

CHOICE OF TECHNIQUES IN MAINLAND CHINA*

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It seems that until recently Socialist countries in regard to the problems of allocation of investment resources during the course of industrialization were almost exclusively concerned with the distribution among sectors or industries. Except for some attempts to determine the relative efficiency of a set of alternative, large-scale projects designed to produce identical outputs, the problem of choosing between establishments with differences in scale of production, technology or capital intensity was given little attention. In the sectors or industries that were given priority in the investment programme, the construction of large-scale establishments equipped with the latest technology was a practice taken for granted, and did not become a matter of choice. If and when in a country a gap would develop between the widespread introduction of capital-intensive technology and the limitation of factor endowment, an attempt was made to eliminate or at least reduce it by what may be called a dualistic technological development within the firm, i. e., while the latest capital-intensive technology was adopted in the principal manufacturing process, labour-intensive technology was pushed in the other relatively unimportant production processes. Such dualistic development in the Soviet machine-making industry was analyzed by David Granick, and similar findings in the Soviet iron and steel industry were presented by Gardner Clark.¹

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¹ M. Gardner Clark, *The Economics of Soviet Steel*, Harvard University Press, Cambridge, Mass., 1956. David Granick, "Economic Development and Productivity Analysis: The Case of Soviet Metal-Working," *Quarterly Journal of Economics*, May 1957, pp. 205-233; *id.*, "Technological Policy and Economic Calculation in Soviet Industry," in G. Grossman (ed.), *Value and Plan*, University of California Press, Berkeley, Calif., 1960, pp. 271-286.

During the First Five-Year Plan period (1953-57), Mainland China in respect to the problem of investment allocation largely followed the pattern described above. Toward the end of that period, however, Chinese planners came to consider the problem of choosing techniques and scales of production as equally important as the problem of choice among sectors or industries. They began to question which is more preferable, the latest technology that requires large-scale establishments, or the traditional technology and small-scale production in many sectors and industries. As a result, Mainland China in the Second Five-Year Plan period (1958-62) was known for the great number of small enterprises spread in all branches of the national economy. The small enterprises of this period are remembered by the "backward furnaces" and other traditional methods whose technological failure became apparent toward the end of 1958. They were reorganized after 1959 into enterprises using relatively up-to-date techniques, and a more definite test of the efficiency of small establishments was actually made in the light of these reorganized techniques. This is not to say, however, that the large-scale projects using the latest technology that were initiated in the First Five-Year Plan period were completely replaced by small firms. It seems, therefore, possible that the new investment policy was aimed at a dualistic development of technology and scale of production among firms as contrasted to that within firms. At any rate, it was the first time that in Socialist countries the problem of choice among different levels of technology and scales of production was taken up explicitly and seriously. The dualistic development adopted in Mainland China may be considered as a new "experiment" in choosing the most efficient form, or combination of forms, of technology or scale of production, to be conducted during the course of economic development in a country where factor endowment reveals an extreme scarcity of capital and an excessive supply of labour.

The ideal object of this paper would be to evaluate the results of such an "experiment," using whatever limited amount of information and statistic is available. Due to space limitation, the author had however to limit himself to a mere representation of empirical findings of the study on choice of technique in the plan period which may serve later as the basis for an overall evaluation of the "experiment." If a tentative conclusion is drawn from the statistical data here presented and previous theoretical studies on the merits and demerits of the dualistic development method,¹ the new "experiment" appears to be a failure insofar as it

¹ Shigeru Ishikawa, "Shakaishugi Kōgyōka Katei ni okeru Gijutsu Sentaku" (Choice of Techniques during the Process of Socialist Industrialization), *Keizai Kenkyū* (Econo-

pretends to be an investment policy that will maximize the growth rate of output and employment. The failure of the Chinese case seems to indicate that the most effective way to maximize the rate of economic growth is still the application of the large-scale production method. It also indicates that in order to meet successfully the difficulties caused by the relative scarcity of capital and abundance of labour, the dualistic development of technology within the firm must be utilized to all extent possible; dualism among firms can be utilized only in the industrial branches where small-scale production and traditional techniques can compete with large-scale firms. Experience in China presents an important example revealing the merits and limitations of the economic policy of promoting development of medium- and small-scale firms, often adopted by or advised to the Southeast Asian countries.

The first chapter studies the size of industrial firms under the First Five-Year Plan. The findings of the study seem to support the view that the Chinese tried to follow the normal pattern of development in Socialist countries with regard to the scale of establishments and technology. An application of the Granick-Clark hypothesis to the Chinese case is analyzed. In the second chapter, a quantitative evaluation is attempted of the application of the dualistic development among firms and its revision during the Second Five-Year Plan period. In the third chapter, the reasons for the declining trend in the number of small firms are studied in the case of small-scale iron-works, especially in view of the changes in their costs of production.

In the present paper, terms such as technical level, scale of production and capital intensity are used indistinctly, except in the case of the dualistic development within the firm, where the original meaning is respected.

mic Studies), Vol. 12, No. 3 (Tokyo, July 1961). This article was partly written as comment on Professor M. Dobb's interpretation of what he calls the "Chinese Method." (See Chapters 2, 3, and 4, especially pp.46 and 47, of M. Dobb, *An Essay on Economic Growth and Planning*, Routledge and Kegan Paul, London, 1960.) Prof. Dobb sent a rejoinder. (See M. Dobb "A Note on Professor Ishikawa's 'Choice of Techniques during the Process of Socialist Industrialization'" in *Keizai Kenkyū* Vol. 13, No. 3. (Tokyo, July 1962))

I. NORMAL INVESTMENT PATTERN IN THE FIRST FIVE-YEAR PLAN PERIOD

Size Structure of Industrial Enterprises¹

Comparative data are available only for the year 1955, but they are far from adequate. Table 1, on which the present examination is to be based, presents the size structure of Chinese industrial enterprises in respect of four aspects: number of enterprises, fixed assets, total amount of production and number of production workers. The table covers only the enterprises in the category of "national industrial enterprises"; it excludes what is officially called "handicraft," i. e., primarily familial industrial enterprises where non-family workers do not exceed three. The lack of data in the smallest size bracket can be compensated by using other sources, if certain inaccuracies are overlooked. What is important for the present analysis is that the size classification of enterprises in the table includes only three categories: 1. "small-scale industrial enterprises," 2. "large-scale industrial enterprises" with less than 500 employees, and 3. "large-scale industrial enterprises" with more than 500 employees (See note 1 of Table 1). Among various inconveniences entailed by this classification, perhaps the most serious is that firms with 1,000 and more employees are not separated as a group, for this group is usually the most important one when attempts are made to study the size structure of firms with special emphasis on larger-size groups. This will necessarily affect the validity of our conclusions.

Since the characteristic feature of the size structure of industrial enterprises in a country can in many cases be illustrated most effectively by international comparison, the figures for Chinese industries, obtained on the basis of Table 1, will be compared in Tables 2 and 3 with those of Japan, India, and the U. S. S. R. (As it is difficult to obtain identical size groupings of enterprises, the purpose of the comparison is only to provide a rough indication of the differences.) As is clear, Table 2 gives

¹ In China's official industrial classification, "industry" (*kung yeh*) includes not only manufacturing industry but also mining and electricity generation and transmission. A most detailed description about composite branches of "industry" in official statistic is given in Li Hui-hung, "An Opinion about the Problem of Classification between Light and Heavy Industries" in *T'ung Chi Kung Tso* (Peking) 1957, No. 18, p. 13 f. In the paragraphs below the term, and the figures concerning "industry" are used in this official definition insofar as it relates to Mainland China, and as it is almost impossible to separate the figures for manufacturing industry, Chinese figures in terms of "industry" are compared with those of Western countries in terms of manufacturing industry.

an ordinary type of comparison for all enterprises including handicrafts. Figures for China are derived fundamentally by adding those of the National Handicraft Survey to the relevant figures in Table 1. As for Table 3, which gives a comparison of size structures, though in a simplest way, of enterprises with more than twenty employees, some explanation is necessary for its importance. In some other publication,

Table 1. SIZE DISTRIBUTION OF CHINESE ENTERPRISES IN TERMS OF NUMBER OF ENTERPRISES, FIXED ASSETS, TOTAL VALUE OF PRODUCTION AND NUMBER OF WORKERS, 1955
— National industries excluding handicraft industry —

Size group as classified by number of employees	(1) Number of enterprises		(2) Fixed assets	
	Absolute number	Ratio (%)	Absolute value (in millions of yuan)	Ratio (%)
1. 4~15 (30)	92,477	73.7	0.2	0.9
2. 16 (31)~449	30,992	24.7	4.6	17.5
3. 500 and more	2,008	1.6	21.5	81.6
Total	125,477	100.0	26.3	100.0

Size group as classified by number of employees	(3) Total value of production		(4) Number of workers	
	Absolute value (in millions of yuan)	Ratio (%)	Absolute number (in thousands of persons)	Ratio (%)
1. 4~15 (30)	3,446	7.7	674	15.5
2. 16 (31)~449	17,541	39.2	1,565	36.0
3. 500 and more	23,761	53.1	2,109	48.5
Total	44,748	100.0	4,384	100.0

Source: This table is based on "Outline of Funds in all Industries of China" *T'ung Chi Kung Tso* (Peking) No. 1, 1957, where ratios are found on page 31, and the following material which gives the absolute figures for the total. (i) for total of column (1) and (3), National Bureau of Statistics, "Report on the Performance of 1955 National Economic Planning" *T'ung Chi Chu Pan She*, Peking, 1956, pp. 23-24, (ii) for the total of column (2), Shigeru Ishikawa, "A Study of the Official National Income Statistics of China" in *Chūgoku Keizai Hatten no Tōkeiteki Kenkyū* (Statistical Study of Chinese Economic Development), The Institute of Asian Economic Affairs, Tokyo, 1960, pp. 117, and (iii) for the column (4), the writer's unpublished work, *National Industrial Workers and Employees Statistics*. (This column is referred to as the annual average number of productive workers.)

Notes: The demarcation line between size groups in line 1 and 2 of the table coincides with the coverage of the official concepts of "small-scale industry" and the "large-scale industry". An enterprise in the "small-scale industry" is one with less than 16 workers and salaried employees in case it uses mechanical power, or with less than 31 workers and salaried employees in case it does not use mechanical power; in either case the number of employees must exceed three.

the author made an empirical study of the size structure of industries in Asian countries except Mainland China.¹ He found that, when all enterprises are divided into two groups, i. e., those with less and those with more than twenty employees (called "domestic industry" and "factory industry" sectors, respectively), the ratio of the total employees

Table 2. SIZE STRUCTURE OF CHINESE INDUSTRIAL ENTERPRISES
AS COMPARED WITH THOSE OF INDIA AND JAPAN, 1955

	1~19 (in China (1~15 (30)))	20~499 (in China (15 (30)~499))	500 and more	Total
Distribution of employees				
Mainland China ¹	63.8	15.4	20.8	100.0
India ²	76.8	10.0	13.2	100.0
Japan ³	34.6	38.6	26.7	100.0
Distribution of total value of production				
Mainland China ⁴	24.7	31.9	43.3	100.0
Japan ⁵	11.2	38.2	50.6	100.0

Sources and notes:

1. The figures on this line are derived in the following way; (i) the total number of workers and salaried employees in national industrial enterprises (except handicraft) in 1955 (see (iii), Table 1) is distributed among the three sizes according to the size distribution ratio of workers given in Table 1; (ii) the number of handicraft employees in 1955 given in Chinese National Bureau of Statistics, *Ten Great Years*, p. 30 was added in the smallest class; (iii) overall distribution ratios were then calculated. I have assumed that the number of handicraft employees does not include that of farmers engaged in handicraft as a subsidiary occupation. This is based on a comparison of the number of handicraft employees in 1954 as given in *Ten Great Years*, page 30 with the number of employees given in the 1954 *National Survey of Handicraft Industry*. (See Table 6.) Modern industries do not include employers and family labour; certain errors may thus arise, but in this size class the number of employers and family labour seems to be rather negligible.
2. Derived from Table 1 in the writer's article cited in Note 1 below. Since this is given in terms of establishments, the ratio of the 500 and more class is liable to underestimation. The ratio of the 1~19 class will remain almost unaffected even when the figures will become available in terms of enterprises.
3. Based on Ministry of International Trade and Industry, *Chūshō Kigyō Sōgō Kihon Chōsa Hōkokusho Sōkatsu Hen* (Report on the General Basic Survey of Small and Medium Industries, Summary), p. 2. Data in terms of total production are not given in this report, but they were published in Economic Research Institute, Economic Planning Agency, *Shihon Kōzō to Kigyō-kan Kakusa* (The Structure of Capital and Differentials between Enterprises), Tokyo, 1960.
4. Same method as in note 1.
5. Same source as in note 3.

¹ Shigeru Ishikawa, "Aja. Shokoku ni okeru Daikigyō to Shōkigyō" (Large and Small Establishments in Asian Countries), *Keizai Kenkyū*, Vol. 13, No 2 (April 1962).

in the former group to that in all enterprises (called "ratio of domestic industry") changes independently from the latter group's distribution of employees among different size brackets (defined as "size structure of the factory industry sector").¹ In international cross section data, the movement of the "ratio of domestic industry" was found to be significantly correlated with the change in the ratio of the primary industry income to the national income. This suggests that the "domestic industry ratio" gradually declines with the progress of an economy in Colin Clark's sense. On the other hand, it appeared that the "size structure of the factory industry sector" is likely to depend more heavily upon a given structure of output and technology, and has no clear corelationship with economic progress. Such statistical observations are understandable, if we consider that enterprises in the smallest-scale bracket are conducted largely by family enterprisers whose aim is to acquire supplementary income for subsistence rather than to maximize profit.

Table 3. SIZE STRUCTURE OF INDUSTRIAL ENTERPRISES IN CHINA AS COMPARED WITH U.S.S.R., INDIA AND JAPAN

— Ratio of enterprises with more than 500 employees to the total of enterprises employing more than 20 persons —

	Number of employees	Fixed assets	Total output
China (Mainland)	57.5	82.6	57.6
U.S.S.R.	74.9	—	—
India	78.8 (57.1)	74.9	69.5
Japan	40.7	70.2	57.0

Sources: For China and Japan, the same as in Table 2; for U.S.S.R., *Промышленность, СССР, 1957* (Industries of the U. S. S. R., 1957), and for India, the figure in bracket is from National Sample Survey of Manufacturing Industries 1956 (published in Government of India, *Occupational Pattern in Manufacturing Industries, India 1956, 1959*) which covers substantially all branches of manufacturing industries, and the others from the Government of India, *Tenth Census of Indian Manufactures (CMI) 1955*, which covers only 29 out of the 62 branches of industry in the official classification of India's manufacturing industries. In the case of India, the proportion of large-scale industries, including textile industry, tends to be overemphasized.

Notes: In this table, figures for India are given on the basis of establishment while those for the other countries on the basis of enterprises. The ratios for China and U. S. S. R. indicate those of enterprises with more than 500 employees to the total of "large-scale industrial enterprises."

¹ This method of analyzing the size structure of industrial enterprises was originated by P. Sargent Florence. (See P. S. Florence, *The Logic of British and American Industry*, Revised ed., Routledge & Kegan Paul, London, 1960, pp. 22 and 23.)

That is why Table 3 is compiled aiming at comparing countries in respect to the "size structure of the factory industry sector." By the same reason, Table 2 is useful mainly for checking the "ratio of domestic industries." It is seen, first, that the "comparative domestic industry ratios" coincide roughly with the economic progress in each country. Therefore, we may safely concentrate on the problem of the size structure of the factory industry sector. Although size grouping in Table 3 is too wide to discern differences of respective size patterns, Mainland China appears to be one of the countries with size structures inclining toward large-scale enterprises. In the study mentioned in footnote 3) on page 28 of this article, it was pointed out on the basis of data with much smaller size groupings that the size structure of Japanese manufacturing industries was more medium-scale centred than is the case in India, where the large-scale enterprises hold the more important position. The Chinese case appears rather similar to that of India.¹

Changes in the Size Structure of Industrial Enterprises during the First Five-Year Plan Period

The above observations on the size structure of the factory industry sector concern only the year 1955, and as such do not necessarily give a correct account of the outlook of the Chinese planners. The official estimates of fixed assets in the "national industrial enterprises" increased from 15.8 billion yuan (\$ 6.71 billion) in 1952 to 35.2 billion yuan (\$ 14.95 billion) in 1957.² The increase was due to investment for capital construction needs. The size structure of Chinese industrial enterprises in 1955, a middle year of the plan period, may therefore be

¹ This statement is based on an observation in terms of establishments. In as much as Table 3 is constructed in terms of enterprises, the differences are not so noticeable. In terms of fixed assets and total production, the differences become even less noticeable. This is partly because in the large-scale enterprise group the number of establishments within an enterprise is far greater in Japan than in the other countries, and also because there are more irregularities in China and India than in Japan in the relation between the size of an enterprise and its capital intensity or labour productivity. The latter fact is discussed in this article.

² The dollar equivalent is meant to give a rough idea of the amounts. The following two points are however worth noting: 1. In China the value of fixed capital stock is calculated in official procedures in terms of book and *gross* value not exclusive of depreciation; in state-operated enterprises an overall reassessment of capital assets was made in September 1951 in terms of replacement prices. 2. A comparison of the purchasing power of the yuan with that of the yen in regard to investment for capital construction reveals that the relation between these two buying powers may not be close to the official exchange rate of the two currencies. See Shigeru Ishikawa, "Chūgoku no Shihonchikuseki to Sono Kokusai Hikaku" (Capital Accumulation in China and its International Comparison), *Kyōsanken Mondai* (Problems in the Communist Sphere), Vol. 6, No. 7 (Tokyo, July 1962).

regarded as a composite of the size structure at the start of the plan period and that which reflected the preference of the planning authorities. In order to study this preference, an effort was made to collect statistical data on the size structure of both state- and private-owned industries at different points during the plan period; but they are not fully to enable a meaningful comparison.¹ Instead, two data are presented.

Table 4. ALLOCATION OF INDUSTRIAL INVESTMENT BETWEEN CONSTRUCTION UNITS OF DIFFERENT SIZE IN THE FIRST FIVE-YEAR PLAN

	Number of units of construction	Amount of investment (in billions of yuan)	Average investment per unit of construction (in millions of yuan)
A. Construction units of above-limit investment	694		
1. Units of investment administered by industrial ministries of the central government	573		
i. Units whose design is assisted by the U.S.S.R.	145	11.00	75.9
ii. Units directly connected with units i	143	1.80	12.6
iii. Others	430		
2. Units of investment administered by non-industrial ministries of the central government	39		
3. Units of investment administered by local governments	82		
B. Construction units of below-limit investment	2,300		
1. Units of investment by the central government	900		
2. Units of investment by local governments	1,400		
A. 1. iii+A. 2+B. 1	1,369	11.92	8.7
A. 3+B. 2	1,482	1.90	1.3
A.+B.	2,994	26.62	0.9

Source: *The First Five-Year Plan for the National Economic Development of the People's Republic of China, 1953-1957* (hereafter mentioned just as *The First Five-Year Plan*), Jen Min Chu Pan She (People's Publishers), 1955, pp. 30-31.

Note: The terms "above-limit" and "below-limit" investments denote the magnitude of investments above or below the limits that are prescribed by regulation for each branch of industries. For the concrete magnitude of these limits that were in force in 1953, see p. 7-8 of the book cited in Note 1, p. 32.

¹ From what can be gathered from available material on state industrial enterprises at the end of 1949, and private industrial enterprises in 1953 and 1954, the size structure of industrial enterprises in China at the beginning of the First Five-Year Plan period appears to lean largely toward large-scale enterprises.

Table 5. AVERAGE AND MARGINAL FIXED CAPITAL-LABOUR RATIOS IN MOJAR INDUSTRIES

— State and Joint Public-Private Enterprises —

	Average capital-labour ratio		Marginal capital-labour ratio (3)	(3)/(1)
	1952 (1)	1956 (2)		(4)
Iron and steel ^a	9,251	13,302*	22,017	2.38
Metal-working ^b	2,996	4,357	9,900	3.30
Electricity ^c	51,197	58,196*	141,200	2.76
Textile**	2,856	3,143	4,098	1.44

Note: Computation or estimation of marginal capital-labour ratio was made by the following method:

Let K and N symbolize respectively the amount of capital and the number of workers, and their suffix the period of time. So, $\frac{K_1}{N_1}$, $\frac{K_2}{N_2}$... denote the average capital-labour ratio in each period of time. Such ratio is given in my *Kokuei Kō-shi Gōei Kōgyō Rōdōsha Heikin Gijutsu Sōbi Ritsu* (Average Fixed Capital-Workers Ratio in State and Joint Public-Private Industries), (unpublished). Then, the marginal capital-labour ratio will be $\frac{K_2 - K_1}{N_2 - N_1}$ which is what is sought here.

Now,

$$\frac{K_2 - K_1}{N_2 - N_1} = \frac{K_1}{N_1} \cdot \frac{\frac{K_2}{K_1} - 1}{\frac{N_2}{N_1} - 1} = \frac{K_1}{N_1} \cdot \frac{k - 1}{n - 1}; \text{ where } k = \frac{K_2}{K_1} \cdot n = \frac{N_2}{N_1} \text{ and } \frac{k}{n} = \frac{K_2}{N_2} / \frac{K_1}{N_1}$$

Therefore, the value of marginal ratio will be derived if the numerical value of either k or n is available. The notes below indicate the sources from which the data about the value of n or k were taken.

- Shigeru Ishikawa, *Chūgoku ni okeru Shihon Chikuseki Kikō* (The Mechanism of Capital Accumulation in China), Tokyo, Iwanami Co., 1960, p. 136.
- National Bureau of Statistics, *Wo-kuo Kang-t'ieh, Tien-li, Mei-tan, Chi-hsieh, Fang-chih, Tsao-chih Kung-yeh te Chin-hsi* (The Past and Present of Steel-Making, Electric Power, Coal, Machine-Making, Textile and Paper Industries in Our Country) (To be quoted just as *Chin-hsi* (Past and Present) hereafter), T'ung Chi Chu Pan She, Peking, 1958, p. 119.
- The same as note a.

* 1955.

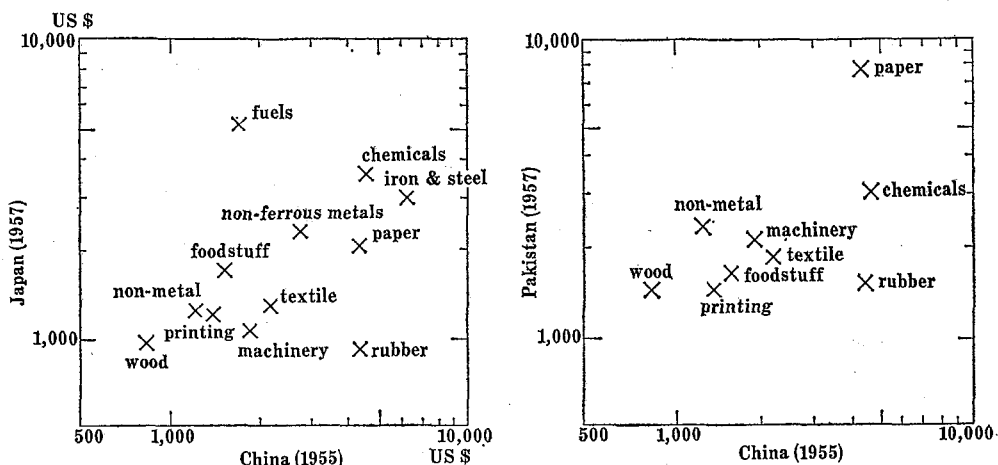
** National Industries (exclusive of handicraft).

The first is on investment for capital construction in industries as allocated between construction units¹ of different scope. Table 4 presents

¹ Construction unit is a terminology in the capital construction plan, denoting either the enterprise or the non-enterprise, independent unit of project whose capital construction programme was officially approved and which is given capital funds for financing construction. Yin Hsi-cheng, *Chi-pen-chien-sheh Tsai-wu Kuan-li* (Financial Management of Capital Construction), Li Hsin K'uai Chi Publishing Co., Shanghai, 1953, p. 6.

data as are available from official publication on the First Five-Year Plan. For the construction units whose designs were aided by the U. S. S. R. and which were given the highest priority in the First Five-Year Plan, the average amount of investment per unit was as large as 75.9 million yuan (\$ 32 million); such investment accounted for 40 per cent of the total amount of basic construction investment. If other construction units that are closely connected technically with the U. S. S. R.-assisted units were to be included, the ratio would come up to 48 per cent.¹

Figure 1. CAPITAL-LABOUR RATIO IN CHINA BY INDUSTRIES — COMPARISON WITH JAPAN AND PAKISTAN



Source: For China: same as in Table 5; for Japan: Government of Japan (MITI), *Chūshō Kigyō Sōgō Kihon Chōsa Hōkokusho* (Report of General Basic Survey of Small and Medium Industries), Tokyo, 1959; for Pakistan: Government of Pakistan, *Census of Manufacturing Industries, 1957*, Karachi, 1960.

Note: The capital labour ratio is in fact the fixed capital-labour ratio. The fixed capital value is meant in terms of current replacement price and gross of depreciation. Since the data on Japan and Pakistan are given in terms of book value and net of depreciation, they were adjusted according to the formula presented in my article. (cited in footnote 1, p. 28 of this article) As is explained in footnote 2, p. 30 of this article, figures for China are given in terms of current replacement values for the period till 1951, and later in terms of book value and gross of depreciation for the increment of fixed capital. Figures for China are given without adjustment.

¹ It is impossible to check the average amounts of investment presented in Table 4 against actual figures from officially published materials. It may, however, be said that the average scope of the projects is not likely to have changed. Furthermore, under the Sino-Soviet agreement of April 1956, 55 additional industrial enterprises were designated as projects to be aided in their design; this seems to have increased the relative importance of large-scale enterprises.

The second data concerns average and marginal ratio of fixed capital to labour in state-operated and joint state-and-private operated enterprises in the four industrial lines, iron and steel, metal processing, electric power, and spinning and weaving.¹ (Table 5) The marginal fixed capital-labour ratio is here assumed to be in linear corelationship with the size of establishment. In order to see exactly how high the average fixed capital-labour ratio was in 1955, comparisons in different lines of industry were made with Japan and Pakistan. (Figure 1) Although there may be some questions as to the comparability of these figures, the figure roughly indicates that the Chinese ratio does not differ much from that of Japan or Pakistan.² With this fact in mind and looking at the marginal ratio given in Table 5, it appears that investment in heavy industries is intended to bring about an especially high capital intensity.

The above findings would seem somehow to confirm the fact that the Chinese investment policy during the First Five-Year Plan laid utmost emphasis upon large-scale enterprises. We may therefore conclude in broad terms that the industrial size structure in Mainland China during the course of the plan became more and more inclined toward large-scale enterprises.

Problem of Domestic Industries

For the "domestic industry ratio" also, figures in Table 2 cover only 1955. It is desirable to study the ratio movement throughout the plan period. However, the only data available in time series are those which show the proportion of "handicraft industry" to the total industries in terms of output. Such proportion tended gradually to decline from 21.3 per cent in 1952 to 17.0 per cent in 1957.³ This is not inconsistent with what we may expect in line with the international cross section data mentioned before.

However, concerning the "handicraft industry sector," another im-

¹ The amount of basic construction investment in these four lines of industry accounts for as much as 40-45 per cent of the total industrial investment in China (See Shigeru Ishikawa, "Capital Accumulation in Mainland China," *Proceedings of the Symposium on Economic and Social Problems of the Far East*. Hongkong University Press (to be published soon).

² The reason why the capital-labour ratio is high in Pakistan is partly because its currency is overvalued. It may be also because in Pakistan, where manufacturing industries are a recent phenomenon, the scale of the establishments tends to be large.

³ National Bureau of Statistics, *Wei-Ta-de Shih-Nien* (Ten Great Years), Jen Min Chu Pan She, Peking, pp. 76 and 83.

portant problem has to be examined. In the afore-mentioned study on the size structure of industrial enterprises in Asian countries, the percentage distribution of employment according to the medium industrial classification adopted in the United Nations was looked for in 19 different lines of industry in the "domestic industry sector." It was found that such ratio distribution was generally stable among different

Table 6. COMPOSITION OF PRODUCTION VALUE OF HANDICRAFT INDUSTRIES ACCORDING TO THE 1954 NATIONAL HANDICRAFT INDUSTRY SURVEY

	Total production (in millions of yuan)	Percentage of total production
A. Total production by end use		
1. Producer goods for agriculture (including farming tools made of iron, wood and bamboo)	61.5	5.88
2. Producer goods for manufacturing industries (metals and metal products, coal mining; wooden products; soda, sulfur, nitric acid, paints, printing ink and paint materials; roughly processed cotton, wool, hemp, etc.)	130.3	12.45
3. Consumer goods for daily use (foodstuff, sewing, textile manufactures, bamboo, rattan, hemp-palm, iron, wood, etc.)	727.3	69.52
4. Other producer goods (construction materials; automobile and ship repair; wooden tools for transportation, measuring instruments, etc.)	6.6	0.63
5. Other consumer goods (cultural and educational, special handicraft, superstitious, etc.)	78.7	7.52
B. Total production by branch of industry		
1. Sewing	142.5	13.62
2. Cotton spinning	85.7	8.19
3. Bamboo, rattan and hemp-palm	64.6	6.17
4. Metal manufacturing	63.1	6.03
5. Wood processing	62.5	5.97
6. Edible fats and oils	32.3	3.09
7. Sugar manufacturing	17.4	1.66
8. Hides and skins	12.9	1.23
9. Special handicraft	9.7	0.93
10. Knitted goods	9.1	0.87
11. Ceramics	6.0	0.57
12. Coal mining	3.1	0.30
13. Silk reeling	1.3	0.12
14. Others	536.2	51.25
15. Total	1,046.4	100.00

Source: Chao I-wen, *Hsin-Chung-Kuo te Kung-yeh* (New China's Industries), T'ung Chi Chu Pan She, Peking, 1957, pp. 101~3

countries, irrespective of the difference in the ratio of domestic industries. The ratios were generally higher for foodstuff, textiles and other light industries, and lower for basic metals, rubber, petroleum and other heavy and chemical industries. It is not easy to clarify the Chinese case because the available data are not adequate for international comparison. But, as shown in Table 6, derived from the officially published material on the national survey of handicraft industries in 1954, the first census in this field in China, the percentage distribution of output among different industries in the "handicraft industry sector" seems to indicate a rough correspondence with the above findings. It suggests that the types of industry in which a self-employed enterpriser can easily engage himself for supplementing his household income because of technological reasons, and unless there are some protective policies exercised, are more or less the same in all countries and that China is not an exception.

Testing the Clark-Granick Thesis

The question of investment policy with respect to technique and the scale of production in the First Five-Year Plan period includes, besides the problem of the size structure of enterprises, the problem of the relation between the scale of enterprises and their capital intensity, or more specifically, the problem of a dual structure of technique within an enterprise. The thesis by M. G. Clark and D. Granick, which takes up the U.S.S.R. planners' behaviour, treats this matter. We may summarize the thesis as follows.

Clark finds that the Soviet iron and steel industry ever since its recovery years of the 1920's has been built up after the model of American large-scale plants. But, while considerable attention was paid to the increase of capital equipment productivity, labour productivity received less attention despite the nominal importance it was given. This is reflected in the fact that the actual Soviet figures on capital equipment productivity are higher than those of the United States, while the opposite is true of labour productivity.

Granick analyzes the Soviet machinery industry before the war with particular emphasis on differences in technical standards between various production processes within an enterprise. He finds that even in a large enterprise equipped by and large with the latest technology, the high degree of mechanization in the principal processes was not accompanied by as high a degree of mechanization in supplementary processes, such as intra-factory transportation, inspection and repair works. The latter, relying heavily on manual work, lagged far behind the mechanization in

their American counterparts. Even in the principal processes, the choice of equipment tended to be made more for capital-saving than for labour-saving purposes.

Behind these two findings, there seems to be the following assumption: factor proportions prevalent in the Soviet Union are far more capital-scarce than in the United States, and this difference should be reflected in investment decisions. Why, then, did the Soviet planners not adopt a "small-enterprise method"? Why did they have to introduce the latest technology even within the confines of a dual structure of production techniques? Clark and Granick have not answered these questions.¹ But, provided that the actual Soviet industrial policy with emphasis on large-scale firms and latest technology is regarded as a given condition, the Clark-Granick findings shed an important light on the ways by which economic rationality is pursued in Socialist industrializing economies. The question is now whether a similar choice has been made by China.

Tables 7 and 8 seem to indicate that what Clark found about the Soviet Union largely applies also to China. It is difficult to obtain systematic data on China which would cover such industrial aspects as were taken up by Granick. However, from the fragmental reports on the Technological Reform Movement (*Chi shu kai ko yun tung*) that since 1959 spread all over the country (a more detailed explanation will be made later in the second section of the present article), one can conclude that the Granick findings also apply to China, even to a greater degree than the Clark findings. To cite a few examples, the Congress of People's Representatives held in April 1960, discussed the problem of technological differences between varying processes within an enterprise, and singled out as the most backward in mechanization in Chinese machinery industry the following four processes, casting, forging, welding, and intra-factory craning. It was revealed that the Technological Reform Movement was helpful in improving major equipment in such processes as casting and forging, but that about 60 per cent of the workers employed in these processes were still dependent on manual operation of equipment. Conditions in the welding process were not much better. As for intra-factory transportation almost all the operations depended on

¹ In order to answer this question, it is necessary to assume that the planners' choice in investment is determined by an additional criterion: the maximization of the rate of sufficiency in principal capital goods (see my article mentioned in note 1, p. 24 of this article).

**Table 7. PRODUCTIVITY OF IRON AND STEEL
MANUFACTURING EQUIPMENTS**

— A Comparison of China, U.S.S.R. and Japan —

	Utilization coefficient of effective capacity of blast furnace (1 metric ton/lm ³)	Utilization coefficient of bottom space of open-hearth furnace (1 metric ton/1 m ²)
China		
1952	1.023	4.78
1953	1.034	4.91
1954	1.079	5.16
1955	1.166	6.07
1956	1.305	6.67
1957	1.321	7.21
1958	1.505	7.78
U.S.S.R.		
1927~28	0.552	2.95
1932	0.595	2.68
1937	0.900	4.55
1950	1.020	5.7
1954	1.219	6.6
Japan		
1955~59	0.868	—
1960	1.000	—
1961	1.160	—

- Sources: 1. China: *Chin-hsi* (Past and Present), p. 25, and Sung I-chih, A New Page of Steel Industry's Development, *Yeh Chin Pao*, 1959, No. 39, p. 13.
2. U. S. S. R.: G. Clark, *The Economics of Soviet Steel*, Harvard University Press, 1956, p. 254.
3. Japan: Figures for 1955~60 are based on the volume of effective capacity, total capacity or inner capacity of furnace per ton of pig iron output (See: Japan Iron & Steel Federation, *Nippon no Tekkō Tōkei* (Iron and Steel Statistics of Japan), Tokyo, 1962, p. 26). (These figures, average coefficients of furnaces throughout the country are needed for the iron-and-steel production plans occasionally proposed at conferences of technical experts. Differences between furnace effective capacity, total capacity, and inner capacity are said to be negligible.) The figures for 1961 was given by the Japan Iron & Steel Federation. It was obtained by dividing the annual tonnage of pig iron output of 39 furnaces actually in operation throughout the country by the total inner capacity of these furnaces.

manual work.¹ Although these conditions were related to the Technological Reform Movement period, it is fair to presume that more or less the same conditions prevailed during the First Five-Year Plan period. If we compare this with what Granick reported about the Soviet Union, the major production processes in Chinese machinery industry, except the metal-cutting process, may be characterized by their extremely labour-intensive methods. It is noticeable that the Chinese Congress of April 1960 did not mention about subsidiary processes, such as repair and inspection, which were pointed out as the most labour-intensive in the Soviet case. It is only toward the end of 1961 that these processes were taken up in China as needing reform.²

2. SMALL-ENTERPRISE METHOD AND ITS TRANSITION

Definition of Small Enterprise and Forms of its Management

The initial policy of stressing the construction of large-scale industrial enterprises equipped with the latest technology was replaced by a new policy officially announced by Liu Shao-chi who reported on behalf of the Central Committee on the occasion of the second session of the Eighth National Congress of Chinese Communist Party (May 1958).³ Small and medium enterprises were to be constructed parallel with the large-scale ones in all but a few lines of industries. Since then the economic development in China was characterized by this policy of dualistic development of industrial enterprises, which consisted, as a matter of fact, in the creation of an overwhelmingly great number of smallest-scale enterprises. The success of the new policy itself was thought to be

¹ Liang Kuang, "machinery Industry Must Make Great Strides Forward in Mechanization of Casting, Forging, Welding and Transportation", *Jen Min Jih Pao* (People's Daily), April 12, 1960, p. 12. See also the description of Shanghai machinery industry in Ho Ch'ing-shih, "For an Ever Increasing Labour Productivity", *Hung Ch'i* (Red Flag), No. 9, 1959.

² Han Kuang, "Problems of Technological Work in Industry", *Hung Ch'i*, No. 24, 1961.

³ See *Hsin Hua Pan Yueh Kan* (New China Bi-monthly) (Peking), No. 11, 1958, especially p. 8. A decision made on 15 November 1957 may be regarded as a sign of the new policy. It concerned the transfer of the enterprises hitherto under direct control of the Central Government to the local governments. It came up for serious debates at the December 1957 Hang Chou meeting of the Politbureau of the Central Committee of the Chinese Communist Party, at its January 1958 Nan Ning meeting, and also at its March 1958 Cheng Tu meeting. This was the time when a series of policy decisions were made on the high-rate economic growth under the name of "Great Leap Forward". The rise of small enterprises was already noted around that time.

largely dependent on the economic efficiency of this group of enterprises.

For conveniency sake, let us call these smallest-scale enterprises "small enterprises," and the policy of stressing the importance of investment in this group "small-enterprise method." The first question is how to define "small enterprise." During the period under review many different terms with respect to the size of enterprises were used in official documents; besides, some of the old terms may possibly have changed meaning. For example, when Liu Shao-chi mentioned in his report "large-scale enterprises" and "small and medium enterprises," the former term denoted almost certainly something different from what it officially meant under the First Five-Year Plan as quoted in the previous section of this article. In any case, however, what we have defined as "small enterprise" in our study obviously corresponds to "enterprise with traditional technique" (*T'u-fa-ch'i-yeh*), "group of enterprises with traditional technique" (*Hsiao-t'u-ch'ün*), "small-scale enterprise" (*Hsiao-hsing-ch'i-yeh*), "industrial base" (*Chi-ti*), etc., that are officially used in the period under review. Another term, "small-scale modern enterprise group" (*Hsiao-yan-ch'ün*), is a little more inclusive, as will be explained later. It seems that these terms are all used for the same small enterprises, but from different viewpoints, according to the type of technology adopted, the size of equipment and the form of management. Let us assume that a classification according to types of equipment and technology underlies the concept of "small-scale enterprise." Such criteria can be illustrated by the case of the iron industry. The blast furnace, the major equipment in iron industry, is divided into four kinds, large, medium, small and "native furnace" (*T'u-kao-lu*). The large-size furnace has an effective capacity of over 500m³,¹ the medium one between 100 and 500m³, and the small one between 3 and 100m³.² The "native furnace" is distinguished from the above three Western-type furnaces (*Yang-fa-kao-lu*) by the following three conditions: first, whether the air blast is powered; second, whether hot wind is used; and third, whether the effective capacity of the furnace exceeds 3m³; the furnaces which do not meet any of these three condi-

¹ Basic Construction Branch, Ministry of Metallurgical Industry, "Let Us Build Up the Metallurgical Industry System as Fast as We Can", *Yeh Chin Pao* (Metallurgical Bulletin), (Peking), No. 39, 1959, p. 19.

² "Reference Materials on the Construction of Small Factories and Mines", *Chi Hua Ching Chi* (Planned Economy), (Peking), No. 5, 1958, pp. 25-28. But a different definition is given in *Chi Hua Yü T'ung Chi* (Plan and Statistics), (Peking), No. 10, 1959, p. 6.

Table 8. LABOUR PRODUCTIVITY IN IRON AND STEEL INDUSTRY

— A Comparison of China, U.S.S.R. and Japan —

	Annual production of pig iron per worker in blast furnace department (in metric tons)		Production of steel ingots per worker in open-hearth furnace department (in metric tons)	
	In enterprises belonging to the Ministry of Metallurgical Industry	In An Shan Iron & Steel Corporation	In enterprises belonging to the Ministry of Metallurgical Industry	In An Shan Iron & Steel Corporation
China ¹				
1943	—	603	—	265
1952	261.4	870.6	346.1	416.6
1953	273.0	1,044.4	242.0	476.5
1954	335.9	1,249.8	385.7	654.5
1955	446.4	1,616.9	353.6	743.8
1956	625.7	2,678.1	470.6	956.4
U.S.S.R.				
1932 ²		253		179
1937 ²		756		484
1950 ³		1,416		747
1955 ³		2,169		1,048
Japan ⁴				
1957		1,400		677
1960		2,439		859

- Sources: 1. *Chin-hsi* (Past and Present), p. 20.
 2. Walter Galenson, *Labor Productivity in Soviet and American Industry*, Columbia University Press, 1955, p. 124.
 3. Промышленность СССР, 1957 (Industries of the U. S. S. R.), p. 105.
 4. *Tekkō Tōkei Nempō* (Annual Statistical Report on Iron and Steel Industry), 1957 and 1958. "Pig iron" is limited to that manufactured by blast furnace, and "worker" to one directly employed in the pig iron department; "steel ingots" are limited to those manufactured by blast furnace and open-hearth makers, and "worker" is confined to one directly employed in the steel-ingot department.

tions are called "native furnaces."¹ Production units that use a "native furnace" are called "enterprises with traditional technique" or "group of enterprises with traditional technique"; those using small-size furnaces are called "small-scale (iron smelting or iron and steel combined) enterprises," irrespective of the number of such furnaces used. What is meant by "small-scale modern (iron and steel) enterprise group" is not quite clear. In many cases, this group includes, besides small-scale enterprises,

¹ *Chi Hua Yü Tung Chi*, No 10, 1959, p. 6.

medium-scale enterprises using medium-size furnaces.¹

Concerning the problem of the "small-enterprise method," some comments must be made on their forms of management. In other countries, the protective policy of small-scale industries takes the form of protecting and supporting the private and notably self-employed enterprises. In China, the "small enterprise method" was initially applied to such sorts of enterprise as the ones operated by various levels of local governments (e. g. *Shêng, Chuan-ch'ü, Hsien, Hsiang* governments), agricultural producers' cooperatives and handicraft producers' cooperatives.² Already in 1956, private enterprises had been transformed into "joint public-private enterprises," but these were not the object of the "small-enterprise method." Similarly, by 1956, most self-employed handicraft industries had been reorganized into handicraft producers' cooperatives; therefore, no case arose where handicraft industries should have been supported by the "small-enterprise method." Contrary, since the latter half of 1958, when the movement for the People's Communes began to be widely developed, enterprises under collective ownership subjected to the "small-enterprise method" became more and more an institution of public nature. The enterprises operated by the agricultural producers' cooperatives were transferred to the rural People's Communes, while enterprises under the control of handicraft producers' cooperatives came to be operated by the local state factories, union of handicraft producers' cooperatives and the rural People's Communes.³ The so-called "avenue industry" (*Chieh-tao-kung-yeh*), a sort of cooperative which had begun to be organized in 1958 on the basis of mobilized idle urban domestic labour force, was put, in 1960, under the management of the urban People's Communes.

Application of Small-Enterprise Method and its Changes

In order to see how important these small enterprises are among the total manufacturing industries, and what changes they have undergone in their importance, we can make only some inferences on the basis of rudimentary official information, because the statistical data available for

¹ For example, Li Fu-ch'un, "Report on the Draft National Economic Plan for 1960" *Chi Hua Yü Tung Chi*, No. 4, 1960, p. 4; and an editorial in *Jen Min Jih Pao*, February 8, 1960, entitled "Modern Small-Enterprise Group Must Go Forward."

² Ch'en Ta-lun, "On the Question of Developing Simultaneously Both Central and Local Industries as well as Large-scale and Small- and Medium-scale Industries", *Ching Chi Yen Chiu*, No. 6, 1958.

³ Teng Chieh, "Overall Review of the Initial Stage of Socialist Transformation of the Chinese Handicraft Industries," *Jen Min Chu Pan She*, Peking, 1958, pp. 101-110.

Table 9. CHANGES IN THE NUMBER OF LOCAL INDUSTRIAL UNITS AND ENTERPRISES DURING THE SECOND FIVE-YEAR PLAN PERIOD

(in thousands)

Units newly built	Total	Operated by <i>shêng</i> and <i>chuan ch'ü</i> governments	Operated by <i>hsien</i> governments	Operated by rural People's Communes		Operated by urban People's Communes
				<i>Hsiang</i> operated	Cooperative operated	
In the first half of 1958 ¹	3,300	90		210	3,000	
By the end of the third quarter of 1958 ²	7,500			1,500	6,000	
By the middle of 1959				700		
By the end of 1959				200		
				(excluding units operated by production units)		
By the beginning of 1960			60	200		
By the latter half of 1960				(")		
				200 (")		

Sources and notes:

1. National Bureau of Statistics, "Performances of the National Economic Plan for the First Half of 1958", *T'ung Chi Yen Chiu*, (Statistical Work, Peking) No. 8, 1958, p. 1.
2. National Bureau of Statistics, "Report on the Performance of the National Economic Plan for the Third Quarter of 1958," *T'ung Chi Yen Chiu*, 1958, No. 19, p. 4. Figure in bracket represents the difference between the total and the number of units operated by the rural People's Communes.
3. Ku Chuo-hsin, "Development in the Industrial Construction Plan during the Past Ten Years," *Chi Hua Yü T'ung Chi*, 1959, No. 13, p. 19; and Ku Ch'i-yün, "People's Communes Throw Bright Light Long Way Ahead," *Jen Min Jih Pao*, September 25, 1959. According to the latter article, the value of production by the Commune industries is accounted for by enterprises directly operated by the Communes (58%), by "Administrative Units" (at present merged with production units) (23%) and by production units (19%).
4. Ku Ch'i-yün, "The People's Commune Industries Must Serve Better Agricultural Production," *Hung Ch'i*, 1960, No. 17.
5. Wang Erh-lo, "The *Hsien* and Commune Industries Are Leaping Forward," *Hung Ch'i*, 1960, No. 6. p. 29.
6. Li Ch'eng-jui and Tso Ch'un-t'ai, "Establishment, Strengthening and Development of the People's Commune Industries," *Hung Ch'i*, 1961, No. 8, p. 20.

this period are even more scarce than before. Table 9 shows the changes in the number of enterprises in major lines of local manufacturing industries. Most of these enterprises, except those operated by such local

governments as *shêng* and *chuan-ch'ü*, fall under the category of "small enterprises" as defined above. This table, inadequate as it is, is enough to indicate that the number of these enterprises, whether operated by *Hsien* Governments or by People's Communes, after an initial increase, sharply decreased, and that the tempo of decrease was most phenomenal in the period from the end of 1958 up to the middle of 1959.¹

However, since changes in the number of enterprises do not sufficiently represent changes in their size structure, when number of employees, equipment and productive capacity change, what can be observed from Table 9 is not adequate in itself. Table 10 is presented as a check for the specific field of iron and steel industry. It shows, on the basis of fragmentary data available, the changes in the number of machines, productive capacity and volume of production. Two points become clear. First, the number of machines, their capacity and the volume of output in the sectors using small-size furnaces and "native furnaces" increased sharply during 1958 and then fell steeply by early 1959, the decrease continuing throughout that year. Second, a similar trend is noted in the sector using small revolving furnaces. Relevant figures for 1960 and later have not yet been made public, except for some fragmentary reports on large-scale enterprises.

A similar trend is also noted in such industries as electric power, non-ferrous metal, coal, petroleum, cement, chemical and general machinery industries, which during the large-enterprise oriented First Five-Year Plan period were given top priority along with the iron and steel industry. Explanations on these industries will be omitted here.

A problem remains to be answered: how did such retrenchment of small enterprises take place. According to descriptive data on the changes in government policies and measures, it becomes almost clear that a number of small enterprises were eliminated because of unsound operating conditions, and that an attempt was made at reorganizing the remaining enterprises into larger units by technological and organizational consolidation and strengthening.² The first phase of this process, officially called

¹ In reading Table 9, attention must be paid to the following two points: 1. When expansion of small-scale enterprises was launched in 1958, the number of those operated by the *Shêng* and *Chuan-ch'ü* governments was far smaller than that under the *Hsien* government operation; 2. Of the total output by industrial enterprises operated by the People's Communes in 1960, the rural Communes and those in urban districts accounted for 79 and 21 per cent respectively.

² The most important documents in this respect are: Chou En-lai, "Report on the Government's Activities", *Hsin Hua Pan Yüeh Kan*, No. 9, 1959, p. 5; Li Fu-ch'un, "Report on the Draft National Economic Plan for 1960", *Chi Hua Yü T'ung Chi*, No. 4, 1960, p. 4.

Table 10. CHANGES IN FACILITIES, THEIR CAPACITY AND VOLUME OF PRODUCTION, FOR PIG IRON AND STEEL INGOT.

	Pig iron					Steel ingot
	Total	Large furnace	Medium furnace	Small furnace	Native furnace	
A. Facilities [Figures in brackets indicate the effective capacity (1000m ³) or bottom space of the furnace (m ²)]						
1. End of 1956 ¹	79 (12)	10 (8)	6 (2)	63 (2)	Unknown	Open-hearth furnace: 42 (1,688)
2. First half of 1958 ²	11,000			900		
3. Newly installed in Jan.-Sep. 1958 ³				500,000 of which started operation: 175,000		
End of 1958 ⁴				2,000,000		
Installed in 9 years from 1949 to 1958 (as announced at the end of 1959 ⁵)	4,033	12				494 of which open-hearth furnaces of over 150 ton capacity and revolving furnaces of over 65 ton capacity: 106
March 1959 ⁶				(60)		
May 1959 ⁷				Several thousands		
September 1959 ⁸				(40)		
October 1959 ⁹				(43)		
B. Capacity of Facilities (in thousands of ton)						
1. 1956 ¹	7,340					7,860
2. 1957 ²	8,340					8,390
3. Increase in August 1958 ³	10,750					
Cumulative increase in Jan.-Aug. 1958 ³	11,894					348
4. Cumulative increase in Jan.-Oct. 1958 ⁴	30,080					18,550
5. Estimate as of the end of 1958 ⁵ (November 1958)						Excluding production by native furnace 30,000
6. Estimate as of the end of 1959 ⁶ (Beginning of 1959)						Excl. production by small revolving furnace 22,000 of which: { 18 priority enterprises: 16,000 24 medium enterprises: 6,000
7. Middle of 1959 ⁷						Small revolving furnace: 7,000
C. Volume of production (in thousands of ton) 1959¹	4,826			4,769	49	4,465
1958 ²	13,690			9,530	4,160	11,080 { production by modern furnace: 8,000 production by native furnace: 3,080
1959 ³	20,500			9,450	11,050	13,350 (Excl. production by native furnace) Excl. following: 8,630 Small and medium revolving furnace: 4,726

- Sources: A
1. National Bureau of Statistics, *Chin-hsi* (Past and Present), pp.16-17.
 2. National Bureau of Statistics, "Report on the Performance of the National Economic Plan during the First Half of 1958," *T'ung Chi Yen Chiu*, 1958, No. 8, p. 1.
 3. National Bureau of Statistics, "Report on the Performance of the National Economic Plan as of September 1958," *T'ung Chi Kung Tso*, 1958, No. 19, p. 4
 4. Wang Chen-chih, "My Personal Opinion on Several Economic Problems in Production of Iron and Steel," *Chi Hua Ching Chi*, 1958, No. 12, p. 21.
 5. Basic Construction Branch of the Ministry of Metallurgical Industry, "Let Us Construct the Metallurgical Industry System at the Highest Possible Speed," *Yeh Chin Pao*, 1959, No. 39, p. 19.
 6. An article about the National Conference on the Technique of Small Furnace Production, in *Jen Min Jih Pao*, March 23, 1959.
 7. Wang Chih-hsi, "Let Us Strive for the Completion of the Iron-and-Steel Production Plan for This Year," *Jen Min Jih Pao*, May 8, 1959, p. 16.
 8. "Let Us Stop Arguing 'Gains do not Make up for Losses,'" Editorial in *Jen Min Jih Pao*, September 1, 1959.
 9. Ku Chuo-hsin, "Development of the Industrial Construction Plan Over the Past Ten Years," *Chi Hua Yü T'ung Chi*, 1959, No. 13, p. 15.
- B
1. Figures on the newly increased capacity of facilities in 1953-56 (p. 16 of *Chin-hsi* (Past and Present)) as added to the corresponding numerical values for 1952 given in *The First Five-Year Plan*.
 2. Figures on the newly increased capacity of facilities (given in the final communique of *The First Five-Year Plan*) as added to the above-mentioned figures for 1952.
 3. "The Great Leap Forward of Capital Construction Works," *T'ung Chi Yen Chiu*, 1958, No. 9, p. 10.
 4. Same as for the above 2. of A.
 5. "Change Steel into Steel Materials," Editorial in *Jen Min Jih Pao*, November 17, 1958.
 6. Po I-po, "Tasks on the Industrial Front for 1959," *Hung Ch'i*, 1959, No. 2.
 7. Same as for 8 of A.
- C
1. *Chin Hsi* (Past and Present), pp. 30-31. But in the original source the column of "Native furnace" is given as "handicraft industry."
 2. Official Communique of the National Bureau of Statistics for 1958.
 3. *Chi Hua Yü T'ung Chi*, 1960, No. 2, p. 1. In Li Fu-ch'un's "Report on Draft National Economic Plan for 1960" (*Chi Hua Yü T'ung Chi*, 1960, No. 4), "9,450 tons" is credited to large enterprises and "11,050 tons" to small and medium enterprises.

the movement of "Streamlining and Strengthening" (*cheng-tun* and *hsiang-shang*), represented an effort to replace the "native technique" (*t'u-fa-chi-shu*), the failure of which became evident toward the end of 1958 by the "modern technique" (*yang-fa-chi-shu*). It amounted to

change the old-style enterprises into small Western-style enterprises. This switch-over did not necessarily and immediately result in effective and economical operation of the Western-style small enterprises; the process of "Streamlining and Strengthening" was kept up through 1960.¹ What happened after 1960, when it becomes almost impossible to obtain statistical data must be gathered from inferential analysis. First, let us emphasize the fact that in this period, even descriptive material directly concerned with small enterprises is hardly available. More specifically, policy statements and overall reports on small enterprises are practically unobtainable since the middle of 1960, except on enterprises belonging to People's Commune.² In other words, unavailability of statistical data now concurs with lack of material concerning policy matters. On the other hand, the emphasis in policy statements made since the end of 1958 appears to have gradually shifted to large-scale enterprises. The most important thing that happened during this period on the side of policies was the Technological Reform Movement started in March 1959 alongside the above-mentioned "Streamlining and Strengthening" movement. The Technological Reform Movement was launched as a mass campaign with the objective of reforming "tools and equipment, technological skills, and designs of products," and especially innovating "the wide use of tools and equipment in manufacturing processes where the labour force is used most intensively." Almost all the descriptions of the movement, appearing since March or April 1960, when the movement reached its peak, in the *Jen Min Jih Pao* (People's Daily) and other periodicals are related to large-scale factories.³ As is well known, the Ninth Committee meeting of the Chinese Communist Party held in January 1960, was an important meeting which decided upon the curtailment of basic construction investment and adjustment of the growth rate of the various economic sectors. The central issues in regard to the industrial sector were largely confined to the question of eliminating bottlenecks within individual enterprises (notably in intra-factory trans-

¹ The details of this process will be again taken up in the following section from the viewpoint of changes in the costs of small-type iron manufacturing enterprises.

² The last comprehensive discussions available are an editorial appearing in *Jen Min Jih Pao*, February 8, 1960, entitled "Modern Small-Enterprise Group Must Go Forward"; an editorial in *Jen Min Jih Pao*, May 7, 1960, entitled "Let Us Push Forward the Modern Small-Enterprise Group in Iron Manufacturing". These sources, however, cover only the "modern small-enterprise group", and not the small enterprises themselves.

³ For one of the exceptions, see the "Draft Measures for Technological Improvement in Small Blast Furnaces" mentioned in the last part of the next section.

portation, maintenance and repairs) as well as among different industrial sectors (especially in mining, communication and transportation), as well as the question of improving the quality of manufactured goods and their diversification.¹ All these problems, it seems, were no longer problems of small enterprises, but of large ones. It will perhaps be hasty to conclude definitely that all these are signs of a complete discarding of the "small-enterprise method," because the period after 1960 was one of unusual agricultural calamities and heavy curtailment of capital investment. However, one may safely note that at least in the period under review small enterprises, except those operated by the People's Communes, continue to decline.

Prosperity of Enterprises Operated by the People's Communes

The fact that, despite the general decline of small enterprises since 1960, small enterprises belonging to the People's Communes continue to operate and even enjoy the protection of the Government, reminds us of the problem of the normal industrial structure presented in the previous section. As was made clear, the "small-enterprise method" in China up to 1960 was characterized by a marked emphasis on heavy industrial lines as seen from the composition of industries. The People's Commune industries were no exception to this at their earlier stages of development when vast numbers of production units were established in such lines as coal mining, electric power, cement, chemical, farm tools and machines. However, after they underwent quick retrenchment, their composition, it seems, turned out to be not much different from that of handicraft industries during the First Five-Year Plan period.² Table 11 shows the composition of industries operated by rural People's Communes as made clear by a survey of industries operated by 60 rural People's Communes sampled throughout the country in April 1959, as compared with the

¹ "Official Report on the Ninth Plenary Session of the Eighth Central Committee Meeting of the Communist Party of China", *Hung Ch'i*, Nos. 3 and 4, 1960, and Po I-po, "For a New High Tide of the Construction of Industrial Production in Our Country", *id.*, Nos. 3 and 4, 1960.

² Ku Ch'i-yün in "People's Communes Throw Bright Light a Long Way Ahead" (*Jen Min Jih Pao*, September 25, 1959), shows concretely the number of newly established enterprises in certain lines of industries. Comparable with this is by the same writer, "The People's Commune Industries Must Serve Better for Agricultural Production" (*Hung Ch'i*, No. 17, 1960) which presents similar figures as of the end of 1959. See also Li Ch'eng-jui and Tso Ch'un-t'ai. "Establishment, Strengthening and Development of the People's Commune Industries," *Hung Ch'i*, No. 8, 1961.

Table 11. COMPOSITION OF PRODUCTION VALUE OF RURAL PEOPLE'S COMMUNE INDUSTRIES AS COMPARED WITH THAT OF RURAL HANDICRAFT INDUSTRIES, 1954

	(1) Composition of production value of rural Commune industries as of April 6, 1959 (%)	(2) Production value of rural handicraft industries by <i>National Handicraft Industry Survey, 1954</i> (in millions of yuan)	Percentage Composition (%) (2)
Foodstuff	27
Chemical industry goods*	21
Spinning and Weaving	11	470***	7.9
Metal processing	10	240	4.0
Sewing	7	530	8.9
Construction materials	7
Wood	5	370	6.2
Others**
Total	100	5,974	100.0

Note: * Mainly native chemical fertilizer and agricultural chemicals.

** Include mineral goods.

*** Includes hosiery goods.

Sources: (1) Ku Chuo-hsih, "Development of the Industrial Construction Plan over the Past Ten Years," *Chi Hua Yü Tung Chi*, 1959, No. 13, p. 15.

(2) Computed from the figures cited in Chao I-wen, *New China's Industries*, pp. 104-5.

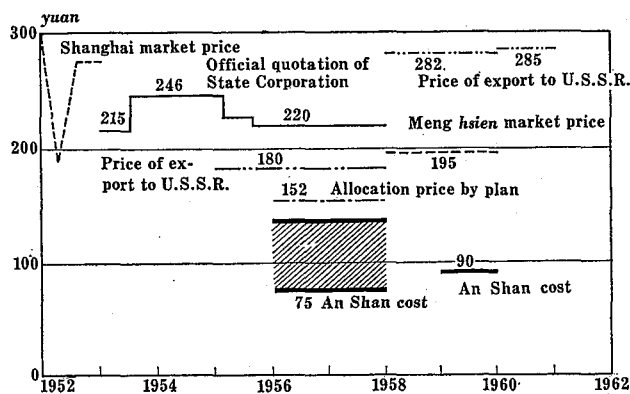
composition of rural handicraft industries reported as a result of the national handicraft industries survey of 1954. Although the retrenchment of the Commune industries was not completed by April 1959, yet it seems already clear that the difference as against 1954 is largely accounted for by the fact that the rudimentary sort of processing of farm products which had formerly been undertaken by individual farmers was now being done on a commercial basis, and that the production of farm machines and tools, agricultural chemicals, fertilizers, etc. was getting more and more into the hands of the Communes. Also, occasional information on the composition of the Commune industries classified by large groupings of purpose, such as daily consumption, farm production, industrial construction and export, seems to indicate a similar trend.

III. CHANGES IN THE COST OF SMALL ENTERPRISES: CASE OF PIG IRON

Reasons for the retrenchment of small enterprises, especially of those which mushroomed in heavy industrial lines, are to be found in their

economic efficiency. In the present section, as a test we shall study the production cost in small enterprises only in the case of pig iron manufacturing.¹

Figure 2. RELATIONS BETWEEN COST OF PRODUCTION, ALLOCATION PRICE BY PLAN, OFFICIAL QUOTATION, MARKET PRICE AND EXPORT PRICE PER TON OF PIG IRON AND THEIR CHANGES, 1952-1962



- Sources: 1. For Shanghai market price and official quotation of State Corporation: Shanghai Economic Institute, Academy of China, (ed.), *Shang-Hai Chieh-Fang-hou Wu-Chia Tzu-Liao Hui-Pien* (Compiled Material on Commodity Prices after Liberation of Shanghai), Shanghai Jen Min Chu Pan She, Shanghai, pp. 524-525.
2. For the An Shan cost: 75 yuan is given in Hsü I, "Several Problems of Economic Accounting", (*Ching Chi Yen Chiu*, (Economic Studies, Peking) 1958, No. 4, p. 64), and presented here as an estimated average for 1956 and 1957; 90 yuan for 1959 is taken from *Yeh Chin Pao*, 1959, No. 40, p. 36 and presented here as annual average of the year. Shao Tang-hua in "Increasing Steel Production and the Party's Guidance" (*Shin Hua Pan Yüeh Kan*, 1957, No. 15, p. 12), stated that in 1956 the cost of pig iron at the iron and steel government in Shih Ching Shan, Ma An Shan, Ch'ung Ch'ing, etc. stood between 114 and 182 as against 100 in An Shan. This range is indicated in oblique lines about the 75 yuan level.
3. For the allocation price by plan: Hsü I, *op. cit.*, p. 64.
4. For the market price in Meng hsien: "Meng Hsien Sponsors a Great Development of its Local Industries by Making Steel Production its Leading Sector", *Ching Chi Yen Chiu*, 1958, No. 10 p. 26.
5. For the export price to U.S.S.R.: *Внешняя Торговля СССР за 1960 год* and yearbooks, but the ruble price was converted to the yuan price on the following basis: 1 yuan = 1 old ruble or 0.225 new ruble.

¹ Production of steel ingot by the small-enterprises method was done under different circumstances from that of pig iron. Pig iron was manufactured in small-scale enterprises scattered throughout the country, but the production of steel ingot was carried out mostly in establishments attached to existing steel mills. Information on the cost of steel ingot is scanty. See Yü Chih-hsi, "Greater Efforts Must Be Made for the Completion of the Iron and Steel Production Program for This Year," *Jen Min Jih Pao*, May 8, 1959, p. 16.

Cost Level in Large Enterprises

The production cost and its changes in pig iron manufacturing by small enterprises can be analyzed in comparison with the similar cost in large enterprises, as well as with the price structure based on the manufacturing cost. Figure 2 was prepared for this purpose, after collecting and arranging available fragments of information. As for the First Five-Year Plan period for which more information is available, differences appear to be great in production cost, transfer price between state enterprises, and market price (which is divided into price of state-operated domestic trading companies and quoted on the general market). When the An Shan Iron & Steel Corporation following directives based on the national allocation plan sold its own pig iron to outside enterprises it reaped a profit of 102.6 per cent including tax and miscellaneous costs. Since however the cost differences between large enterprises were considerable, the profits accruing to enterprises other than the An Shan Iron & Steel Corporation were not so great, especially in the case of marginal enterprises. On the other hand, the data presented seem to support the official Chinese announcement that the production of iron and steel was carried out without government subsidies compensating for losses.¹ Since 1958, the cost of pig iron at An Shan went up probably because the distance for the transportation of raw materials increased.² In 1959 the cost level (probably marginal) of pig iron manufacturing with large-size furnace was less than 150 yuan, and less than 190 yuan if medium-size furnaces are included.³ The market price level given in Figure 2 is but the example of one locality in order to obtain a definite numerical value; the prices in other localities show that the market price level is from 180 to 190 yuan.⁴

In Figure 3 is presented a comparison of such cost and price level of pig iron with its international price on the basis of official exchange rates. As far as the transfer price among state-operated enterprises is concerned, it can be said that the Chinese pig iron is able to sufficiently compete in the international market under the present exchange rate. Although international comparison of cost levels cannot be made easily

¹ Wang He-shou, "Let Us Develop Our Iron and Steel Industry at High Speed", *Hsin Hua Pan Yüeh Kan*, No. 21, 1956, p. 142.

² A most detailed account is given in *Chi Hau Ching Chi*, No. 10, 1959, p. 6.

³ See Note 1, p. 31 of this article and *Jen Min Jih Pao*, November 3, 1959, p. 3.

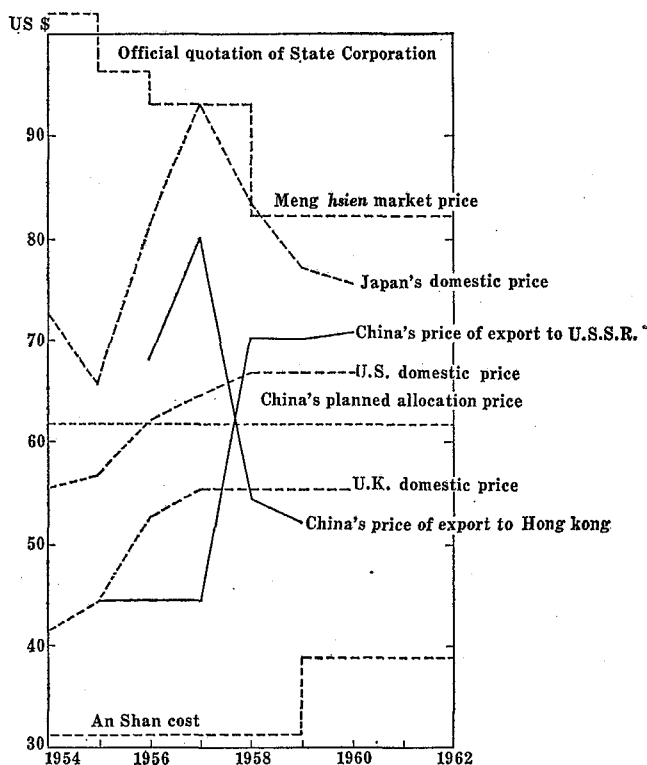
⁴ *Yeh Chin Pao*, No. 40, 1959, p. 33; *Ch'i Yeh K'uai Chi* (Business Accounting) (Peking), No. 12, 1959, p. 13.

due to the unavailability of adequate information for each country, the Chinese cost level can safely be said to stand at a lower level internationally.

Movement of Production Cost with Small-size Blast Furnace

In March 1959, at the National Conference on the production Technique of Small Blast Furnaces, held under the sponsorship of the

Figure 3. PRICE AND COST OF ONE TON OF CHINESE IRON AND INTERNATIONAL PRICES



Sources: For China, same as in Figure 2. The Chinese cost and price were computed on the basis of 1 yuan = \$0.4246; the export to U.S.S.R. was computed on the basis of the ruble-dollar exchange rate; the price of the export to Hong Kong was taken from Hong Kong trade statistics; the domestic price of the U.S., U.K. are those at the time of delivery and are taken from *Tekkō-gyō Tōkei Nemphō* (Annual Statistical Report on Iron and Steel Industry), Tokyo, for each year; in the case of Japan the official quotation of pig iron for casting was used.

Ministry of Metallurgical Industry, the question of high costs of manufacturing iron with small-size blast furnace in comparison with those in large enterprises was raised for the first time. It was at the National Conference

on the Cost of Iron Manufacturing by Small Blast Furnace held in September of the same year, that concrete objectives for lowering this cost were set forth. It appears that until that time, especially as long as the "native furnace" was in common use, the Chinese interest in the question of such a cost was hardly noticeable. The conference took up the general problem of low productivity of the small-size blast furnace, that is, the low coefficient of utilization, low quality of pig iron manufactured, high input ratio of coke and high production cost.¹ It expressed the ambition to bring the production cost down to 200 yuan, but did not clearly indicate the target date by which such goal should be attained. It was reported that at the second conference the problem of productivity in iron manufacturing was reduced to one of cost. The following decisions were made: 1. to cut the cost of pig iron production by the small furnace down to the national average of 250 yuan, by the end of the fourth quarter of 1959; and 2. to cut it further down to less than 150 yuan by the end of 1960, and make it nearly as low as the current cost for the large blast furnaces.²

While such cost-cutting objectives appear to have formed since 1959 a most important core in the campaign for "Streamlining and Strengthening" small blast furnaces, the movements of the actual cost to be brought in correspondence with the given goals were not shown clearly. Printed materials throwing some light on the absolute levels of cost and their changes are scarce. The following observations can, however, be drawn:

(1) The national average of the cost of manufacturing pig iron by small blast furnace went down by about 16 per cent each quarter from the last quarter of 1958 to the second quarter of 1959, but the decline slowed down and the annual rate for 1959 was only 25 per cent.³ We may suppose that the actual performance at the end of 1959 was quite far from the goal of 250.⁴ The impact is especially crucial on the investment resources. From reports cited in official periodicals,⁵ we know

1 "National Conference on Production Techniques by Small Furnace", *Jen Min Jih Pao*, March 23, 1950.

2 From a report appearing in *Jen Min Jih Pao*, October 7, 1959. Reports in *Yeh Chin Pao* (No. 40, 1959) and *Ch'i Yeh Kuai Chi* (No. 21, 1959) stated that the goal (set in the second decision in the text) could be realized within two or three years.

3 *Ch'i Yeh Kuai Chi*, No. 21, 1959 and the editorial in *Jen Min Jih Pao*, February 8, 1960.

4 *Jen Min Jih Pao*, March 27, 1960.

5 *Yeh Chin Pao*, 1959, No. 40, p. 32. There is also a report indicating a case in which the loss was covered by state banks credit. The economic implication is not much different (See *id.*, p. 36)

that the financial losses of the small enterprises caused by the difference between the actual production cost and the—lower—market price of about 190 yuan were covered by subsidies paid out of the government budget. In our assumption, the national average cost in 1959 was about 270 yuan¹ and the output of pig iron by small furnaces was around 10 million tons. It seems, therefore, that a total of 800 million yuan (\$340 million) was paid out, in 1959, as a subsidy to this type of pig iron production.

(2) According to available information, up until May 1960, cost differentials of small-furnace production between regions as well as enterprises were consistently great. A 1958 survey covering several *hsiens* in Wan Fu *chuan ch'ü* of Ssu Chu'an province revealed remarkable differences between the following three groups of enterprises:

First group: Production is continuously and normally carried on; average daily output exceeds 1 ton; manufacturing cost comes to around 115 yuan.

Second group: Production is normal; average daily output exceeds 0.5 ton; cost is 170 to 250 yuan.

Third group: Production is often discontinued; level of output is low; cost exceeds 450 yuan, and sometimes reaches 1400 yuan.²

Later reports cite many examples of success in attaining the cost-reduction goals. Thus, by the end of 1959, the average cost of small-furnace production in four *chuan ch'ü* was already down to 250 yuan; in more than 40 small blast furnaces throughout the country the cost was reduced to less than 150 yuan reaching the level of large blast furnaces.³ Some even attained the An Shan cost level.⁴ On the other hand, however, there are many small blast furnaces in which the cost has hardly been lowered. In May 1960, it was pointed out that the cost of manufacturing iron by small furnace stood at "a mere 70 yuan for some furnaces, while it is higher than 200-300 yuan for others."⁵

1 This is the minimum level of national average that is conceivable. The figure of 270 yuan is derived by assuming the national average cost lowered to 250 yuan at the end of 1959; the annual rate of cost reduction was disclosed as 25% as was cited above.

2 Ching Sheng, "The Cost of Iron Manufacturing by Native Furnaces Can Be Reduced", *Chi Hau Yü T'ung Chi*, No. 2, 1959, p. 23.

3 *Jen Min Jih Pao*, February 8, 1960.

4 Most often reported are Wan Fu Steel Mill in Ssu Ch'uan *Shêng* (See *Yeh Chin Pao*, No. 40, 1950, p. 36, and elsewhere), etc. Shui Ch'eng Steel Mill in Kui Chou *Shêng* (reported in *id.*, p. 32, and elsewhere).

5 Editorial of *Jen Min Jih Pao*, May 7, 1960.

Background Factors of Cost of Iron Manufacturing by Small Blast Furnace

The causes for such a high manufacturing cost can be but briefly outlined. Concerning the early period, it is revealed by the afore-mentioned

Table 12. STRUCTURE OF COST PER TON OF PIG IRON PRODUCED BY SMALL FURNACE

(In yuan)

Name of enterprise and location	Time of survey	Total cost	Structure of cost			
			Ores	Cokes	Wages	Managerial
Shui Ch'eng Iron-Steel Mill (Kui Chou <i>shêng</i>)	April-June, 1959	84.36	24.07	35.19	4.19	15.53
Wan Fu Steel Iron Mill (Ssu Ch'uan <i>shêng</i>)	July, 1959	96.54	41.87	27.80	4.50	14.13
An Fu Steel-Iron Mill (Chiang Hsi <i>shêng</i>)	August, 1959	159.37	28.82	90.86	5.83	11.80
Jen Ho Iron Mill (Hu Nan <i>shêng</i>)	April-June, 1959	172.42	61.25	69.61	16.17	23.48
Ch'ang Yeh Iron-Steel Mill (Shan Hsi <i>shêng</i>)	July, 1959	195.84	90.26	39.00	9.26	43.99
Shih Chia Chuang Iron-Steel Mill (Ho Pei <i>shêng</i>)	August, 1959	207.79	94.76	54.31	6.54	43.20
Shui Yeh Pig Iron Mill (Ho Nan <i>shêng</i>)	August, 1959	218.62	41.62	129.53	5.39	14.07
Ch'ang Ling Iron Mill (An Kang <i>kung</i>)	August, 1959	237.52	24.34	88.66	19.07	94.97
K'ai Yüan 1st Iron-Steel Mill (Liao Ning <i>shêng</i>)	August, 1959	451.10	102.23	238.62	10.12	69.13
China Mu Su Iron-Steel Mill (Hei Lung Chiang <i>shêng</i>)	August, 1959	553.80	51.99	211.97	80.49	162.11

Source: *Yeh Chin Pao*, 1959, No. 40 (Oct. 9), p. 34.

survey of Wan Fu *chuan ch'ü* of Ssu Ch'uan province that the major reasons for this high cost are low quality of raw materials and fuels, the high cost of their transportation,¹ as well as the abnormal conditions of production caused, among others, by bottlenecks in the supply of coke.² This condition seems to be consistent with the trend shown in Table 12.³ The high cost of manufacturing by small blast furnace seems

¹ Editorial in *Yeh Chin Pao*, No. 40, 1959. According to this editorial, the production cost of pig iron per ton according to a 1959 survey of eleven steel mills in the cities of Chi Nan and Pang Pu stood at around 60 yuan, and where large blast furnaces were used at around 10 yuan.

² Editorial of *Jen Min Jih Pao*, March 23, 1959.

³ Editorial of *Jen Min Jih Pao*, March 23, 1959.

to indicate that these furnaces were constructed without due consideration of their location.¹ The fact that since the end of 1958 up to the beginning of 1960, the movement for "Streamlining and Strengthening" small enterprises was pushed also in the iron and steel industry indicates that at that time the problem of reducing the cost was connected with problems of industrial location rather than with the technological improvement. It aimed first at the establishment and organization of groups of small blast furnaces as full-fledged enterprises, and then at building them up as iron manufacturing enterprises equipped with ore bases and fuel bases. The first-mentioned task appears to have been achieved in a relatively short time, but the latter one was reported to be in progress only after May 1960.² Since an integration of iron works and ore-and-fuel bases is possible only if it meets location requirements, the actual process of integration should mean the weeding out of factories that do not meet such requirements. This seems to be a principal cause for the decline in the manufacturing cost of pig iron up to 1960.

Since the beginning of 1960, the effort for reducing the cost appears to switch gradually to an endeavour of achieving technological improvement. In March of that year, the Ministry of Metallurgical Industry issued "Draft Measures for Technological Improvement in Small Blast Furnaces." They include the improvement of hot-air furnaces as well as air blast, the increase of facilities for operating low-grade mines, etc.³ What effect these measures actually had on the lowering of the cost of iron manufacturing is not known. According to a statement made public in May 1960, it was considered at that time to be beyond the existing capacity of the machinery industry to meet all the national requirements for innovating enterprises using small blast furnaces.⁴ Be it as it may, an almost complete lack of information on the small-enterprise method prevails ever since.

1 Generally speaking, this table indicates that the influence of each constituent item is strongest in coke expenses and indirect expenses, followed by expenses on wages and iron ores.

2 Editorial of *Jen Min Jih Pao*, May 7, 1960.

3 *Jen Min Jih Pao*, March 27, 1960.

4 Editorial of *Jen Min Jih Pao*, May 7, 1960.