Volume Title: Small-Scale Industry in the Soviet Union

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Volume Publisher: NBER

Volume ISBN: 0-87014-394-8

Volume URL: http://www.nber.org/books/kauf62-1

Publication Date: 1962

Chapter Title: Indexes of Small-Scale Production

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Chapter URL: http://www.nber.org/chapters/c5675

Chapter pages in book: (p. 52 - 62)

CHAPTER 6

Indexes of Small-Scale Production

The Data Problem

THERE are many difficulties involved in constructing a reliable production index for Soviet small-scale industry, not the least being the scarcity of data on physical output. As mentioned earlier, such data were rarely published even though they had been collected, as in the census for 1928/29. In the Soviet statistical abstracts published within the last few years, the figures on output are said to apply to all industry, and it would therefore seem to be possible to derive small-scale output as the difference between these data and those published in earlier abstracts for large-scale industry only. Unfortunately, the matter is not so simple because in a number of important cases total output for pre-Plan and early Plan years has been significantly understated in the recent abstracts. Some examples are soap, beer, boots and shoes, silk fabrics, woolen and worsted fabrics, and timber haulage.[1]

Through several methods of estimation, we have gathered together physical data on small-scale output for fifty-eight products, covering the years 1913, 1927/28, and 1933 (see Tables A-4 and A-5). Some important activities of the small-scale sector involving diversified and custom-made products, like tailoring and dressmaking, are not covered because of insoluble problems in measuring physical output, given the available information.[2] In the case of those products for which output has been estimated, production within home ("cottage") industry is

[1] See notes in *Statistical Abstract of Industrial Output in the Soviet Union, 1913–1955*, New York, NBER, 1956, Parts 3 and 4.

[2] According to data compiled by A. A. Rybnikov, who spent a lifetime studying the prerevolutionary *kustar'* industry, 12 per cent of the value of output of all industry in 1913 was accounted for by industries whose production was organized predominantly on a small-scale basis and whose products were so diversified that

largely not included. Finally, for a number of products whose physical output could have been measured more or less adequately (such as sheepskin coats, sleds, buggies, axes, and barrels), production records were never kept, so that they cannot be included in a production index.

In brief, the output record one must work from is, to say the least, highly deficient in many important respects. Nevertheless, it does provide a basis for estimating over-all trends in small-scale production through index numbers, and we turn now to see what those index numbers show.

Index of Industrial Materials

In his study of Soviet industrial growth, G. Warren Nutter uses, as one of his indicators of growth, a production index covering fifty-four staple industrial materials and basic consumer goods, each product being weighted by its price net of the cost of nonindustrial materials consumed in its fabrication.[3] Since our data on the physical output of small-scale industries cover these fifty-four commodities, it is possible to construct similar production indexes for both the large- and small-scale sectors. This we have done, using 1927/28 unit values as weights, for 1913, 1927/28, and 1933 (see Table 17).

According to these indexes, the total output of industrial materials increased by 37 per cent between 1913 and 1933, composed of an increase of 83 per cent in the large-scale sector and a decline of 68 per cent in the small-scale sector.[4] The share of the small-scale sector in the net production of these materials, evaluated in 1927/28 prices, went down from 31 per cent in 1913 to 26 per cent in 1927/28 and finally to 7 per cent in 1933. These percentages correspond closely to our estimates of the percentages of the gross value of output of all industry accounted for by the small-scale sector in the three respective years (see Table A-3).

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output could not be expressed in homogeneous physical units. See A. A. Rybnikov, "Osnovye tendentsii evoliutsii form promyshlennosti voobshche i melkoi promyshlennosti v osobennosti" [The Basic Tendencies of the Evolution of the Forms of Industry in General and of Small-Scale Industry in Particular], *Ekonomicheskoe obozrenie* [Economic Survey], 1927, No. 7, pp. 132 f.

[3] See G. Warren Nutter, *Growth of Industrial Production in the Soviet Union*, Princeton for NBER, 1962, pp. 118 ff.

[4] Over 1927/28–33, Hodgman's index of large-scale production shows an increase of 78 per cent in the "unadjusted" version and 92 per cent in the "adjusted" version (see Donald Hodgman, *Soviet Industrial Production, 1928–1951*, Cambridge, Mass., 1954, p. 73). Our index for industrial materials in the large-scale sector shows an increase of 71 per cent over the same period.

TABLE 17

PRODUCTION INDEX FOR INDUSTRIAL MATERIALS: LARGE- AND SMALL-SCALE INDUSTRY, 1913, 1927/28, AND 1933

	Net Value of Output			*Index Numbers*		
	Large-Scale	Small-Scale	Total	Large-Scale	Small-Scale	Total
	(million rubles, 1927/28 prices)			(1913 = 100)		
1913	3,842	1,694	5,536	100	100	100
1927/28	4,103	1,454	5,557	107	86	100
1933	7,028	540	7,568	183	32	137

SOURCE: Table A-6.

TABLE 18

INDEXES OF OUTPUT, PERSONS ENGAGED, AND OUTPUT PER PERSON ENGAGED: TOTAL, LARGE-SCALE, AND SMALL-SCALE INDUSTRY, 1927/28 AND 1933 (1913 = 100)

	1927/28	1933
	TOTAL INDUSTRY	
Output [a]	100	137
Persons engaged [b]	93	173
Output per person engaged [c]	109	79
	LARGE-SCALE INDUSTRY	
Output [a]	107	183
Persons engaged [b]	104	318
Output per person engaged [c]	103	58
	SMALL-SCALE INDUSTRY	
Output [a]	86	32
Persons engaged [b]	82	29
Output per person engaged [c]	105	110

[a] Measured by industrial materials. From Table 17.
[b] Measured in full-time equivalents. From Table A-2.
[c] Index of output divided by index of persons engaged.

Indexes of Small-Scale Production

The production indexes may be combined with our data on employment to provide measures of changes in labor productivity over this early part of the Soviet period (Table 18). Output per person engaged rose in both large-scale and small-scale industry over 1913–27/28,[5] but it moved in opposite directions over 1927/28–33, falling by 46 per cent in large-scale industry but rising by 5 per cent in small-scale industry. This divergent behavior may be partly illusory, resulting from a shift of industries with relatively low productivity from the small-scale to the large-scale sector. But in large part it reflects a genuine lowering of labor productivity as persons were almost poured into existing factories. This is shown by the fact that output per person engaged in the total production of industrial materials fell by 28 per cent.[6] During the next four years, 1933–37, labor productivity rose sharply as new plants and equipment were brought into operation and the relatively unskilled work force was assimilated.[7]

Soviet Indexes of Small-Scale Production

Reversing their previous policy, Soviet statistical authorities recently published two official indexes of gross industrial production, one for large-scale industry and the other for all industry.[8] On the basis of these two official indexes and the known breakdown of gross value of output for 1933 in "1926/27" rubles (42,261 million for large-scale industry and 45,955 million for all industry [9]), we can reconstruct the gross production in "1926/27" rubles [10] for both large-scale and all

[5] The rise for total industry exceeded that for either sector. This seemingly paradoxical result can occur because output is measured by a weighted index whereas persons engaged are measured by an unweighted one.

[6] For all industry, the decline was only 7 per cent and in man-hour productivity there was a slight rise (see Nutter, *Industrial Production,* Table 40).

[7] See *ibid.,* Table 40.

[8] See *Promyshlennost' SSSR* [Industry of the USSR], Moscow, 1957, p. 31.

[9] Data from the 1933 industrial census, given separately for large- and small-scale industry, were published in *SSSR v tsifrakh* [The USSR in Figures], Moscow, 1935, pp. 7–11, and *Plan,* 1935, No. 7, pp. 41–49. For coverage and details of this census, see Chapter 2.

[10] The constant "1926/27" prices used as weights in constructing the official Soviet index vary for identical products in different enterprises, especially in the late 1920's and early 1930's. For the products of small-scale industry, 1932 prices were used, reduced by a system of coefficients to the level of 1926/27 prices. Not before 1936 were the "1926/27" prices brought into a uniform system of prices, but even at this time many new products were evaluated on the basis of the much higher current production cost rather than in "1926/27" prices. (See A. T. Ezhov, *Statistika promyshlennosti* [Industrial Statistics], Moscow, 1957, p. 82.) For further comments, see Nutter, *Industrial Production,* pp. 152 ff.

industry for every year from 1913 through 1950. By subtracting one from the other, we can obtain the gross production of small-scale industry. The results of these computations are presented in Tables 19, 20, and 21 below. The derived gross production of large-scale industry seems to be accurate, since the derived figures for 1928–37 are almost

TABLE 19

DERIVED GROSS PRODUCTION OF LARGE- AND SMALL-SCALE INDUSTRY, 1913–50
(billion "1926/27" rubles)

	All Industry [a]	Large-Scale Industry [a]	Small-Scale Industry [b]
1913	16.4	11.1	5.3
1917	11.6	7.0	4.6
1921	5.1	2.3	2.7
1924	7.4	5.1	2.3
1925	11.9	8.3	3.6
1926	16.0	12.0	4.0
1927	18.2	13.5	4.6
1928	21.6	16.9	4.7
1929	25.8	21.1	4.8
1930	31.6	27.6	3.9
1931	38.1	34.1	4.1
1932	43.7	39.0	4.6
1933	46.0	42.3	3.7
1934	54.8	50.7	4.1
1935	67.2	62.4	4.8
1936	86.5	81.3	5.2
1937	96.2	90.5	5.6
1938	107.4	101.0	6.4
1939	124.8	116.6	8.2
1940	139.3	130.0	9.3
1945	127.9	120.3	7.5
1946	106.6	98.5	8.1
1947	130.0	120.6	9.4
1948	164.0	152.2	11.8
1949	196.6	183.7	12.9
1950	241.7	228.5	13.2

[a] Computed from gross value of output in 1933 and indexes in *Promyshlennost' SSSR*, 1957, p. 31. See text.

[b] All industry minus large-scale industry.

Indexes of Small-Scale Production

TABLE 20

OFFICIAL SOVIET INDEXES OF GROSS PRODUCTION, LARGE- AND SMALL-SCALE INDUSTRY, 1913–55 [a]
(1913 = 100)

	All Industry [b]	Large-Scale Industry [b]	Small-Scale Industry [c]
1913	100	100	100
1917	71	63	88
1921	31	21	52
1924	45	46	43
1925	73	75	69
1926	98	108	77
1927	111	122	88
1928	132	152	90
1929	158	190	91
1930	193	249	75
1931	233	307	77
1932	267	352	88
1933	281	381	70
1934	335	457	78
1935	411	563	91
1936	529	733	99
1937	588	816	107
1938	657	911	122
1939	763	1,051	156
1940	852	1,172	177
1945	782	1,085	143
1946	652	888	154
1947	795	1,087	179
1948	1,003	1,372	225
1949	1,202	1,656	245
1950	1,476	2,060	251
1951	1,718	2,411	
1952	1,917	2,705	
1953	2,143	3,045	
1954	2,428	3,461	
1955	2,729	3,915	

[a] For 1924–30, years probably refer to fiscal years ending in the specified years.
[b] *Promyshlennost' SSSR*, 1957, p. 31.
[c] Derived from Table 19.

TABLE 21

PERCENTAGE SHARES OF GROSS PRODUCTION IN "1926/27" PRICES ACCOUNTED FOR BY LARGE- AND SMALL-SCALE INDUSTRY ACCORDING TO OFFICIAL SOVIET STATISTICS, 1913–50
(per cent)

	Large-Scale Industry	Small-Scale Industry
1913	68	32
1917	60	40
1921	46	54
1924	69	31
1925	70	30
1926	75	25
1927	74	26
1928	78	21
1929	82	18
1930	88	12
1931	89	11
1932	89	11
1933	92	8
1934	92	7
1935	93	7
1936	94	6
1937	94	6
1938	94	6
1939	93	7
1940	93	7
1945	94	6
1946	92	8
1947	93	7
1948	93	7
1949	93	7
1950	95	5

SOURCE: Table 19.

identical with ones published in earlier Soviet statistical sources, the differences between the two sets of figures exceeding 0.5 per cent in only one year (Table 22).

The derived official Soviet production index for small-scale industry shows a decline by 10 per cent between 1913 and 1927/28 and by 22

TABLE 22

COMPARISON OF DERIVED AND PUBLISHED DATA ON GROSS PRODUCTION OF LARGE-SCALE INDUSTRY, 1928–37
(million "1926/27" rubles)

	Published in Soviet Sources [a]	Derived [b]	Ratio of Derived to Published
1928	16,860	16,860	1.000
1929	21,204	21,075	.994
1930	27,699	27,619	.997
1931	34,159	34,053	.997
1932	38,831	39,044	1.005
1934	50,568	50,691	1.002
1935	62,129	62,449	1.005
1936	80,900	81,305	1.005
1937	90,200	90,512	1.003

[a] 1928–34: *Sotsialisticheskoe stroitel'stvo SSSR* [Socialist Construction in the USSR], Moscow, 1936, p. 2; 1935–37: *Sovetskaia sotsialisticheskaia ekonomika, 1917–1957* [The Soviet Socialist Economy, 1917–57], Moscow, 1957, p. 126.

[b] See Table 19.

per cent between 1927/28 and 1933, while our index declines by 14 and 63 per cent, respectively. In 1933, the official index of small-scale industry stands at 80 per cent of the 1913 level, while ours stands at 32 per cent. If our index can be accepted as more or less correct, the official Soviet index substantially understates the decline in small-scale production over this period. It is generally agreed by Western scholars that the official Soviet index seriously exaggerates growth in all industry,[11] and we may now add that the exaggeration applies to both the large- and small-scale sectors.

On this score, it is interesting to note that the official Soviet data show the share of small-scale industry in total gross production (in "1926/27" prices) as 32 per cent for 1913, 22 per cent for 1928, and 8 per cent for 1933 (see Table 21). The shares implied by our index of industrial materials (in 1927/28 prices) are 31, 26, and 7 per cent, similar to the data above. This evidence suggests, too, that whatever long-run upward bias there is in the official Soviet index applies equally to both the large- and small-scale sectors.

It should be kept in mind that the derived official Soviet index of small-scale production is certainly based on estimated values. As we

[11] On the upward bias implied in the Soviet index, see Nutter, *Industrial Production,* pp. 27 ff.

have pointed out several times, the state of Russian statistics in 1913 and in the 1920's made it impossible to measure small-scale output accurately, especially in marginal, semi-industrial branches. The accuracy of official estimates for 1913 to 1928 may be checked by comparing them with estimates derived in different periods by other Soviet economists and statisticians.

Gross output in 1913 amounted, according to the official Soviet index, to 11.1 billion "1926/27" rubles in large-scale industry and 5.26 billion in small-scale industry. In a recently published article, S. G. Strumilin gives data on the output of large- and small-scale industry in 1913 which differ from the official Soviet index. He estimates gross value of output as 10.25 billion "1926/27" rubles for large-scale industry (0.8 billion rubles fewer than the official data) and as 5.95 billion for small-scale industry (0.7 billion rubles more than the official data).[12] There is no doubt that Strumilin had access to all the official data and was aware of them. The discrepancy between his estimates and the official ones may be caused by different definitions of small- and large-scale industry or by different methods of re-evaluing gross value in current rubles into "1926/27" rubles. The coefficient used by Strumilin for both sectors is 182, with the 1913 price level taken as 100.[13] Deflating the data given by Strumilin by this coefficient, we obtain a gross value of output of 5.6 billion current rubles for large-scale industry and of 3.3 billion for small-scale industry. The latter is 4 per cent higher than our corresponding estimate, and the former is 10 per cent lower (see Table A-3). On these grounds, the official data would seem to be more consistent with our estimates than Strumilin's data.

However, Strumilin seems to make a countervailing error in using the same price level for both small- and large-scale industry. The price index for consumer goods in November 1927 was 198 per cent of 1913, whereas the price index for producer goods (the industrial index of the *VSNKh*) was 171 per cent. The price index of consumer goods sold in private trade was 230 per cent, even higher.[14] The consumer goods price index applies more appropriately to small-scale industry and the producer goods index to large-scale industry, though a mixture would be best in both cases, the weights of the two components varying. If our estimates for large- and small-scale gross value of output in 1913 (Table A-3) are inflated by the producer and consumer

[12] *Sovetskaia sotsialisticheskaia ekonomika,* pp. 120 ff.
[13] *Ibid.,* p. 123.
[14] *Ekonomicheskoe obozrenie,* 1928, No. 1, p. 178.

goods indexes, separately, the values in "1926/27" rubles become 10.4 billion for large-scale industry and 6.2 billion for small-scale industry. The large-scale figure lies between those of Strumilin and of the official index while the small-scale figure exceeds both. We are unable to say which of the three estimates—the estimative nature of all must be underlined—is best.

Summary

Limitation of material and paucity of data prevented us from constructing an all-inclusive index of small-scale industry for the years when it was important in the Soviet economy. An attempt, therefore, was made to determine the physical output of small-scale industry for the fifty-four staple industrial materials and basic consumer goods which were covered by the production index of industrial materials, constructed by G. W. Nutter. There is a considerable discrepancy between this index (see Table 17) and the official Soviet index reconstructed for large- and small-scale industry. While in our index large-scale production shows an increase of 83 per cent between 1913 and 1933 and small-scale production a decrease of 68 per cent, in the official Soviet index the former shows an increase of 281 per cent and the latter a decrease of only 30 per cent. But in spite of this discrepancy, the share of small-scale industry in total industrial output in our index is very close to the one in the official index. It is generally agreed among Western scholars that the official Soviet index suffers from an upward bias and it can now be said that this bias applies to large- as well as to small-scale industry.