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#### THE FLOUR INDUSTRY OF CHINA

Huang Chih-ch'iu

The flour industry in China occupies a position second in importance only to the textile industry. Since the beginning of its development, the problems that have confronted the flour industry are approximately the same as those confronting the textile industry.

The concentration of the flour industry in the Shanghai-Hankow areas is a result of natural and economic conditions, in addition to the domination of industry by the imperialists. In the past, the transportation in the north of our country was not as good as that in the south. In the east and south central areas of China, exportation of products was easy because of the convenient transportation offered by the Yangtze River and the sea. Hence, the flour produced in Shanghai and Hankow could be sold to buyers of northeastern and northern China, in Tientsin, Ying-k'ou and Dairen, and to those of the south in Fuchow, Amoy, Swatow, Canton, and Hong Kong.

#### I. FACTORS AFFECTING INDUSTRY

Both natural and economic factors affect the flour industry. They include the following:

##### A. Difficulty in Obtaining Raw Materials

North China lacks water transportation and must rely on the labor of human beings and animals for conveyance. A great deal of labor is necessary to transport a very small quantity. Consequently, transportation costs are high and cannot compete with the cheap water transportation in the south.

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B. High Price of Wheat in North

The main food of the people in the south is rice; wheat is only a supplementary food. Farmers keep a very small quantity of wheat for their use after the harvest and sell most of it in the market. From late summer to early autumn in the south the wheat market is overflowing and the price is low. The flour mills can purchase large quantities of cheap wheat at that time. On the other hand, in the north wheat is generally the main food of the people. Consequently, farmers sell very small amounts of wheat after the harvest; they delay selling their product until the autumn harvest is completed. Hence, wheat is scarce on the market and prices are very high as compared with those in the south.

C. High Costs of Export

At present, the rural economy is very poor; but the price of machine-processed flour cannot drop as low as that of hand-ground flour; consequently, very few farmers in North China use machine-processed flour and it must find a market outside the north. However, when the cost of transportation by land is added, the total cost of exporting flour from the north becomes very high in comparison to that of the south.

The flour industry in North China must be content with the market in its area since it cannot expect an expansion of export in the near future. On the other hand, the prospect for the flour industry in the south is still good due to its comparative advantages. Although the flour market of the north cannot be expected to sell over 10 million bags a year as it did in the past, it can maintain a yearly sale of several million bags. Furthermore, markets in the south, such as Hong Kong, Taiwan, Canton, Amoy and even the South Pacific area can very well be explored when the political situation becomes stable.

The following table shows the present conditions of the flour industry in China:

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Table 1. Production Capacity of Chinese Flour Industry  
by Area (Compiled, September 1950)

| Area                           | No of Mills    |                  |                    | 24-Hr Production<br>(bags) |                  |                    | Total          |                          | Notes                  |
|--------------------------------|----------------|------------------|--------------------|----------------------------|------------------|--------------------|----------------|--------------------------|------------------------|
|                                | State<br>Owned | Jointly<br>Owned | Privately<br>Owned | State<br>Owned             | Jointly<br>Owned | Privately<br>Owned | No of<br>Mills | 24-Hr<br>Pro-<br>duction |                        |
| <u>East China</u>              | 22             | --               | 465                | 38,363                     | --               | 251,194            | 487            | 289,557                  | 76,443,048<br>(yearly) |
| Shantung                       | 15             | --               | 375                | 18,931                     | --               | 30,015             | 390            | 48,946                   | Taiwan alone<br>29,636 |
| Anhui                          | 2              | --               | 11                 | 7,400                      | --               | 14,458             | 13             | 21,858                   |                        |
| Kiangsu /excluding<br>Shanghai | 5              | --               | 44                 | 12,032                     | --               | 82,684             | 49             | 94,716                   | Wu-hai alone<br>43,550 |
| Shanghai                       | --             | --               | 29                 | --                         | --               | 119,318            | 29             | 119,318                  |                        |
| Chekiang                       | --             | --               | 3                  | --                         | --               | 2,560              | 3              | 2,560                    |                        |
| Fukien                         | --             | --               | 3                  | --                         | --               | 2,159              | 3              | 2,159                    |                        |
| <u>Northwest China</u>         | 8              | --               | 93                 | 6,324                      | --               | 26,454             | 101            | 32,778                   | 8,653,392<br>(yearly)  |
| Pei-feng                       | 2              | --               | 64                 | 840                        | --               | 19,544             | 66             | 20,384                   |                        |
| Shensi                         | 2              | --               | 12                 | 1,510                      | --               | 4,588              | 14             | 6,498                    |                        |
| Kansu                          | 2              | --               | 17                 | 1,280                      | --               | 1,922              | 19             | 3,202                    |                        |
| Ningxia                        | 1              | --               | --                 | 450                        | --               | --                 | 1              | 450                      |                        |
| Sinkiang                       | 1              | --               | --                 | 2,244                      | --               | --                 | 1              | 2,244                    |                        |
| <u>Central-South China</u>     | 8              | 6                | 65                 | 9,418                      | 5,840            | 33,720             | 79             | 48,978                   | 12,930,192<br>(yearly) |
| Hupeh                          | --             | --               | 2                  | --                         | --               | 520                | 2              | 920                      |                        |
| Hankow                         | 3              | --               | 49                 | 4,120                      | --               | 26,030             | 52             | 30,150                   | 7,959,600<br>(yearly)  |
| Honan                          | 2              | 4                | 3                  | 3,048                      | 4,840            | 1,650              | 9              | 9,538                    |                        |
| Kiangsi                        | --             | 2                | 2                  | --                         | 1,000            | 200                | 4              | 1,200                    |                        |
| Kwangsi                        | 1              | --               | 2                  | 50                         | --               | 400                | 3              | 450                      |                        |
| Kwangtung                      | 2              | --               | 1                  | 2,200                      | --               | 2,000              | 3              | 4,200                    |                        |

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|   |      |     |      |         |       |         |     |         |             |
|---|------|-----|------|---------|-------|---------|-----|---------|-------------|
| Hunan                                       | --   | --  | 6    | --      | --    | 2,520   | 6   | 2,520   |             |
| Southwest China                             | --   | --  | 53   | --      | --    | 13,730  | 53  | 13,730  | 3,644,720   |
| Chungking                                   | --   | --  | 30   | --      | --    | 8,856   | 30  | 8,856   | (yearly)    |
| Szechwan                                    | --   | --  | 16   | --      | --    | 3,120   | 16  | 3,120   |             |
| Yunnan                                      | --   | --  | 5    | --      | --    | 1,400   | 5   | 1,400   |             |
| Kweichow                                    | --   | --  | 2    | --      | --    | 354     | 2   | 354     |             |
| North China                                 | 42   | 1   | 143  | 42,407  | 960   | 55,653  | 191 | 99,020  | 26,141,280  |
| Tientsin                                    | 5    | --  | 50   | 8,350   | --    | 30,410  | 55  | 38,760  | (yearly)    |
| Peiping                                     | 11   | --  | 76   | 8,150   | --    | 18,913  | 87  | 27,063  |             |
| Hopeh /excluding<br>Tientsin and<br>Peiping | 13   | --  | 11   | 11,215  | --    | 1,590   | 24  | 12,805  |             |
| Pingyuan                                    | 2    | --  | 1    | 3,500   | --    | 1,400   | 3   | 4,900   |             |
| Shansi                                      | 5    | --  | --   | 7,412   | --    | --      | 5   | 7,412   |             |
| Chahar                                      | 5    | 1   | 4    | 2,780*  | 960   | 1,200*  | 10  | 4,940   |             |
| Suiyuan                                     | 1    | --  | 6    | 1,000   | --    | 2,140   | 7   | 3,140   |             |
| Northeast                                   | 20   | --  | 39   | 18,211  | --    | 17,451  | 59  | 35,662  | 9,414,468   |
| Lungkiang                                   | 7    | --  | 2    | 11,411  | --    | 1,000   | 9   | 12,411  | (yearly)    |
| Kirin                                       | 1    | --  | --   | 570     | --    | --      | 1   | 570     |             |
| Shenyang                                    | 1    | --  | 28   | 1,100   | --    | 8,640   | 29  | 9,740   |             |
| Sungkiang                                   | 11   | --  | 1    | 5,130   | --    | 500     | 12  | 5,630   |             |
| Harbin                                      | --   | --  | 8    | --      | --    | 7,311   | 8   | 7,311   |             |
| Total                                       | 100  | 7   | 863  | 114,723 | 6,800 | 398,202 | 970 | 519,725 | 137,207,400 |
| Percent of Total                            | 10.2 | 0.7 | 89.1 | 22.2    | 1.1   | 76.7    | 100 | 100     | (yearly)    |

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Note:

- i. The above table of daily production capacity is based on the original data reported by each mill.
- ii. The unit of production capacity is equal to 44 catties [one catty equals 1 and 1/3 pounds] of second-grade flour.
- iii. Flour produced through stone or steel-plate grinding is not included.
- iv. Figures followed by an asterisk are calculated from the estimated capacity of a flour mill with a 0.2 inch by 24-inch roller.

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Data on the productive capacity of the flour mills in the Northeast are incomplete. According to a survey of 1940, daily productive capacity of flour mills in the Northeast area was 180,000 bags, but data of the present investigation show only 35,000 bags, which is far less than that obtained in 1940. Figures compiled from the actual reports made by all the mills south of the Great Wall are believed to be reliable.

The daily (24-hour basis) productive capacity of the whole nation, according to the above figure, is 519,725 bags; and, counting 22 working days a month, monthly productive capacity of the whole nation amounts to 11,433,950 bags. This means that the yearly productive capacity of the nation amounts to as much as 137,207,400 bags.

#### D. Production by Provinces

Kiangsu Province produces the largest quantity in the nation. It has a daily production of 214,034 bags which constitutes more than 40 percent of the productive capacity of the entire nation. Hopeh Province is second in productive capacity; it produces more than 78,000 bags daily, about 15.5 percent of the productive capacity of the entire nation. Shantung Province has a productive capacity of 55,000 bags (11.5 percent of the nation's total) Eupeh has a capacity of 31,000 bags (6.1 percent of the total) and Shensi has a capacity of 28,628 bags (5.1 percent of the total).

#### E. Production by Cities

The daily productive capacity of Shanghai is over 119,000 bags, which constitutes 20 percent of the daily national productive capacity. Wu-hsi is next with a daily productive capacity amounting to over 43,000 bags or 8.6 percent of the national capacity. The daily productive capacity of Tientsin is 38,760 bags (7.9 percent of the total national capacity). Hankow's capacity is 30,150 bags, or 6.1 percent, Tsinan's capacity is 29,636 bags, (5.8 percent of the total) and Peiping's capacity is 27,063 bags (5.3 percent of the total).

#### F. Production by Administrative Regions

The daily productive capacity of East China is 214,034 bags, over 40 percent of the daily national productive capacity. North China's capacity is 99,020 bags a day, which is about 19.6 percent of the national capacity. The productive capacity of Central-South China is 49,978 bags, which is 9.8 percent of the national capacity; the capacity of Northwest China is 32,776 bags or 6.5 percent of the national capacity. The capacity of Southwest China is comparatively small.

#### G. Production by Private and Public Enterprise

The daily productive capacity of state-owned mills is 114,723 bags, which is about 22.2 percent of the national productive capacity. The daily capacity of private mills is 398,202 bags (76.7 percent of the national capacity). Mills owned jointly by the state and private enterprise produce about 1.1 percent of the national capacity.

### II. PRODUCTION AND MARKET CONDITIONS

About 130 million people in China eat wheat products as their main diet. If all these people should eat machine-processed flour, one billion bags of flour would be needed. In other words, we need about 500 million piculs of wheat. According to the total figure given by the Ministry of Agriculture, however, last year's wheat production was about 400 million piculs. Subtracting

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the amount necessary for seeding and wastage, the wheat to be used for food purposes does not exceed 350 million piculs. If the entire amount is used to produce "81-type flour" (81 catties of flour made from every 100 catties of wheat), about 650 million bags of flour would be produced; but the present facilities must be increased fourfold to meet that goal.

It is still too early to try to increase the market for machine-processed flour. Only when the rural economy shows progress and the farmers standard of living is improved will it be possible to find a better market for the machine-processed flour.

In the past, most of the flour produced in the Shanghai and Hankow areas was sold in North China. Shanghai alone shipped about 12 million bags of flour to North China every year. Flour sold in Tientsin amounted to 20 million bags every year. This constitutes about one quarter of the entire amount for the nation. For this reason Tientsin is called the greatest flour market in East Asia.

In recent years, seaports in South China have been blockaded, making the water transport of flour extremely difficult. Moreover, the cost of wheat transport from North China to Shanghai and Hankow, where the wheat is processed, is extremely high. The total cost would be unbelievably high if the flour had to be transported by railway to the Peiping and Tientsin areas. Therefore, unless the seaports are reopened it will be practically impossible to expand the northern market for southern flour.

The number of flour mills has been greatly increased in Peiping and Tientsin because of great actual demands and the encouragement of the government. Under present conditions it will be impossible for the flour industry of Shanghai and Hankow to maintain in the future the favorable position in North China it has had in the past, although sales will not drop entirely. The future development of the flour industry must take into consideration the supply of raw materials and market demands. It must not develop blindly again.

The following table shows the amount of wheat required for full operation of the flour mills in each area of China. From it we may derive estimates of possible surpluses.

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Table 2. Wheat Production and Amount Necessary for Full Operation of Flour Mills  
(10,000 catties)

| Regional Area              | Total Production | Farmers' Consumption | Amounts For Tax Payments | Required Seed | Balance | Required Amount For Full Operation of Mills | Comparison of Supply and Demand |
|----------------------------|------------------|----------------------|--------------------------|---------------|---------|---|---------------------------------|
| <u>East China</u>          | 802,313          | 382,920              | 113,576                  | 80,231        | 225,586 | 442,993                                     | -217,367                        |
| Shantung Province          | 342,313          | 152,920              | 53,576                   | 34,231        | 101,586 | 83,253                                      | + 18,331                        |
| Others provinces           | 460,000          | 230,000              | 60,000                   | 46,000        | 124,000 | 359,700                                     | -235,700                        |
| <u>Central-South China</u> | 892,400          | 483,200              | 138,000                  | 67,598        | 203,602 | 75,706                                      | +127,896                        |
| Honan Province             | 581,451          | 302,830              | 100,000                  | 35,109        | 143,512 | 16,090                                      | +127,422                        |
| Others                     | 310,949          | 180,370              | 38,000                   | 32,489        | 60,090  | 59,616                                      | + 474                           |
| <u>Southwest China</u>     | 870,000          | 840,000              | --                       | --            | 3,000   | 22,504                                      | + 7,496                         |
| <u>Northwest China</u>     | 667,000          | 610,000              | --                       | --            | 65,600  | 54,031                                      | + 2,969                         |
| Shensi Province            | 386,400          | 329,400              | --                       | --            | 57,000  | 46,454                                      | + 10,546                        |
| Others                     | 280,600          | 272,000              | --                       | --            | 8,000   | 7,671                                       | + 329                           |
| <u>Northeast</u>           | 40,000           | --                   | --                       | --            | 35,895  | 33,384                                      | + 2,511                         |
| <u>North China</u>         | 845,812          | 358,476              | 103,663                  | 67,665        | 316,008 | 147,472                                     | +168,536                        |
| <u>National total</u>      | 4,117,525        | 2,696,596            | 335,239                  | 219,599       | 854,091 | 789,428                                     | + 56,663                        |

Note: The above wheat production figures are derived from the figures given by the National Food Conference



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Based upon past figures the maximum annual supply of wheat in our country is less than 40 million piculs; normally it is only about 30 million piculs. Wheat over and above the amount needed for home consumption accumulates in rural areas instead of being shipped to city markets. To correct such an accumulation the following measures should be taken by the government:

1. Restrict wheat imports from foreign countries
2. Improve transportation between cities and villages
3. Lower transportation costs for wheat products
4. Purchase wheat at the proper time

If all the above measures are adopted, the problem of wheat surplus will no longer exist, while wheat production will also increase.

Although wheat cultivation in the Southwest is primarily a subsidiary occupation during the winter, if the market were to be expanded, wheat production there would increase accordingly. If all these methods are adopted, the milling industry will no longer depend on foreign sources for raw materials as in the past.

Table 2 reveals that the areas which have the least wheat are Kiangsu, Chekiang, and Anhwei in East China. It is estimated that these areas have an annual shortage of 23 million piculs of wheat. In the past, a considerable amount of wheat was imported from foreign countries by way of Shanghai. From 1937 to 1939, Shanghai imported about 9 million piculs of foreign wheat a year, which constituted about 50 percent of the total wheat needed by the flour mills in that area. In 1931 - 1932, the amount of imported foreign wheat increased to 16,600,000 piculs, which was over 98 percent of the wheat mechanically milled in that area. From 1921 to 1930, foreign wheat accounted for about 28.78 percent of the total amount used by flour mills in that area.

With the exception of Shanghai, the supply of raw materials for the flour industry in China is fairly equal to the demand of each area. Honan Province produces plenty of wheat, but there are very few flour mills. Consequently, the mills need only a fraction of the raw materials produced and there is a surplus of about 15 million piculs of wheat a year. This surplus wheat is usually concentrated in the Shang-ch'iu, Esu-ch'ang and K'ai-feng areas before it is shipped to Shanghai via the Lung-hai Railway to Hankow via the Peiping-Hankow line.

The amount of wheat transported from this area depends upon the volume of the purchases made by mill operators from other areas. Sometimes it reaches 10 million piculs; normally it is about 6 million piculs. Wheat produced in the Honan area is usually sent to the Shanghai and Hankow areas for milling and then to the Peiping and Tientsin areas for distribution. This is uneconomical. If the wheat were transported directly to the Peiping-Tientsin areas and processed there, the costs of transportation and distribution would be reduced by one half. For this reason we should reconsider the advisability of purchasing wheat from the Honan area.

Wheat from the Shantung area is usually concentrated in T'eng Hsien, T'ai-an, Tse-yang, and Chiao-mi areas before it is shipped to the Tsingtao and Tsinan areas via the Chiao-Chi Railway for processing. A small quantity is also transported to Shanghai. Wheat produced in the Hopei area is usually taken to T'ung Hsien, Lang-fang, Tientsin, and Ts'ang Hsien, and then transported to Peiping and Tientsin with greater convenience; thus, very little wheat is transported from these to other areas. Wheat grown in western and northern Hupeh is generally brought to the Chung-chiang and Yün-meng areas and is then shipped to Hankow for processing.

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Wheat production in Hopeh is just sufficient to meet local needs. There is no excess wheat available for Hankow and Shanghai. However, it is estimated that about 2 million piculs of wheat are shipped annually from southern Honan to Hankow. This 2 million piculs of imported wheat compensates for the amount shipped from Hankow eastward to Shanghai.

North China provides the biggest market for wheat products produced in Kiangsu, Chekiang, and Anhwei. The second market is south China. The following table reveals the flour market situation in Shanghai.

Table 3. Flour Sales by Shanghai to Each Area Prior to 1940  
(unit: bags)

| <u>Year</u> | <u>Kiangsu, Chekiang<br/>and Shanghai</u> | <u>South<br/>China</u> | <u>North<br/>China</u> | <u>Northeast</u> |
|-------------|---|------------------------|------------------------|------------------|
| 1935        | 5,660,800                                 | 7,060,000              | 18,397,000             | 4,245,600        |
| 1936        | 4,486,000                                 | 5,608,000              | 14,581,000             | 3,366,000        |
| 1937        | 2,816,000                                 | 3,519,000              | 9,151,700              | 2,112,800        |
| 1938        | 2,600,000                                 | 3,299,300              | 8,998,400              |                  |
| 1939        | 4,119,000                                 | 5,132,100              | 13,998,000             |                  |

From the above table, it can be seen that Shanghai produced over 30 million bags of flour annually before the last war, about one half of which was sold in North China, one quarter in south China, and the rest distributed in Northeast China and the Shanghai area.

Five percent of the wheat processed in Shanghai flour mills came from foreign sources, and more than 50 percent of the flour was sold in northern China. Because importation of foreign wheat has been stopped and the market situation in North China has also been changed, more adjustments must be made for the future development of the Shanghai flour industry. It will have to utilize as much of the wheat produced in local areas as possible, as well as wheat from Szechuan. Though it is still possible to maintain a considerable market in North China, larger markets must be developed in south China.

In recent years very small quantities of foreign wheat and flour were imported, yet domestic flour markets often experienced slumps. The following table compares production with the sale of flour in the past year.

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Table 4. Comparison of Production and Sales of Machine-Milled Flour, June 1949 - May 1950  
(bags)

| Area                | Actual Output | As Compared<br>to Production<br>Capacity (in %) | Actual Sales | Sales in %<br>of Output | Surplus   |
|---------------------|---------------|---|--------------|-------------------------|-----------|
| East China          | 17,273,600    | 29.82   | 16,718,600   | 97.0                    | 555,000   |
| Shantung            | 5,905,542     | 38.13   | 5,355,542    | 90.5                    | 550,000   |
| Central-South China | 3,670,000     | 24.59   | 1,929,215    | 52.5                    | 1,740,785 |
| North China         | 18,910,000    | 72.06   | 14,765,949   | 78.2                    | 4,144,051 |
| Northwest China     | 7,014,000     | 70.00   | 7,014,000    | 100.0                   | --        |
| Northeast           | 4,250,000     | 35.42   | 3,550,000    | 83.5                    | 700,000   |
| Southwest China     | 837,400       | 25.10   | 887,400      | 100.0                   | --        |
| Total               | 57,910,542    | 43.00   | 50,220,706   | 87.0                    | 7,690,836 |

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The above table shows that from June 1949 to May 1950, the actual output of flour was 58 million bags, which is about 43 percent of the total productive capacity of the country. The actual amount of sale was about 50 million bags, which constitutes about 87 percent of the actual output. The surplus, therefore, was over 7 million bags. Apparently the surplus does not differ much from an annual inventory-output ratio of 10 percent, which is about 5 million bags. In other words, the present surplus problem is not a very serious one. Several conclusions may also be derived from the above table.

1. During a slump in the wheat market, the flour mills located near a wheat-producing area are able to operate at a rate closer to full capacity than the mills located far away from a wheat-producing area. In other words, the former are confronted with less acute surplus problems than the latter. For example, the northern Anhwei area actually produced 1,296,000 bags (47.1 percent of its production capacity), while the Shanghai area produced 6,672,000 bags (only 21.17 percent of its productive capacity).
2. During a wheat market slump, the mills located near a market area are able to operate at a rate closer to their productive capacity. This means that they are less subject to flour market recessions. For example, mills in the Northwest maintained production at 70 percent capacity during that year, and those in the Tientsin area at more than 72 percent of their capacity.
3. Central-South China was severely affected by the flour market slump in 1950. Its production was only 24.59 percent of its actual capacity and the amount of sales was 52.5 percent of the total output. This means that the market consumed only 12.9 percent of the area's productive capacity. This caused the flour mills in that area to experience greater difficulties than in any other area.
4. Production and sales in the Northwest and Southwest are in balance at present.

### III. WHEAT FOR MILLING INDUSTRY AND MARKETS FOR ITS PRODUCTS

Costs of raw materials constitute as much as 84.6 percent of the operating expenses of flour mills. The cost of transportation varies greatly; it may be as low as 3 or 4 percent, or as high as 50 percent of the total cost. Therefore, to reduce production costs, special consideration must be given to location of the plant as it affects the cost of transport.

The following table shows the effect of shipping costs upon wheat prices in different areas:

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Table 5. Comparison of Wheat Prices and Transportation Costs (yuan)

| <u>From</u>      | <u>To</u> | <u>Original Prices</u><br>(per catty) | <u>Transportation and</u><br><u>Miscellaneous Costs</u> | <u>Total Cost</u> | <u>Transportation, etc.</u><br><u>Costs in % of</u><br><u>Original Price</u> |
|------------------|-----------|---------------------------------------|---|-------------------|--|
| Hopeh            | Peiping   | 772                                   | 99  | 871               | 12.8   |
| Hopeh            | Tientsin  | 772                                   | 105   | 877               | 13.7   |
| Shantung         | Tsingtao  | 693                                   | 92  | 785               | 13.3   |
| Shantung         | Shanghai  | 693                                   | 171   | 864               | 24.9   |
| North Anhwei     | Shanghai  | 630                                   | 141   | 771               | 22.4   |
| Hupei            | Canton    | 718                                   | 257   | 975               | 36.5   |
| Hupei            | Wuhan     | 718                                   | 153   | 871               | 21.4   |
| Southwest Region | Chungking | 608                                   | 108   | 716               | 17.8   |

Notes:

1. Shipments of wheat from Hopeh to Peiping and Tientsin start from Han-tan, Heng-shui, Hsin-lo, and Ting Hsien; transportation costs in that area are computed from the average distance. Shipments of wheat from Shantung to Tsingtao start from Tsinan and Wei Hsien, those from Shantung to Shanghai start from Hsu-chou and T'ai-an. Shipments from North Anhwei to Shanghai start from Peng-fu, Su Hsien, Chu Hsien, and Ho-fei. Shipments from western Hupei to Ch'ang-sha start from I-ch'ang and Sha-shih by boat. Shipments from areas in Szechwan to Chungking start from Pei-ling.
11. Expenses for unloading are determined by averages. Packing expenses are based upon 100-catty bags (at 30 yuan per catty) in lots of five.
111. Freight rates by truck, car, and by boat are the prevailing authorized rates.

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As explained in Table 5, wheat grown in the Hopeh area is shipped to Peiping for processing; its transportation cost, which amounts to only 12.8 percent of the price of wheat, is the lowest. The cost of transporting Hopeh wheat to Canton is the highest, about 36.8 percent of the cost of the wheat. Costs of transporting wheat from Shantung and North Anhwei to Shanghai are next highest -- 24.9 percent and 22.4 percent, respectively, of the raw material costs.

According to estimates made by Shanghai flour merchants, the transportation and miscellaneous costs of shipping Honan wheat to Shanghai or Canton are the most expensive; they constitute over 50 percent of the cost of the raw material. Under such circumstances, it seems almost impossible to reduce production expenses. Accordingly, flour mills should be built only in wheat-producing areas. We should avoid moving wheat to the South for processing and then sending the flour back to the North for consumption as we did in the past. Permission should be obtained from the government before constructing a new mill. The government should prepare detailed information on wheat production and flour markets in each area to serve as references in building new mills.

The cost of transporting flour to the market also increases the over-all cost. Before World War II, flour from East China and Central-South China had a very good market in North China because water transport costs were low. The following table compares the prewar cost of shipping flour from Shanghai and Hankow to Tientsin with the postwar cost.

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Table 6. Prewar and Postwar Costs of Shipping Flour from Shanghai and Hankow to Tientsin (yuan)

| <u>Shipping and<br/>Exporting Area</u> |           | <u>Cost of Transport</u><br>(per 44-catty bag) | <u>Flour Price</u><br>(per bag) | <u>Ratio of Transport<br/>Cost to Flour Price</u><br>(%) |
|--|-----------|--|---------------------------------|--|
| <u>From</u>                            | <u>To</u> |  |                                 |  |
| Shanghai                               | Tientsin  | Prewar 0.25 (ship cost)                        | 3.35 (2d grade flour)           | 7.4  |
| Shanghai                               | Tientsin  | Postwar 11.158 (train cost)                    | 52,000 (81 flour)               | 21.8   |
| Hankow                                 | Tientsin  | Prewar 0.28 (ship cost)                        | 3.25 (2d grade flour)           | 8.3  |
| Hankow                                 | Tientsin  | Postwar 10.754 (train cost)                    | 52,000 (81 flour)               | 20.7   |

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Before the war flour was shipped north by sea because of the low rates and the convenience, i.e., shipping by sea did not require unloading and re-loading as did rail transportation. The prewar transportation cost from Shanghai to Tientsin by sea was only 7.4 percent of the selling price, but now it is as high as 21.6 percent. The cost of shipping flour from Shanghai to Hankow was 5.3 percent before the war, but now it has increased to 20.7 percent. Due to rising transportation costs, the flour industry in Shanghai and Hankow is facing many more difficulties than the northern flour industry. This also is a consequence of the blind development in the past.

For the development of the flour industry in the future, special attention must be given to transportation costs, to market conditions, and to the wheat supply problems. Table 7 shows the plan for the production and sale of flour throughout the nation for June 1950 to May 1951, adopted by the Foodstuff Processing Conference.

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Table 7. Plan to Balance Production and Sale of Flour, June 1950 to May 1951  
(bags)

| Area                | Planned Production Figures for Year |                 |           |            |            | Planned Operation in % of Existing Capacity | Increase or Decrease of Operation in % of Last Year's Operation |
|---------------------|-------------------------------------|-----------------|-----------|------------|------------|---|---|
|                     | Hand Milling                        | Machine Milling | Amount    | Percentage | Total      |   |   |
| East China          | 10,090,460                          | 6,700,000       | 2,138,000 | 11.2       | 18,828,460 | 32.6  | + 2.8   |
| Shantung            | 2,770,000                           | 2,900,000       | 907,000   | 13.2       | 6,577,000  | 42.2  | + 4.1   |
| North China         | 10,000,000                          | 7,000,000       |           |            | 17,000,000 | 64.5  | - 7.6   |
| Central-South China | 2,780,000                           | 2,640,000       | 895,000   | 16.7       | 5,215,000  | 35.5  | + 11.0  |
| Southwest           | 620,000                             | 360,000         |           |            | 980,000    | 25.1  | none  |
| Northwest           | 2,700,000                           | 1,800,000       | 800,000   | 15.1       | 5,300,000  | 52.6  | - 17.4  |
| Total               | 27,960,460                          | 21,400,000      | 4,740,000 |            | 54,100,460 |   |   |

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To solve the surplus wheat problem that exists today, state-owned and private mills should follow the plan advanced by the conference. They should ~~draw up production and sales quotas~~ in a spirit of compromise, prevent waste, reduce costs, and increase the markets. After the completion of the nationwide land reform, the people's standard of living will be improved and purchasing power will be increased, improving the outlook for the flour industry. Nevertheless, judging from present productive capacity, it is certain that the flour industry in East and in Central-South China will face a surplus problem for at least the next 5 years.

## IV. ADDITIONAL DATA

The following tables give further data on acreage and production.

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Table 8. China's Wheat Acreage, Production per Mou, Annual Output by Province

| Regions and Provinces      | Area of Wheat Cultivation (mou) | Average Production From Each Mou | Yearly Production (picul) | Remarks    |
|----------------------------|---------------------------------|----------------------------------|---------------------------|------------|
| <u>North China</u>         | 89,080,000                      | --                               | 73,220,000                | 72,520,000 |
| Hopeh                      | 36,000,000                      | 85                               | 30,600,000                |            |
| Pingyuan                   | 30,000,000                      | 80                               | 24,000,000                |            |
| Shansi                     | 15,600,000                      | 81                               | 12,636,000                |            |
| Chahar                     | 4,000,000                       | 80                               | 3,200,000                 |            |
| Suiyuan                    | 3,150,000                       | 80                               | 2,520,000                 |            |
| Peking vicinity            | 330,000                         | 80                               | 264,000                   |            |
| <u>Central-South China</u> | 79,210,000                      | --                               | 98,249,000                |            |
| Honan                      | 43,000,000                      | 120                              | 51,600,000                |            |
| Hupeh                      | 15,900,000                      | 140                              | 22,260,000                |            |
| Hunan                      | 4,600,000                       | 110                              | 5,060,000                 |            |
| Kiangsi                    | 7,300,000                       | 124                              | 9,052,000                 |            |
| Kwangtung                  | 2,650,000                       | 110                              | 2,915,000                 |            |
| Kwangsi                    | 5,760,000                       | 120                              | 6,912,000                 |            |
| <u>East China</u>          | 129,820,000                     |                                  | 125,378,700               |            |
| Shantung                   | 45,000,000                      | 110                              | 49,500,000                |            |
| North Kiangsu              | 27,600,000                      | 90                               | 24,840,000                |            |
| South Kiangsu              | 12,840,000                      | 70                               | 8,988,000                 |            |
| North Anhwei               | 27,290,000                      | 83                               | 22,650,700                |            |
| South Anhwei               | 1,550,000                       | 100                              | 1,550,000                 |            |
| Chekiang                   | 10,920,000                      | 100                              | 10,920,000                |            |
| Fukien                     | 4,620,000                       | 150                              | 6,930,000                 |            |

Total area under cultivation estimated by Committee of Finance and Economics of 4,600,000 and by Ministry of Agriculture at 2,500,000

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|                                       |             |     |             |
|---------------------------------------|-------------|-----|-------------|
| <u>Northeast</u>                      | 8,000,000   | 110 | 8,800,000   |
| <u>Southwest China</u>                | 36,590,000  |     | 51,974,000  |
| Yunnan                                | 3,940,000   | 135 | 5,319,000   |
| Kweichow                              | 4,640,000   | 100 | 4,640,000   |
| Szechwan                              | 27,320,000  | 150 | 40,980,000  |
| Sikang                                | 690,000     | 150 | 1,035,000   |
| <u>Northwest China</u>                | 43,930,000  |     | 56,482,300  |
| Shensi                                | 25,560,000  | 140 | 35,784,000  |
| Kansu                                 | 10,540,000  | 100 | 10,540,000  |
| Ninghsia                              | 600,000     | 134 | 804,000     |
| Tsingha                               | 2,550,000   | 105 | 2,677,500   |
| Sinkiang                              | 4,620,000   | 144 | 6,625,800   |
| Acreage cultivated<br>by armed forces | 60,000      | 40  | 24,000      |
| Total                                 | 386,630,000 |     | 414,104,000 |

Average figures for  
5 prewar years

Note: Figures are based on statistics published recently by the Ministry of Agriculture, Central People's Government

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Table 9. Flour Yield of Various Wheats by Provinces (%)

| Type of Wheat        | Regions and Provinces | Water Content | Miscellaneous Substance | Flour (No. 81) |
|----------------------|-----------------------|---------------|-------------------------|----------------|
| Spring wheat         | Chahar                | 14            | 11                      | 66             |
|                      | Northeast             | --            | --                      | 70             |
| Winter wheat (white) | Tientsin              | 12            | 1.5                     | 82-85          |
|                      | Hopeh                 | 12            | 1.5                     | 82-85          |
|                      | Pingyuan              | 12            | 2                       | 82.5           |
|                      | Shansi                | 11            | 2                       | 82.5           |
|                      | Shantung              | 11.5          | 1.5                     | 84             |
| Winter wheat (red)   | Honan (Southern)      | 13.5          | 10                      | 75             |
|                      | Hupeh                 | 13.5          | 10                      | 78             |
|                      | Anhui                 | 13.5          | 5-12                    | 79             |
|                      | Kiangsu               | 13.5          | 4-6                     | 79             |

Note: Flour yield refers to the net flour output from the processing of raw wheat, which still contains miscellaneous particles

Table 10. Flour Yield of Various Wheats and Their Nutritive Qualities

| <u>Wheats</u>      | <u>Flour Yields</u> | <u>Albumin</u><br><u>(net weight)</u> | <u>Percentage</u><br><u>Increase</u> | <u>Thiamin</u> | <u>Percentage</u><br><u>Increase</u> |
|--------------------|---------------------|---------------------------------------|--------------------------------------|----------------|--------------------------------------|
| White wheat        | 72                  | 11.460                                |                                      | 0.493          |                                      |
| (Pei-hsi No 12)    | 81                  | 12.982                                | +12.0                                | 0.553          | +73                                  |
| Red wheat          | 72                  | 9.125                                 |                                      | 0.518          |                                      |
| (Ming-kung No 204) | 81                  | 11.123                                |                                      | 0.880          | +69.8                                |

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