



## *Role of Rail Transport in Soviet Economy*

PAUL N. WOOLF

*Department of Economics  
Eastern Washington College of Education*

Ever since Russia entered the industrial stage of economic development, the railroad has been by far its most important means of freight transport. This pre-eminence of the railway is predicated on several factors of geographical and technological character:

a) The great plains of Russia readily lend themselves to railroad construction; for example, the trunk lines from the western borders to Lake Baikal in eastern Siberia do not pass through a single tunnel.

b) Water-borne traffic, which plays a decisive role in other countries, is severely restricted in Russia by natural limitations. The navigable streams are frozen during the long months of winter, to say nothing of the critical fact that most of the rivers run in the north-south direction and either empty into the land-locked waters of Aral Sea, Caspian Sea, and the Black Sea, or into the Arctic Ocean.

c) The limited supply of water due to subsoil frost in the north and in the desert areas of the southeast has been gradually overcome through reforestation and the use of more advanced types of locomotives such as steam condensers and Diesels.

d) Highway freight traffic is largely undeveloped and must wait for further growth of the automotive industry. The construction of modern roads is also complicated by a widespread lack of hard rock so that roadbeds are made of river gravel and sand; in Ukraine, where the rivers have their sources in marshlands, even large pebbles are relatively scarce, and the strategic highway from Chernigov to Kiev had to be paved with brick (Simmons, 1947, p. 275).

Historically, the railroad age in Russia began with the building of the 16-

mile line from St. Petersburg to Pavlovsk in 1838, and was characterized by two periods of large expansion: between 1868 and 1874 the network increased by over 13,000 km. and between 1891 and 1900 by more than 22,000 km. Considerable advances in construction were also made before and during the First World War.

The total length of the Russian railroads in 1913 was 70,500 km., with the density of network averaging 0.3 km. per sq. km., as contrasted with about 12 km. in England and in Germany at the same time. The roads were poorly equipped with locomotives and cars; for each 100 km. of track, Russia had: 29 locomotives, as against 61 in England and 50 in Germany; 31 passenger cars, as compared with 140 in England and 110 in Germany; and 696 freight cars, against 2122 in England and 1175 in Germany (Balzak, *et al.*, 1949). The technical facilities were improperly organized and exploited.

#### MAIN LINES AND THEIR AREAS

In examining the evolution of rail transport in Russia prior to 1917, the following main groups of lines and the areas they serve (Balzak, *et al.*, 1949, pp. 441-42) should be distinguished:

a) The trunk lines radiating from Moscow and St. Petersburg, connecting those cities with the Volga, the Ural Mountains, and with the western provinces: Among these, the most important are the Moscow-St. Petersburg line (1851); the St. Petersburg-Warsaw line (1862); and a number of lines from Moscow to Gorgy, to Kursk, to Warsaw via Minsk, to Vologda, and to Ventspils on the Latvian coast.

b) The Donetz Basin and Krivoi Rog in the southwest: Serving this very important and the oldest industrial area, are the Moscow-Rostov line (1870); the Moscow-Kursk-Sevastopol line (1874); the Dniepropetrovsk line connecting the Donetz Basin with Krivoi Rog; and several other lines that give the southwest the densest railway network in the country (Balzak, *et al.*, 1949, pp. 441-42).

c) The Ural metallurgical and manufacturing area: This important district was connected with the rest of the country only in 1896, when the first link of the Trans-Siberian trunk line was laid from Kuibyshev on the Volga to Ufa and Cheliabinsk through the southern Ural. Later, the district was also connected by rail through Perm (Molotov) to Sverdlovsk. Generally speaking, the Ural network remained deficient.

d) The export trade railways: Almost simultaneously with the trunk lines

in the center and in the southwest, railway construction began to expedite the grain-export trade; first was the Tsatitsyn-Orel-Riga line passing through the rich agricultural lands of south central Russia and of the lower Volga, the second joined Romensk in Ukraine with Libau on the Baltic Coast, and the third extended from Kiev to the German ports of Koenigsberg and Danzig.

e) Lines of the Caucasus and of Central Asia: The Trans-Caucasian line was built in 1883 and connected with the main network in 1900, while the Trans-Caspian railway was constructed in the 80's and went as far as Samarkand and Tashkent, linking with the main system in 1906 through the Orenburg (Chkalov)-Tashkent line.

f) The Trans-Siberian trunk line: The construction of the longest line in the world started in the 90's, both from the west and the east—from Vladivostok to Khabarovsk (1897) and from Cheliabinsk to Irkutsk and beyond to Lake Baikal (1892–99). By 1903, the Chinese-Eastern railroad had been completed, and two years later rail communication was established between European Russia and the Far East, with ferry service across Lake Baikal. In 1916 the section between Chita and Khabarovsk was finished, completing the great Trans-Siberian line (Balzak, *et al.*, 1949, pp. 444–45).

Generally speaking, the builders of Russian railroads had in mind both the economic needs of the country and the purposes of national defense. As an additional protection against possible invasion from the west, few lines crossed the border in the east-west direction, and the Russian tracks were laid 5 feet apart, while the standard gauge for Germany and Austro-Hungary was 4 feet 8½ inches, (Simmons, 1947, p. 270).

In 1913, the total freight traffic amounted to 132.4 million tons and was marked by sharp seasonal variations, extensive cross-movements, and round-about transfers. The geography of freight flow was dominated by the export of grain from the southeast to the northwest to the Baltic ports, with a second heavy stream moving to the ports of the Black Sea.

The inadequacies of the railroad system became clearly felt during the First World War when even the main trunk lines gradually broke down, leaving unmoved millions of tons of military and civilian supplies, and contributing to the general collapse of the Russian State in 1917.

#### THE RAILWAY IN ECONOMIC PLANNING

After the civil war, the reconstruction of rail transport has become the *sine qua non* of Soviet economic planning, and each of the succeeding five-

year plans entailed progressive redesigning and expansion of the network. Accordingly, by 1941, together with the accelerated development of the new metallurgical and industrial centers beyond the Ural Mountains, the geography of rail transport had similarly undergone considerable change, and the flow of primary industrial materials, such as coal, petroleum, and iron ore, and of grain had also been rerouted to increase the operational efficiency.

Coal (approximately 25 per cent of the total rail freight) was shipped mainly from the Donetz Basin in the direction of Moscow, Leningrad, the Dnieper district, the Volga provinces, and the Caucasus. The eastern boundary of coal movement from the Donetz mines was the Volga River. Before the revolution, the entire northwest of Russia had been supplied with coal from abroad.

Petroleum (some 5 per cent of the total freight) moved principally from Baku and Grozny in the Caucasus toward the Donetz Basin and to the industrial center around Moscow. Secondary traffic streams came from Emba, Central Asia, and from Sakhalin.

Iron ore (about 6 per cent of the total freight) was moved mostly from Krivoi Rog to the Donetz Basin and the Dnieper district, from Magnitogorsk to the Kuznetsk Basin industries, and from the Ural mines to the local industrial establishments.

The shipments of grain originating in Ukraine, north Caucasus, and in the Volga provinces, went to Moscow, Leningrad, and to the Donetz district. Grain in large volume also moved from Kazakhstan, western Siberia, and southern Altai to the central provinces of European Russia and to Central Asia, while some grain from western Siberia was sent to the Far East. It should be noted that under the Tsarist regime, Siberian grain was held back by the so called Cheliabinsk rate divide to keep it from competition with the grain produced in European Russia under less favorable conditions. (The preceding data on resources were obtained from *Bolshaya Sovetskaya Entsiklopedia*, p. 958.)

#### INDUSTRIAL CENTERS MOVED FROM BORDERS

Since the Soviet-planned economy order envisages a redistribution of basic industrial complexes away from the vulnerable western borders, great new metallurgical and manufacturing centers have now been established in the Ural Mountains, in Central Asia, in the Kuznetsk Basin of the Altai Mountains, and in the Far East where coking coal, iron ore, and oil are found in close proximity. To facilitate their development and to increase the produc-

tion of the old Donetz-Krivoi Rog complex, several new trunk arterials had to be built and many existing lines were double tracked or electrified, particularly in the eastern areas.

Thus, the Ural district was linked with the Kuznetsk Basin, and the Trans-Siberian railroad double tracked between Omsk, Cheliabinsk, and Magnitogorsk, and from Ufa to Cheliabinsk.

New lines were also constructed in Kazakhstan: the Turkestan-Siberian line (1442 km.), which furnished a direct outlet for Siberian grain and lumber to Central Asia; the Petropavlovsk-Karaganda line (717 km.) united Karaganda (the third largest coal base) with the rest of the national economy; and the Guriev-Kandagach line that opened up the Emba oil fields.

In the Far East, the great Baikal-Amur trunk line of about 2000 miles, with a branch from Komsomolsk to Volochaevka, has been constructed, vastly increasing the carrying capacity of the Trans-Siberian and creating a new industrial center at Komsomolsk. The last remaining sector of the Trans-Siberian (some 1865 miles) was finally double tracked.

The Donetz-Krivoi Rog production area was given additional outlet to the central provinces by the construction of a new Moscow-Donbas trunk arterial and by double tracking the connections to the Volga and to the Black Sea (Balzak, *et al.*, 1949, pp. 453-55).

During the Second World War, the Soviets built the 1154-mile northern Pechora railroad from Konosha, on the Moscow-Archangel line, to Vorkuta via Kotlas, opening the region of rich coal deposits known as the Arctic Donbas; many miles of spur trackage were added to the industrial centers in the Ural and Siberia (Simmons, 1947, p. 271).

#### RAIL EXPANSION SINCE WAR II

After the cessation of hostilities, the Soviet planners have launched still further expansion of rail transport, allotting to it over 40 billion rubles, or one-sixth of the total national capital investment for the period of 1946-50. The plan entails the construction of 7230 km. of new lines and the double tracking of another 12,600 km. By far the most ambitious project is the South Siberian trunk line, linking the central Volga with the Ural and eastern Siberia. The line runs from Kuibyshev on the Volga through Magnitogorsk and Barnaul to Stalinsk in the Kuznetsk Basin, whence it turns to the northeast and joins the Trans-Siberian at Taishet, covering a distance of some 4000 km. (Ogonek, July, 1946).

Although the total mileage of railroads in Russia increased only 50 per

cent between 1913 and 1938 (from 36,000 to 54,000 miles), the extent of progress may be more adequately judged by the corresponding rise in the total volume of freight carried. The volume rose from 41 billion metric ton-miles in 1913 to 370 billion in 1939, an increase of about 560 per cent (Horrabin and Gregory, 1945, p. 54; Simmons, 1947, p. 273). The apparent discrepancy in the rates of development must be attributed to intensified exploitation of the facilities, including improvements in the rolling stock, and a more efficient utilization of the trackage. An interesting comparison appears in the Soviet Encyclopedia (Bolshaya Sovetskaya Entsiklopedia, p. 964). It is given in Table 1.

Table 1

	Russia 1913	USSR	USA	England	France
		1939			
Ave. weight of freight trains, tons .....	570.0	1,300.0	1,700.0	350.0	600.0
Ave. annual frequency of traffic, 1000 trains per 1 km. of track .....	6.0	11.0	4.0	21.0	10.0
Ave. annual density of freight traffic, mill. ton-km. per 1 km. of track .....	1.2	4.5	1.5	0.9	0.8

Rather than restore all the railroads that were demolished during the German invasion, the Soviets have been shifting some of the short-distance freight from railroad to motor transport; Soviet automobile production, which began in 1929 with 1390 machines, had in 1937 increased the annual output to over 200,000 machines, of which 70 per cent were trucks (Simmons, 1947, p. 276).

Despite the growing importance of motor freight, it appears unlikely that rail transport will soon lose much of its historical pre-eminence, and the extent to which the Soviet-planned economy depends upon rail traffic may be easily judged from the summary tabulation in the Bolshaya Sovetskaya Entsiklopedia (p. 951), is given here in Table 2.

Table 2

Type of transport	1940	1950 plan
	<i>billions of ton-km.</i>	<i>billions of ton-km.</i>
All types .....	483.0	657.5
Railroads .....	415.0	532.5
River transport .....	36.0	49.0
Sea transport .....	23.0	51.0
Auto transport .....	9.0	25.0
Percentage of rail to total .....	85.9	80.9

In attempting to assess the significance of Soviet rail transport, one fact of paramount importance must not be overlooked: the Soviet rail network has been singled out by the state planning commission as one of the key factors in national planning. The railroad is regarded, not merely as a means of accommodating freight and passenger traffic, but rather as a tool of national policy wherein purely commercial calculations are overruled by reasons of national security and self-sufficiency.

Accordingly, the immediate economic soundness of a particular rail line or system is held irrelevant, and it may be supported out of the national budget for the sake of long-range considerations. Perhaps, the best examples of this point of view are the Baikal-Amur line from Nijneudinsk to Komosomolsk and the South Siberian line from Kuibyshev to Taishet. Both have been built at tremendous sacrifices in men and capital, although the likelihood of their becoming self-supporting in the foreseeable future is quite problematic. The real justification must be found in the overriding requirements of national preparedness.

The pale ghost of "capitalistic encirclement" still haunts the dreams of Soviet statesmen and planners.

#### LITERATURE CITED

- Balzak, Vasyutin, and Feigin. 1949. *Economic Geography of the USSR*. Macmillan Co.
- Horrabin and Gregory. 1945. *An Atlas of the USSR*. Penguin Books.
- Simmons, E. J. 1947. *USSR, A Concise Handbook*. Cornell Univ. Press.