

Historical analysis of agricultural productivity and food security initiatives

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Abstract. The development and analysis of productivity and sustainability problems of agricultural sectors, such as crop production and livestock, based on actual statistical data, appeared in the late nineteenth – early twentieth century. In the Russian Empire A.E. Lositsky should be considered as the creator of this research direction. He is known as a prominent scientist, a specialist in the field of economic statistics, whose name is practically unknown to the modern science. This work is devoted to the initial stages of consumption statistics for urban and rural populations. The creation of such a research area was closely related to the experience of providing food to the population during the social upheavals of the early twentieth century, when food became a force capable of influencing political decision-making in the country. The population surveys conducted by A.E. Lositsky and his colleagues lead to the creation of databases for sociological and economic analysis in the context of the transition to a planned and distributive economy. The proposed provisions and conclusions draw attention to the compilation of food balances as an analytical tool of the economic policy of the early USSR, as well as a number of modern methods of solving food problems in the world.

1 Introduction

The key position of the modern economy is the problem of consumption, the study of which is based on statistical data. The formation and development of the analysis of productivity and sustainability of agricultural sectors problems, such as crop production, livestock, forestry and others on the basis of actual statistical data appeared at the beginning of the twentieth century. Since integration remains the main focus of any development strategy, the importance of studying the presentation of statistical data on food history increases, especially the creation of food balances as an analytical tool of public policy. In the Russian Empire the founder of this research direction was A.E. Lositsky, a prominent scientist, an expert in the field of economic statistics, whose legacy has not been practically studied. He was the author of more than 150 scientific papers from the first third of the twentieth century, the author of a number of methods in livestock statistics, who received a large gold medal from the Russian Geographical Society for his developments. He can be considered as the only specialist on statistics of the meat industry during the beginning of the twentieth century in the Russian Empire. A.E. Lositsky became the founder of urban and rural population

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consumption statistics, largely determining a number of modern methods of analyzing food problems in the world. It is well known that since the Second World War the Food and Agriculture Organization of the United Nations (FAO) (Food and Agriculture Organization, FAO) has been operating. Its main task is the fight against hunger as well as the discussion and coordination of political decisions in the food security field. FAO's work on crop, livestock and food statistics (CLFS) focuses on providing basic global data on food and agriculture. Food statistics also includes food balance sheets (FBS) as a tool that provides comprehensive, detailed country-specific data on an annual basis, regarding the supply and use of primary and recycled goods, covering food stocks and losses, animal feed and availability for human consumption. Today the annual compilation and distribution of food balance sheets provides the most complete and comparable coverage in terms of goods and geographical territories. Food balance sheets show certain trends in the overall national food supply, reveal changes that may have occurred in the types of consumed products. Also, they demonstrate to what extent the country's food supply is adequate to nutritional needs. The statistical data, presented in the food balance sheets, is used to develop and define the policy goals to reduce hunger in different countries (<https://www.fao.org/food-agriculture-statistics/statistical-domains/crop-livestock-and-food> - 12.05.2023). In this regard it should be noted that A.E. Lositsky began to deal with these problems in the period of the 1890s-1940s and became the founder of food statistics of urban and rural population in Russia. His scientific developments and forecasts, in particular about the increase in the consumption of livestock products, formed the basis of Soviet power policy during the first years. N. Yasny dedicated a short essay to A.E. Lositsky who he met personally [1]. Also the famous scientist A.V. Chayanov spoke highly of the quality of A.E. Lositsky research. In particular, about the development of food balance sheets, showing trends in the state food supply. In this study a number of facts, considering scientist's biography, are introduced into scientific circulation for the first time, since, with the exception of a brief reference, his name is practically unknown (<http://letopis.msu.ru/peoples/1285> - 12.05.2023). The GARF archival collections contain information about him, his analytical notes and works as well as monographic studies of different years [2].

2 Methods

The study methodological basis was the analysis of scientific and practical works of A.E. Lositsky. The traditional as well as the new research methods were used, in particular, general scientific methods as well as the method of comparative analysis in relation to the context of the era before 1917, the period of the Provisional Government and the NEP, and those methods that were developed and implemented in Gosplan. Meanwhile, special methods of economic history were used, such as the system-structural and statistical method, the analysis of structural transformations for studying the methodology as a whole.

3 The results of the study

This topic is related to the study of the experience of supplying food to the population in an era of serious social upheaval. The article presents the characteristic of A.E. Lositsky's activity, which is considered in the historical and social context in the period before and after 1917. It examines various evidences of the planned statistics formation in the economy, food balances in the field of animal husbandry and crop production were calculated, statistical information on the state of the grain market in Russia was analyzed, and a research area such as urban and rural consumption statistics was established. Research on the proper nutrition of the population, forecasting changes in its structure in terms of increasing consumption of

animal products and the creation of a catering system turned out to be closely related to issues of social life in the country. Data on the composition of products, sources of their production, sufficiency for the family, the price of products and the forms of their consumption made it possible to balance the national food supply in the early USSR. The analysis of the monographic studies, the journalistic heritage complex as well as the press materials is given. Special attention is paid to the food balance sheets compilation as an analytical tool of economic policy.

4 Discussion

The analysis and calculation of agricultural productivity based on actual statistical data on a national scale dates back to the late 19th and early 20th centuries. Its goal was to ensure food independence, solve the problems of food availability, distribution and development of consumption standards. Alexander Lositsky, a prominent scientist, economist, and statistician, whose name is practically unknown to modern science, became one of the founders of this area of research in the field of consumer statistics. He was the author of more than 150 scientific papers from the first third of the twentieth century, the creator of a number of methods in livestock statistics, awarded the grand gold medal of the Russian Geographical Society for his developments and largely predetermined a number of modern methods for analyzing food problems.

Alexander Emelianovich Lositsky was born on September 2, 1869, in Stavropol, graduated from the gymnasium, then from Moscow State University, Faculty of Law. Since 1894, he was engaged in zemstvo statistics in some provinces of Russia, particularly in Saratov, Orel, Kursk, Petrograd and Moscow. From 1911 to 1917, he worked in the Moscow City Statistical Department as an assistant manager of the department under the guidance of V.G. Mikhailovsky, the famous statistician and demographer [2]. Despite the active public position, in particular, the participation in statisticians' congresses, consultations of Social Democrats on agrarian issues in the State Duma, A.E. Lositsky remained nonparty and was mainly engaged in statistical and scientific work. During 1917, he worked in Petrograd in the National Food Committee as well as in the economic department of the Ministry of Food. This ministry was formed by the Provisional Government of Russia and was functioning since May, 1917, until January, 1918. During this period it was headed by two well-known leaders of the socialist government – A.V. Peshekhonov and S.N. Prokopovich [3].

After the events of 1917 in Russia, in the period from 1918 to 1929, A.E. Lositsky worked in the Central Statistical Directorate (TsSU) and the USSR State Planning Committee (Gosplan). It should be noted that in the period of the 1920s, scientific research of agricultural problems and the study of planning in agriculture were almost not examined. Only neonarodniki contributed, namely L.N. Litoshenko, N.P. Oganovsky, N.M. Vishnevsky, A.E. Lositsky [4]. Particularly they participated in the preparation of a plan for the national economy development from 1926/27 to 1940/41. So, Lev Nikolaevich Litoshenko (1886-1943), as a statistician and economist, specialized in the peasantry and agriculture problems. He was engaged in peasant budgets, gave an assessment of the most important groups of consumers and goods in agriculture for the first time. He also was in charge of the world's first intersectoral balance sheet compilation in 1923-1924. Nikolai Petrovich Oganovsky (1874-1938) was a Russian agricultural economist and geographer, statistician and politician. He was the author of works on agrarian problems, in which he acted as a supporter of the theory of small peasant farming sustainability. Nikolai Mikhailovich Vishnevsky (1891-1938) – an economist, statistician, specialist in the agrarian revolution study in Russia. He worked in the Supreme Board of the National Economy (VSNKh), TsSU and the USSR Gosplan, where he conducted statistical research. N.P. Oganovsky, N.M. Vishnevsky and A.E. Lositsky in the winter of 1926/27 created a plan of the agriculture development in the

country from 1926/27 to 1940/41 at the request of Gosplan. This plan was criticized for being too fast by well-known experts, N.D. Kondratiev, N.P. Makarov and A.N. Chelintseva. But it found its recognition by the communists – the supporters of high industrialization rates. It should be noted that in his forecasts A.E. Lositsky stated statistical databases and showed the possibilities of those livestock and crop production areas, where the increase in food production was potentially feasible. This made it possible to use his developments further to create large collective farms. Despite this, in 1930, A.E. Lositsky was brought to justice by the OGPU. But in 1932, after being deported to Zubtsov, he was returned to Moscow and restored his rights. Also, he was invited as a consultant to Soyuznarpit – the General Directorate on National Nutrition of the USSR. In 1935, as a result of a tram accident, he remained disabled, retired from public service and teaching. He was engaged only in scientific work. Among his most important works were the " Vykupnaya operaciya ", which concerned the termination of peasants redemption payments after the abolition of serfdom in 1861[5]; " Raspadenie obshchiny " [6], published in 1912 and dedicated to the exit of peasants from the community, considered the situation in Russia before P.A. Stolypin's decree of November 9, 1912, the plots of land transfer to personal property, the separation of farms and holdings. The diagrams and cartograms of the work represented the size and geography of the land community destruction in the era of reforms by S.Y. Witte and P.A. Stolypin. " Urozhaj hlebov 1917" [7], was published in 1918, recorded the characteristics of the gross and net bread harvest, the food and feed needs of the country, the excess and shortage of Russian bread. In its own way the book has become a unique phenomenon, written in the midst of the revolution of 1917; it not only brought together statistical data, but also presented a critically analyzed sample from various sources about the state of the bread market in Russia. The generalized materials, along with the conclusions of A.E. Lositsky, aroused the interest of the People's Commissar of Food, A.D. Tsyuryupa. By his order the book was immediately published in the publishing house "Red Proletarian" and handed over to V.I. Lenin. One of the textbook works of A.E. Lositsky was " Sovremennoe sostoyanie skotovodstva v Rossii" [8], where he presented the characteristics of the livestock state in the country, suggesting ways to solve the problem of restoring livestock in Russia, an industry that greatly suffered during the First World War, the revolution of 1917, and the Civil War in Russia. After serious social upheavals the restoring of food supply to the population became a key challenge of the entire twentieth century. And nowadays work on consumption statistics remains relevant, in particular, for determining GDP and calculating per capita consumption. Therefore, the creation of databases on food is actively conducted in various structures. In many ways the food organization is a force capable of not only determining the direction of development in the spirit of distribution, but also influencing political decisions in the country.

At the same time, the scientific discoveries of Russian economists were closely connected to practice. In particular, A.E. Lositsky carried out calculations of the crop production marketability, the livestock profitability, made an attempt to calculate the distribution of food between social groups. A.E. Lositsky worked closely with well-known representatives of economic knowledge in Russia. His data were actively used. So, the authorship of A.E. Lositsky belongs to the calculation of meat products in the work of S.N. Prokopovich "Sovremennoe sostoyanie skotovodstva v Rossii" [9]. The work was published in Moscow in 1918 and consisted of three essays which gave an assessment of the data for 1900-1913 that were processed and used in the Economic Council of the Provisional Government in 1917. Conducting a comparative analysis of the Soviet economy study in Russia and in emigration, the background of the issue should be concerned. Sergey Nikolaevich Prokopovich was a Russian economist, minister of the Provisional Government of Russia, emigrant, creator of the Economic Cabinet in Prague – a scientific center, dedicated to studying Soviet Russia economy. Most of his works concerned the calculation of national

income and were aligned with the development of such a key indicator of the modern economy as GDP. He supplemented his data on the national income of Russia with information on livestock by A.E. Lositsky, which increased the indicators of national income from 63 rubles to 67.25 rubles per capita. Along with this another work of S.N. Prokopovich "Narodnyj dohod Zapadno-Evropskih stran", published in the USSR in 1930, is also noteworthy [10]. The preface to it was written by S.G. Strumilin, a deputy chairman of the USSR Gosplan, who recognized the statistical validity of many provisions in S.N. Prokopovich's work, speaking from socialist positions. An attempt to consider the scientific relations of Soviet Russia economists and emigration from the point of view of the mutual influence of ideas, shared by Russian scientists, in particular, S.N. Prokopovich's Economic Cabinet and representatives of Gosplan, testifies to the generality of theoretical thought. At the same time, it is necessary to take into account their personal connections and official point of view. So, A.E. Lositsky worked in the structures of Gosplan in the same direction as other economists with moderately socialist views. Among his works in this direction "Obsledovanie pitaniya" should be noted - published in the Bulletin of Statistics in 1922, works on public nutrition and the creation of Soznarpit in the 1930s as well as a number of instructions for compiling agricultural balance sheets in Soviet Russia. The instructions provided recommendations for the sociological data collection. On their basis the calculation was made to assess the agriculture and urban economy state in the country. As a result, the survey of nutrition and food supply by interviewing the population led to the receiving of data on the composition of products, their sources, sufficiency for the family, food prices and forms of consumption – individual in the family and in food service [11]. The survey forms, developed by A.E. Lositsky, were used in the future in order to present statistical data on food. Thus, the food statistics of A.E. Lositsky created a foundation for the future economic research of the Soviet economy, and also turned out to be closely connected with the world practice.

Table 1. Form «Survey of the nutritional status of the population»

The subject of the survey	The content of the survey
1. The time of the study	February-March
2. Place of research	The territory of Soviet Russia
3. Layers of interviewees	All strata of the urban and rural population
4. Forms of organization of consumption	All forms: individual, family, collective
5. Research objectives	To study: the quantitative composition of products, sources of production, the degree of sufficiency of products, the cost of products, the state of heating
6. The nature of the survey of individual farms	The survey The expedition method Check
7. Selection of survey objects	The choice of respondents at the direction of public organizations Continuous house-to-house inspection

5 Conclusion

The proposed provisions and conclusions solve the problem of returning the scientific heritage of A.E. Lositsky to a wide readership and determine his place and role in the economic policy of Russia-the USSR during the twentieth century. On the basis of statistical methods of A.E. Lositsky the balances of the livestock development and meat products

consumption were calculated. Such a direction of research as statistics of urban and rural consumption was laid. The management apparatus formation in the new structures of the Soviet economy, particularly in Gosplan, was largely connected with the previous period of development and the approach to statistics. Most of the specialists adhered to moderate socialist views, being nonparty practical researchers. The population's nutrition analysis, forecasting changes in the structure considering increasing of animal products consumption and their diversity turned out to be closely related to issues of social life. Based on the developments of A.E. Lositsky the analytical tools were created, which made it possible to consider the nutrition system as a structure that influenced decision-making processes and determining the directions of the country's development. The compilation of food balance sheets provides the most complete coverage in terms of counting food and geographical territories, which is directly aligned with the activities of FAO nowadays as part of one of the main directions of the development strategy. The data on the composition of products, their sources, sufficiency for the family, food prices, and forms of consumption allowed producing a balance of national food supply. Meanwhile, the relevance of the methodological aspect of the knowledge history study at the intersection of the interdisciplinarity of history and economy offers a fresh perspective at economic history during its transformations.

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