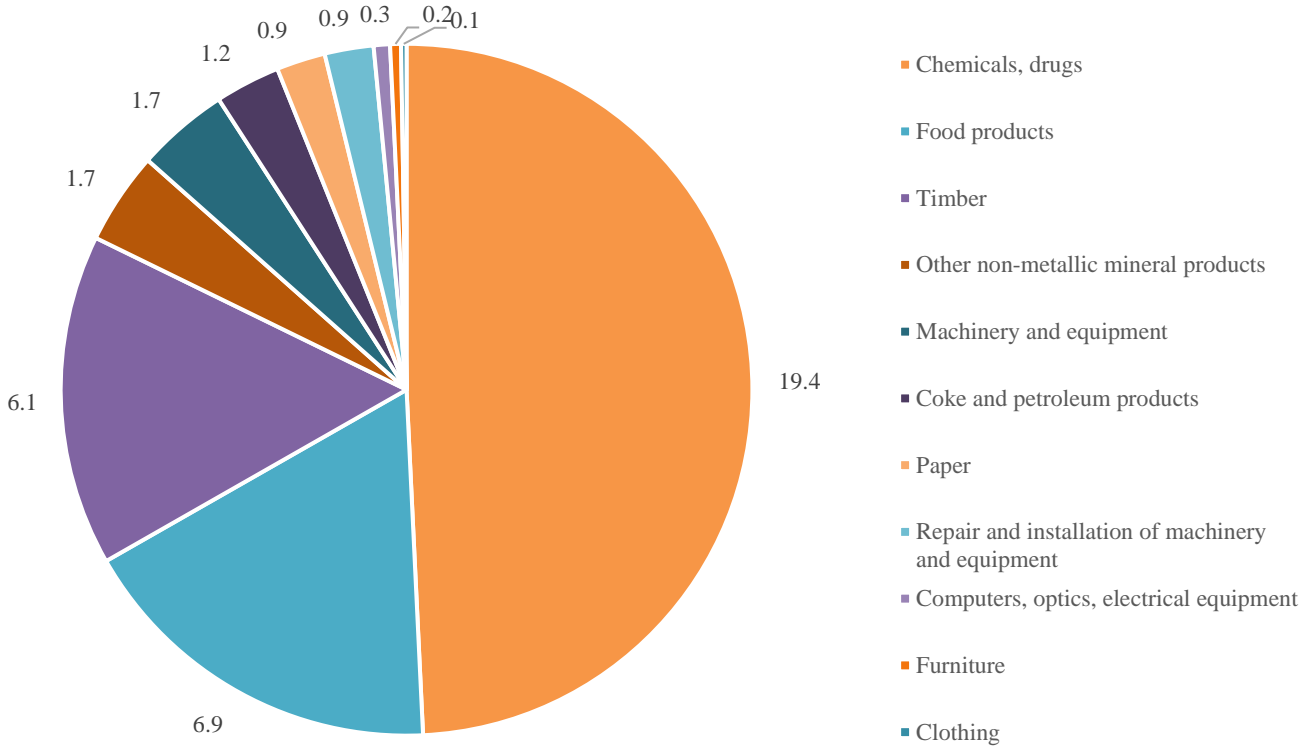
Fig. 3. Structure of the manufacturing industry in the Vologda region in 2018, %. Source: compiled by the authors based on Rosstat data [4]

Thus, the main industries of the Vologda Oblast are metallurgy (the largest metallurgical enterprises are the Cherepovets Metallurgical Plant PJSC Severstal, JSC Severstal-metiz, LLC Severstal TPZ Sheksna [6]), the chemical industry and wood processing (most of the large enterprises in the Vologda Oblast are included in three timber industry holding).

Thus, it should be noted that the sectoral specialization of the Northwestern Federal District is rather heterogeneous. The main industries in the Arkhangelsk and Vologda regions are manufacturing, trade and transport.

Since the purpose of the paper is to consider their industry specialization using the example of Russian monotowns, the monotowns of Koryazhma in the Arkhangelsk region and Cherepovets in the Vologda region were selected for analysis. Next, we will focus on these monotowns.

Arhangelsk region. Koryazhma Monotown.

The backbone of the monotown economy is the town-forming enterprise – OJSC Ilim Group. This is one of the country's leading timber industry enterprises (https://dvinaland.ru/region/176). The average number of employees of the city-forming enterprise is 3463 people, the unemployment rate is 1.4% (http://monotown.rf/monotown/koryazhma/).

The growth rates of shipments in industry are shown in Fig. 4.

It should be noted that the volumes of manufacturing industries in the city in 2019 decreased by 4.5% compared to the level of 2018, which may be due to their growth in 2018 relative to 2017 (it was 130.8%).

Analysis of the growth rate of shipment of manufactured products in the industry of the monotown of Koryazhma in 2019 relative to the level of 2018 showed that growth was noted in all sectors, except for the production of paper and the chemical industry (the fall was 5.9% and 4.7%, respectively). The largest increase was observed in the production of clothing (by 23.4%). At the same time, in 2018, the fastest growing was the food industry (the growth rate compared to 2017 was 39.7%), wood processing (25.6%), and paper production (33.1%).

The main industry for the monotown – wood processing – developed in 2018-2019 (the rate of its growth was 25.6% in 2018 and 70% in 2019). Indicators of growth rates of the woodworking and pulp and paper industry in 2019 relative to 2018:

- unprocessed timber – 104.7%,
- sawn softwood – 145.4%,
- wood pulp and cellulose from other fibrous materials – 101.7%,
- offset paper – 97.9%,
- containerboard (kraft liner) – 106.8%.

The largest growth was observed in sawn softwood production, which can be classified as a low value-added industry.
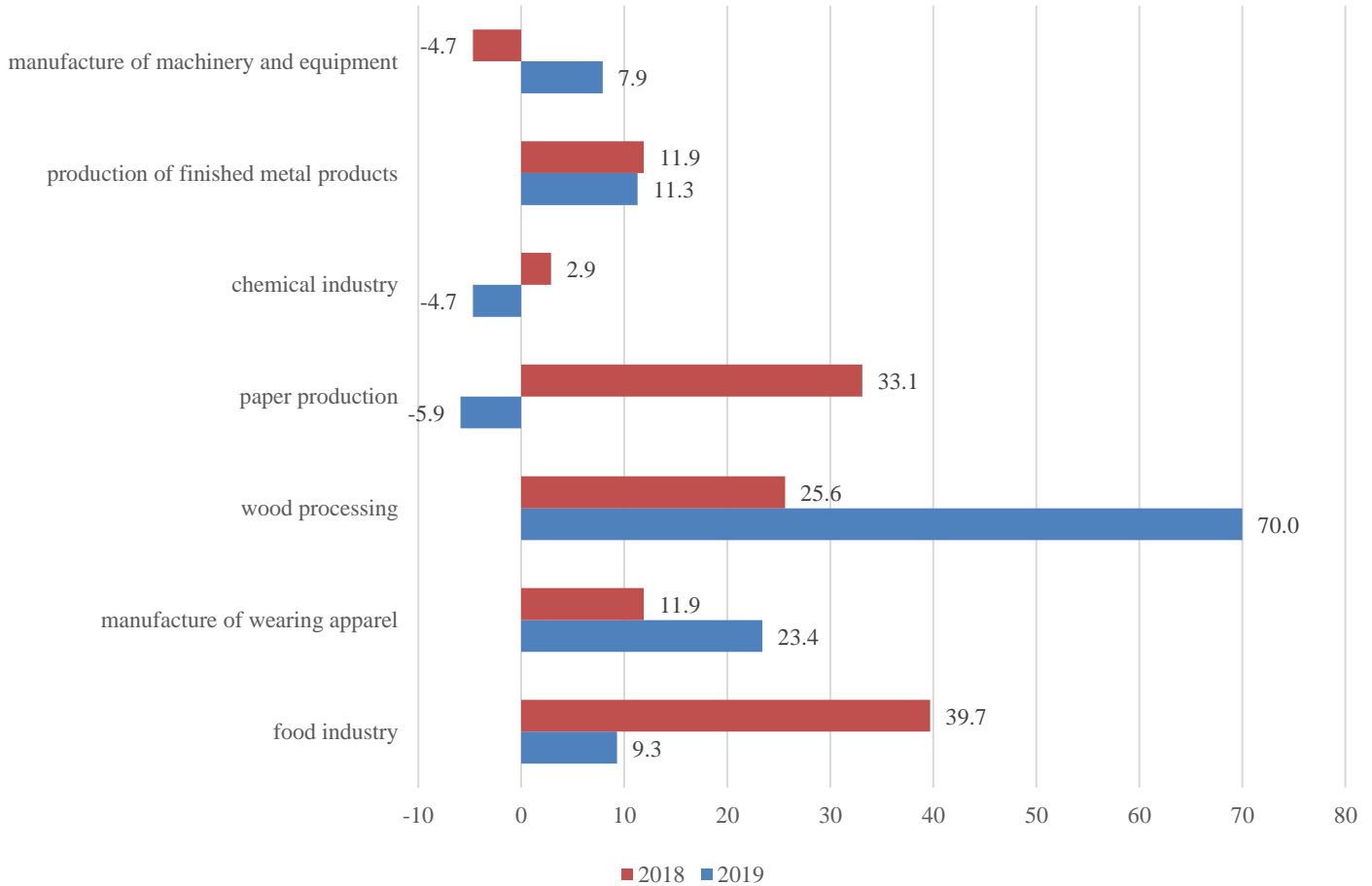
Fig. 4. The rate of industrial growth in 2019 to 2018 and 2018 to 2017,% (Retrieved from https://koradm.ru/ekonomika/ekonomika-munitsipalnogo-obrazovaniy

Thus, the main one for the monotown is the woodworking industry, whose production volumes for the period 2018-2019 have increased significantly. Despite the quite successful development of this industry, socio-economic, infrastructural, demographic and other problems in the monotown remain unresolved. It is assumed that the successful development of the industry entails investment in the economy of a monotown, however, financial investments, government and other programs are aimed mainly at supporting the town-forming enterprise.

Vologda Region. Cherepovets Monotown.

The basis of the economic potential of a monotown is made up of enterprises of ferrous metallurgy and the chemical complex. The leading enterprises are the Cherepovets Metallurgical Combine CherMK PJSC Severstal, JSC Severstal-metiz, JSC Apatit. The city-forming enterprise is CherMK PJSC Severstal, which belongs to the mining and metallurgical industry (the second largest steel plant in Russia). The average number of employees at CherMK PJSC Severstal as of March 01, 2020 amounted to 22196 people.

Also in the city are located the largest production facilities of JSC "Apatit" – a producer of mineral fertilizers.

Analysis of the structure of the industry of a monotown shows that the largest share is made up of metallurgical

production (67.4%) and chemical production (24.1%). The shares of other industries did not exceed 5%.

The growth rates of industry in 2019 relative to 2018 are shown in Fig. 5.

Analysis of the growth rates of industries in a monotown shows that production increased in such industries as food production (by 12%), finished metal products (by 6.5%), other non-metallic products (by 5.4%), chemical production (by 4.4%). At the same time, in the most capital-intensive industries (metallurgical production, which is the main one for the city) and the production of machinery and equipment, there was a decline (by 2.4 and 7.2%, respectively). At the same time, the overall drop in industrial production in 2019 relative to the level of 2018 was 0.3%.

The main branches of the monotown are still metallurgical and chemical production. However, there is a gradual change in the sectoral focus of the monotown. Thus, metallurgical production and production of machinery and equipment are declining, and the food industry is growing. Such tendencies can gradually lead to the loss of manufacturing industries in a monotown, which in turn will lead to a change in the demographic, socio-economic situation in the city. At the same time, modernization at the town-forming enterprise (PJSC Severstal) in the early 2010s led to a significant release of personnel, which at present could not but affect the situation in general in the monotown.
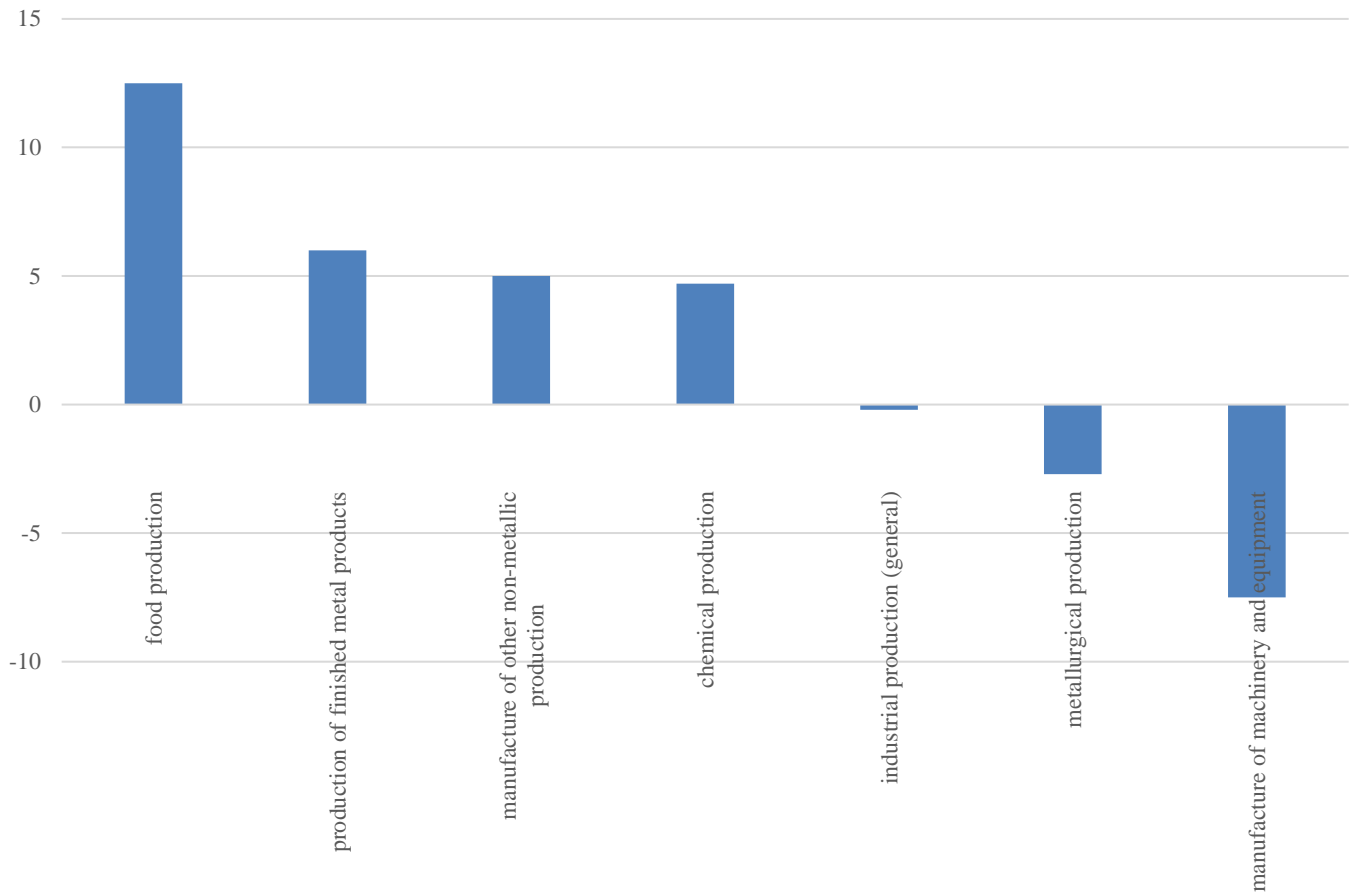
Fig. 5. Growth rate in industry in 2019 to 2018, %. Source: compiled by the authors on the basis of [7]

III. CONCLUSION

The industry specialization of the Northwestern Federal District is not uniform. The main industries are manufacturing, mining, trade. The main industries in the Arkhangelsk and Vologda regions are manufacturing, trade, and transport. The not always stable economic activity of a city-forming enterprise contributes to the effective development of a monotown. The level of socio-economic development of a monotown does not depend on the sectoral specialization of the town-forming enterprise. Regardless of the level of development of the branch specialization of a monotown, problems common to the monotowns considered in the work can be identified, namely: low living standards of the population and its outflow, lack of qualified personnel, as well as insufficient attention from the state and business. The revealed patterns can be used in the development of measures to ensure the modernization of the economy of monotowns, in particular, the choice of certain taxation regimes, the creation of territories with a special status and others [11, 12].

References

[1] Predictive analytics in the monotown management system: Opportunities and monitoring. Digitalization and efficiency. Development and Risk Management [Predikativnaya analitika v sisteme upravleniya monogorodami: Vozmozhnosti i monitoring. Cifrovizaciya i effektivnost'. Razvitie i upravlenie riskami]: monograph, V.A. Trifonov, O.P. Ivanova, Yu.V. Danejkin, M.M. Kozyrev, Veliky Novgorod: NovSU, 2019, 185 p. (In Russ.).

[2] O.P. Ivanova, Development of single-industry towns and management of investment attractiveness [Razvitie monogorodov i upravlenie investicionnoj privlekatel'nost'yu]: monograph, O.P. Ivanova, I.S. Antonova, G.D. Antonov, M.: INFRA-M, 2016, 260 p. (In Russ.).

[3] P. Hagget, Spatial analysis in economic geography [Prostranstvennyj analiz v ekonomicheskoj geografii], Moscow: Progress, 1968. (In Russ.).

[4] Merriam-Webster Dictionary, 2020. Retrieved from http://www.merriam-webster.com/dictionary/company%20town

[5] H. Green, The Company Town: The Industrial Edens and Satanic Mills That Shaped the American Economy, New York: Basic Books, 2010, pp. 7-27.

[6] Company Towns in the Americas: Landscape, Power, and Working-Class Communities (Geographies of Justice and Social Transformation), Ed. by Oliver J. Denius, A. Vergara, Athens, Georgia: University of Georgia Press, 2011, pp. 1-45.

[7] L. Clarson, Company towns of the Pacific Northwest. Washington, DC: University of Washington press, 2003, pp. 3-13.

[8] S. Berder, Pullman: An Experiment in Industrial Order and Community Planning, 1880-1930 (Urban Life in America), New York: University Press, 1970, pp. 49-106.

[9] L. Virt, "Urbanism as a way of life" ["Urbanizm kak obraz zhizni"], Sociological walks. The city by feet of a sociologist [Sociologicheskie progulki. Gorod nogami sociologa], 2009. (In Russ.). Retrieved from: http://www.urban%club.ru/?p=99

[10] R. Park, City as a social laboratory, Workbooks on the history and theory of sociology, Issue 1 [Gorod kak social'naya laboratoriya, Rabochie tetradi po istorii i teorii sociologii, No. 1], Moscow, 1992, pp. 59-61. (In Russ.).

[11] E.V. Akinfeeva , O.P. Ivanova, and M.A. Nikonova, "Support For Single-Industry Towns As A National Project", In Roceedings of the European Proceedings of Social & Behavioural Sciences, 2019, p. 31. DOI: doi:https://doi.org/10.15405/epsbs.2019.12.05.5 https://www.futureacademy.org.uk/files/images/upload/MTSDT2019 F005.pdf

[12] G.D. Antonov, and O.P. Ivanova, "An approach to the Choice of a Supply Management Model in Conglomerates Operating at the Markets of Machine-building industry", In SHS Web of Conferences, 2016, vol. 28, 01116. DOI: 10.1051/shsconf/20162801116. https://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=MarkedList&qid=61&SID=E1yaO5EeiN8Bx7wEmsD&excludeEventConfig=ExcludeIfFromFullRecPage&page=1&doc=5