

ECONOMY HISTORY

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BEGINNING OF THE END: THE USSR ECONOMIC DEVELOPMENT IN 1950S – 1960S

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Abstract

The economic processes taking place in the modern world are so unpredictable and passing so rapidly that economics can neither foresee nor prognosticate the way they will be developing in the future. At the same time many events happening now are the reflection of those of the past, which, in its turn, necessitates using the theory and experience of the previous state building in government policy at present. In this respect it seems useful to learn the experience of state building in the USSR, the state that quickly became one of the top powers in the world and then disappeared just as quickly.

Keywords: economy, industry, scientific and technological revolution, the Soviet system, the USSR

Introduction. The article considers the peculiarities of the USSR economic development at the beginning of the scientific and technological revolution of middle twentieth century. The author made an attempt to show that there were already signs of an impending crisis in the powerful upsurge of

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the Soviet economy in 1950s - 1960s which lead to the collapse of the country in future.

Materials and methods. The chosen theme is explored on a large and diverse range of sources, part of which is used in research for the first time. Statistical output, business documents and monographs constituted an important part of source materials for the research. The author relied on the works by Western scholars [1; 2; 3; 4; 5; 6] in his study, which contributed to the true representation of the bygone era.

The work on the article required the use of a number of traditional and special methods of research, including analytical, contextual, historical retrospective and systematic structural. The sufficient amount of statistical output sources involved the use of mathematical methods.

Discussion. A typical phenomenon of the middle – second half of the 20th century was the launch of scientific and technological revolution. It was characterized by a relatively short, from the point of view of historical time, qualitative changes in science and engineering, technology and organization of production, the entire system of productive forces and the corresponding relations of production.

There may be distinguished several groups of factors leading to the scientific and technological revolution in 1950s - 1960s. First of all, the scientific and technological revolution was by its beginning obliged to the skills, experience and knowledge gained by that time, which created the conditions for the appearance of qualitatively new technical means of labour, new forms and methods of using new substances, laws and processes of nature in industrial activity as well as changes in the ways involving a person in the public labour process. Secondly, it was stipulated by the nature of the social needs of society. Thirdly, by the middle of the twentieth century a number of countries, including the USSR, formed a certain capacity and ability to launch a scientific and technological revolution. [7]

A new wave of scientific and technological revolution covered all aspects of social and economic development. The period of 1950s - 1960s appeared to be the time of deep revolutionary restructuring of productive apparatus and a new qualitative change of all production factors.

In our opinion, in the middle of the 20th century the Soviet Union had in fact all conditions (such as rich natural and human resources, vast areas, developed industrial base, etc.) to launch the scientific and technological revolution but there were also obstacles hindering the revolutionary processes. The production which was created during the scientific and technological revolution needed a much higher rate of technological progress than that which was typical of industrial manufacturing. With the emergence of new needs and considerable changes in their structure the economic growth could not be

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provided only by the quantitative extension of traditional manufacturing resources; changes to improve the technical level of production apparatus and to upgrade the level of general education and workers' vocational training were necessary. Besides, in contrast to the conventional industrialization, it was impossible to implement scientific and technological changes in economy through shock development of separate branches of economy. It was necessary to provide an integrated and balanced growth of all branches and sectors of state economy – heavy and light industry, agriculture, engineering, production of consumer goods, production and public infrastructure, social and cultural services.

The solution of these problems was urgent because of the need to hold a relative economic and political parity in the contest with the Western powers.

It did not take long to realize it. The July Plenary Session (1955) of the Central Committee of the Communist Party of the USSR stated that the Soviet Union is at the threshold of the scientific and technological revolution. [8; 9] Further on, the Program of the CPSU, adopted by the 22nd Party Congress, noted, that “mankind is entering a period of scientific and technological revolution associated with the mastery of nuclear energy, space exploration, the development of chemistry, automation and other major advances in science and technology” [10; 11].

Meanwhile the country's leaders interpreted the processes of the scientific and technological revolution that had already started in a traditional way. In the Soviet Union an opinion prevailed which clearly expressed an extensive character of development based on the so-called ‘cost-based growth’, when the increase in the production volume was almost linearly related to the increase in costs. Such dependence was preserved in predominantly evolutionary asset-intensive scientific and technological progress leading to the increase in the amount of resources used by the production apparatus. The availability of significant human and natural resources, as well as undeveloped areas did not contribute to the reorientation of industrial policy to a more intensive development.

The important aspects of the economic growth of the country in the period under review were the changes in the foreign policy. Immediately after World War II, "Cold War" began to gain momentum in the world. Countries in the West as well as countries from the socialist camp tried to make its borders secure by increasing the military capabilities. The Soviet Union was not the exception since its costs spent in the military sphere in the total amount of investments held a leading position in the world. The military needs required huge capital costs as a result of it the funds were withdrawn from sectors of the national economy. Plans of the USSR development in military and special industrial branches in the period of 1950s-1960s covered significant volume of

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different types of military equipment delivery increasing from year to year with special attention paid to the training facilities for the production of new types of military technology and strategic raw materials. Since the beginning of the 1950s that plan was exposed repeatedly upward adjustment.

A kind of military-industrial revolution began in the country. It was accompanied by a sharp increase in military expenses, the expansion of defense programs and at the same time the increasing influence of the professional elite on decision-making process on defense issues.

In some periods when there was a reduction in military orders, the saved funds were used for peaceful purposes. Only in the period since 1955 till 1958 the military expenses of the USSR were reduced upon the whole by a billion rubles [12]. According to some Western estimates for the first three years of N.S. Khrushchev's board the rate of military expenses in the national product gross of the country decreased from 12 to 9%, while the rate of the consumption sector increased from 60 to 62% [13]. Actually since 1959 the rate of military expenses became to increase slowly but steadily. In 1963 the expenses in the defense were 16,1 %, in 1964 — 14,6 % of total budget expenditures [14]. According to some estimates [15], the power inherent in the post-war military-industrial complex of the USSR was that 2-3 times higher than the civil engineering industry. With nominally similar cost values accumulated in the sector of fixed assets, as well as the value of marketable products production the real value of the resources received from military-industrial complex was much higher in terms of quantity and was many times higher in quality [16]. Such large amounts of military production, of course, lay heavily on the development of industries, designed for the mass market, and interfered with the orderly development of the national economy.

In the Directives to the Sixth Five-Year Plan of the USSR Economic Development for 1956-1960 adopted by the 20th Communist Party Congress, in spite of the appeal to use at maximum the scientific achievements, emphasis was laid on the predominant development of heavy industry. [17] It was “the basis and stronghold of the socialist forms of economy, the socialist system in the Soviet economy. The growth and expansion of large-scale industry meant the expansion of socialist forms of economy and the displacement of capitalist elements. Strengthening and growth of industry meant the strengthening and growth of the working class, a recognized leader of all the working people in building socialism ... The industrialization of the country was not only a means to overcome technical and economic backwardness, but also a key to the victory of the socialist system in the Soviet Union”. [18]

It was a strategic mistake to restore the economy being oriented to the old branch system (to be exact, to the traditional industry product range) on the basis of morally outdated and to a great extent physically worn out technical

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equipment. In general a new post-war five-year plan represented the previous structure of industry and did not take into account the structural changes in the industry of the Western countries during the Second World War, nor did it consider the trend toward the accelerated development of the most advanced industries (electricity and chemicals), which was predetermined in the pre-war period. Although it was mainly explained by the need to rebuild the war-ravaged country's economy in the shortest time and at the lowest cost. [14]

These erroneous actions were exacerbated by a number of actions sharpening the negative processes, which, in the opinion of the Russian scientists (S. Glaziev, D. Lvov, G. Fetisov) [19] are:

1) striving as soon as possible to develop a five-year plan (this race for coordination terms and implementation of formal performance left no time to reflect on technological and structural changes that have taken place in recent years). The fourth and fifth five-year plans sent the country's technical and economic development on the 'bitten track', which led to even a greater lag behind the advanced Western countries that already entered a different technological trajectory. In addition, the prescriptive plan did not allow to carry out the technical measures not stipulated therein (the need for the implementation of which was realized in future). The additional resources which were found were spent on financing and funding of such technological shifts that supported the implementation of the plan. It was natural that such technological advances could not lead to major technological breakthroughs;

2) an attempt to involve all the laid up and unused equipment in the production process. To implement this plan, the State Planning Committee of the USSR in the late 1940s - early 1950s sent commissions to machine-building, metallurgy and coal industry enterprises to find the latent capacities, which conducted a series of equipment censuses there. Increased production output plans were imposed on those enterprises where such latent capacities were found even if the machinery and equipment were morally outdated and often physically worn out, which involved additional financial resources that could have been deployed to develop new industries;

3) orientation, without a previous scientific analysis, to industrial recovery of the war-raged country's regions. Under the circumstances there was often a situation when having invested a lot of labour and money to restore extracting companies and processing factories and plants connected with them, the economic executives found out in a few years that the capacities of the mines which were commissioned could not provide the regional industrial enterprises with the necessary amount of raw materials. The depletion of deposits that had always been the source of raw materials rendered it senseless to make capital investments in their development. Considerable sums of money had to be invested in the development of new mining areas, which involved

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additional indirect costs of transportation, social infrastructure and the like.

4) disregard for foreign achievements in science and technology, initiated by the political leaders of the country in late 1940s. As a result the mainstream Soviet science ignored prominent results and findings of Western scholars and engineers even despite the fact that under their influence the priorities were revised in the world science. There was a continuous 'harassment' of the Soviet scientists engaged in non-traditional areas of research and engineering, and, as a result, their achievements were announced a bourgeois pseudo-science, and the scientists themselves were persecuted. The destruction of the scientific and technological potential left its mark: it formed prerequisites for a future technological lag in the new areas of scientific, technological and manufacturing activities.

At this newly begun stage of scientific and technological revolution the opportunity for the economic leap was lost due to the old technocratic approach that was prevailing in the country's economy. By the mid 1950s there was an embarrassing situation in the Soviet Union. Approximately 18% of metal cutting machines that were produced required replacement and modernization, about 50% woodworking machines produced by machine tool industry were outdated. And that was in mechanical engineering – the 'core' industry. The situation was even worse in other industries. According to the materials of the Industry Workers' Union Conference more than 300,000 machines operated for over 20 years, other 63,000 - from 10 to 20 years. [20] By 1960s the situation in this field was even more complicated. According to the depreciation rates, introduced on January 1, 1963, which were based on the average equipment renewal term of 17 years, according to S. Heynman, replacement or upgrading time actually was 25 years (or to be more exact - about 40 years).

During 1965 the disposal of industrial fixed assets, including industrial buildings and structures due to decay and deterioration was equal to 2.1% of their value at the beginning of the year, and in mechanical engineering, metalworking and chemical industries - 1.4%, that is, complete equipment upgrading in these industries at that rate would have taken from 70 to 80 years. Major repairs, when restoration of outdated equipment was substituted by the introduction of new technologies, were common practice.

Besides, there was a widespread malpractice of repeated overhaul and virtually complete absence of a centralized industrial production of spare parts at that. As a result there emerged in industry a large-scale but poorly specialized repair facility with a low production rate and with staff capacity of 2.5 million skilled workers and machine park of 1 million pieces of machines that were used in repair works as a rule, and which were older than those in the main production, that is, the repair facility, in fact, repeatedly produced the outdated equipment. [16, p.125; 21]

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At the same time there was a high proportion of manual labour. The industrial census of 1954 revealed that the share of manual labour in iron and steel industry was 34.6%, in coal industry - 44.1%, in engineering - 48%, in logging - 67.8% [22] (still it is possible that these official figures were understated). As a result the 20th Communist Party Congress defined comprehensive development of automation in national industry as the main backbone. I. Bulganin in his Report "On the Directives of the Sixth Five-Year Plan" emphasized that "the implementation of the broad program of technical progress will largely depend on what scope the development of industrial specialization and cooperation will reach." [23]

Moreover, there were some naturally determined factors that reduced the economic growth rate in late 1940s - early 1950s, such as:

1) Restoration was still going on in the Soviet Union: a) in industry: returning and putting into operation of enterprises that were evacuated during the war and reorientation of military industries to civilian production, etc.; b) in agriculture: the devastation and destruction of large territories during the war made it necessary to withdraw great sums of money from industrial production and invest it in agriculture rehabilitation, etc.;

2) Unfavorable demographic conditions left its imprint: there was a sharp decline in fertility as a result of the last war;

3) A decline in the share of investment in the national economy was significant during the Great Patriotic War.

As a result, the scientific and technological revolution in the USSR was launched later than in the U.S., but nearly at the same time as in the industrialized capitalist countries of Western Europe - Britain, France and Germany. A competition with the capitalist countries in the increasing rate of gross output, labour productivity, capacity of the military-industrial complex, etc. became the basic paradigm of the Soviet economy in 1953-1965.

The development of industry of most Western countries accelerated significantly during this period. If in 1930-1938 the industrial production in these countries increased on average by only 0.5% per year, in 1953-1962 the increase was already 4.8%. The average annual growth rate of industrial production in Western Europe was 3.2% within the period of 1925-1937; in the period of 1949-1962 it was 6.8%. The fastest industrial growth took place in West Germany (average annual growth rate of production was 8.2% in 1953-1962), France (5.8%), Italy (9.3%) and Japan (over 15%). Lower rates of industrial growth were observed in England (3.2%) and Sweden (3.6%). [14]

As estimated by Soviet economists, the economic growth rate in the USSR in 1950-1963, on average, amounted to 10-12%, according to American studies – to about 6% [7], which significantly outpaced the growth rate of many Western European countries. These facts had international repercussions: as P.

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Samuelson wrote at that time, the supporters of the U.S. economic growth acceleration used the rapid development of the USSR as a counterargument against their more moderate opponents. [24]

Despite the high growth of the Soviet economy in the middle of the 20th century, the gap between the USSR and the United States remained significant. In 1960, the industrial fixed assets of the Soviet Union were equal to about half of U.S. industry capital, and capital-labour ratio and electric power consumption ranged between 40-45% of the U.S. [25] According to the official data, the volume of industrial production of the country in 1964 was equal to 65% of the U.S. production (although in comparison with the countries of Western Europe it was much higher: in 1962 it amounted to 315% of the industrial production of Germany, 323% - of England, 578% - of Japan). [14]

The scientific and technological revolution in the Soviet Union developed in three main areas: 1) a search for new energy sources; 2) a qualitative change in the instruments of labour due to the introduction of automation and electronics in manufacturing process; 3) a revolution in the field of labour objects associated with the rapid development of chemical industry. [26] The results of this policy were: the USSR' nuclear weapons test in 1949; the creation of the hydrogen bomb in 1954; the development and implementation of the nuclear power plant project (the world's first nuclear power plant was commissioned in Obninsk in 1954); and the appearance of the first computers in the country, etc.

The following basic change directions in the Soviet economic macrostructure could be distinguished: firstly, those related to a planned specialization of economic areas; secondly, those related to extensive development of large-scale machine production, it especially concerned industries without a complete system of machine use and with a large proportion of manual labour (such industries, for example, as agriculture); and thirdly, those increasing the share and role of the 'new' industries: electrical engineering, radio electronics, radio engineering, nuclear power, etc. In addition, it should be noted that together with the increase in quantitative indices, a regional component was considered one of the new factors of economic growth in this period.

Maintaining conditions for the stable economic growth was seen in the systematic specialization of regions and republics. In its turn, it depended primarily on natural and economic features. Integrated development of the national economy of economic regions was to form an integral part of the entire national economy of the country. The characteristic features of that became the combination within the economic region or the republics of the leading all-round development of the basic industries, serving public needs, and local industries, oriented to meet local needs. The proportions of the production had

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its specific content and objectives. First of all they had to consist of such a level of development of the leading industries of each region, which would correspond to the needs of the country, but at the same time the proportion of material production had to be directed to the development of local branches in each region and republic to meet the needs from their own resources of the internal requirements.

The country on that component lagged significantly behind the countries of the western world. Some regions allowed discrepancies in the development of production branches, the complexity of the economy violated, so that the further growth of the national economy was slowed down. Up till the second half of the 1950s all production was practically dispersed in the European part of the country, while the natural resources required for the Soviet Union, which were in the eastern part of the country, remained almost undisturbed. In this regard, in 1950s-1960s the priority task for the management was to create conditions for a more balanced development of the depressive, less developed regions of the country.

Exploration works conducted in the Soviet Union, focused on the detection of mineral deposits. As an outcome of these actions new branches of industrial production began to develop: oil, gas, nuclear, and satellite production: chemical industry, engineering manufacture, electric power, etc. The production of artificial diamonds, abrasive materials and tools from them stood out in the machine-building and tool branches; in the chemical and petrochemical industry groups there were developed such branches and sub-branches, as the production of synthetic resins, plastics, dyes, alcohols and detergents, the industry of plastic products, etc. In general, when comparing the classification of 1967 with the classification of the national economy of 1962 it noted the emergence of three new groups of branches: 16 branches, 46 sub-branches and 30 new manufactures [27]. According to the classification of 1967 the industry of the Soviet Union consisted of 16 integrated branches already, 139 branches and 305 sub-industries [28]. New manufactures concentrated mainly in branches of heavy industry. The independent sectors became such branches like nuclear power stations, nickel, titano- magnesium, tungsten industry, and others; polymer engineering became the sub-branch of machine building [29]. In the same period, the USA industry consisted of 27 integrated branches, 171 branches and 483 sub-branches [30].

One of the features of the initial phase of scientific and technological revolution development was merging of science and manufacturing processes. Academician S. Vavilov said on the role of the latter, “The perspectives, which the steadily growing science reveals are often much wider than the prospects of economic plans. Science has its own peculiar logic of development, and it is very important to take it into consideration” [31].

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The 19th Communist Party Congress supported the scientists' position and set the task "to contribute fully to the scientists in their development of theoretical aspects in all fields of knowledge and strengthen the link between science and production" [16; 32]. Although there emerged contradictions in implementing the intended line even at its initial stage, the government annually increased investment in this area (Table 1).

Table 1

Scientific expenditure in the USSR [33; 34]

years	Scientific expenditure from the state budget and other sources		
	Total (in billions of rubles).	% of national income	% of capital investment
1940	0.3	0.9	5.4
1950	1.0	-	-
1960	3.9	2.7	1.1
1965	6.9	3.5	14.6

The table shows that spending on science in the USSR in the period from 1940 to 1965 did not only grow, but its share in the national economy also increased. The annual investments in science increased in 1950-1965 and amounted to 12.85% (in the next four years, they were equal to only 5.45%). [35] The result of these changes was that in 1951-1955 the number of scientific discoveries was 32, in 1956-1960 – 74, in 1961-1965 - 90 (in 1966-1970 - 89, 1971-1975 - 47). [36; 37] Western researchers confirm these data. So, in 1957 the American researcher W. Herst said, "If a few years ago, we had been told that Russia would overtake the United States in science, we would have laughed at it. However, the Soviet Union did it." And the U.S. President Dwight D. Eisenhower was forced to put before the American scientists the task to surpass the Soviet Union in a number of important areas of science and technology. [38]

The most characteristic feature of science development in the Soviet Union was not only the fact that investments in science were constantly increasing, but also the fact that the area of research and scientific inventions transformed into a specific stage, or phase of material production. This development trend manifested itself in the fact that the direct material production and its material elements, technology and organization almost completely became a product of theoretical and applied science. This concerned not only 'new' industries (radio engineering, radio electronics, nuclear energy, etc.), but also the so-called 'traditional' industries - mining, metalwork and others.

Since the middle of 1950s the attention to the idea of a regionally-integrated organization of productive forces was increased as the methodological basis for the development of science and technology policy for

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the formation and development of clusters [39]. It became evident that the objective processes of science and education roles increasing, research coming closer together with business practice one must take into account not only in the scale of the country, but also in the scale of the individual regions. Meanwhile, the bulk of the scientific potential was concentrated in the central regions, mainly in Moscow and Leningrad [40]. The process of science regionalization began in the second half of the 1950s which chronologically coincided with the reform of the Academy of Sciences of the USSR and the creation of its offices in the Urals, Siberia and the Far East. The great importance in the creation and development of scientific institutions in the regions played a fundamental restructuring of national economy management. In terms of councils of national economy on the basis of leading industrial branches numerous specialized Scientific Research Institutes, design bureaus appeared and received considerable initial support from the local authorities in many regions and republics [16].

Still there were serious flaws in the Soviet science in reaching the aim to combine achievements of scientific and technological revolution and socialist economy, such as: the existence of administrative command and control, the accumulated contradictions between the complex structure of the productive forces, which were formed under the influence of scientific and technological revolution, and the retrograde system of management [41; 42]. Instead of the expansion of individual and collective freedoms, that are the essence of all organic upgrades in the world, the aim of the Soviet modernization in 1950s - 1960s was a selective borrowing of technical and organizational achievements from the more developed Western countries. The development of science and technology was uneven because of a 'chance factor' in the field of inventions and discoveries. Besides, alongside with the introduction of new technical solutions, the existing types of equipment and processes, which had not exhausted its potential, continued being upgraded.

Conclusions. Summarizing the processes that took place in the middle of the 20th century, it is necessary to note that in the first postwar decade the core of socio-economic development began to change radically. The world community faced fundamentally new production, social and cultural challenges. Of particular significance was the fact that the social production verged on a new stage, where the extreme strategy of accelerated industrialization lost all its meaning. The processes of the next stage of technical-technological, social and cultural progress (development of the modern scientific and technological revolution and the scientific and industrial, scientific and technological mode of production) were gradually advancing the front, which required a fast theoretical understanding of organizational and technological restructuring of the economy. The "Cold War" that was launched in the middle of the 20th

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century also played its role in these processes.

The revolutionary processes in the Soviet Union began later than in the U.S., but simultaneously with the states of Western Europe and Japan. The USSR had relatively equal starting opportunities to generate its economic growth.

With basic conditions to launch the scientific and technological revolution (the availability of natural and human resources, the undeveloped areas, a rather well-developed industry and science, etc.), the Soviet Union nevertheless failed to implement scientific and technological revolution achievements in every sector of national economy. The preferential funding was given only to those areas of scientific knowledge which contributed to the modernization of such industries as engineering, chemical, fuel and power industry, while the light and food industries remained intact.

Moreover, in the post-war period, the country's leaders made mistakes in further development strategy, that envisaged a pursuit to develop a five-year plan in the shortest possible term (not taking into account the structural changes that occurred in the post-war period), an attempt to engage all the equipment that was laid up and unused in production processes, orientation (without preliminary scientific analysis) towards the recovery of industry in the devastated areas of the country, etc. Alongside with the consequences of the postwar period (economic collapse, demographic decline, and so on), these factors hindered the scientific and technological revolution in the country. Industrial production continued to increase at the expense of gross indicators growth; besides, by the beginning of 1950s the country's social and economic institutions had not been duly reoriented to a peaceful development.

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