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II

Recent Developments in Soviet Industry

by

Robert A. Dockstader

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II

Industrial Production

1. The rate of growth of civilian industrial production in the Soviet Union fell below 6% in 1968-69, the lowest rate of growth for consecutive years since World War II.[1/] In every sector of industry the rate of growth in 1968-69 was lower than in 1951-60 or in 1961-67. Sharp reductions in the rate of growth of industrial materials and nondurable consumer goods accounted for most of the downturn. The rate of growth of industrial materials fell from 6.8% in 1966-67 to 4.6% in 1968-69, and the rate of growth of nondurable consumer goods declined from 6.0% to 4.4%. The decline in the rate of growth of civilian machinery was not as steep -- from 9.5% in 1966-67 to 9.1% in 1968-69.[2/]

U.S.S.R.: Average Annual Rates of Growth of Civilian Industrial Output by Major Sector, 1951-69 a/

(In percent)

	1951-55	1956-60	1961-65	1966-67	1968-69 b/
Total industry	10.5	9.4	6.8	7.2	5.6
Industrial materials	10.4	9.0	7.0	6.8	4.6
Civilian machinery	11.6	14.0	8.6	9.5	9.1
Nondurable consumer goods	10.0	7.0	4.8	6.0	4.4

a. The base year for the calculation shown in each column is the year before the stated initial year of the period; i.e. the average annual rate of increase for 1951-55 is computed by relating production in 1955 to the base year 1950.

b. 1969 data are preliminary.

1/ Because information on armaments production is not published, the growth of total industrial production cannot be measured independently. The share of armaments production in total industrial output is probably small enough to prevent moderate variations in military output from having a significant effect on the growth of total industrial production, at least since 1955.

2/ The rates of growth cited in this paper are calculated from the indexes presented in Table 1 in the appendix.

4. Growth in the fuels industry [1] dropped from 4% in 1966-67 to 3% in 1968-69. The record in 1968 was particularly poor. Of all fuel products, crude oil alone achieved the planned goal. The rate of growth of natural gas production declined to its lowest level since 1952. The 1968 shortfall was reportedly the result of faltering pipeline construction, shortages of equipment, technology inadequate to reach new oil and gas deposits located at greater depths, delays in modernizing existing facilities, and failure to meet planned goals for new capacity in mining and refining. Performance in the fuels sector in 1969, however, indicates that Soviet efforts to overcome these problems may have borne some fruit. The rate of growth of the coal industry increased two percentage points, and output of coal was about 14 million tons above the planned output. This apparently unexpected upsurge suggests that the Soviets are beginning to have some success in their costly efforts to reconstruct and re-equip the older mine fields. While the rate of growth of the petroleum products industry fell slightly in 1969, for the first time in recent years there was a marked increase in the construction of pipelines. Significantly, the growth in both the coal and petroleum

1. Based on weighted sum of output indexes for the petroleum products and coal branches.

products industries occurred almost entirely in the second half of 1969, well after the unusually severe winter of 1968-69 was over.

5. Investment problems in the mid-1960's have adversely affected recent growth in several of the other materials branches. The rate of growth of the chemicals branch showed a decline of $4\frac{1}{2}$ percentage points in 1968-69 (compared with 1966-67) following an absolute decline in the level of investment in 1965-67. Difficulties encountered in putting existing or newly commissioned capacity to efficient use contributed substantially to the setback in growth. Until 1968-69, the output of construction materials increased at relatively high rates despite a drop-off in investment after 1963, but in 1968-69 the growth rate fell to 3.3% as constraints in production capacity made themselves felt. The production of ferrous metals was also affected by bottlenecks in the investment program (see Paragraph 6, below).

6. Metals production in 1968-69 increased by 5.2% as compared with an average of 7.9% in 1966-67. As in previous years, output of non-ferrous metals grew more rapidly than production of ferrous metals. Expansion in ferrous metals continued to lose some of the momentum furnished by the boost in priority given the industry in 1965 by the Brezhnev-Kosygin leadership. The year 1969 was particularly bleak, with growth dropping to 2.8% from 6.4% in 1968. The growth of pig iron

and ingot production sagged while the rate of increase in rolled steel output declined from 7.3% in 1966-67 to 3.5% in 1968-69. The ferrous metals sectors have been especially afflicted by continued long delays in bringing new capacity on line and by difficulties experienced in the attempt to shift to a more diversified product mix.

7. The growth rate of the paper and paperboard industry fell from 9.3% in 1966-67, to 3.5% in 1968-69, partly because of the unusual severity of the 1968-69 winter. The paper and paperboard industry depends on the forest products industry for its raw materials, and the harsh winter seriously interfered with cutting and logging operations. Indeed, the output of the commercial timber industry declined absolutely in 1969.

Civilian Machinery 1/

8. While growth in the industrial materials and nondurable consumer goods sectors slumped in 1968-69, the growth of civilian machinery declined only slightly, from 9.5% in 1966-67 to 9.1% in 1968-69. Performance in both these periods was better than in 1961-65, when growth averaged

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1/ The index of output of civilian machinery has been changed somewhat in comparison to past presentations in the JEC series. The changes are described in "Indexes of Industrial Output -- Notes to Tables", p. 9 , below.

8.6% per year. The improvement was due largely to a spurt in the production of consumer durables. Impressive gains have been made in the output of refrigerators, washing machines, and television sets, whose combined growth averaged 15.5% a year in 1966-69. Continued rapid growth of consumer durables, however, depends on Soviet investment priorities. If the decline in overall industrial growth continues, the Soviets may well place more stress on increasing the output of investment goods at the expense of consumer durables.

9. Investment goods make up the major portion of producer durables, so the trend displayed by the producer durables index may be compared with the trend of official Soviet data on investment in equipment. The average annual growth rate of both series declined in 1968-69 as compared to 1966-67, but the drop in growth of investment in equipment is much sharper (6.8% a year to 5.7% a year) than the drop in growth of producer durables (8.2% to 8.1% a year). This may reflect difficulties in putting investment goods to use once they are produced. The recent rapid growth of stockpiles of uninstalled equipment (see Para. 8 of Chapter VI, Capital Investment) and the consequent reduction in the demand for more such goods, which would merely add to these stockpiles, may help to explain the absolute decline of output in several categories of producer durable goods in 1969 -- turbines, generators, metallurgical equipment, and oil equipment. These declines, however, were offset by continuing growth in the production of investment goods that do not require installation -- tractors, agricultural equipment, excavators, and bulldozers.

Nondurable Consumer Goods

10. The rate of growth of nondurable consumer goods declined from 6.0% in 1966-67 to 4.4% in 1968-69. The 1968-69 decline was partially the result of the pronounced failures in commissioning new capacity in

this sector and the bad weather in 1969 which restricted the flow of raw materials from the agricultural sector. Livestock herds were particularly hard hit.

11. The growth of the processed foods branch fell to a meager 1.8% in 1969, the lowest rate of all industrial branches. Of the major processed food products, only the output of fish and confectionaries continued to rise at a noteworthy rate. Four key commodities (industrially processed meat, vegetable oil, soaps and detergents, and dairy products) suffered absolute declines in output, while output of sausage and canned goods was only slightly above the 1968 level. The rate of growth of the soft goods branch also fell (from 7.2% in 1966-67 to 5.5% in 1968-69), largely because of an absolute decline in the output of linen fabrics and knitted underwear in 1969 and slower growth in the production of cotton fabrics and sewn garments.

Industrial Productivity

12. The continued slowdown in industrial growth in 1968-69 was the result of a decline in the growth of the efficiency with which labor and capital were used rather than a slower rate of growth of inputs of labor and capital. Because of the impossibility of identifying the labor force and capital stock involved in military production in MBMW, the trends in productivity can be viewed most conveniently by comparing civilian industrial production and inputs of labor and capital outside of MBMW. Measured by the ratio of such output to a weighted sum of labor and capital inputs, industrial productivity actually fell in 1968-69. This performance was even worse than in 1961-65, when the near collapse of productivity growth proved to be a major stimulus for the economic reform that is still underway.

USSR: Average Annual Rates of Growth of Industrial Output (excluding MBMW), Factor Inputs, and Factor Productivity, 1951-69
(in percent)

	1951-60	1961-65	1966-67	1968-69 1/
Industrial output (excluding MBMW)	9.3	6.3	6.5	4.5
Inputs: 2/				
Labor (manhours) and capital 3/	5.0	4.6	4.6	4.8
Manhours	2.0	1.9	3.0	3.6
Capital	12.5	11.4	8.5	7.8
Factor productivity:				
Labor (manhours) and capital	4.1	1.6	1.9	-0.3
Manhours	7.2	4.3	3.5	0.9
Capital	-2.8	-4.6	-1.9	-3.0

1/ 1969 data are preliminary.
2/ Labor and capital in MBMW have been excluded from inputs.
3/ Inputs have been combined using a Cobb-Douglas (linearly homogeneous) production function with weights of .708 and .292 for labor and capital respectively. Labor income and capital charges in MBMW have been excluded in deriving these weights.

Outlook for 1970

13. The plan fulfillment results for industry in the first quarter of 1970 indicate a rate of growth of 8% compared to the first quarter of 1969 -- a considerable improvement over 1969. On balance, the outlook for 1970 is for some recovery in the rate of growth of civilian industrial production, but it is unlikely that the high rate of growth of the first quarter will be sustained for the whole year. Most of the improvement occurred in those sectors in which growth rates fell off sharply in the first quarter of 1969. For example, output in the processed foods industry, which grew only 0.5% in the first quarter of 1969, increased by 8% in the first quarter of 1970. Similarly, the production of construction materials and commercial timber, which fell absolutely in early

1969, grew by 12% and 9%, respectively, in the first quarter of 1970. Conversely, the rates of growth of most sectors which did not suffer such severe setbacks in the first part of 1969 did not change appreciably in the first quarter of 1970. Civilian machinery, for example, grew 10½% in the first quarter of 1969 and 9½% in the first quarter of 1970.

Indexes of Industrial Output -- Notes to Tables

The preceding description of the growth of civilian industrial production in the USSR is based on the index shown in Table 1. This index has been designed to approximate a value-added weighted index such as the Federal Reserve Board index of United States industrial production. Value-added weights are calculated only for the major branches of Soviet industry shown in the table, and the individual branch indexes represent the summation of the value of sample commodities in 1 July 1955 prices. The value-added weights represent the sum of labor costs (wages and social insurance deductions) and capital costs (depreciation charges and an 8% interest charge on fixed and working capital).

The weights used in this publication differ from those in previous articles on Soviet industrial production in Joint Economic Committee publications e.g., Annual Economic Indicators for the USSR (1964), Current Economic Indicators for the USSR (1965), and Soviet Economic Performance: 1966-67 (1968). The difference stems from (1) the revision of the 1960 weights to reflect more recent data on employment, earnings, and fixed capital in 1960 and (2) the addition of an explicit charge for working capital. A second major change in the index is the revision of the civilian machinery sample. The machinery index presented in previous Joint Economic Committee publications was derived by aggregating an index of civilian machinery (excluding electronics) and an index of total

electronics with the aid of value-added weights (see JEC, Dimensions of Soviet Power, 1962, p. 131). The total electronics series has been replaced by a civilian electronics sample composed of electronic instruments and consumer electronics. The present civilian machinery index is an aggregation of indexes of producer durables (including electronic instruments) and consumer durables (including consumer electronics). The 1960 weights of producer durables and consumer durables in enterprise wholesale prices have been estimated at .887 and .113, respectively. Furthermore, the civilian machinery sample has been expanded to include the officially reported value of production of instruments (both electronic and non electronic); the physical product sample of equipment for consumer industries has been replaced by a series based on value of production as reported in Soviet handbooks. Compared to the series presented in Soviet Economic Performance: 1966-67, the net effect of these changes in the sample is to reduce the rate of growth of civilian machinery over the whole period 1951-68 and the rate of growth in each of the 5-year periods except 1956-60.

As a result of the revised weights and the changes in the estimates of output of individual commodities, the indexes and growth rates of Tables 1 and 2 differ somewhat from those shown previously. For a more detailed discussion of the indexes (sources of data, coverage of commodity sample, and deficiencies of the index), see Joint Economic Committee, Dimensions of Soviet Economic Power, (1962) p. 131-134.

Table 1

USSR: Indexes of Civilian Industrial Production, 1960-68
(1960 = 100)

Branch of Industry	1960 Weights	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969 a/
Industrial materials	53.5	100.0	106.4	114.2	121.7	130.6	140.3	149.5	159.9	168.1	175.0
Electric power	4.9	100.0	112.1	126.5	140.7	156.4	172.2	185.3	199.6	217.1	234.3
Coal products	10.9	100.0	100.0	102.4	105.4	109.7	114.5	116.7	119.2	119.9	122.8
Petroleum products	2.8	100.0	112.5	127.1	141.6	154.1	167.9	183.1	199.6	213.8	227.9
Ferrous metals	7.7	100.0	109.2	118.5	126.6	136.7	146.8	157.9	168.4	179.2	184.2
Nonferrous metals	4.7	100.0	108.9	118.5	128.0	137.8	149.6	162.7	178.4	191.1	200.6
Forest products	9.9	100.0	101.3	105.3	111.2	116.4	118.4	120.7	127.7	132.9	136.6
Paper and paperboard	1.1	100.0	106.0	113.4	119.7	128.7	145.2	160.4	173.5	182.3	186.0
Construction materials	6.9	100.0	110.8	120.3	126.6	134.7	147.3	161.5	174.1	180.8	185.9
Chemicals	4.5	100.0	108.5	119.8	129.2	144.8	165.9	182.4	201.6	213.5	225.6
Civilian machinery	20.5	100.0	110.8	124.0	135.3	143.8	151.0	167.7	180.9	197.9	215.5
Producer durables	18.1	100.0	110.9	125.1	136.2	143.7	149.2	163.4	174.8	189.1	204.3
Consumer durables	2.4	100.0	110.0	115.7	128.7	144.3	165.2	200.1	226.3	263.8	303.5
Nondurable consumer goods	26.0	100.0	105.5	110.6	112.0	117.3	126.6	133.0	142.2	149.4	155.0
Soft goods	14.6	100.0	103.3	107.5	109.9	114.5	117.2	125.9	134.7	142.2	149.9
Processed foods	11.4	100.0	108.4	114.5	114.8	120.9	138.6	142.2	151.9	158.7	161.5
Civilian industrial production		100.0	107.1	115.3	122.0	129.8	138.9	148.9	159.6	169.3	178.1

a. Preliminary

Table 2

USSR: Annual Rates of Growth in Industrial Production, 1960-68

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969 c/
Industrial materials a/	7.7	6.4	7.3	6.6	7.3	7.4	6.6	7.0	5.1	4.1
Electric power b/	10.2	12.1	12.8	11.2	11.2	10.0	7.6	7.7	8.8	7.9
Coal products b/	2.2	0	2.4	3.0	4.0	4.4	1.9	2.2	0.6	2.4
Petroleum products b/	13.8	12.5	12.9	11.4	8.8	9.0	9.0	9.0	7.1	6.6
Ferrous metals b/	8.8	9.2	8.6	6.8	8.0	7.3	7.6	6.6	6.4	2.8
Nonferrous metals b/	9.1	8.9	8.8	8.0	7.7	8.6	8.8	9.6	7.1	5.0
Forest products a/	1.0	1.3	3.9	5.6	4.7	1.7	1.9	5.8	4.1	2.8
Paper and paperboard b/	4.5	6.0	7.0	5.6	7.5	12.8	10.5	8.2	5.1	2.0
Construction materials b/	15.3	10.8	8.6	5.3	6.4	9.3	9.7	7.8	3.9	2.8
Chemicals b/	9.9	8.5	10.5	7.8	12.1	14.5	10.0	10.6	5.9	5.7
Civilian machinery a/	12.2	10.8	11.9	9.1	6.3	5.0	11.1	7.9	9.4	8.9
Producer durables b/	12.6	10.9	12.8	8.9	5.5	3.8	9.6	7.0	8.2	8.0
Consumer durables b/	10.3	10.0	5.2	11.2	12.1	14.5	21.1	13.1	16.5	15.0
Nondurable consumer goods a/	4.2	5.5	4.8	1.3	4.7	7.9	5.1	6.9	5.1	3.7
Soft goods b/	5.8	3.3	4.1	2.2	4.2	2.3	7.4	7.0	5.6	5.4
Processed foods b/	2.3	8.4	5.6	0.3	5.3	14.7	2.6	6.8	4.5	1.8
Total industrial production a/	7.6	7.1	7.7	5.8	6.4	7.0	7.2	7.2	6.1	5.2

a. Computed from index numbers in Table 1.
b. Computed from production series expressed in ruble values (unrounded). These unrounded values underlie the corresponding index numbers in Table 1.
c. Preliminary.

Table 3 -- USSR and United States: Production of selected industrial commodities in the USSR, 1960-69, and in the United States, 1968 1/

	Units	USSR										United States
		1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1968
Fuels and power:												
Primary energy 2/	Million metric tons	662.7	705.5	763.0	821.4	883.2	942.5	1006.5	1062.8	1112.1	1167.8	1941.6
Electric power	Billion kilowatt hours	292.3	327.6	369.3	412.4	458.9	506.7	544.6	587.7	638.7	689.0	1523.0
Coal	Million metric tons	509.6	506.4	517.4	531.7	554.0	577.7	585.6	595.2	594.0	608.0	505.0
Crude oil	do	147.9	166.1	186.2	206.1	223.6	242.9	265.1	288.1	309.2	328.0	449.9
Natural gas 3/	Billion cubic meters	45.3	59.0	73.5	89.8	108.6	127.7	143.0	157.4	169.1	181.3	547.1
Ferrous metals:												
Pig iron	Million metric tons	46.8	50.9	55.3	58.7	62.4	66.2	70.3	74.8	78.8	81.6	81.0
Crude steel	do	65.3	70.8	76.3	80.2	85.0	91.0	96.9	102.2	106.5	110.0	118.9
Rolled steel	do	51.0	55.3	59.3	62.5	66.7	70.9	76.7	81.7	85.3	87.5	89.9
Nonferrous metals:												
Aluminum (primary)	Thousand metric tons	640.0	890.0	900.0	960.0	1000.0	1075.0	1220.0	1360.0	1525.0	NA	2952.0
Copper (refined)	do	490.0	530.0	590.0	640.0	700.0	772.0	828.0	915.0	992.0	1078.0	1681.2
Lead (primary)	do	324.0	343.0	364.0	385.0	408.0	433.0	463.0	495.0	528.0	563.0	423.9
Tin (primary & secondary)	do	16.2	16.7	16.7	19.7	19.7	19.7	21.5	23.5	24.8	NA	3.6
Zinc (refined primary)	do	364.0	377.0	403.0	419.0	436.0	504.0	551.0	610.0	678.0	747.8	982.9
Construction materials:												
Cement	Million metric tons	45.5	50.9	57.3	61.0	64.9	72.4	80.0	84.8	87.5	89.8	68.8
Bricks	Million units	35498.0	36692.0	35979.0	35183.0	35939.0	36574.0	37757.0	39940.0	40491.0	40000.0	7909.1
Chemicals:												
Mineral fertilizers 5/	Million metric tons	13.9	15.3	17.3	19.9	25.5	31.3	35.9	40.1	43.5	46.0	64.8
Mineral fertilizers 6/	Thousand metric tons	3281.0	3593.0	4078.0	4647.0	6003.0	7389.0	8438.0	9406.0	10221.0	10800.0	13987.9
Sulfuric acid (100%)	do	5398.0	5718.0	6132.0	6885.0	7647.0	8518.0	9367.0	9737.0	10159.0	10664.0	25748.0
Caustic soda (100%)	do	704.0	825.0	884.0	965.0	1061.0	1199.0	1282.0	1402.0	1525.0	1668.0	7983.0
Plastics	do	311.6	383.7	451.7	567.2	700.8	803.1	971.2	1113.6	1291.0	1452.0	7100.0
Rubber tires	Thousand units	17225.0	18996.0	20846.0	22563.0	24361.0	26434.0	27656.0	29635.0	31773.0	32600.0	208682.0
Chemical fiber	Thousand metric tons	211.2	250.4	277.3	308.4	361.1	407.3	458.3	510.6	553.7	583.0	2169.0
Machinery and equipment:												
Metal cutting machine tools	Thousand units	155.9	165.8	176.8	182.7	184.4	186.1	192.2	197.6	200.8	206.0	70.5
Metal forming machine tools	do	29.9	30.5	33.4	34.2	34.5	34.6	38.4	41.1	42.1	42.7	54.6 4/
Electric generators	Thousand kilowatts	7915.0	9450.0	11022.0	11838.0	12791.0	14390.0	13447.0	14575.0	14529.0	12700.0	27432.5 7/
Trucks and buses	Thousand units	384.2	406.4	411.5	413.9	417.9	415.1	445.0	477.3	520.5	550.7	1896.1 8/
Tractors	Thousand units	238.5	263.6	287.0	325.3	329.0	354.5	382.5	405.1	423.4	442.0	233.8 9/

	Units	USSR										United States
		1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1968
Consumer goods:												
Durables:												
Passenger cars	Thousand units	138.8	148.9	165.9	173.1	185.2	201.2	230.3	251.4	280.3	293.6	8822.2 8/
Refrigerators	do	529.5	686.5	837.8	910.9	1134.0	1675.0	2205.0	2697.0	3155.0	3700.0	5150.0
Washing machines	do	895.5	1285.6	1797.0	2282.4	2860.6	3430.0	3869.0	4324.0	4700.0	5200.0	4520.0
Television sets	do	1726.0	1949.0	2168.0	2473.0	2927.0	3655.0	4415.0	4955.0	5742.0	6600.0	11794.0
Radios & radio phonographs	do	4165.0	4228.0	4251.0	4796.0	4766.0	5160.0	5842.0	6416.0	6981.0	7300.0	24487.0 10/
Soft goods:												
Cotton fabrics	Million linear meters	6386.9	6425.0	6454.0	6618.6	6976.1	7076.9	7237.8	7414.3	7561.8	7592.0	6794.0
Rayon & acetate fabrics	do	755.0	771.0	906.0	921.0	940.0	900.0	970.0	1036.0	1033.0	1113.0	1584.0
Footware 11/	Million pairs	419.3	443.2	456.3	462.7	474.7	486.0	522.2	561.3	597.6	635.0	642.4

1. With the exceptions of the estimates for nonferrous metals, production data for the USSR are official Soviet figures; 1969 data are preliminary. For metal forming machine tools 1968 data for the United States was not available; 1967 data was used.
2. Data are for coal, crude oil, natural gas, and hydroelectric power expressed in terms of coal equivalents (calorific value of 7,000 kilocalories per kilogram) but exclude minor fuels such as peat, shale, and fuel wood.
3. Data for the USSR are for gross production less losses and waste, whereas data for the United States are for net marketed production.
4. 1968 data not available. Figure shown is for 1967.
5. In Soviet standard units.
6. In terms of pure nutrient.
7. Shipments of units 4,000 kilowatts and larger.
8. Factory sales.
9. Data for wheel-type tractors are shipments.
10. Data for radio-phonograph combinations are factory sales.
11. Shoes and slippers.