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ECONOMIC INTELLIGENCE REPORT

1955 RUBLE-DOLLAR PRICE RATIOS FOR INTERMEDIATE PRODUCTS AND SERVICES IN THE USSR AND THE US



CIA/RR ER 60-16

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CENTRAL INTELLIGENCE AGENCY

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FOREWORD

This report presents 1955 ruble-dollar price ratios for selected intermediate products and services produced in both the USSR and the US and is part of a larger project that has the following purposes: (1) to construct the appropriate ruble-dollar ratios for making direct comparisons in common currencies of the major end-use sectors of Soviet gross national product (GNP) and US GNP, (2) to assess the value of the ruble in comparison with the dollar for various commodities and for various commodity groups, and (3) to furnish a catalog of 1955 ruble-dollar ratios.

The ruble-dollar price ratios presented in this report provide a basis for assessing the value of the ruble in comparison with the dollar for various commodities and for various commodity groups. The ratios also may be useful for comparing the purchasing power of the ruble for selected commodity groups with the trade rate for Soviet merchandise or with the rate for tourist expenditure. The ratios may be useful in costing studies in which economic programs are initially estimated in either dollars or rubles and then converted to the other currency for purposes of international comparisons. These ratios have only limited application in GNP comparisons, for intermediate products and services form only a small part of GNP. GNP is concerned primarily with final products and services, whereas intermediate products and services enter only in the comparatively minor entry for additions to inventories and, to a lesser extent, consumption.

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USSR: Price Zones for Petroleum Products, 1955 inside back cover

1955 RUBLE-DOLLAR PRICE RATIOS FOR INTERMEDIATE PRODUCTS AND SERVICES
IN THE USSR AND THE US

Summary

The 1955 ruble-dollar price ratios presented in this report are based on a comparison of 1955 wholesale ruble and dollar prices for intermediate products and services* common to the Soviet and US economies. These price comparisons reveal substantial variations in relative prices between the two countries. As indicated by a geometric mean of the Soviet-weighted and US-weighted ratios, 1 ruble is worth about 10 cents for intermediate products as a whole. In regard to the ratios for the various categories, 1 ruble is worth about 6 cents for solid fuels; 7 to 10 cents for chemicals, paper and paperboard, non-ferrous metals, and electric power; and about 15 to 20 cents for iron and steel products and construction materials. On the basis of individual products, 1 ruble is worth approximately 55 cents for tool-steel bars, 25 cents for natural gas, 10 cents for motor fuel, and about 2 cents for cadmium. Because the necessary value weights for obtaining a mean ratio for all services were not available, an aggregate ruble-dollar ratio is limited to the product sample alone.

The geometric mean of 9.6 for the aggregate ratio for total intermediate products is, however, more than twice as high as the aggregate ratio of 3.6 for rail transport but more than a third less than the aggregate ratio of 14.6 for electric power.

The 1955 ruble-dollar ratios for intermediate products are in general much lower than those for 1950. The decreases in the ratios range from 5 percent for anthracite to 72 percent for mercury and calcium chloride (flake). The decline in the ratios from 1950 to 1955 resulted from decreases in prices for most intermediate products in the USSR during this period and from increases in the corresponding prices in the US.

* Unless otherwise indicated, the term intermediate products and services as used in this report refers to commodities and services purchased for use in production.

I. Characteristics of Data

In the derivation of 1955 ruble-dollar ratios for the USSR and the US, ruble and dollar wholesale prices have been compared for 171 intermediate products and services. For services, however, prices also have been compared for selected services consumed by the final consumer. Although those final services consumed by households also have been counted in the consumption end-use sector of gross national product (GNP), it is convenient and of interest to consider household and enterprise rates together in this section.

The following categories of intermediate products and services are represented: (1) solid fuels, (2) petroleum products, (3) paper and paperboard, (4) chemicals, (5) construction materials, (6) iron and steel products, (7) nonferrous metals, (8) rail transport, (9) communications services, and (10) electric power. Aggregate ruble-dollar ratios, usually based on both Soviet and US value weights, have been constructed for these categories of intermediate products and services and are shown in Table 1.* In general, data on value of output have been used as weights for combining the individual ratios into aggregate ratios. The methodology underlying the calculations of individual and aggregate ruble-dollar ratios is given in Appendix A. The calculation of individual and aggregate ratios is given in Tables 4 through 24.**

A. Comparability of Prices and Products

The ruble prices used in this comparison are those established on 1 July 1955, with the exception of those for communications services, which are average 1955 prices. Two reasons led to the choice of prices in effect on 1 July 1955. First, 1 July 1955 represents the most recent date for which extensive information on wholesale prices by specific commodity exists. Second, the prices introduced on this date were established for the period of the Sixth Five Year Plan (1956-60). Although the Sixth Five Year Plan was abandoned and although some price changes took place in 1956 and 1957 and early in 1958, it appears that 1955 prices are still in effect for most of the commodities for the Seven Year Plan (1959-65). The dollar prices are those of 1 July 1955 or are average 1955 prices. There were substantial price changes for a number of commodity groups in the US during 1955, but the difference between average 1955 dollar prices and 1 July 1955 dollar prices is not generally significant.

Although the ruble prices used in this report came from a number of sources, most of such prices were drawn from the following: (1) a handbook of prices of materials and equipment used in or by construction organizations, Spravochnik tsen na stroitel'nyye materialy i oborudovaniye (Handbook of Prices for Construction Materials and Equipment), Moscow, 1956, and (2) a handbook of prices of commodities

* Table 1 follows on p. 4.

** Appendix B, pp. 32 through 67, below.

used in the coal industry, Materialy i oborudovaniye primenyayemye v ugol'noy promyshlennosti: spravochnik (Handbook /of Prices/ for Materials and Equipment Used in the Coal Industry), Moscow, 1955. Particular references to these sources and all additional sources are noted along with the ruble prices in Appendix A.

Once ruble prices were assembled, it was necessary to fix standards of comparison for Soviet and US items. Generally, items were accepted into the sample on the basis of the following two criteria: (1) comparability of physical characteristics and (2) comparability of the price basis.

In general, Soviet specifications for products were available in sufficient detail to permit the ready designation of US counterparts. The degree of comparability achieved in the report as a whole is believed to be good, even though the degree of comparability varies by product group and ranges from virtual identity to rough approximation.

Table 1

USSR and US: Aggregate 1955 Ruble-Dollar Price Ratios
for Selected Categories of Intermediate Products and Services a/

Category	Rubles per Dollar	
	Weighted Ratio	
	Soviet Weights	US Weights
Solid fuels	17.0	18.2
Petroleum products	10.5	11.8
Paper and paperboard	9.6	10.1
Chemicals	11.0 <u>b/</u>	13.0
Construction materials	4.9	5.5
Iron and steel products	5.4	5.9
Nonferrous metals	12.0	13.6
Rail freight transport		3.6
Rail passenger service <u>c/</u>	6.3	6.3
Communications services <u>d/</u>	5.2	5.7
Electric power <u>d/</u>	14.2	15.0

a. For data and methodology, see Appendixes A and B.

b. Estimated.

c. The ratios are identical for both the USSR and the US because they represent one item only.

d. Including intermediate and final services.

Usually the ruble prices for products are quoted free on board (f.o.b.) depot of seller -- that is, the prices represent those at the manufacturing site or at the freight depot in the city of manufacture and thus exclude all, or virtually all, outbound transport charges. The important exceptions to this practice were found in iron and steel and petroleum products, the prices of which are quoted f.o.b. depot of destination or depot of sales. Soviet prices for solid fuels, petroleum products, and some construction materials as well as rates for electric power are differentiated by sales region. For prices differentiated by region, an attempt was made to derive a national average price.

Because US and Soviet prices are not always comparable, it has sometimes been necessary to adjust one of the prices. For example, US prices do not include transport charges for petroleum products or iron and steel products. Soviet prices have therefore been adjusted to exclude these charges. US prices for paper and paperboard, however, include transport charges, and the Soviet prices have been adjusted to include these charges. The ruble and dollar prices for commodities are therefore of two types: most are f.o.b. depot of seller and exclude transport charges, and some are delivered prices and include transport charges. It is believed that in general the degree of price comparability achieved is good.

Petroleum products as a group presented the greatest difficulty in the establishment of comparability of products and prices. Whereas, in general, comparability of petroleum products is good, compromises were made in the basic criteria for establishing comparability. As to prices of petroleum products, all Soviet prices include transport charges and the cost of operating sales bases, and the turnover tax and an administrative surcharge are included in the prices for some unspecified products. An adjustment was made in the ruble prices to exclude transport charges. Because tax rates, sales base operating costs, and administrative surcharges are not available for specific products, however, these components could not be deducted from the ruble prices. It is estimated that the turnover tax alone may average as much as 50 percent of the ruble price for a given product* and that the turnover tax and sales costs combined may average as much as 60 percent of the price. The administrative surcharge, which represents operating costs of various organizations of the Ministry of the Petroleum Industry, is believed to be a very small share of the price -- probably less than 1 percent.

The preceding discussion of prices and comparability has been confined primarily to prices of products. A few remarks are necessary with respect to services. For electric power, ruble and dollar rates paid by comparable classes of users have been compared. For communications services, rates for services with the same general characteristics have been compared. Soviet basic freight rates for the US average lengths of haul have been compared with US rates derived from data on revenue for the US average lengths of haul. Soviet

* This percentage applies to the ruble price inclusive of transport charges.

basic passenger fares for an average distance of a Soviet passenger trip have been compared with US passenger fares for the same distance.

The problems encountered in achieving comparability and the solutions adopted are discussed in greater detail, by product and service group, in Appendix A. The particular products and services and the corresponding prices selected for comparison are given in Tables 4 through 14.*

B. Coverage and Representativeness of Intermediate Products and Services

Because neither Soviet nor US data are available for the aggregate values of production for intermediate products and services, it is impossible to give an arithmetic evaluation of the extent to which the products and services priced in this report cover the corresponding sectors of these two economies. Perhaps the best measure of coverage is reflected by an enumeration of the categories that have been omitted. The most important categories of intermediate products and services for which no ruble-dollar ratios have been constructed are lumber and wood; rubber; leather products; and motor vehicle, water, and air transport. These categories were omitted because the necessary information on Soviet prices was not available.

The relative importance of the various products and services for which ratios have been constructed differ in the two countries. Therefore, in order to obtain aggregate ruble-dollar ratios that take these differences into account, the individual ruble-dollar ratios for products and services have been weighted by their relative importance in each country, except in those cases in which data were not available for deriving weights. The aggregate ratios and the Soviet and US data used for combining the individual ratios into aggregate ratios are presented in Tables 15 through 24.**

The list of products and services included in this report is less representative of either the Soviet or the US economy than one would desire, because the sample is of necessity restricted to those products and services that are comparable in the two countries. Nevertheless, it is believed that the samples of items selected to represent the various categories considered in this report are, in general, fairly representative of both the Soviet and the US economies. Uniform representativeness, however, was not obtained for each category, and a few comments are necessary regarding certain categories.

The sample of items in the category of solid fuels is more representative of the US than of the Soviet economy because both coke and peat, which have been omitted, are produced as a fuel in the USSR, whereas only coke is produced as a fuel in the US. It is believed, however, that the over-all ratio for solid fuels as computed in this report is fairly reliable because peat prices are believed to

* Appendix B, pp. 32 through 52, below.

** Appendix B, pp. 53 through 67, below.

approximate the average of the coal prices considered. It is also believed that the ruble-dollar ratio for coke would closely approximate the aggregate ratio for solid fuels.

The commodity coverage of petroleum products probably is more representative of the Soviet than of the US product mix. For the USSR the coverage is judged to be good; and for the US, fair. The refined products represented by ruble-dollar ratios account for about 60 percent of the total tonnage* of refined products produced in the USSR in 1955. From the US point of view, a number of petroleum products have been omitted because of the lack of Soviet counterparts. The most important omissions are US regular (85-to-90 octane) and premium (93-to-98) motor gasolines. These gasolines together accounted for about 80 percent of the total tonnage of motor gasoline produced in the US in 1955, or about 30 percent of the total output of refined petroleum products. US aviation gasoline having an octane rating of 115 to 145 and all grades of jet fuel also have been omitted. High-octane (100 and above) aviation gasolines (of which the above-mentioned grade 115 to 145 is a part) accounted for about 78 percent of the total tonnage of aviation gasoline produced in the US in 1955. It is believed that the sample includes items representing the major portion of high-octane aviation gasolines, because grade 115 to 145 probably accounted for only a minor portion of total tonnage produced in this category in 1955. Even though US jet fuel has been omitted, the US price for jet fuel is very similar to the price of 41-to-43 gravity water-white kerosine, which has been compared with the Soviet jet fuels.

Of the six groups of chemicals considered, coverage is believed to be good only for three groups -- alkalies and chlorine, cyclic (coal-tar) crudes, and industrial inorganic chemicals. Coverage for the remaining groups (industrial organic chemicals, plastic materials and synthetic resins, and fertilizers) is, at best, spotty. It is believed that the sample represents Soviet and US production of chemicals to about the same degree. It is interesting to note, however, that even though the over-all sample appears to be deficient in terms of coverage, the US-weighted ruble-dollar ratio derived from it is almost identical with the ratio derived by applying the appropriate Soviet and US price indexes for 1950-55 to the 1950 US-weighted ratio, which was based on a sample of ratios much superior to the 1955 sample in terms of coverage.

Products of the iron and steel industry are represented only by those products considered to be rolled steel. It is believed, however, that ruble-dollar ratios for forgings and castings would be very close to the aggregate ratios obtained for rolled steel. The sample of products compared is representative of both Soviet and US output of rolled steel. Rolled, drawn, and alloyed nonferrous products have not been included in the sample of nonferrous metals, but their ratios probably would closely resemble the over-all ratios for primary nonferrous metals.

* Tonnages are given in metric tons throughout this report.

The commodities included in the comparison of rail freight rates in Table 11* are those with the greatest loadings in the US in 1955. It is believed, however, that the sample is fairly representative of the bulk of rail freight traffic in both the USSR and the US. Because Soviet and US rates have been compared for US lengths of haul only, the ratios are more representative of US than Soviet rail freight transport.

C. Characteristics of Ruble-Dollar Ratios

Because the necessary value weights for obtaining a mean ruble-dollar ratio for all services were not available, an aggregate ruble-dollar ratio is limited to the product sample alone. About the only general observation relevant to the total sample is the wide dispersion of ratios extending from a low value of 1.8 for tool steel bars to a high of 67.3 for borax. The distribution of the ruble-dollar ratios within groups of products and services and for the sample as a whole is summarized in Table 2.**

Although there is a marked bunching at the low end of the scale, there is considerable dispersion in the sample of ruble-dollar ratios for intermediate products. The greatest dispersion in the ratios is found within the categories of chemicals, nonferrous metals, and petroleum products.***

Because of the wide dispersion in the ruble-dollar ratios and the disparity in the number of observations among the component groups of intermediate products, the median and unweighted mean ratios were of questionable significance -- especially in determining a ratio for total intermediate products. For this reason, an attempt was made to obtain weighted average ratios for total intermediate products. In the absence of information on the value of output, value-added data were used as weights for combining the weighted mean ratios of the component groups† into aggregate ratios for intermediate products. The aggregate ratios obtained in this manner, the median ratio, and the unweighted mean ratio for total intermediate products all fall within a very narrow range.

* Appendix B, p. 48, below.

** Table 2 follows on p. 9.

*** Inquiry into the kinds of items with ruble-dollar ratios of an unusually high magnitude -- for example, ratios of 25.0 and greater -- shows them to be various materials within the categories of chemicals and nonferrous metals. Among the chemicals are the following (with their ruble-dollar ratios): acetone (25.3), calcium chloride (30.1), and borax (67.3). Among the nonferrous metals are the following: cadmium (64.0), tin (48.1), and antimony (27.1).

† The derivation of weighted ruble-dollar ratios for the component groups is explained in Appendix A.

Table 2

USSR and US: Median, Unweighted, and Weighted 1955 Ruble-Dollar Price Ratios
and Frequency Distribution of Ruble-Dollar Ratios for Intermediate Products and Services
by Category of Product or Service

Category	Number of Ratios	Ratio (Rubles per Dollar)				Number of Ratios in Each Class Interval of 5 Rubles per Dollar						
		Median	Unweighted Mean	Weighted Mean ^{a/}		0.0 to 4.9	5.0 to 9.9	10.0 to 14.9	15.0 to 19.9	20.0 to 24.9	25.0 to 29.9	30.0 and over
				Soviet Weights	US Weights							
Intermediate products												
Solid fuels	3	18.8	17.1	17.0	18.2			1	1	1		
Petroleum products	50	10.8	11.5	10.5	11.8	1	19	21	5	4		
Paper and paperboard	6	9.3	10.0	9.6	10.1		5	1				
Chemicals	33	7.8	11.9	11.0	13.0	3	21	2	2	2	1	2
Construction materials	13	5.0	5.6	4.9	5.5	6	6	1				
Iron and steel products	20	5.5	5.5	5.4	5.9	2	18					
Nonferrous metals	9	13.0	23.8	12.0	13.6		2	3		1	1	2
Subtotal	<u>134</u>	<u>8.6</u>	<u>11.0</u>	<u>8.7 b/</u>	<u>10.5 b/</u>	<u>12</u>	<u>71</u>	<u>29</u>	<u>8</u>	<u>8</u>	<u>2</u>	<u>4</u>
Services												
Rail freight transport	29	3.4	3.5		3.6	25	4					
Rail passenger service	1	6.3	6.3	6.3	6.3		1					
Communications services ^{c/}	5	4.5	7.7	5.2	5.7	3		2				
Electric power	2	14.6	14.6	14.2	15.0			1	1			
Subtotal	<u>37</u>					<u>28</u>	<u>5</u>	<u>3</u>	<u>1</u>			
Total	<u>171</u>					<u>40</u>	<u>76</u>	<u>32</u>	<u>9</u>	<u>8</u>	<u>2</u>	<u>4</u>
Cumulative percentages						23.4	67.8	86.5	91.8	96.5	97.7	100.0

a. Aggregates for component categories from Table 1, p. 4, above.

b. Aggregates for component categories combined on the basis of estimated value-added weights.

c. Excluding home or private telephone subscriptions.

It is shown in Table 2 that the weighted mean ruble-dollar ratios based on Soviet weights differ from those based on US weights. The explanation lies basically in a negative correlation between relative prices and relative quantities -- that is, goods and services that have lower relative prices tend to be produced in greater relative quantities. Thus, when the price structure of one country is applied to the output structure of the other country, relatively high prices are applied to relatively large quantities and relatively low prices are applied to relatively small quantities. ¹/_{*} The gap between the Soviet-weighted and the US-weighted ratios for total intermediate products is larger than the gap for any of the component groups except chemicals. The gaps between the two sets of ratios for both the total and the component groups probably would become larger as the sample number of ratios increases. This increase in size of gaps would be due to the tendency for the relative price structures and the product mixes to become increasingly dissimilar as the output of each country was considered in greater detail.

Some other interesting observations can be made from the weighted mean ratios in Table 2: (1) the lowest weighted ruble-dollar ratios are those for construction materials and iron and steel products, whereas the highest are those for solid fuels; (2) the weighted ratios for construction materials are about one-half as high as the aggregate ratios for intermediate products; (3) the Soviet-weighted and the US-weighted ratios for solid fuels are almost twice as high as the respective Soviet and US aggregate ratios for total intermediate products; and (4) the weighted ratios for nonferrous metals are more than twice as high as those for iron and steel products.

Thus it is clear that there are substantial variations in relative prices for intermediate products between the two countries. As indicated by a geometric mean of the Soviet-weighted and the US-weighted ratios for the various groups, a ruble is worth about 6 cents for solid fuels; 8 to 10 cents for petroleum products, paper and paperboard, chemicals, and nonferrous metals; and about 15 to 20 cents for construction materials and iron and steel products. For intermediate products in the aggregate, a ruble is worth about 10 cents. On an individual product basis a ruble is worth about 2 cents for cadmium, 10 cents for motor fuel, about 25 cents for natural gas, and about 55 cents for tool steel bars.

Although the weighted ratios for intermediate services range from 3.6 to 15.0, the dispersion within ruble-dollar ratios for services is not as high as in the comparable groups of intermediate products. The weighted ratios for electric power are more than 2.5 times as high as those for communications services and 4 times as high as those for rail freight transport. As was the case with intermediate products, relative prices for intermediate services vary substantially between the USSR and the US. For example, a 1955 ruble is worth about 30 cents for rail freight transport, about 15 cents for rail passenger service, 20 cents for communications services, and 7 cents for electric power.

* For serially numbered source references, see Appendix C.

II. Comparison of 1950 and 1955 Ruble-Dollar Ratios

A large sample of 1950 ruble-dollar ratios has been compiled by the RAND Corporation, 2/ and other 1950 ratios have been compiled on the basis of other information as a need for these ratios has arisen. For purposes of comparison with the 1955 ratios constructed in this report, a sample of 1950 ratios has been selected. These 1950 ratios were selected for comparison with 1955 ratios when the commodity specifications and the price basis for an item were considered comparable. The results are striking. In the short span of 5 years, about 30 percent of the items in the sample show decreases in the ratios of 40 to 60 percent; decreases of 60 percent or more are noted for another 8 percent of the sample; and the direction of the change is downward for all commodities except two. The decreases in the ratios range from 5 percent for anthracite to 72 percent for mercury and calcium chloride (flake). In Table 3* the ruble-dollar ratios for 1950 and 1955 are compared in terms of individual commodities. Although weights are not available for calculating the aggregate change in the ratios, the data in Table 3 demonstrate a substantial change in price relatives in the two countries between 1950 and 1955.

The computed decreases in the ruble-dollar ratios between 1950 and 1955 are confirmed independently by other data. For example, a recent RAND report of Soviet prices of basic industrial goods shows a decline of about 11 percent between 1950 and 1955. 3/ Prices of basic industrial goods in the US rose about 15 percent between the same years.** These data imply that the ratio of Soviet prices to US prices for industrial goods fell by about one-fourth during this period.

As noted in Table 3, ratios for two items, lead and cadmium, increased between 1950 and 1955. Soviet prices for lead in 1955 were almost 100 percent higher than in 1950, whereas US prices for lead increased only about 25 percent between 1950 and 1955. Between 1950 and 1955, Soviet and US prices for cadmium decreased. The Soviet price, however, decreased only about 10 percent, whereas the US price decreased about 22 percent.

* Table 3 follows on p. 12.

** This statement is based on wholesale price indexes produced by the Bureau of Labor Statistics for coal, coke, gas, electric power, petroleum products, chemicals and allied products, rubber products, lumber and wood, pulp and paper products, iron and steel, nonferrous metals, and nonmetallic minerals from source 4/ combined on the basis of 1954 weights from source 5/.

Table 3

USSR and US: Comparison of 1950 and 1955 Ruble-Dollar Price Ratios
for a Selected Sample of Intermediate Products

Category and Item	Ratio (Rubles per Dollar)		Decrease b/ (Percent)
	1950	1955 <u>a</u> /*	
Solid fuels <u>c</u> /			
Anthracite	12.2	11.6	5
Bituminous coal	21.6	18.8	13
Lignite	23.5	21.0	11
Petroleum products <u>d</u> /			
Aviation gasoline	17.6 <u>e</u> /	12.3 <u>e</u> /	30
Automotive gasoline	20.3 <u>e</u> /	16.6 <u>e</u> /	18
Illuminating kerosine	17.3	10.6	39
Diesel fuel, light	12.1 <u>e</u> /	8.8 <u>e</u> /	27
Diesel fuel, heavy	10.4	9.0 <u>e</u> /	13
Fleet mazut	20.0	13.3	34
Chemicals <u>f</u> /			
Alkalies and chlorine			
Chlorine	6.4	4.3	33
Sodium bicarbonate	13.1	7.7	41
Soda ash	15.7	8.9	43
Caustic soda, liquid	28.0	15.5	45
Caustic soda, cake	29.1	15.3	47
Cyclic (coal-tar) crudes			
Naphthalene	12.4	7.7	38
Benzene	21.7	11.9	45
Industrial organic chemicals, n.e.c. <u>g</u> /			
Methanol	25.0	20.9	16
Acetone	36.3	25.3	30
Ethylene dichloride	2.4	2.1	12
Industrial inorganic chemicals, n.e.c. <u>g</u> /			
Nitric acid, weak	5.0	4.0	20
Nitric acid, concentrated	6.8	5.1	25
Ammonium sulfate	8.6	5.4	37

* Footnotes for Table 3 follow on p. 14.

Table 3

USSR and US: Comparison of 1950 and 1955 Ruble-Dollar Price Ratios
for a Selected Sample of Intermediate Products
(Continued)

Category and Item	Ratio (Rubles per Dollar)		Decrease b/ (Percent)
	1950	1955 a/	
Chemicals (Continued)			
Industrial inorganic chemicals, n.e.c. g/			
Ammonium nitrate	8.7	5.7	34
Sodium sulfate (salt cake)	10.5	7.6	28
Calcium carbide	11.0	6.9	37
Hydrochloric acid	11.3	5.1	55
Sulfuric acid, tower	12.4	6.7	46
Sulfuric acid, contact	14.3	7.7	46
Magnesium oxide	12.5	7.3	42
Synthetic ammonia, anhydrous	14.1	9.4	33
Aqueous ammonia	15.8	9.5	40
Ammonium chloride	19.2	7.8	59
Copper sulfate	15.1	8.3	45
Trisodium phosphate	18.0	6.4	64
Barium chloride	22.3	12.7	43
Hydrogen peroxide	24.9	8.8	65
Calcium chloride, solid	54.4	24.6	55
Calcium chloride, flake	108.3	30.1	72
Construction materials h/			
Roofing felt i/	5.5	4.2	24
Flat glass	8.4	5.1	39
Cement, hydraulic	10.6	6.9	35
Brick	6.2	4.4	29
Iron and steel products j/			
Rails	7.6	5.8	24
Rail accessories	6.7	5.1	24
Buttweld standard pipe	8.8	5.4	39
Seamless line pipe	9.5	6.3	34
Seamless casing	9.6	6.2	35
Angles	8.3	5.8	30
Hot-rolled carbon bars	9.5	5.4 k/	43
Cold-finished carbon bars	10.0	5.3	47
Wire rod	8.1	5.2	36

Table 3

USSR and US: Comparison of 1950 and 1955 Ruble-Dollar Price Ratios
for a Selected Sample of Intermediate Products
(Continued)

Category and Item	Ratio (Rubles per Dollar)		Decrease b/ (Percent)
	1950	1955 ^{a/}	
Iron and steel products ^{j/} (Continued)			
Hot-rolled carbon sheet	9.3	5.6	40
Cold-rolled carbon sheet	9.7	7.7	21
Electrical sheet	8.7	5.5	37
Hot-rolled carbon strip	7.8	6.4	18
Cold-rolled carbon strip	11.2	5.6	50
Forging billets	7.6	5.3	30
Nonferrous metals ^{l/}			
Copper cathodes	16.2	8.3	49
Lead ingots	14.0	21.9	+56 ^{m/}
Zinc ingots	12.6 ^{l/}	10.8	14
Aluminum unalloyed ingots	17.7	9.3	47
Cadmium	56.2	64.0	+14 ^{m/}
Tin	67.9	48.1	29
Mercury	47.2	13.0	72
Antimony	32.6	27.1	17
Magnesium	34.0 ^{n/}	11.5	66

a. For data and methodology, see Appendix A.

b. Unless otherwise indicated, the difference between the ratio for 1955 and the ratio for 1950 expressed as a percentage of the ratio for 1950.

c. 1950 ruble prices from source ^{6/} and 1950 dollar prices from source ^{7/}.

d. 1950 ruble prices from source ^{8/} and 1950 dollar prices from source ^{9/}.

e. Arithmetic mean for a number of grades.

f. 1950 ruble prices from source ^{10/} and 1950 dollar prices from source ^{11/}.

g. Not elsewhere counted.

h. Except for roofing felt, 1950 ruble prices are averages from source ^{12/}, and all 1950 dollar prices from source ^{13/}.

i. 1950 ruble price from source ^{14/}.

j. Arithmetic mean of 1950 ruble-dollar ratios from source ^{15/}.

k. Arithmetic mean.

l. 1950 ruble-dollar ratios from source ^{16/}.

m. Percentage increase.

n. 1950 ruble price from source ^{17/} and 1950 dollar price from source ^{18/}.

APPENDIX A

METHODOLOGY1. Individual Ruble-Dollar Ratios

This section contains a discussion of the methodology used in constructing the ruble-dollar ratios for individual commodities and services, which are shown in Tables 4 through 14.* The four-digit industrial classifications used in the tables are the numbers appearing in the 1957 edition of the Standard Industrial Classification Manual.**

a. Solid Fuels

1955 ruble-dollar ratios for anthracite, bituminous coal, and lignite have been computed by comparing Soviet weighted-average prices per unit of energy with the corresponding US unit prices, as shown in Table 4.*** It is believed that the price per unit of energy is a more reasonable basis for comparing prices of coal in the USSR and the US than the matching of prices of similar coals, mines, or producing areas in the two countries. Comparisons on the latter basis would fail to take into account significant differences in heat content between coals of the two countries.

For the USSR the average price per unit of energy (kilocalorie) for anthracite, bituminous coal, and lignite has been derived by weighting the 1 July 1955 prices 19/ and heating values 20/ by the estimated physical production in all coal producing areas in order to arrive at a weighted average price and a weighted average heating value. The weighted average price was then divided by the weighted average heating value to obtain an average price per unit of energy. For the US, average 1955 prices and average heating values developed by the Bureau of Mines 21/ were utilized in computing average prices per unit of energy. Soviet and US prices are f.o.b. mine or dispatching point.

b. Petroleum Products

1955 ruble-dollar ratios have been constructed for 50 petroleum products by comparing 1 July 1955 ruble prices with average 1955 dollar prices. The petroleum products considered in this report include natural gas and those products refined from crude petroleum and coal tars.

The US price for natural gas is the wellhead price from source 22/. Except in those cases in which Gulf Coast cargo prices have been used,

* Appendix B, pp. 32 through 52, below.

** Washington, 1957, published by the Bureau of the Budget, Office of Statistical Standards, Technical Committee on Industrial Classification.

*** Appendix B, p. 32, below.

the prices for refined petroleum products are sales prices, quotations, general offers, or posted prices of operators of product pipeline terminals and tanker terminals. The prices are f.o.b. refineries, pipeline terminals, or tanker terminals in the particular refining district where the product is made. Gulf Coast cargo prices are those of refiners selling or quoting to other refiners, to export agents, or to operators of large tanker terminals. The US prices do not include taxes or inspection fees. 23/

In the absence of Soviet data on wellhead prices for natural gas, it has been assumed that the price is approximately the same as the estimated cost of producing natural gas. The estimated cost of producing natural gas was calculated by applying a Soviet ratio 24/ of cost of producing a standard fuel unit of coal and natural gas to the average cost of producing a standard fuel unit of coal. Available Soviet prices for refined petroleum products are wholesale-release prices f.o.b. the oil base of the Main Administration of Sales, the station of destination within the Ministry of Transportation (Railroads), or the port of destination. 25/ All of the ruble prices for refined petroleum products include sums that cover the cost of production, the cost of transportation, and the cost of operating sales bases. Prices for some unspecified products include the turnover tax as well as an administrative surcharge. 26/ The administrative surcharge, which represents operating costs of the various organizations of the Ministry of the Petroleum Industry, is considered to be of minor importance. In 1955, for all petroleum products marketed in the USSR, tax payments* were equal to about 50 percent of the receipts from sales; expenses of transportation and expenses of operating sales bases were equal to about 20 percent; and the f.o.b. refinery prices combined for all products marketed were equal to only about 30 percent of those receipts. 27/ It follows that, to achieve comparability between the Soviet and US prices, the ruble prices should be adjusted to exclude transport charges, the turnover tax, and costs of operating sales bases. Because rates of the turnover taxes and expenses of operating sales bases are not available for specific products, these components could not be deducted from the ruble prices. Soviet freight rates for rail transport of petroleum products in 1955 are available. Rail transport charges for specific products could therefore be calculated and the ruble prices adjusted accordingly.

For marketing of virtually all of the major petroleum products, the USSR is divided into five price zones** in which prices vary because of differences in production costs, the turnover tax, and transport charges. The lowest price is charged in Zone I, and a progressively higher price is charged in the remaining four zones as the average distance from Zone I increases. Prices in Zone I, adjusted to

* Interpreted to include the turnover tax and the administrative surcharge. The latter is usually minor (less than 1 percent of wholesale prices), so that most of this percentage is assumed to be represented by the turnover tax.

** The price zones for petroleum products referred to in this report are those defined and numbered on the map, USSR: Price Zones for Petroleum Products, 1955, inside back cover.

exclude estimated average transport charges, have been used in constructing the ruble-dollar ratios because the principal refining centers of Baku and the Ural-Volga Region are located in Zone I. The average length of haul of petroleum products within Zone I was judged to be 1,000 kilometers (km). On the basis of Soviet freight rates for rail transport of the appropriate petroleum products, 28/ the transport charge for a haul of 1,000 km was calculated and deducted from the ruble price of each product. A transport charge of 57 rubles per ton was deducted from the prices for gasoline, diesel fuel, and lubricants; 46 rubles for kerosine; and 39 rubles for motor fuel and furnace oil. These deductions may be overstated somewhat, for only rail, and not water, transport was considered. Charges for rail transport are higher than charges for water transport, which also is used to ship petroleum products. The effect of the omission of any adjustment for water transport is not considered to be significant, however, because it is estimated that more than 75 percent of the volume of freight in petroleum products moves by rail.

Soviet specifications for most petroleum products are available in enough detail to facilitate the selection of comparable US items. In the instance of aviation gasoline, however, in 1955 the US did not produce a product comparable to Soviet grades 95 to 130 or 91 to 115. Synthesized blends of varying proportions of US aviation gasoline grades 100 to 130 and 91 to 96 were assumed and compared with these Soviet products. The comparability thus achieved is considered to be only roughly approximate. Also, a jet fuel comparable to the Soviet jet fuels T-1 and TS-1 was not produced in the US in 1955. Certain US high-grade kerosines are similar in quality to and have been compared with Soviet jet fuels. In the US, data for lubricating oils are given for stocks used in blending final products, whereas in the USSR data are given for finished products. Nevertheless, comparisons of Soviet and US products have been made even though only rough approximations to comparability may have been achieved. US prices for residual fuel oils vary inversely with viscosity, whereas Soviet fuel oils of a given viscosity are marketed in the USSR at different prices depending on the sulfur content. The ruble prices thus vary inversely with sulfur content. Comparable specifications for sulfur content at different viscosities are not available for US fuel oils. Nevertheless, by considering all of the specifications of a given product and assuming various mixtures of US fuel oils, several comparisons have been made between Soviet and US fuel oils. The petroleum products compared and their specifications, ruble and dollar prices, and ruble-dollar ratios are shown in Table 5.*

c. Paper and Paperboard

1955 ruble-dollar ratios for paper and paperboard are based on four major classes of paper (newsprint, book paper, fine paper, and coarse paper) and two major classes of paperboard (corrugated paperboard and fiberboard).

* Appendix B, p. 33, below.

US prices are average annual wholesale prices for 1955, f.o.b. destination as constructed by the Bureau of Labor Statistics. 29/ Available Soviet prices are wholesale prices as of 1 July 1955, f.o.b. the shipper's railroad station. 30/ To obtain comparability with the US prices, the Soviet prices were adjusted to a delivered basis as follows. The average length of haul of paper and paperboard products was assumed to lie within the range of 1,000 to 2,000 km per ton. A transport cost was estimated for the median of this range on the basis of the basic rail transport tariff of 0.04 ruble per ton-kilometer (tkm) for paper and paperboard products for lengths of haul between 1,501 and 1,600 km. 31/ Therefore, a sum of 60 rubles per ton was added to the ruble price of each of the paper and paperboard products.

Although Soviet and US products that were matched were generally comparable in respect to the available descriptive information concerning their characteristics, the information is not sufficiently comprehensive to make a definitive determination of their physical comparability. In general, it is believed that US paper is of higher quality than Soviet paper. The paper and paperboard products compared and their specifications, ruble and dollar prices, and ruble-dollar ratios are shown in Table 6.*

d. Chemicals

1955 ruble-dollar ratios have been constructed for 33 chemicals by comparing Soviet prices in effect on 1 July 1955 with US prices in effect in June 1955. The ruble and dollar prices are f.o.b. depot of seller. It should be pointed out that the products considered are essentially representative of industrial chemicals rather than the broader group commonly referred to in the US as chemicals and allied products. The major components of the chemicals and allied products that are excluded are drugs and pharmaceuticals, paints and paint materials, inedible fats and oils, and miscellaneous chemical products.

The comparability of the chemicals considered in this section is based primarily on standards published in the USSR that state the analysis, purity percentage, and the amounts and types of impurity permitted for a given grade of a specific product. Where detailed specifications are not available, comparability is based on methods of manufacture and comparable industrial use. The chemicals compared and their specifications, ruble and dollar prices, and ruble-dollar ratios are shown in Table 7.**

e. Construction Materials

1955 ruble-dollar ratios have been constructed for 13 construction materials by comparing average Soviet and US prices in effect as of 1 July 1955. The ruble and dollar prices are f.o.b. depot of seller. Comparability of most of the products in this category is believed to be very good.

* Appendix B, p. 37, below.

** Appendix B, p. 38, below.

Soviet prices of most of the materials considered in this section are quoted on the basis of specific sales zones within the USSR. To obtain a single Soviet price for a given commodity, one of the following criteria was used in deriving Soviet prices comparable to US average prices. (1) When Soviet prices were given for several zones, an average Soviet price was obtained. The average prices for brick and cement are based on zonal prices weighted by physical production. Average prices for construction gypsum, asbestos cement shingles, asbestos cement pipe, and lime have been estimated from the zonal prices. (2) When only Moscow prices were available, although the materials might actually be zonally priced, it was assumed that the Moscow prices closely approximated the average Soviet prices. This criterion also was used for petroleum bitumen, roofing felt, flat glass, ready mixed concrete, and mineral wool. The construction materials compared and their specifications, ruble and dollar prices, and ruble-dollar ratios are shown in Table 8.*

f. Iron and Steel Products

Only those items considered to be rolled steel products have been included in this report. 1955 ruble-dollar ratios have not been constructed for such items as pig iron, forgings, castings, and electro-metallurgical products. The ruble-dollar ratios for rolled steel products are based on a comparison of ruble prices of 1 July 1955 and dollar prices in July 1955.

US prices for rolled steel products are those constructed by the Bureau of Labor Statistics and are average f.o.b. mill prices with a selected number of "extras" added. Extras are added for such things as special shapes, sizes, classification, chemistry, and order quantity. The Bureau of Labor Statistics, in consultation with the American Iron and Steel Institute, has included extras most typical of a category in its average prices.

To achieve comparability with the US prices, it has been necessary to make two adjustments in the ruble prices -- one for freight charges and one for extras. Available Soviet prices are All-Union delivered prices and as such include a charge for freight. Because the average Soviet transport charge for ferrous metals is estimated to be 5 percent of the delivered price, the delivered price for each type of rolled steel product has been reduced by this amount. Most size extras are included in the Soviet prices because, unlike the US pricing system for steel, in which one base price is given for broad categories of products with extras for each size, the Soviet pricing system is composed of prices for each size of a given product. For example, in the US, prices for carbon structurals are quoted at so much per pound with extras added for each size, whereas in the USSR prices are quoted for each size of I-beam, angle, channel, or the like. In the USSR, extras such as classification, small lot sizes, and extra testing are not included in the price. The Soviet practice of extras, however, is not as refined as that in the US. The only adjustments in

* Appendix B, p. 40, below.

the ruble prices believed to be necessary for extras were in the prices of cold-rolled sheet and plate, the prices of which have been increased by 5 rubles each to adjust for noncomparability of size extras. The degree of comparability achieved for extras is believed to be good.

In general, Soviet and US specifications are available in enough detail to permit the matching of products that are reasonably comparable in all aspects. The iron and steel products compared and their specifications, ruble and dollar prices, and ruble-dollar ratios are shown in Table 9.*

g. Nonferrous Metals

1955 ruble-dollar ratios presented for nonferrous metals relate only to nonferrous metals products obtained from primary smelting. Price comparisons have not been made for nonferrous metals products obtained from secondary smelting and for rolled, drawn, and alloyed nonferrous metals.

The ruble-dollar ratios are based on a comparison of ruble and dollar prices in effect on 1 July 1955. The ruble and dollar prices are f.o.b. mill prices with the exception of the US prices for copper cathodes and cadmium, which are delivered prices. The share of freight charges in the delivered prices for copper cathodes and cadmium is so small, however, that even if these charges could be removed from the US price in some practicable manner, the effect on the ratio would be inconsequential. Comparability of the products included is believed to be very good. The nonferrous metals products compared and their specifications, ruble and dollar prices, and ruble-dollar ratios are shown in Table 10.**

h. Rail Transport

1955 ruble-dollar ratios have been constructed for rail freight and rail passenger transport in the USSR and the US in 1955. Freight and passenger transport will be discussed in turn.

(1) Freight Transport

In a comparison of freight charges, where freight rates are used as prices, there is introduced an additional dimension that is not applicable to price comparisons appearing in the preceding sections of this report. Because of the variability of unit freight rates according to length of haul, consideration must be given to the distance that a commodity is hauled.

It follows that two comparisons of Soviet and US freight rates should be made, one based on Soviet and US unit rates for US lengths of haul and the other based on Soviet and US unit rates for

* Appendix B, p. 42, below.

** Appendix B, p. 47, below.

Soviet lengths of haul. Problems in data, principally arising from differences between the structures of rail rates in the Soviet and US economies, have made it impractical to make both of these comparisons.

The structure of Soviet freight rates is complicated by the existence of basic freight rates, increased rates for transport over specific routes, additional charges for special handling or service, and exceptional or preferential rates. For example, penalty rates are added to basic rates during the navigation season for rail routes that parallel a functioning river route, and substantial reductions in basic rates are offered during the navigation season on shipments by rail and water combined. In the US the structure of freight rates is complicated by the existence of two basic types of rates -- a class rate and a commodity rate. The class rate prevails for those commodities for which a commodity rate has not been established. The class rate, which is generally higher than the commodity rate, is applicable to a "class" of products for the standard pattern of origins and destinations. Automobile tires may be shipped in class 45, whereas glass jars may be shipped in class 35. This difference in rates means that the rate for tires would be 45 percent of a prescribed basic charge (class 100) between the origin and destination and that the rate for glass jars would be 35 percent. The commodity rate is a specific charge for a specific commodity moving between a specified origin and destination. For example, because of the volume and frequency of shipments, a commodity rate may be established for carload shipments of cement between Richmond, Virginia, and Washington, D.C.

Because Soviet base rates can be expressed for US average lengths of haul, whereas there are no basic or uniform US commodity rates that can be applied to Soviet lengths of haul, only a comparison of Soviet and US freight rates utilizing a US mix has been made. Soviet basic unit freight rates per ton-kilometer at US average lengths of haul have been compared with US average unit revenues per ton-kilometer. The justification for using data on revenue as representative of US rates for this comparison is that such data take into account both the class and the commodity rates applicable in the US. These data also embody the effects of extras and exceptions, whereas the Soviet basic tariff does not.

A sample of commodities with the greatest loadings in the US product mix has been selected from a 1-percent sample of freight terminations. This 1-percent sample, prepared by the Interstate Commerce Commission, 32/ provides an average US length of haul for each commodity and an average revenue per short ton - mile. The US average revenue for 1955 for each commodity was compared with the Soviet basic rate in effect on 1 July 1955 for the same commodity at the US average length of haul. The calculation of ruble-dollar ratios for rail freight rates is shown in Table 11.*

* Appendix B, p. 48, below.

(2) Passenger Service

The ruble-dollar ratio presented for transport of passengers by rail is intended to represent an intermediate service on the assumption that travel for business reasons is charged as a cost of production. This ratio differs from the consumer-passenger ratio included in the consumption end-use sector of GNP as a final service. The primary difference in the two ratios stems from the type of service and the distance selected to represent the intermediate and final aspects of the service. The consumer passenger ratio is based on a comparison of Soviet and US services and distances that are believed to be most representative of household expenditures. The passenger ratio, which is characterized as an intermediate service, is represented by the services and distances believed to be most representative of business travel.

In the USSR, rail passenger rates consist of a basic fare for a type of service plus additional charges for such items as speed, baggage, reclining space, and sleeping cars. These surcharges, as well as the basic fare, vary with distances and types of service. The rate per kilometer decreases as the distance traveled increases. In the US, rates consist of a basic fare for a type of service plus additional charges for such items as reserved seats, pillows, parlor car seats, and pullman car space. Extra charges are not levied in the US for normal baggage and only rarely for speed. US rates are fairly uniform in regard to distance, but the rates vary by geographical region and type of service.

Because of the very nature of rail passenger rates, a comparison of them should take into account the variations in rates arising from both distance traveled and type of service. Ideally a comparison of unit passenger rates in the USSR and the US for each of the types of service should be made, one based on Soviet and US rates for US average distances and the other based on Soviet and US rates for Soviet average distances. Differences between the two economies, arising principally in types of service rendered and in traveling habits, make it difficult to define and measure comparability of passenger services. Therefore, to avoid the risk of introducing a wide range of error by comparing various types of service, rates have been compared for the service that is believed to be most representative of the business travel in each country, and the average distance of Soviet passenger trips has been used. The Soviet rate for the basic fare for "soft class" has been compared with the US fare for first class plus pullman car seats, for a trip distance of 438 km. The distance represents the Soviet average length of haul for all passengers other than commuters. ^{33/} The services compared and their specifications, ruble and dollar prices, and ruble-dollar ratios are shown in Table 12.*

i. Communications Services

1955 ruble-dollar ratios have been constructed for domestic communications services in the USSR and the US -- that is, the telephone,

* Appendix B, p. 50, below.

telegraph, and postal services. Such special, functionalized communications systems as those maintained by the military, police, and civil air fleet have not been considered. The ratios are based on a comparison of charges for the various services that are used to approximate average charges for the two countries in 1955.

It should be pointed out that in dealing with a service, in comparison with a commodity, it is difficult, if not impossible, to measure differences in quality. Therefore, comparability of the communications services selected for comparison has been assumed on the basis that differences in quality cannot be measured and adjusted for.

In both the USSR and the US, charges for long-distance telephone calls are based on distance spanned and time consumed in conversation. Ideally, rates for identical calls should be compared for the two countries and the resulting ratios weighted together according to the relative importance of the different calls compared. Soviet data are not available for making such a comparison. Therefore, a comparison has been made of the rates in the two countries for a 3-minute call for eight comparable distance units. An arithmetic mean of the ratios was taken as a representative ratio for long-distance telephone calls.

In the US, subscription rates for home and business telephones vary by locality, numbers of telephones in the exchange, and type of service rendered. The variations in the structure of US rates and the lack of Soviet data have prevented a comparison of the various types of telephone services rendered in the two countries. Instead, the range of rates in effect in the US were examined, and average rates were selected by inspection for comparison with the Soviet rates for subscriptions for home and business telephones.

In both the US and the USSR, there are three types of telegrams. In the US the types are night letters, day letters, and full rate. In the USSR the types are common, urgent, and lightning. Because Soviet data relating to telegraph service are so fragmentary, it has not been possible to relate Soviet classifications of telegrams with those of the US. Instead, common telegrams, which are the most typical sent in the USSR, and full rate, the most typical in the US, have been selected to represent telegraph service in the two countries. The communications services compared and their specifications, ruble and dollar prices, and ruble-dollar ratios are shown in Table 13.*

j. Electric Power

1955 ruble-dollar ratios have been constructed for two classes of consumers of electric power, as shown in Table 14.** The ratios are based on a comparison of Soviet and US electric power rates for

* Appendix B, p. 51, below.

** Appendix B, p. 52, below.

industrial consumers and for residential and commercial consumers. The industrial class includes industry, railroad consumption, and other energy requirements, and the residential and commercial class also includes rural and governmental consumption.

In both the USSR and the US, rate structures for electric power sold to consumers vary considerably by geographic area and by type and quantity of power consumed. A comparison of Soviet and US power rates is further complicated by differences in methods of book-keeping and in defining categories and by the paucity of information related to the Soviet rate structure.

Rates for industrial power in both countries are based on two types of charges: a use charge, based on the kilowatt-hours of electricity consumed during a billing period, and a demand charge, based either on the maximum power demanded during a billing period or on the maximum capacity of installed electrical equipment. Rates for industrial power differ for the two countries in that in the US the rate charged industrial consumers decreases as the quantity consumed increases, whereas in the USSR the rate usually remains the same regardless of the amount of power consumed. In addition, rates in the USSR are often reduced to subsidize certain industries.

Power rates for residential and commercial consumers in the US vary considerably from area to area and are presumed to reflect actual production and distribution costs. In addition, rates vary in relation to the amount of energy used. In contrast, rates vary considerably in the USSR by type of consumer but do not vary from area to area.

The average 1955 rate for utility sales in the category "Large Light and Power" as defined by the Edison Electric Institute has been used to represent the power rate charged industrial consumers in the US. 34/

For the USSR an average rate for electric power consumed by industry has been derived by weighting industrial rates of 1 July 1955 for those areas for which power rates were available 35/ by the estimated volume of energy sold to the corresponding area. In terms of kilowatt hours, it is estimated that 70 percent of the total industrial purchases from powerplants of the Ministry of Electric Power Stations is represented in this calculation. It is estimated that the Ministry of Electric Power Stations supplied 75 percent of the total power consumed and that self-generated power accounted for the remaining 25 percent.

Each industrial consumer in the USSR is charged a penalty for permitting a power factor under 0.85 and is given a bonus for having a higher power factor. The tendency was for consumers to permit poor power factors and therefore incur greater charges. Also, special consumers, such as some nonferrous metals plants, get special lower rates. This fact would tend to depress the total charges on industry. Because data are not available for making adjustments for these considerations, it has been assumed that they would offset each other.

Some industrial plants and municipalities in each country generate their own power. This power has been arbitrarily priced at the amount that these enterprises would have paid if the power had been purchased from sources of public supply.

The average 1955 power rate for residential and commercial consumers in the US has been derived by dividing the total kilowatt-hours consumed by residential, commercial, rural, and governmental consumers into the total revenue received from these consumers. 36/

The average rate for consumption of electric power by residential and commercial consumers in the USSR has been estimated at 40 kopeks per kilowatt-hour based on prices on 1 July 1955. According to a Soviet source of 1955, 37/ the rates for residential and commercial consumers in the USSR are divided into nine groups. The first and second groups of rates are basically for residential consumers, who are charged 40 kopeks per kilowatt-hour unless the consumer furnishes his own transformer, in which case he is charged 35 kopeks per kilowatt-hour. The remaining groups include agricultural consumers, who pay 19 kopeks per kilowatt-hour; street railroads, which pay 10 to 20 kopeks per kilowatt-hour; street and highway lighting, which pay 30 and 42 kopeks per kilowatt-hour, respectively; public buildings, stores, and office buildings, which pay 60 kopeks per kilowatt-hour; beauty parlors, cinemas, and the like, which pay 110 kopeks per kilowatt-hour; and churches, which pay 250 kopeks per kilowatt-hour. An average rate of 40 kopeks per kilowatt-hour for residential and commercial consumers is believed to be a valid estimate because the largest proportion of electric power consumed by this class probably would be accounted for by consumers in the first and second rate groups. Also, the lower rates charged some groups of consumers are offset by the higher rates charged other consumers.

2. Aggregate Ruble-Dollar Ratios

a. Formulas for Weighting Ratios

The US-weighted and Soviet-weighted 1955 ruble-dollar ratios for the various categories and subcategories of intermediate products and services have been computed by weighting the ratio for each individual product or service with the corresponding value of output of the product or service. When US-value weights are utilized, the calculation is as follows:

$$\frac{\sum \frac{P_1}{P_0} (P_0 Q_0)}{\sum P_0 Q_0}$$

When Soviet-value weights are utilized, the calculation is as follows:

$$\frac{\sum P_1 Q_1}{\sum \frac{P_0}{P_1} (P_1 Q_1)}$$

In these formulas, P_0 and Q_0 represent US prices and quantities, and P_1 and Q_1 represent Soviet prices and quantities.

It should be pointed out that although value weights were utilized in all calculations, they are expressed as percentages in Tables 15 through 24.* Also, whereas ruble-dollar ratios based on Soviet weights are presented at various levels of aggregation, dollar-ruble ratios have been used in performing all calculations when Soviet weights were utilized, as required by the second formula above.

b. Derivations of Aggregate Ratios

Aggregate 1955 ruble-dollar ratios have been derived for most of the categories of intermediate products and services on the basis of both a Soviet and a US product mix. The derivations of the aggregate ruble-dollar ratios for solid fuels, petroleum products, paper and paperboard, chemicals, construction materials, iron and steel products, nonferrous metals, rail freight transport, communications services, and electric power are shown in Tables 15 through 24. Data on value of production in 1955 have been used in deriving aggregate ratios based on each of the product mixes for the following categories: solid fuels, petroleum products, paper and paperboard, and iron and steel products.

The aggregate ruble-dollar ratios for petroleum products are overstated because the ruble prices for refined petroleum products used in constructing the individual ratios include turnover taxes and sales costs. Because tax rates and sales costs are not available for specific products, the individual ruble prices could not be adjusted to exclude them. The magnitude of taxes is revealed by the fact that for all petroleum products marketed in the USSR in 1955, tax payments were equal to about 50 percent of the receipts from sales. ^{38/} It is estimated that the turnover tax averaged 60 percent of the ruble price exclusive of transport charges. Soviet data suggest that the tax probably applied to most petroleum products in 1955. Sales costs are considered to be minor compared with the turnover tax.

If it is assumed that the turnover tax averaged 60 percent of the ruble price, adjusted to exclude transport charges; that the tax applied to all refined petroleum products in the sample**; and that the tax rate falls equally and uniformly on all products, the aggregate ruble-dollar ratios with the tax removed for all petroleum products for the Soviet and US product mixes would be 40 percent of

* Appendix B, pp. 54 through 67, below. In some instances, data on output underlying the Soviet weights have been estimated from scattered data in numerous sources. In those instances, rather than citing the numerous sources, the data are noted as estimated.

** The ruble price for natural gas is a wellhead price and as such does not include the turnover tax.

the ratios inclusive of the turnover tax. These assumptions have been made, and the aggregate ratios, adjusted to exclude the turnover tax, are shown along with the ratios that include them in Table 16.* The adjusted ratios are not considered precise enough to be substituted for the unadjusted one. They are presented, however, as an estimate of the impact of an adjustment for the turnover tax.

Because data were not available to construct a satisfactory set of Soviet weights, the individual ruble-dollar ratios for chemicals have not been weighted on the basis of the Soviet product mix. It is estimated, however, that the Soviet-weighted ratio would be slightly lower than the US-weighted ratio, or about 11.0 rubles per dollar. This ratio would be the result of the fact that items with high ratios (chiefly basic organic chemicals) are, in terms of value, of less importance in the USSR than in the US. Data on value of shipments in 1954 have been used as weights for the US product mix because available data on value of production would not provide a complete set of weights.

Individual ruble-dollar ratios were prepared for 13 items of construction materials, as shown in Table 8.** Because Soviet value weights were not known for all 13 items, however, 7 items basic to both Soviet and US construction practices were selected as a basis for the calculation of aggregate ratios. Data on value of production for 1955 have been used in constructing the aggregate ratio for the Soviet product mix. Data on value of shipments in 1954 have been used as weights for the US product mix because these data provide a more complete set of weights than available data on value of production.

Soviet weights for nonferrous metals were known for only three items in the sample -- copper, lead, and aluminum. The individual ruble-dollar ratios for these items were combined with data on value of production in 1955, and the resulting aggregate ratio was adjusted to take into account the ratios for which weights were not available. For the US product mix, data on value of production in 1954 have been used as weights for copper, lead, zinc, and aluminum. Data on value of consumption in 1954 have been used for cadmium, tin, mercury, antimony, and magnesium because in the US relatively large quantities of these items are imported in order to satisfy consumption requirements. Therefore, value of consumption better reflects the bill of purchases of US producers and the relative importance of the items composing it than does value of production.

An aggregate ruble-dollar ratio for rail freight transport has been computed for the US product mix only. The individual ratios, based on a comparison of Soviet and US rates for US average lengths

* Appendix B, p. 54, below.

** Appendix B, p. 40, below.

of haul, have been combined with data on US revenue in 1955 to obtain an aggregate ratio. It should be pointed out that the aggregate ratio is based on a comparison of Soviet basic freight rates and US rates derived from revenue data. As noted above,* Soviet basic rates do not reflect total charges, whereas the US rates do. Therefore, the aggregate ratio presented for rail freight is understated.

Another reason for the understatement of the ruble-dollar ratio is the fact that the commodities included in the sample of comparisons of rail freight rates are those commodities with the greatest loadings in the US in 1955 and are, by their nature, those commodities carrying the lowest rates in both countries. For the commodities having higher rates that have been omitted from the sample, the ruble rates would be much higher than the rates for bulk goods included in the sample. The variation in rates between these groups, however, is not as great in the US as in the USSR.

It is estimated that if an adjustment could be made for the factors of understatement, the aggregate ruble-dollar ratio might lie within the range of 5 to 6 rubles per dollar. It is believed that an aggregate ratio based on US lengths of haul and weighted by the Soviet product mix would be slightly lower and may approximate 4.5 to 5.0 rubles per dollar.

Ruble-dollar ratios for rail freight based on Soviet lengths of haul for the Soviet and US product mixes might well be higher than those based on US lengths of haul because Soviet average lengths of haul are longer than those in the US. In the US the rate per mile decreases as the length of haul increases, whereas in the USSR the rate may well increase as the length increases.**

Ideally, an aggregate ruble-dollar ratio for rail passenger service should be based on a comparison of rates for each of the types of passenger service. It is difficult to define and measure comparability of passenger services, and it is believed that a wide range of error would be introduced by comparing each type of service rendered in the two countries. Also, Soviet and US data are not available in enough detail to provide a satisfactory set of weights for constructing aggregate ratios for the various types of services. Therefore, a ratio of 6.3 was constructed for a type and distance of passenger service characterized as an intermediate service, as shown in Table 12.*** This ratio, however, does not represent total rail passenger service. For example, a ratio of 8.8 has been constructed for passenger service characterized as a final service in the consumption end-use sector of GNP. Because the ruble portion of both

* See h, (1), p. 20, above.

** Soviet freight rates per ton-kilometer decrease as the distance increases until some intermediate length of haul is attained; then the rate increases or remains constant as the mileage block increases.

*** Appendix B, p. 50, below.

of these ratios represents Soviet basic passenger rates only, the ratios may well understate the true ratio for the respective types of transport. This understatement would be due to the fact that more charges are added to basic rates in the USSR than in the US.

For both the Soviet and US product mixes, aggregate ruble-dollar ratios for communications services and electric power result from combining the individual ratios with data on value of revenue in 1955 and data on value of consumption in 1955, respectively.

APPENDIX B

STATISTICAL TABLES

Table 4

USSR and US: Prices and Ruble-Dollar Price Ratios for Solid Fuels
1955

Standard Industrial Classification Number	Category and Item ^{a/}	Price		Ratio (Rubles per Dollar)
		Rubles per Million Kilocalories ^{b/}	Dollars per Million Kilocalories ^{c/}	
1111	Anthracite	14.14	1.22	11.6
1211	Bituminous coal	12.78	0.68	18.8
1212	Lignite	12.80	0.61	21.0

a. Comparability for each item in the USSR with each item in the US was established on the basis of heating values.

b. The weighted average price per metric ton was derived by weighting prices ^{39/} by estimated physical production for all areas producing coal. The average price per metric ton was converted to price per kilocalorie by using average heating values from source ^{40/}.

c. Converted to dollars per kilocalorie by using average prices and average heating values from source ^{41/}.

Table 5

USSR and US: Specifications, Prices, and Ruble-Dollar Price Ratios for Petroleum Products
1955

Standard Industrial Classification Number	Category and Item	Specifications		Prices \$/*		Ratio (Rubles per Dollar)
		USSR	US	Rubles per Thousand Cubic Meters	Dollars per Thousand Cubic Meters	
1311	Crude petroleum and natural gas					
	Natural gas	Comparability assumed	Comparability assumed	14 b/	3.74 c/	3.7
2911	Petroleum refining			Rubles per Metric Ton	Dollars per Metric Ton	
	Aviation gasoline	B-100/130	Grade 100/130, Houston	968	65.30	14.8
		B-95/130	Average of grades 100/130 and 91/96, Houston	841	63.43 d/	13.3
		B-93/130	Average of grades 100/130 and 91/96, Houston	818	63.13 d/	13.0
		B-91/115	Average of grades 100/130 and 91/96, Houston	658	61.07 d/	10.8
		B-70	Grade 80, New York	563	57.97	9.7
	Automotive gasoline	Average of A-66 and A-70	70 to 72 octane M, leaded, Gulf Coast cargoes	522	34.50	15.1
		A-74	83 octane, Gulf Coast cargoes	658	35.70	18.4
		Minimum octane number of 56	60 octane M and below, Oklahoma (Group 3)	416	36.70	11.3
	Ligroine	Tractor ligroine	Motor gasoline, 60 octane M and below, Oklahoma	329	37.44	8.8
	Kerosine	Tractor kerosine	Tractor fuel, Arkansas	246	32.60	7.5
		Tractor kerosine, high octane	Kerosine and/or No. 1 fuel, Baton Rouge	274	33.58	8.2
		Illuminating kerosine	41 to 43 gravity, water white kerosine, Gulf Coast cargoes	324	30.54	10.6
		Illuminating kerosine, heavy high-ignition-temperature kerosine for lighthouse lamps (pironaft)	Kerosine and/or No. 1 fuel, Baton Rouge	402	33.58	12.0
		Jet fuels T-1 and TS-1	41 to 43 gravity, water white kerosine, Gulf Coast cargoes	324	30.54	10.6
	Diesel fuel, light	Average of diesel fuels L and Z	No. 2 fuel, Gulf Coast cargoes	245	27.90	8.8
		Diesel fuel DL	43 to 47 diesel index gas oil, Gulf Coast cargoes	235	27.67	8.5
		Diesel fuels DA, DZ, and DS	48 to 52 diesel index gas oil, Gulf Coast cargoes	255	28.07	9.1

* Footnotes for Table 5 follow on p. 36.

Table 5

USSR and US: Specifications, Prices, and Ruble-Dollar Price Ratios for Petroleum Products
1955
(Continued)

Standard Industrial Classification Number	Category and Item	Specifications		Prices ^{a/}		Ratio (Rubles per Dollar)
		USSR	US	Rubles per Metric Ton	Dollars per Metric Ton	
2911 (Continued)	Diesel fuel, heavy	Motor fuels DT-1 (M-3), DT-2 (M-4), and DT-3 (M-5)	Average of No. 4 fuel, Baltimore, and No. 5 fuel, Baltimore	222	21.79	10.2
		Solar oil	No. 2 fuel oil, Houston	229	29.70	7.7
	Lubricants		<u>Pale Neutral Oils Vis. at 100° F</u>			
		Autotractor oil AK-15 (avtol 18)	2,000 Vis. No. 4 color, South Texas	683	47.04	14.5
		Autotractor oil AK-10 (avtol 10)	Average of 1,200 Vis. No. 3 to 4 color, South Texas, and 2,000 Vis. No. 4 color, South Texas	753	46.31	16.3
		Autotractor oils AKZ-p-6 and AKZ-p-10	Average of 750 Vis. No. 3 to 4 color, South Texas, and 1,200 Vis. No. 3 to 4 color, South Texas	1,003	44.84	22.4
		Diesel oils D-11; Dp-8, Dp-11, Dp-14 (all three with additive AZNII TsIATIM-1); and Dp-8, Dp-11, and Dp-14 (all three with additive TsIATIM-339)	300 Vis. No. 3 color, Tulsa	1,001	42.88	23.3
		Oil for low-speed diesel (motor), M and T	250 Vis. No. 3 color, Tulsa	455	41.40	11.0
		Automobile transmission oil	150 Vis. No. 3 color, Tulsa	275	39.19	7.0
		Autotractor transmission oil, summer	86 to 110 Vis. No. 2 color, Tulsa	243	36.89	6.6
		Autotractor transmission oil, winter	150 Vis. No. 3 color, Tulsa	275	39.19	7.0
		Instrument oil (MVP)	60 to 85 Vis. No. 2 color, Tulsa	727	36.16	20.1
		Industrial oil				
		12 (spindle 2)	60 to 85 Vis. No. 2 color, Tulsa	423	36.16	11.7
		20 (spindle 3)	86 to 110 Vis. No. 2 color, Tulsa	423	36.89	11.5
		30 (machine 1)	150 Vis. No. 3 color, Tulsa	423	39.19	10.8
		45 (machine 5)	180 Vis. No. 3 color, Tulsa	423	39.93	10.6
		50 (machine 5U)	250 Vis. No. 3 color, Tulsa	671	41.40	16.2
		Leached 20V (spindle 3V)	86 to 110 Vis. No. 2 color, Tulsa	283	36.89	7.7
		Leached 45V (machine 5V)	200 Vis. No. 3 color, Tulsa	283	40.66	7.0
		Oil for high-speed machines L (Velosit) or for high-speed machines T (vaseline)	60 to 85 Vis. No. 2 color, Tulsa	447	36.16	12.4

Table 5
(Continued)

Standard Industrial Classification Number	Category and Item	Specifications		Prices ^{a/}		Ratio (Rubles per Dollar)	
		USSR	US	Rubles per Metric Ton	Dollars per Metric Ton		
2911 (Continued)	Cylinder oil						
	11 (cylinder 2)	250 Vis. No. 3 color, Tulsa		455	41.40	11.0	
	24 (Viskozoin)	150 Vis. No. 3 color, Tulsa		320	39.19	8.2	
	Axle oil						
	L	200 Vis. No. 3 color, Tulsa		223	40.66	5.5	
	Z and S	250 Vis. No. 3 color, Tulsa		253	41.40	6.1	
		<u>Neutral Oil Solvent</u>					
	Oil for rolling mills	300 Vis. at 100° F, 0 to 10 pour test 95 V.I., Gulf Coast cargoes		1,031	51.48	20.0	
		<u>Lubes-Cylinder Stock</u>					
	Cylinder oil						
	38 (cylinder 6)	600 Flash, West Pennsylvania		554	42.62	13.0	
	52 (vapor)	630 Flash, West Pennsylvania		831	45.67	18.2	
	Residual and others	Fleet mazut	Average of No. 5 fuel oil, Baton Rouge, and Bunker C fuel, Baton Rouge		211	15.85	13.3
		Fuel oils (furnace mazuts), low sulfur, 20, 40, 60, 80, and 100 with a sulfur content up to 0.5 percent (low sulfur boiler mazut)	Average of No. 2 fuel and No. 4 fuel, Baltimore		206	25.90	8.0
	Fuel oils (furnace mazuts), sulfurous, 20, 40, 60, 80, and 100 with a sulfur content of from 0.5 to 1.0 percent, and fuel oils, high sulfur, 20, 40, 60, 80, and 100 with a sulfur content of more than 1 percent (sulfurous boiler mazut)	Average of No. 4 fuel and No. 6 fuel, no sulfur guarantee, Baltimore		142	18.65	7.6	
	Petroleum paraffin, technical highly refined (A,B); medical; technical purified (G,D)	Wax, melting point AMP, 3° higher than BMP, 133 to 135 fully refined, New York Domestic		2,443	188.49	13.0	

Table 5

USSR and US: Specifications, Prices, and Ruble-Dollar Price Ratios for Petroleum Products
1955
(Continued)

Standard Industrial Classification Number	Category and Item	Specifications		Prices ^{a/}		Ratio (Rubles per Dollar)
		USSR	US	Rubles per Metric Ton	Dollars per Metric Ton	
2911 (Continued)		Gasoline, solvent used in the rubber industry (Galosha)	Rubber solvent, Group 3	532	45.96	11.6
		Gasoline, solvent used in the paint industry (white spirit)	V.M. and P. naphtha, Group 3	429	45.96	9.3

- a. Unless otherwise indicated, ruble prices are from source 42/ and have been adjusted to exclude transport charges. (See Appendix A, 1, b, p. 15, above.) Dollar prices are from source 43/.
- b. It is assumed that the wellhead price of natural gas is approximately the same as the estimated average cost of producing natural gas, or 14 rubles per 1,000 cubic meters.
- c. 44/
- d. Average prices vary because the prices for the two types of gasoline have been weighted by different proportions in each case.

Table 6

USSR and US: Specifications, Prices, and Ruble-Dollar Price Ratios for Paper and Paperboard
1955

Standard Industrial Classification Number	Category and Item	Specifications		Prices		Ratio (Rubles per Dollar)
		USSR	US	Rubles per Metric Ton ^a /	Dollars per Metric Ton ^b /	
2621	Paper mills, except building paper mills					
	Newsprint	Newsprint, roll, 50 grams per square meter, delivered	Newsprint, standard roll, delivered contract price	1,246 ^c /	139	9.0
	Book paper	Typographic paper No. 1a, sheet, glazed, 60 grams per square meter, delivered	Grade "A," English finish, sheet, 59 grams per square meter, delivered	2,860	315	9.1
	Fine paper	Typewriter paper, machine finish, sheet, delivered	Wood bond No. 4, sheet, delivered	2,690	325	8.3
	Coarse paper	Sulfate-cellulose (kraft) wrapping paper, roll, 65 grams per square meter, delivered	Standard kraft roll, 65 grams per square meter, delivered	1,860	189	9.8
2631	Paperboard mills					
	Corrugated paperboard	Corrugated paperboard, sheet, delivered	0.009 corrugating medium, sheet, delivered	1,960	139	14.1
	Fiberboard	Book binder and box board, brown sheet, delivered	Box or chip board, ground wood fiber, sheet, delivered	1,440	151	9.5

a. Unless otherwise indicated, ruble prices are estimated from source ⁴⁵/ and adjusted to a delivered basis.

b. Unless otherwise indicated, dollar prices are from source ⁴⁶/.

c. 1950 price ⁴⁷/ adjusted to 1955 by estimating a 15-percent reduction in prices between 1950 and 1955.

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Table 7

USSR and US: Specifications, Prices, and Ruble-Dollar Price Ratios for Chemicals
1955

Standard Industrial Classification Number	Category and Item	Specifications ^{a/} *		Prices		Ratio (Rubles per Dollar)
		USSR	US	Rubles per Metric Ton ^{b/}	Dollars per Metric Ton ^{c/}	
2812	Alkalies and chlorine					
	Chlorine	99.5 percent Cl ₂		280	64.61	4.3
	Sodium bicarbonate	98 percent NaHCO ₃	USP, powdered	390	50.72	7.7
	Soda ash	Na ₂ CO ₃	Dense	275	30.87	8.9
	Caustic soda	Liquid	Liquid	924	59.54	15.5
	Caustic soda	Cake, 95 percent NaOH	Cake, NaOH 98 percent	1,300	84.89	15.3
2814	Cyclic (coal-tar) crudes					
	Naphthalene	Crude	Crude	1,195	154.35	7.7
	Benzene			1,300	109.19	11.9
2818	Industrial organic chemicals, n.e.c. ^{d/}					
	Methanol	Synthetic, Grade I	Synthetic	1,920	92.02	20.9
	Acetone	Synthetic, Grade I		3,900	154.35	25.3
	Ethylene dichloride	97 percent C ₂ H ₄ Cl ₂		425	198.45	2.1
2819	Industrial inorganic chemicals, n.e.c. ^{d/}					
	Nitric acid, weak	Grade B, 60 percent HNO ₃	58.5 to 68 percent HNO ₃	192	48.23	4.0
	Nitric acid, con- centrated	Grade II, 96 percent HNO ₃	94.5 to 95.5 percent HNO ₃	489	95.09	5.1
	Ammonium sulfate			250	46.28	5.4
	Ammonium nitrate	Grade C, 99.2 percent NH ₄ NO ₃	Fertilizer grade	430	74.94	5.7
	Sodium sulfate (salt cake)	Grade I		235 ^{e/}	30.86	7.6
	Calcium carbide	Grade I	Standard generator size	1,018 ^{f/}	148.11	6.9
	Hydrochloric acid	Synthetic, technical, 31 percent	32 percent	170	33.06	5.1
	Sulfuric acid, tower	75 percent	78 percent	137	20.50	6.7
	Sulfuric acid, contact	92.5 percent	93 percent	190	24.63	7.7

* Footnotes for Table 7 follow on p. 39.

Table 7
(Continued)

Standard Industrial Classification Number	Category and Item	Specifications ^{a/}		Prices		Ratio (Rubles per Dollar)	
		USSR	US	Rubles per Metric Ton ^{b/}	Dollars per Metric Ton ^{c/}		
2819 (Continued)	Magnesium oxide	Grade I, 89 percent MgO	Synthetic rubber grade	4,700	644.96	7.3	
	Synthetic ammonia, anhydrous	Grade B, 99 percent NH ₃	Fertilizer grade	900	95.32	9.4	
	Aqueous ammonia	Technical, synthetic, 25 percent	25 percent	251	26.45 ^{g/}	9.5	
	Ammonium chloride	Grade A	White granulated	900	115.76	7.8	
	Copper sulfate	98.2 percent CuSO ₄ .5H ₂ O	Crystals, 99 percent	2,250	270.11	8.3	
	Trisodium phosphate	95 percent, Na ₃ PO ₄ .12H ₂ O	Crystals	620	97.02	6.4	
	Barium chloride	Grade A, 95 percent BaCl ₂ .2H ₂ O	Technical	1,680	132.30	12.7	
	Hydrogen peroxide	27.5 to 31 percent H ₂ O ₂	35 percent	3,500	396.90	8.8	
	Calcium chloride, solid	67 percent, fused	73 to 75 percent, solid	690	28.10	24.6	
	Calcium chloride, flake	83 percent, dehydrated	77 to 80 percent, flake	895	29.75	30.1	
	Borax (sodium borate)	50.2 percent Na ₂ B ₄ O ₇	Granular, decahydrate	3,060	45.46	67.3	
	2821	Plastics materials, synthetic resins, and nonvulcanizable elastomers					
		Polyvinyl chloride			6,800	684.00 ^{h/}	9.9
Urea resins				5,000	727.52 ^{i/}	6.9	
2871	Fertilizers						
	Superphosphate	Grade I		161	18.45	8.7	

a. Where detailed specifications are not available, comparability is based on methods of manufacture and comparable industrial use.

b. Unless otherwise indicated, ruble prices are from source ^{48/}.c. Unless otherwise indicated, US prices are from source ^{49/}.

d. Not elsewhere counted.

e. Adjusted to basis of 100 percent.

f. Adjusted on the basis of acetylene yield.

g. Price quoted at \$105.79 per metric ton, anhydrous basis.

h. ^{50/}i. ^{51/}

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Table 8

USSR and US: Specifications, Prices, and Ruble-Dollar Price Ratios for Construction Materials
1955

Standard Industrial Classification Number	Category and Item	Specifications		Prices		Ratio (Rubles per Dollar)	
		USSR	US	Rubles per Unit	Dollars per Unit		
2951	Paving mixtures and blocks	Petroleum bitumen, Grades 4 to 5	Asphalt binders and flux	290 per metric ton <u>a</u> /*	22.43 per metric ton <u>b</u> /	12.9	
2952	Asphalt felts and coatings	Roofing felt	Soft roofing, Ruberoid RCM-500	Asphalt felt	1.4 per square meter <u>c</u> /	0.33 per square meter <u>d</u> /	4.2
			Soft roofing, roofing tar paper T-350	Tar felt	1.4 per square meter	0.33 per square meter	4.2
3211	Flat glass	Window glass, double strength, Grade I	Window glass, double strength, quality A	9.8 per square meter <u>e</u> /	1.93 per square meter <u>f</u> /	5.1	
3241	Cement, hydraulic	Mark 400	Portland cement, bulk	144 per metric ton <u>g</u> /	20.9 per metric ton <u>h</u> /	6.9	
3251	Brick and structural clay tile	Brick	Clay building brick, GOST <u>i</u> / 530-54, standard clay brick, Mark 100, 25 by 12 by 6.6 centimeters	Common red brick, 8 by 3.75 by 2.5 inches	243 per 1,000 <u>j</u> /	55.33 per 1,000 <u>k</u> /	4.4
		Ready mixed concrete	Commercial Grade 100	Redi-mix	119 per cubic meter <u>l</u> /	16.41 per cubic meter <u>m</u> /	7.3
3274	Lime	Lime, GOST 1174-51	Lime, hydrated, building, finishing	122.14 per metric ton <u>n</u> /	20.88 per metric ton <u>o</u> /	5.8	
3275	Gypsum products	Plaster, base coat	Alabaster (construction gypsum), GOST 125-41	Plaster, gypsum, base coat	120 per metric ton <u>p</u> /	16.47 per metric ton <u>q</u> /	7.3

* Footnotes for Table 8 follow on p. 41.

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Table 8
(Continued)

Standard Industrial Classification Number	Category and Item	Specifications		Prices		Ratio (Rubles per Dollar)
		USSR	US	Rubles per Unit	Dollars per Unit	
3292	Asbestos products					
	Asbestos cement shingles	Mark II	3/16 inch	3.9 per square meter <u>r/</u>	1.07 per square meter <u>s/</u>	3.6
	Asbestos cement pipe	GOST 539-48, Mark VND-8 and VND-10				
		155 mm	6 inches	11.73 per meter <u>t/</u>	4.97 per meter <u>u/</u>	2.4
		305 mm	12 inches	38.53 per meter <u>v/</u>	7.77 per meter <u>u/</u>	5.0
3296	Mineral wool	Mineral wool, Grade II	Mineral wool insulation	315 per metric ton <u>v/</u>	83.77 per metric ton <u>w/</u>	3.8
a. <u>52/</u>		1. Gosudarstvennyy Obshcheyuznyy Standart (All Union Standard).				p. <u>66/</u>
b. <u>53/</u>		j. <u>60/</u>			q. <u>67/</u>	
c. <u>54/</u>		k. <u>68/</u>		US price of \$34.58 per 1,000 adjusted to compensate for difference in size of US	r. <u>68/</u>	
d. <u>55/</u>				and Soviet brick. Soviet brick is roughly 1.6 times the volume of US brick. <u>61/</u>	s. <u>69/</u>	
e. <u>56/</u>		l. <u>62/</u>			t. <u>70/</u>	
f. <u>57/</u>		m. <u>63/</u>			u. <u>71/</u>	
g. <u>58/</u>		n. <u>64/</u>			v. <u>72/</u>	
h. <u>59/</u>		o. <u>65/</u>			w. <u>73/</u>	

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Table 9

USSR and US: Specifications, Prices, and Ruble-Dollar Price Ratios for Iron and Steel Products
1955

Standard Industrial Classification Number	Category and Item	Specifications		Prices		Ratio (Rubles per Dollar)
		USSR	US	Rubles per Metric Ton <u>a</u> / [*]	Dollars per Metric Ton <u>b</u> / [*]	
3312	Blast furnaces, including coke ovens, steel works, and rolling mills					
	Rails	Open-hearth, No. 1, P-50 type, 12.5-meter lengths	Standard, carbon steel No. 1, open hearth with 8-percent seconds arising, 39-foot standard lengths with usual shorts, section No. 11525 (115 pounds per lineal yard), ASTM, <u>c</u> / AREA, <u>d</u> / or equivalent specifications, controlled cooling, base quantity; extras comprise controlled cooling	618	106 <u>e</u> / [*]	5.8
	Rail accessories	Two flanged tie plates	Standard section, low carbon, cold punched, AREA specifications or AISI <u>f</u> / base design to AREA specifications, weight more than 12 pounds per tie plate, base quantity	631	124	5.1
	Pipe and tube					
	Buttweld standard pipe	Carbon, water or gas pipe with threads and couplings, ordinary strength, 1-1/4 inches (about 32 mm <u>g</u> / [*])	Black, carbon, threaded and coupled, 1-1/4-inch nominal diameter, random 1 length, weight 228 pounds per 100 feet, carload lots; jobbers and distributors discounts	927	171	5.4
	Seamless line pipe	Carbon steel, first-class grade, St. 2 or 4, 219-mm diameter, 6-mm wall thickness	Carbon steel (electric weld or seamless), black, plain ends, 8-5/8-inch outside diameter, 0.250-inch wall thickness, random lengths, carload lots; jobbers and distributors discounts	1,034 <u>h</u> / [*]	165	6.3

* Footnotes for Table 9 follow on p. 46.

Table 9
(Continued)

Standard Industrial Classification Number	Category and Item	Specifications		Prices		
		USSR	US	Rubles per Metric Ton ^{a/}	Dollars per Metric Ton ^{b/}	Ratio (Rubles per Dollar)
3312 (Continued)	Seamless casing	Seamless casing with threads and couplings, Class I, 168-mm (6-5/8-inch) diameter pipe with a wall thickness of 8 mm	Casing, oil well, carbon steel, Grade J-55, seamless, short threads and couplings, 7-inch outside diameter, 20 pounds per foot, carload lots; jobbers and distributors discounts	808	130	6.2 <u>1/</u>
	Heavy sections	Angles, unequal leg, 150 by 100 mm, open-hearth St. 3 killed steel; this sample is representative of the heavy section category -- that is, prices for such items as I-beams and channels are almost identical	Structural shapes, carbon steel, 6 by 4 by 1/2-inch angles, 30 feet long, ASTM specifications, A-7, base quantity; the extra is size	616	107	5.8
	Light sections (bars and bar-size shapes)					
	Hot-rolled carbon bars	Hot-rolled carbon rounds, 38-mm diameter, open-hearth St. 3 killed steel	Hot-rolled carbon 1-1/2-inch (38-mm) rounds, 16 to 20 feet long, specifications C-1030, special quality, base quantity; extras comprise size, quality, and chemistry	619	118	5.2
	Hot-rolled alloy bars	Rounds and squares, hot-rolled alloy steel, type 35 KhM (0.40 carbon, 0.80 to 1.10 chrome, 0.15 to 0.25 molybdenum)	Hot-rolled alloy steel, 1-1/2-inch rounds, 18 to 20 feet long, specifications AISI 4140, open-hearth, annealed, machine straightened, base packaging, base quantity; extras comprise size, grade, straightness, and annealing	1,387	207	6.7
	Hot-rolled stainless bars	Stainless steel round of 25-mm diameter of type 1 Kh 18 N9 j/	Stainless steel, type 303, 3/8 by 2-inch flats, mill lengths, annealed, base packaging, base quantity; extras comprise size and annealing	4,114	992	4.1

Table 9

USSR and US: Specifications, Prices, and Ruble-Dollar Price Ratios for Iron and Steel Products
1955
(Continued)

Standard Industrial Classification Number	Category and Item	Specifications		Prices		Ratio (Rubles per Dollar)
		USSR	US	Rubles per Metric Ton ^{a/}	Dollars per Metric Ton ^{b/}	
3312 (Continued)	Tool steel bars					
	High-speed tool steel	High-speed tool rounds, 16 to 30-mm diameter, type R18 (RFL), 17.5 to 19.0 tungsten, 1.0 to 1.4 vanadium, 3.8 to 4.6 chrome	High-speed tool steel, hot-rolled alloy, tungsten 18, chrome 4, vanadium 1, 1-inch rounds, 10 to 14 feet mill lengths, annealed; extras comprise size and annealing	19,380	3,549	5.5
	Tool steel	Alloy tool steel rounds, type 5KhVG (0.55 to 0.70 carbon, 0.90 to 1.20 manganese, 0.50 to 0.80 chrome, and 0.50 to 0.80 tungsten), 50-meter diameter ^{k/}	Alloy tool steel, oil hardening die steel, carbon 0.90, manganese 1.25, chrome 0.50, tungsten 0.50, 2-inch rounds, 10 to 14 feet mill lengths, annealed; extras comprise annealing and quantity	2,071	1,157	1.8
	Cold-finished carbon bars	Cold-finished bars with increased manganese, type 15G (0.12 to 0.20 carbon, manganese less than 1.5, sulfur and phosphorous less than 0.040), 15.0 to 23.0-mm diameter rounds	Cold-finished, carbon steel, 5/8-inch rounds, 10 to 12 feet long, specifications B1112, standard quality, base quantity; extras comprise size, chemistry, and quality	1,006	191	5.3
	Wire rod	5-mm diameter, open-hearth, St.3 rimming grade	No. 5 coils, 0.218 inch, carbon steel, base quantity; the extra is size	607	117	5.2
	Sheet					
	Hot-rolled carbon	Ordinary quality hot-rolled carbon sheet, 3 mm, open-hearth rimming grade, Mst 3	Hot-rolled carbon steel, 10 gauge, 48 inches (1,220 mm) wide by 120 inches (3,050 mm) long, sheared edge, cut length, base chemistry, commercial quality, base packaging, base quantity; extras comprise size, gauge, width, length, and cutting edge	635	113	5.6
	Cold-rolled carbon	Cold-rolled carbon sheet, constructional grade, normal drawing quality, thickness 0.8 to 0.95-mm, 0.10 to 0.20 carbon; size extra, 5 rubles	Cold-rolled sheet, carbon steel, 20 gauge, 36 by 120 inches, base chemistry, standard flatness and shearing, drawing quality, single paper wrapped on skids, base quality; extras comprise size, gauge, width, length, quality, and packaging	1,062	138	7.7

Table 9
(Continued)

Standard Industrial Classification Number	Category and Item	Specifications		Prices		Ratio (Rubles per Dollar)
		USSR	US	Rubles per Metric Ton ^{a/}	Dollars per Metric Ton ^{b/}	
3312 (Continued)	Electrical	Electrical sheet, dynamo grade, 0.5 mm thick, 860 by 1,720 mm <u>l/</u>	Electrical sheet, alloy steel specifications, electrical grade, 240 gauge, 30 by 108 inches (2,750 mm) long, single paper wrapped on skids, base quantity; extras comprise gauge and packaging	1,244	225	5.5
	Strip					
	Hot-rolled (ordinary steel)	2.5 to 3.5 mm thick, open-hearth St. 3 killed steel	Hot-rolled, carbon steel, 10 gauge, 12 by 240 inches, base chemistry, commercial quality, mill edge, base packaging, base quantity; extras comprise size and length	750	118	6.4
	Cold-rolled (quality steel)	Carbon steel, 0.90 mm thick <u>m/</u>	Carbon steel, coils, No. 4 temper, No. 2 finish, No. 3 edge, base chemistry, 6 inches (152 mm) by 0.050 inches (1.27 mm); extras comprise size and quantity	998	177	5.6
	Plate	Plate (thick sheet), 6 to 9 mm, open-hearth St. 3 rimming grade carbon; size extra, 5 rubles	Plate, carbon steel, 72 by 1/4 by 240 inches, ASTM specifications, A-7, base quantity; extras comprise thickness and physical requirement	585	109	5.4
	Blooms, billets, and slabs	Forging billets, 100 to 180 mm on a side, open-hearth St. 5 killed steel, base lengths 2/6 meters	Forging carbon steel billets, 4 by 4 inches by 10 to 15 feet long, specifications C-1045, base quantity; extras comprise size and chemistry	564	107	5.3

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Table 9

USSR and US: Specifications, Prices, and Ruble-Dollar Price Ratios for Iron and Steel Products
1955
(Continued)

-
- a. Unless otherwise indicated, ruble prices are from source 74/.
 - b. Unless otherwise indicated, dollar prices are from source 75/.
 - c. American Society for Testing Materials.
 - d. American Railway Engineers Association.
 - e. The extra, "controlled cooling," is only 7-1/2 cents per 100 pounds.
 - f. American Iron and Steel Institute.
 - g. Millimeters.
 - h. In 1950 the price differential between 6-mm and 8-mm wall for 219-mm diameter pipe was 7.1 rubles. It has been assumed that the same differential would apply in 1955.
 - i. The Soviet item is smaller than the US item with which it has been compared.
 - j. Soviet prices are not available for stainless flats. This comparison, however, is believed to be a fair one.
 - k. For strict comparability with the US type, the Soviet type 9KhVG should have been used. A 1955 price, however, is not available for this item. In 1950 the ruble prices for the 5 KhVG and the 9 KhVG were identical.
 - l. Comparability is only approximate because a Soviet item directly comparable to the US item with respect to size or grade is not produced.
 - m. Soviet price data are not available for cold-rolled strip over 0.90 mm, and for this reason 0.90 mm was chosen for comparison. Cold-rolled strip 1.27 mm thick would be cheaper than 0.90 mm.

Table 10

USSR and US: Specifications, Prices, and Ruble-Dollar Price Ratios for Nonferrous Metals
1955

Standard Industrial Classification Number	Category and Item	Specifications		Prices		Ratio (Rubles per Dollar)
		USSR	US	Rubles per Metric Ton ^{a/}	Dollars per Metric Ton ^{b/}	
3331	Primary smelting and refining of copper Cathodes	GOST ^{c/} 546-41, Mark MO, Cu 99.95, electrolytic copper	Cathodes, electrolytic, delivered Connecticut Valley	6,600	793.66	8.3
3332	Primary smelting and refining of lead Ingots	GOST 3778-47, Mark S-2, Pb 99.95	Ingots, common grade, St. Louis	7,150	326.28	21.9
3333	Primary smelting and refining of zinc Ingots	GOST 3640-47, Mark TS-2, Zn 99.9, Pb 0.05; Mark TS-3, Zn 99.7, Pb 1.0	Ingots, prime western zinc, St. Louis	2,975 ^{d/}	275.57	10.8
3334	Primary production of aluminum Unalloyed ingots	GOST 3549-47, Mark A-2, Al 99.00	Ingots, 99 percent plus f.o.b. shipping point	4,760	511.47	9.3
3339	Primary smelting and refining of other nonferrous metals, n.e.c. ^{e/} Cadmium	GOST 1467-42, Mark KD-0, Cd 99.95, Pb 0.02, Zn 0.01, Cu 0.01	Regular shapes, delivered	240,000	3,747.82	64.0
	Tin	GOST 860-41, Mark O-1, Sn 99.9	Straits, spot, New York	103,000	2,139.45	48.1
	Mercury	GOST 4658-49, Mark R-1, Hg 99.999		100,000	7,682.68 ^{f/}	13.0
	Antimony	GOST 1089-41, Mark SU-3, Sb 99.4	Domestic, bulk, carload lots, f.o.b. Laredo, Texas	17,000	628.31	27.1
	Magnesium	GOST 804-49, Mark MG-1, Mg 99.21	Ingots 99.8 percent Mg, f.o.b. Freeport, Texas	7,200	628.14 ^{g/}	11.5

- a. Unless otherwise indicated, ruble prices are from source ^{76/}.
b. Unless otherwise indicated, dollar prices are from source ^{77/}.
c. Gosudarstvennyy Obshcheyuznyy Standart (All-Union State Standard).
d. Arithmetic mean of prices for Mark TS-2 and TS-3 (3,150 and 2,800 rubles per metric ton, respectively).
e. Not elsewhere counted.
f. ^{78/}
g. ^{79/}

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Table 11

USSR and US: Calculation of Ruble-Dollar Price Ratios for Rail Freight Transport
1955

Standard Industrial Classification Number	Category and Item	Metric Tons Originated in the US, 1955 a/* (Thousand Metric Tons)	Freight Revenue Received by US Railroads, 1955 b/ (Thousand Dollars)	US Average Short Line Haul per Unit of Weight c/	US Revenue per Metric Ton d/ (Dollars)	Soviet Base Rate per Metric Ton for Average US Haul e/ (Rubles)	Average US Revenue per Metric Ton - Kilometer for Average US Haul f/ (Dollars)	Soviet Rate per Metric Ton - Kilometer for Average US Haul g/ (Rubles)	Ratio g/ (Rubles per Dollar)
4011	Rail freight transport								
	Foodstuffs								
	Wheat	280	1,904	523	6.80	19.30	0.0130	0.0368	2.8
	Corn	165	968	544	5.87	20.00	0.0108	0.0360	3.3
	Wheat flour	79	560	999	7.09	36.70	0.0071	0.0374	5.3
	Potatoes (not sweet)	33	718	1,942	21.76	64.91	0.0112	0.0333	3.0
	Fresh meat, n.e.c. h/	25	946	1,622	37.84	118.80	0.0233	0.0720	3.1
	Food products, n.e.c. h/	99	1,848	1,572	18.67	62.00	0.0119	0.0400	3.4
	Coal and coke								
	Anthracite	152	542	295	3.57	11.20	0.0121	0.0386	3.2
	Bituminous coal	3,140	10,612	468	3.38	15.40	0.0072	0.0330	4.6
	Coke	180	643	386	3.57	13.20	0.0092	0.0352	3.8
	Petroleum products								
	Gasoline	88	438	312	4.98	25.00	0.0160	0.0794	5.0
	Fuel and road oil, n.e.c. h/	90	507	468	5.63	21.00	0.0120	0.0452	3.8
	Refined petroleum, n.e.c. h/	82	1,153	1,056	14.06	49.00	0.0133	0.0460	3.5
	Ores								
	Iron Ore	1,434	2,155	222	1.50	7.80	0.0068	0.0339	5.0
	Iron and steel								
	Manufactured iron and steel	287	2,650	600	9.23	18.50	0.0154	0.0316	2.1
	Iron and steel pipe, fittings	65	994	1,044	15.29	30.40	0.0146	0.0297	2.0
	Scrap iron	227	918	214	4.04	10.30	0.0189	0.0490	2.6

* Footnotes for Table 11 follow on p. 49.

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Table 11
(Continued)

Standard Industrial Classification Number	Category and Item	Metric Tons Originated in the US, 1955 ^{a/} (Thousand Metric Tons)	Freight Revenue Received by US Railroads, 1955 ^{b/} (Thousand Dollars)	US Average Short Line Haul per Unit of Weight ^{c/}	US Revenue per Metric Ton ^{d/} (Dollars)	Soviet Base Rate per Metric Ton for Average US Haul ^{e/} (Rubles)	Average US Revenue per Metric Ton - Kilometer for Average US Haul ^{f/} (Dollars)	Soviet Rate per Metric Ton - Kilometer for Average US Haul ^{e/} (Rubles)	Ratio ^{g/} (Rubles per Dollar)
4011 (Continued)	Building materials								
	Gravel and sand, n.e.c. ^{h/}	561	733	135	1.31	5.20	0.0097	0.0398	4.1
	Crushed stone	472	754	177	1.60	5.70	0.0090	0.0338	3.8
	Portland cement	294	1,340	240	4.56	12.70	0.0190	0.0552	2.9
	Lumber and shingles	231	4,019	2,113	17.40	53.10	0.0082	0.0247	3.0
	Chemicals								
	Fertilizers, n.e.c. ^{h/}	125	778	576	6.22	19.20	0.0108	0.0328	3.0
	Phosphate rock	165	420	372	2.55	14.20	0.0069	0.0381	5.5
	Sodium products	88	763	686	8.67	32.20	0.0126	0.0460	3.7
	Chemicals, n.e.c. ^{h/}	94	1,550	1,349	16.49	57.80	0.0122	0.0436	3.6
	Machinery and equipment								
	Machinery and machines	28	919	1,324	32.82	82.00	0.0248	0.0619	2.5
	Passenger automobiles	13	763	1,399	58.69	132.00	0.0420	0.0944	2.2
	Vehicle parts, n.e.c. ^{h/}	98	2,709	1,230	27.64	77.00	0.0225	0.0626	2.8
	Miscellaneous								
	Paperboard and fiberboard	60	858	1,212	14.30	50.10	0.0118	0.0409	3.5
	Feed, n.e.c. ^{h/}	156	784	536	5.03	19.30	0.0094	0.0368	3.9

a. One percent sample. Data ^{80/} converted from short tons to metric tons.b. One percent sample. ^{81/}c. One percent sample. Data ^{82/} converted from miles to kilometers.

d. Column 2 divided by column 1.

e. Soviet freight rates from source ^{83/}.

f. Column 4 divided by column 3.

g. Column 7 divided by column 6.

h. In this table (and in Table 22, p. 66, below), n.e.c. represents the categories for not otherwise specified (NOS) as used by the Interstate Commerce Commission. As such, the n.e.c. as used in this table includes most of the specified items.

Table 12

USSR and US: Specifications, Prices, and Ruble-Dollar Price Ratio for Rail Passenger Service
1955

Standard Industrial Classification Number	Category	Specifications		Prices		Ratio (Rubles per Dollar)
		USSR	US	Rubles a/ per Trip	Dollars b/ per Trip	
4021	Rail passenger service	Adult one-way fare, soft car, basic fare	Adult one-way fare, first class, basic fare plus pullman seat space	97.05	15.33	6.3

a. Rate applicable to a distance block of 431 to 460 kilometers. 84/

b. Arithmetic mean of rates applicable to the East and Southeast, based on unpublished statistics from the Interstate Commerce Commission, applied to a trip distance of 438 kilometers.

Table 13

USSR and US: Specifications, Prices, and Ruble-Dollar Price Ratios for Communications Services a/
1955

Standard Industrial Classification Number	Category and Item	Specifications		Prices		Ratio (Rubles per Dollar)
		USSR	US	Rubles per Unit	Dollars per Unit	
4811	Telephone communication (wire and radio)					
	Telephone service	Long-distance Home or private Business or enterprise	Long-distance Home or private Business or enterprise	N.A. 300 <u>c/</u> 500 <u>c/</u>	N.A. 58 <u>d/</u> 122 <u>d/</u>	4.5 <u>b/</u> 5.2 4.1
	Telegraph communication (wire and radio)					
4821	Telegraph service	Telegram, common	Telegram, full rate	5.25 <u>e/</u>	1.32 <u>f/</u>	4.0
	4899	Communications services, n.e.c. <u>g/</u>				
	First-class mail	Letters Post cards	Letters Post cards	0.40 <u>h/</u> 0.25 <u>h/</u>	0.03 0.02	13.3 12.5

a. Including intermediate and final services.

b. Arithmetic mean of ratios derived by comparing Soviet and US rates for a 3-minute call for eight distance units. 85/c. 86/d. It was assumed that the average rate increased between 1950 87/ and 1955 in the same proportion as revenues from subscriptions for this period. 88/e. Estimated from data on volume and revenue in source 89/.f. 90/

g. Not elsewhere counted.

h. 91/

Table 14

USSR and US: Prices and Ruble-Dollar Price Ratios for Electric Power a/
1955

Standard Industrial Classification Number	Category and Item	Prices <u>b/</u>		Ratio (Rubles per Dollar)
		Kopeks per Kilowatt-Hour	Cents per Kilowatt-Hour	
4911	Electric companies and systems			
	Industrial consumers, including railroads	12.2	0.91	13.4
	Residential and com- mercial consumers, including rural and governmental consumers	40.0	2.51	15.9

a. Including intermediate and final services.

b. For sources and methodology used in deriving rates, see Appendix A.

Table 15

USSR and US: Aggregate Ruble-Dollar Price Ratios for Solid Fuels
1955

Standard Industrial Classification Number	Category and Item	Ratio <u>a/</u> (Rubles per Dollar)	Weights (Percent)		Weighted Ratio (Rubles per Dollar)	
			USSR <u>b/</u>	US <u>c/</u>	Soviet Weights	US Weights
	Solid fuels		<u>100.0</u>	<u>100.0</u>	17.0	18.2
1111	Anthracite	11.6	19.4	9.0		
1211	Bituminous coal	18.8	63.3	90.7		
1212	Lignite	21.0	17.3	0.3		

a. Price ratios from Table 4, p. 32, above.

b. Based on prices derived from source 92/ multiplied by estimated physical production for all areas producing coal.c. 93/

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Table 16

USSR and US: Aggregate Ruble-Dollar Price Ratios for Petroleum Products
1955

Standard Industrial Classification Number	Category and Item	Ratio a/* (Rubles per Dollar)	Weights (Percent)		Weighted Ratio (Rubles per Dollar)	
			USSR b/	US c/	Soviet Weights	US Weights
	Petroleum products		<u>100.0</u>	<u>100.0</u>	10.5 (4.6) d/	11.8 (4.9) d/
1311	Crude petroleum and natural gas e/	3.7	<u>4.1</u>	<u>7.4</u>	3.7	3.7
2911	Petroleum refining		<u>95.9</u>	<u>92.6</u>	11.4 (4.6) d/	12.5 (5.0) d/
	Aviation gasoline		<u>7.2</u>	<u>5.6</u>	12.3 f/	12.3 f/
	B-100/130	14.8				
	B-95/130	13.3				
	B-93/130	13.0				
	B-91/115	10.8				
	B-70	9.7				
	Automotive gasoline		<u>32.8</u>	<u>45.9</u>	14.9 f/	14.9 f/
	A-66 and A-70	15.1				
	A-74	18.4				
	Minimum octane number of 56	11.3				
	Ligroine	8.8	Negl.	Negl.		
	Kerosine		<u>12.8</u>	<u>5.3</u>	9.8 f/	9.8 g/
	Tractor kerosine	7.5				
	Tractor kerosine, high octane	8.2				
	Illuminating kerosine	10.6				
	Illuminating kerosine, heavy high-ignition-temperature kerosine for lighthouse lamps (pironaft)	12.0		3.6		
	Jet fuels T-1 and TS-1	10.6		1.7		
	Diesel fuel, light		<u>13.4</u>	<u>5.0</u>	8.8 f/	8.8 f/
	L and Z	8.8				
	DL	8.5				
	DA, DZ, and DS	9.1				

* Footnotes for Table 16 follow on p. 56.

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Table 16
(Continued)

Standard Industrial Classification Number	Category and Item	Ratio a/ (Rubles per Dollar)	Weights (Percent)		Weighted Ratio (Rubles per Dollar)	
			USSR b/	US c/	Soviet Weights	US Weights
2911 (Continued)	Diesel fuel, heavy		<u>4.1</u>	<u>12.9</u>	9.0 f/	9.0 f/
	Motor fuels DT-1 (M-3), DT-2 (M-4), and DT-3 (M-5)	10.2				
	Solar oil	7.7				
	Lubricants		<u>8.7</u>	<u>2.9</u>	12.4 f/	12.4 f/
	Autotractor oil, AK-15 (avtol 18)	14.5				
	Autotractor oil, AK-10 (avtol 10)	16.3				
	Autotractor oils, AKZ-p-6 and AKZ-p-10	22.4				
	Diesel oils D-11; Dp-8, Dp-11, Dp-14 (all three with additive AZNII TsIATIM-1); and Dp-8, Dp-11, and Dp-14 (all three with additive TsIATIM-339)	23.3				
	Oil for low-speed diesel (motor), M and T	11.0				
	Automobile transmission oil	7.0				
	Autotractor transmission oil, summer	6.6				
	Autotractor transmission oil, winter	7.0				
	Instrument oil (MVP)	20.1				
	Industrial oil					
	12 (spindle 2)	11.7				
	20 (spindle 3)	11.5				
	30 (machine 1)	10.8				
	45 (machine 8)	10.6				
	50 (machine 8U)	16.2				
	Leached 20V (spindle 3V)	7.7				
	Leached 45V (machine 8V)	7.0				
	Oil for highspeed machines L (Velosit) or for highspeed machines T (vaseline)	12.4				

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Table 16

USSR and US: Aggregate Ruble-Dollar Price Ratios for Petroleum Products
1955
(Continued)

Standard Industrial Classification Number	Category and Item	Ratio a/ (Rubles per Dollar)	Weights (Percent)		Weighted Ratio (Rubles per Dollar)	
			USSR b/ US c/	US c/ Soviet Weights	Soviet Weights	US Weights
2911 (Continued)	Cylinder oil					
	11 (cylinder 2)	11.0				
	24 (Viskozin)	8.2				
	38 (cylinder 6)	13.0				
	52 (vapor)	18.2				
	Axle oil					
	L	5.5				
	Z and S	6.1				
	Oil for rolling mills	20.0				
	Residual and others		16.9	15.0	10.5 f/	10.5 f/
	Fleet mazut	13.3				
	Fuel oils (furnace mazuts), low sulfur, 20, 40, 60, 80, and 100 with a sulfur content up to 0.5 percent (low sulfur boiler mazut)	8.0				
	Fuel oils (furnace mazuts), sulfurous, 20, 40, 60, 80, and 100 with a sulfur content of from 0.5 to 1.0 percent, and fuel oils, high sulfur, 20, 40, 60, 80, and 100 with a sulfur content of more than 1 percent (sulfurous boiler mazut)	7.6				
	Petroleum paraffin, technical highly refined (A, B); medical; technical purified (G, D)	13.0				
	Gasoline, solvent used in the rubber industry (Galosha)	11.6				
	Gasoline, solvent used in the paint industry (white spirit)	9.3				

a. Price ratios from Table 5, p. 33, above.

b. Based on 1955 values of production computed from estimated production multiplied by estimated average prices.

c. Based on estimated average prices, derived from physical quantities and value of consumption, multiplied by estimated production. 94/

d. See Appendix A, 2, b, p. 26, above. The ratios in parentheses reflect adjustment to exclude the turnover tax.

e. Represented by natural gas only.

f. Arithmetic mean of ruble-dollar ratios.

g. Arithmetic mean of ratios for tractor and illuminating kerosines combined with the ratio for jet fuel.

Table 17

USSR and US: Aggregate Ruble-Dollar Price Ratios for Paper and Paperboard
1955

Standard Industrial Classification Number	Category and Item	Ratio a/ (Rubles per Dollar)	Weights (Percent)		Weighted Ratio (Rubles per Dollar)	
			USSR b/	US c/	Soviet Weights	US Weights
	Paper and paperboard		<u>100.0</u>	<u>100.0</u>	9.6	10.1
2621	Paper mills, except building paper mills		<u>80.4</u>	<u>60.8</u>	9.1	9.1
	Newsprint	9.0	12.4	5.3		
	Book paper	9.1	22.9	25.0		
	Fine paper	8.3	15.5	12.4		
	Coarse paper	9.8	29.6	18.1		
2631	Paperboard mills		<u>19.6</u>	<u>39.2</u>	11.7	11.7
	Corrugated paperboard	14.1	11.3	18.8		
	Fiberboard	9.5	8.3	20.4		

a. Price ratios from Table 6, p. 37, above.

b. Based on production data estimated from source 95/ multiplied by average prices from Table 6.c. Based on production data estimated from source 96/ multiplied by average prices from Table 6.

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Table 18

USSR and US: Aggregate Ruble-Dollar Price Ratios for Chemicals
1955

Standard Industrial Classification Number	Category and Item	Ratio <u>a</u> / [*] (Rubles per Dollar)	Weights for the US <u>b</u> / (Percent)	Weighted Ratio (Rubles per Dollar)	
				Soviet Weights	US Weights
	Chemicals		<u>100.0</u>	11.0 <u>c</u> /	13.0
2812	Alkalies and chlorine		<u>5.8</u>		8.9
	Chlorine	4.3	2.0		
	Sodium bicarbonate	7.7	0.1		
	Soda ash	8.9	2.3		
	Caustic soda, liquid	15.5	0.6		
	Caustic soda, cake	15.3	0.8		
2814	Cyclic (coal-tar) crudes		<u>1.4</u>		9.8 <u>d</u> /
	Naphthalene	7.7			
	Benzene	11.9			
2818	Industrial organic chemicals, n.e.c. <u>e</u> /		<u>33.2</u>		20.9 <u>f</u> /
	Methanol	20.9			
	Acetone	25.3			
	Ethylene dichloride	2.1			
2819	Industrial inorganic chemicals, n.e.c. <u>e</u> /		<u>22.9</u>		9.1
	Nitric acid	4.6 <u>g</u> /	0.5		
	Ammonium sulfate	5.4	1.6		
	Ammonium nitrate	5.7	2.6		
	Sodium sulfate (salt cake)	7.6	0.5		
	Calcium carbide	6.9	1.7		
	Hydrochloric acid	5.1	1.0		

* Footnotes for Table 18 follow on p. 59.

Table 18
(Continued)

Standard Industrial Classification Number	Category and Item	Ratio a/ (Rubles per Dollar)	Weights for the US b/ (Percent)	Weighted Ratio (Rubles per Dollar)	
				Soviet Weights	US Weights
2819 (Continued)	Sulfuric acid, tower	6.7	1.0		
	Sulfuric acid, contact	7.7	5.4		
	Magnesium oxide	7.3	0.5		
	Synthetic ammonia, anhydrous	9.4	5.1		
	Aqueous ammonia	9.5	0.2		
	Ammonium chloride	7.8	0.2		
	Copper sulfate	8.3	0.6		
	Trisodium phosphate	6.4	0.4		
	Barium chloride	12.7	0.3		
	Hydrogen peroxide	8.8	0.3 h/		
	Calcium chloride, solid	24.6	0.1		
	Calcium chloride, flake	30.1	0.5		
	Borax (sodium borate)	67.3	0.4		
	2821	Plastics materials, synthetic resins, and nonvulcanizable elastomers		23.3	
	Polyvinyl chloride	9.9	18.0		
	Urea resins	6.9	5.3		
2871	Fertilizers		13.4 i/		8.7
	Superphosphate	8.7			

a. Price ratios from Table 7, p. 38, above.

b. Based on 1954 value of shipments from source 97/.

c. Estimated. See Appendix A, 2, b, p. 26, above.

d. Arithmetic mean of ratios.

e. Not elsewhere counted.

f. Median ratio.

g. Arithmetic mean of ratios for weak and concentrated nitric acid.

h. Estimated on the basis of 1947 data.

i. Based on value weights for mixed and superphosphate fertilizers.

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Table 19

USSR and US: Aggregate Ruble-Dollar Price Ratios for Construction Materials
1955

Standard Industrial Classification Number	Category and Item	Ratio <u>a/</u> (Rubles per Dollar)	Weights (Percent)		Weighted Ratio (Rubles per Dollar)	
			USSR <u>b/</u>	US <u>c/</u>	Soviet Weights	US Weights
	Construction materials		<u>100.0</u>	<u>100.0</u>	4.9	5.5
2952	Asphalt felts and coatings	4.2	5.5	14.7		
3211	Flat glass	5.1	9.3	19.0		
3241	Cement, hydraulic	6.9	24.5	30.7		
3251	Brick and structural clay tile	4.4	46.3	9.2		
3274	Lime	5.8	5.1	3.6		
3275	Gypsum products	7.3	2.4	10.5		
3292	Asbestos products	3.7 <u>d/</u>	6.9	12.3		

a. Price ratios from Table 8, p. 40, above.

b. Based on estimated value of production. 98/

c. Based on 1954 values of shipments from source 99/.

d. Arithmetic mean of ratios for asbestos cement shingles and asbestos cement pipe.

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Table 20

USSR and US: Aggregate Ruble-Dollar Price Ratios for Iron and Steel Products
1955

Standard Industrial Classification Number	Category and Item	Ratio a/ (Ruble per Dollar)	Weights (Percent)		Weighted Ratio (Ruble per Dollar)	
			USSR b/	US c/	Soviet Weights	US Weights
3312	Elast furnaces, including coke ovens, steel works, and rolling mills		<u>100.0</u>	<u>100.0</u>	5.4	5.9
	Rails	5.8	<u>5.2</u>	<u>1.1</u>	5.8	5.8
	Rail accessories	5.1	<u>1.3</u>	<u>0.5</u>	5.1	5.1
	Pipe and tube		<u>13.1</u>	<u>14.4</u>	5.9	5.7
	Buttweld standard pipe	5.4	4.4	9.4		
	Seamless line pipe and seamless casing	6.3 d/	8.7	5.0		
	Heavy sections	5.8	<u>11.4</u>	<u>5.1</u>	5.8	5.8
	Light sections (bars and bar-size shapes)		<u>33.8</u>	<u>21.6</u>	4.8	5.3
	Hot-rolled carbon bars	5.2	21.2	9.1		
	Hot-rolled alloy bars	6.7	6.3	4.9		
	Hot-rolled stainless bars	4.1	1.5	0.9		
	Tool steel bars	3.6 e/	4.0	3.2		
	Cold-finished carbon bars	5.3	0.8	3.5		
	Wire rod	5.2	<u>5.5</u>	<u>6.3</u>	5.2	5.2
	Sheet		<u>15.3</u>	<u>35.9</u>	6.2	6.8
	Hot-rolled carbon	5.6	8.1	13.8		
	Cold-rolled carbon	7.7	5.7	20.4		
	Electrical	5.5	1.5	1.7		
	Strip		<u>2.6</u>	<u>5.1</u>	6.1	5.8
	Hot-rolled (ordinary steel)	6.4	1.7	1.2		
	Cold-rolled (quality steel)	5.6	0.9	3.9		
	Plate	5.4	<u>2.7</u>	<u>7.2</u>	5.4	5.4
	Blooms, billets, and slabs	5.3	<u>2.1</u>	<u>2.1</u>	5.3	5.3

a. Price ratios from Table 9, p. 42, above.

b. Based on estimated production data and estimated average prices.

c. Based on value derived from production data 100/ and average prices from Table 9.

d. The ratios for seamless line pipe and seamless casing are about the same. The ratio for seamless line pipe is used for both items.

e. Arithmetic mean of ratios for tool steel and high-speed tool steel.

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Table 21

USSR and US: Aggregate Ruble-Dollar Price Ratios for Nonferrous Metals
1955

Standard Industrial Classification Number	Category and Item	Ratio <u>a/</u> (Rubles per Dollar)	Weights (Percent)		Weighted Ratio (Rubles per Dollar)	
			USSR <u>b/</u>	US <u>c/</u>	Soviet Weights	US Weights
	Nonferrous metals		<u>100.0</u>	<u>100.0</u>	12.0 <u>d/</u>	13.6
3331	Primary smelting and refining of copper	8.3	38.9	31.6		
3332	Primary smelting and refining of lead	21.9	28.8	8.6		
3333	Primary smelting and refining of zinc	10.8		11.2		
3334	Primary production of aluminum	9.3	32.3	38.1		
3339	Primary smelting and refining of other nonferrous metals, n.e.c. <u>e/</u>					
	Cadmium	64.0		0.8		
	Tin	48.1		7.2		
	Mercury	13.0		0.7		
	Antimony	27.1		0.4		
	Magnesium	11.5		1.4		

a. Price ratios from Table 10, p. 47, above.

b. Based on average prices from Table 10 and estimated data on production.

c. Based on 1955 value derived from data on production and consumption and average prices. 101/ See Appendix A, 2, b, p. 26, above.

d. The weighted ratio for copper, lead, and aluminum of 10.6 adjusted to 12.0 to take into account the effect of the ratios, all of which were higher than 10.6, for which weights were not available.

e. Not elsewhere counted.

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Table 22

USSR and US: Aggregate Ruble-Dollar Price Ratio for Rail Freight Transport
1955

Standard Industrial Classification Number	Category and Item	Ratio a/* (Rubles per Dollar)	Weights for the US b/ (Percent)	Weighted Ratio for US Weights (Rubles per Dollar)
4011	Rail freight transport		<u>100.0</u>	3.6
	Foodstuffs			
	Wheat	2.8	4.3	
	Corn	3.3	2.2	
	Wheat flour	5.3	1.3	
	Potatoes (not sweet)	3.0	1.6	
	Fresh meat, n.e.c. <u>c/</u>	3.1	2.2	
	Food products, n.e.c. <u>c/</u>	3.4	4.2	
	Coal and coke			
	Anthracite	3.2	1.2	
	Bituminous coal	4.6	24.1	
	Coke	3.8	1.5	
	Petroleum products			
	Gasoline	5.0	1.0	
	Fuel and road oil, n.e.c. <u>c/</u>	3.8	1.2	
	Refined petroleum, n.e.c. <u>c/</u>	3.5	2.6	

* Footnotes for Table 22 follow on p. 65.

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 Table 22

USSR and US: Aggregate Ruble-Dollar Price Ratio for Rail Freight Transport
 1955
 (Continued)

Standard Industrial Classification Number	Category and Item	Ratio a/ (Rubles per Dollar)	Weights for the US b/ (Percent)	Weighted Ratio for US Weights (Rubles per Dollar)
4011 (Continued)	Ores			
	Iron ore	5.0	4.9	
	Iron and steel			
	Manufactured iron and steel	2.1	6.0	
	Iron and steel pipe, fittings	2.0	2.3	
	Scrap iron	2.6	2.1	
	Building materials			
	Gravel and sand, n.e.c. c/	4.1	1.7	
	Crushed stone	3.8	1.7	
	Portland cement	2.9	3.0	
	Lumber and shingles	3.0	9.1	
	Chemicals			
	Fertilizers, n.e.c. c/	3.0	1.8	
	Phosphate rock	5.5	1.0	
	Sodium products	3.7	1.7	
	Chemicals, n.e.c. c/	3.6	3.5	

Table 22
(Continued)

Standard Industrial Classification Number	Category and Item	Ratio <u>a/</u> (Rubles per Dollar)	Weights for the US <u>b/</u> (Percent)	Weighted Ratio for US Weights (Rubles per Dollar)
4011 (Continued)	Machinery and equipment			
	Machinery and machines	2.5	2.1	
	Passenger automobiles	2.2	1.7	
	Vehicle parts, n.e.c. <u>c/</u>	2.8	6.2	
	Miscellaneous			
	Paperboard and fiberboard	3.5	2.0	
	Feed, n.e.c. <u>c/</u>	3.9	1.8	

a. Price ratios from Table 11, p. 48, above.

b. Based on 1955 revenue data. 102/

c. See Table 11, footnote h.

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Table 23

USSR and US: Aggregate Ruble-Dollar Price Ratios for Communications Services a/
1955

Standard Industrial Classification Number	Category and Item	Ratio b/ (Rubles per Dollar)	Weights (Percent)		Weighted Ratio (Rubles per Dollar)	
			USSR c/ d/	US e/ f/	Soviet Weights	US Weights
	Communications services		<u>100.0</u>	<u>100.0</u>	5.2	5.7
4811	Telephone communication (wire and radio)		<u>42.5</u>	<u>84.9</u>	4.3	4.6
	Long-distance	4.5	20.6	29.5		
	Home or private	5.2	3.1	30.3 e/		
	Business or enterprise	4.1	18.8	25.1 e/		
4821	Telegraph communication (wire and radio)					
	Telegrams	4.0	<u>28.0</u>	<u>2.2</u>	4.0	4.0
4899	Communications services, n.e.c. f/		<u>29.5</u>	<u>12.9</u>	13.2	13.2
	First-class mail					
	Letters	13.3	25.4	11.4 g/		
	Post cards	12.5	4.1	1.5 g/		

- a. Including intermediate and final services.
b. Price ratios from Table 13, p. 51, above.
c. Based on revenue data derived by multiplying average rates from Table 13 by corresponding volume data estimated from source 103/.
d. Unless otherwise indicated, based on revenue data from source 104/.
e. Estimated number of full-year subscribers 105/ multiplied by average rates from Table 13.
f. Not elsewhere counted.
g. Estimated distribution of first-class mail 106/ into letters and post cards multiplied by average rates from Table 13.

Table 24

USSR and US: Aggregate Ruble-Dollar Price Ratios for Electric Power a/
1955

Standard Industrial Classification Number	Category and Item	Ratio <u>b/</u> (Rubles per Dollar)	Weights (Percent)		Weighted Ratio (Rubles per Dollar)	
			USSR <u>c/</u>	US <u>d/</u>	Soviet Weights	US Weights
4911	Electric companies and systems		100.0	100.0	14.2	15.0
	Industrial consumers, including railroads	13.4	62.5	34.5 <u>d/</u>		
	Residential and commercial, including rural and govern- mental consumers	15.9	37.5	65.5 <u>e/</u>		

a. Including intermediate and final services.

b. Price ratios from Table 14, p. 52, above.

c. Based on values derived by multiplying estimated net consumption 107/ by average rates from Table 14.d. Based on values derived by multiplying net consumption, based on unpublished statistics from the Federal Power Commission and on source 108/, by average rates from Table 14.e. 109/

APPENDIX C

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