STATISTICAL ANALYSIS OF PRICE SYSTEM IN MAINLAND CHINA

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This paper aims to analyse price data in Mainland China and to establish the characteristics of the price system by an international comparison. The data on commodity prices examined in Section I include those based on official information as well as semi-official data obtained from Chinese newspapers. In Section II, wholesale price levels are compared between China and Japan, with the intention to compare the overall price level, but the difference in the price system will also be explored.

I. EXAMINATION OF PRICE DATA IN MAINLAND CHINA

Data on commodity prices in Mainland China are not sufficient for a detailed economic analysis, although they seem to be relatively more abundant than in other socialist countries. Wholesale and retail price indices were officially published at least until 1958 and some data on prices of individual commodities can also be found. It is commonly said, however, that some differences exist between prices in the wholesale market and those in transactions among the state enterprises. The latter have been published only fragmentarily;[1] presently, the share of the wholesale market is said to have been decreasing. It is also reported that retail prices of rationed commodities are lower than those in the "free market." Therefore, an analysis using published data does not necessarily cover the whole price system in Mainland China. The characteristics of foreign trade prices are very difficult to analyse, because available data are restricted to prices indirectly calculated from trade statistics of the partner countries.

As for the published price indices, careful attention must be paid because the value of indices varies according to the formula chosen, especially in such a developing country as Mainland China; little

1 This fact is discussed and proved by Shigeru Ishikawa in his "Chūgoku ni okeru Shihon-chikuseki-kikō to Kokusai-hikaku" (The Structure of Capital Formation in China with an International Comparison), *Kyōsanken Mondai*, Vol. VI, No. 7, 1962.

information about them has been published in that country, so additional checks are required.

Another interesting work is a comparison of prices at the various stages of business transactions: wholesale, retail, and foreign trade. Of course, the three indices corresponding to these stages do not necessarily move in the same direction, even in free countries, because of differences in coverage, weights, etc. However, in the case of Mainland China, they deserve special consideration because the government is in a position where it is able to control almost all prices.

Data examined in this section centre on the First Five-Year Plan period (1953–1957). Previous price fluctuations were very violent, and price data after 1958 are scarcely available, though their analysis remains important.

1. Examination of Data on Wholesale Prices[1]

Official indices on wholesale prices were published in some cities together with data on individual prices before 1952. Among these sources, *Collected Data on the Nankai Price Index Number*[2] gives the greatest amount of information until April, 1952. It describes also the method used for the calculation of those indices. Other publications usually list index figures after 1952 without any suggestions about the index formula. However, *Collection of Source Material Relating to Prices in Shanghai Before and After Liberation*[3] is precious, because it includes more detailed information than the other publications. *Shanghai Price Data* gives the general wholesale price index in Shanghai City, 8 indices by groups of commodities, and prices for 47 commodities for 1949–1957. Although these indices are indicated in two different forms, they may safely be considered as identical.[4] Further, the table with 1949 as base-year has a note indicating that the indices have been calculated with Fixed Weighted Arithmetic Averages.

There is also the official price index for Mainland China published

1 *Pibo Wuchia.*

2 Compiled by Nankai Economic Research Institute, Nankai University, published in 1958 by Statistical Publishing Company. Hereafter abbreviated as *Nankai Price Data.*

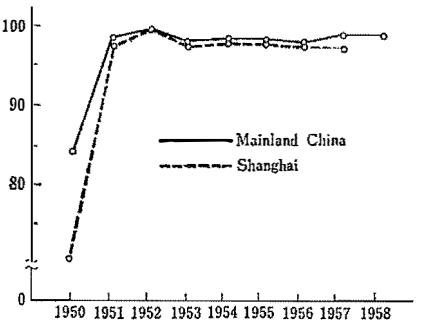
3 Compiled by Economic Research Institute, Academia Sinica, Shanghai and the Economic Research Institute of Shanghai Social Sciences, published in 1958 by the Statistical Publishing Company. Hereafter abbreviated as *Shanghai Price Data.*

4 The indices are published with two different base-years: June, 1949 and an average for 1952. Dividing all yearly averages of the former by the corresponding 1952 average. All figures except the one for 1951 are equal to the corresponding figures in the latter; for instance, 99.01 for the 1951-value of the former corresponds to 99.30 for the latter.

in *Ten Great Years*,[1] but these figures had already appeared systematically in *Communiqué 1956*.[2] According to the latter, the number of cities where price surveys were made varies every year; the indices are considered to have been compiled by linking indices based on the previous year. No information is given about the weight system of the indices, nor are names of cities or of commodities indicated.

An interesting subject may be to compare the values of these indices with each other. According to Figure 1, the general index in Shanghai City seems to have been lower than that for Mainland China, but this arises from the rather higher price level in base-year (1952) in the former. This similarity is important because the analysis of Shanghai index by using its detailed information affords some suggestions for the latter's analysis.

Figure 1. COMPARISON OF WHOLESALE PRICE INDICES: MAINLAND CHINA AND SHANGHAI, 1950–1957



Sources: For Mainland China, *Ten Great Years*; for Shanghai, *Shanghai Price Data*.

Concerning the price data by individual commodities, the list of quotations given in Chinese newspapers can be used as supplementary material for the price data of the 47 commodities in the *Shanghai Price Data*. As the brands are not uniform in the former, comparison between periods or between cities is very difficult. But these data are useful as a test of other information.

With these limitations in mind, let us proceed to the analysis of the *Shanghai Price Data*. The tests will be tried in three stages: on prices by individual commodities, on 8 group indices and on the general index.

(1) Let us compare the prices of individual commodities in Shanghai with those in the other cities by using the list of quotations. A preliminary analysis of this data tells us that the dispersion of prices seems to be too irregular to get any conclusion. However, in the light of

1 State Statistical Bureau, Government of the People's Republic of China, *Ten Great Years—Statistics of the Economic and Cultural Achievements of the People's Republic of China*, Peking, The People's Publishing Company, 1959.

2 State Statistical Bureau, Government of the People's Republic of China, *Communiqué by the State Statistical Bureau of the Government of the People's Republic of China on the Results of the Implementation of the Plans in the National Economy in 1956*, Peking, The Statistical Publishing Company, 1957.

possible differences in brands, this dispersion may be, in many cases, within a probable error.

Table 1. ASSUMED CORRESPONDENCE OF INDIVIDUAL COMMODITIES INDICES AND GROUP INDICES IN *SHANGHAI PRICE DATA*

Groups	Individual Commodities
Food : Main	Rice, Southern Rice, Wheat, Flour, Soybean.
Food : Subsidiary	Soybean Oil, Sugar, Pork, Eggs.
Clothing	Cotton Yarn, White Cloth, Printed Cloth, Coloured Cloth.
Fuel	Coal, Anthracite, Oil, Gasoline, Kerosene.
Building Materials	Cedar Wood, Cement, Glass, Brick.
Industrial Materials	Bar Iron, Steel Plate, Steel Tube, Copper Wire, Pig Iron.
Miscellaneous	Rubber, Caustic Soda, Di-nitro,[1] Matches, Soap, Penicillin, Carbonate of Soda, Black Sulphur, Paper, Tobacco, Socks.
Local Products	Gunny Bag, Tung Oil, Refuse of Soybean Oil, Leaf Tobacco, Hemp, Cotton, Ox-hide.

Note: 1) Preliminary translation of "erh-hsiao-chi."
Source: *Shanghai Price Data.*

(2) The method of making group index (the index by group of commodities) from individual indices should be analysed. The *Shanghai Price Data* informs us that 8 group indices are calculated from those of 47 commodities, but it is difficult to classify these commodities into 8 groups defined in this data. Although the data offer no explicit description of these classifications, the order of tables of individual price indices seems to correspond to that of group indices. The classification shown in Table 1 is made on this assumption, though the correspondence remains obscure for some commodities. The group indices are compared with the indices of individual commodities in this preliminary classification; medians and ranges of individual indices are calculated in order to check the corresponding group indices in Table 2. The result shows that the medians with some exceptions are distributed around the group indices and the ranges are not too small; excluding the highest and the lowest, however, the indices are not much different within the same classes. The individual price indices of the main kinds of food, clothing, and fuel are especially closely distributed around the value of the corresponding group indices and these may be consistent with each other. The range of subsidiary food is not too small, but this may be explained by the different movements of two components: the indices are high for pork and eggs, and low for seasoning. Since the group indices are located near the average of these two groups, the weights are supposed to be nearly equal in these two groups. The

price movements of building materials are also composed of two different kinds of movements: that of timber and that of other manufactured goods; as the weight of timber is considered to be large in China, the deviation of the group index from the median can be explained by the rise in price for timber. The identification of industrial materials with individual commodities is the most difficult. When metal products alone are assumed to belong to this class as in Table 1, the median is lower than the group index, while only copper wire, considered to represent the price movements in non-ferrous metal products, is greater than the group index. As the weight of ferrous metal products is supposed to be large, the values of the group index cannot be explained. One alternative might be to include rubber products and some chemical products in this group as was done in the adjusted results of Table 2, but even in this case the weights of iron and steel seem to be too small.[1] Miscellaneous and local products are composite and difficult to check by this method.

Table 2. COMPARISON OF GROUP INDICES AND INDICES OF INDIVIDUAL COMMODITIES IN *SHANGHAI PRICE DATA*, 1957 (base=1952)

	Number of Commodities	Group Indices	Indices of Individual Items		
			Median	Range I	Range II
Food: Main	5	104.32	103.1	29.4	3.5
Food: Subsidiary	5	121.57	132.7	48.3	34.5
Clothing	4	97.13	98.5	3.3	0.4
Fuel	5	94.11	93.2	23.1	8.0
Building Materials	4	108.54	93.7	55.5	24.2
Industrial Materials	5	90.77	84.0	71.3	24.2
Miscellaneous	12	98.01	99.1	81.4	28.4
Local Products	7	100.74	116.8	45.1	21.6
		(adjusted results)			
Industrial Materials	8	90.77	89.4	71.3	39.3
Miscellaneous	9	98.01	99.2	81.4	28.4

Note: Range I: Range for all commodities.
Range II: Range for commodities excluding the highest and the lowest figures.
Source: *Shanghai Price Data.*

(3) In order to check the method used for the general price index, we should refer to a note in *Shanghai Price Data* (See p. 449), which

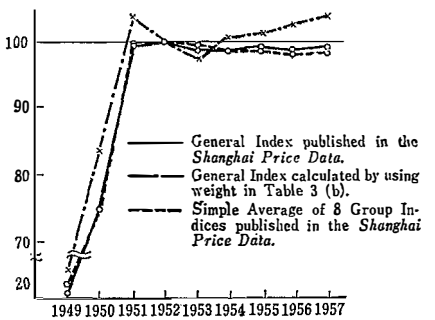
1 The *Shanghai Price Data* seems to have been compiled only with regard to those commodities which are transacted in the wholesale market. If this principle is applied on weights, it is possible that the transaction of ferrous metal products in the wholesale market is small, because these products are transacted among the state enterprises. If this supposition is admitted, the results of Table 2 seem acceptable.

indicates that the index is calculated by means of the Fixed Weight Arithmetic Average. From this information, the relation between the general index $P(t)$ and the group index $P(t:i)$ can be assumed as:

$$P(t)=\sum_{i=1}^{8} W(i)\,P(t:i)\ldots\ldots\ldots(1),$$

where i indicates the group number and $W(i)$, the weight of i-th group, is assumed to be constant. Formula (1) can be considered as an equation for $W(i)$ $(i=1, 2,\ldots\ldots 8)$, when the values for $P(t)$ and $P(t:i)$ are substituted by statistical values for 8 time points. The results, calculated by using the annual figures from 1950 to 1957, however, cannot be considered good. Their total sum is less than 1, and for two years there are negative values, as shown in Table 3. The weight system might have been changed during this period, because 1952 was the start of the First Five-Year Plan. A calculation is made by monthly figures for January-August, 1952, in order to check this possibility; nevertheless, the result remains unrealistic. Some possible explanation of these results may be considered, but the writer presumes that the above-mentioned note, added to the table of the *Shanghai Price Data*, is doubtful.

Figure 2. GOODNESS OF FIT OF THE CONDITIONAL REGRESSION EQUATION



Source: See text.

Even if the fixed weight system itself is doubtful, it would not be meaningless to estimate a sort of average weights during this period. With a consideration on the mathematical characteristics of $W(i)$,[1] a conditional least-squares method is applied for the formula (1) under the restriction;

$$\sum_{i=1}^{8} W(i)=1\ldots\ldots\ldots(2).$$

The figures in the second column of Table 3 are calculated from monthly values for the period 1952 to 1956, but also these results are not satisfactory: for instance, the weight of subsidiary food is too small. However, the values calculated by using these figures on the formula

1 The restriction on formula (1) includes also the fact that all weights should be positive. It is very difficult to apply the least-squares method under this restriction, though not impossible if we use non-linear programming.

(2) fit favourably not only for the period of the estimation but also for the extrapolated period (before 1951 and after 1957—see Figure 2). The important fact is that while the estimated weight of subsidiary food is nearly zero, its actual price has been increasing since 1952. Therefore, it is possible that the general wholesale price index in the *Shanghai Price Data* was set at a lower level from 1952 to 1957.

2. *Examination of Data on Retail Prices*[1]

The movement of retail prices has a close connection with the measurement of the standard of living. However, data on retail prices in Mainland China are even scarcer than those on wholesale prices; data before 1951 are relatively abundant but later they are very few.

Retail price indices and the cost of living indices have been published for Mainland China and some local cities. The retail price index for Mainland China can be found in *Ten Great Years*, and those for the 8 largest cities' average in *Ten Great Years* and *Communiqué 1956*.[2] Among the indices for local cities, the Shanghai Retail Price Index and the Shanghai Cost of Living Index, found in the *Shanghai Price Data* are noteworthy, because their variety rests on the fact that these indices are available from 1952 to 1957, and the group indices are also published. In addition, the Shanghai Retail Price Index moves in a similar form as the average index for the 8 cities in *Ten Great Years*, so the analysis of the former will give us some hints for the discussion of the latter.

Table 3. ESTIMATED WEIGHT OF THE WHOLESALE PRICE INDEX FOR 1952–1956 IN *SHANGHAI PRICE DATA*

	(a) Simultaneous Equation	(b) Conditional Regression
Food: main	0.0070	0.065
Food: subsidiary	0.0016	0.000
Clothing	−0.0102	0.251
Fuel	0.0121	0.035
Building materials	0.8349	0.103
Industrial materials	0.0036	0.241
Miscellaneous	0.0034	0.352
Local products	−0.0098	0.016

Note: For the method used, see text.

For Tientsin and related to the period before April, 1952, data on retail prices by individual commodities can be found in *Tientsin Price*

1 *Lingshou Wuchia.*

2 A comparison of these sources shows that the figures in *Ten Great Years* are higher than those in *Communiqué 1956.*

Data. Other data can be obtained only by careful collection from lists of quotations in Chinese newspapers after 1952. Another interesting source is a survey made by the East Asia Economic Research Group, Tokyo.[1] This survey collected reports about retail prices in many Chinese cities by Japanese travellers or Japanese nationals who lived in China after 1949; the prices of more than 50 commodities are listed for the period 1953–1960. These data are valuable because they give actual retail prices; however, they may be affected by faulty memory on the part of the informers.

One of the interesting facts is that the general retail price indices rose after 1952, though the wholesale price index was stable. In the note given in *Ten Great Years*, the cause of this difference was said to have arisen from the adjustments in the prices of subsidiary food which had been fixed too low. In fact, the group index of subsidiary food in the *Shanghai Price Data* increased year-by-year for both retail and wholesale prices. As the weight of this group is far greater in the retail than in the wholesale index, the above differences may be explained by the different weight systems. In order to support this, some checks should be made on the fact that there are small differences in the movements of price indices by individual commodities at wholesale and retail price level, but there are few data on retail prices after 1952. One of the devices may be to compare the group indices of the retail price index[2] in the *Shanghai Price Data* with the assumed corresponding wholesale price indices by individual commodities. From the *Shanghai Price Data* 25 out of 47 individual price indices are selected in order to exclude the effects of producer goods. They are listed in such a manner as to correspond to the groups in the retail price index, and their simple averages and ranges are given in Table 4. Generally speaking, nearly all the movements of wholesale price indices and retail price indices seem to be similar. Exceptions are those commodities for which wholesale price indices are lower than their retail price indices, i.e., for textile products, fuel, and daily necessities. A part of these differences may be explained by a difference in coverage; for example, fuel listed under wholesale prices does not include firewood or charcoal.

1 Tōa Keizai Kenkyū Kai (East Asia Economic Research Group), "Shin-Chūgoku no Keizai-hatten no Bunseki—Bukka-hen—" (Analysis of the Economic Development of Communist China—Commodity Price Series—), 1962 (mimeographed).

2 In comparing the corresponding group indices in the Shanghai Retail Price Index and in the Shanghai Cost of Living Index, there are few differences, though their general indices deviate from each other. For this reason, the following analysis will proceed using the group indices of the Shanghai Retail Price Index.

However, such an explanation may not be sufficient. An interesting fact is that these commodities are supposed to have high income elasticities in the demand analysis in general. We may suppose, as a very bold assumption, that the rises of the retail prices of these commodities are explained by the hypothetical actions of government authorities. The Chinese Government has established production plans and pegged

Table 4. COMPARISON OF RETAIL PRICE GROUP INDICES WITH INDIVIDUAL WHOLESALE PRICE INDICES IN SHANGHAI, 1957

(base=1952)

	Retail Price Group Indices	Individual Wholesale Price Indices		
		Average	Maximum	Maximum
Food: Main	103.6	104.0	119.0	90.0
Food: Subsidiary				
Meat, Eggs, Fish	130.2	140.0	144.0	142.0
Seasoning	116.2	112.8	132.0	96.0
Vegetables*	109.7	?	?	?
Other Food				
Tobacco	107.5	115.0	115.0	115.0
Tea*	128.9	?	?	?
Spirits*	114.0	?	?	?
Others*	108.5	?	?	?
Clothing				
Fabric	109.0	96.9	98.7	95.6
Finished Fabric*	99.9	?	?	?
Others	108.5	94.5	99.5	89.4
Fuel	98.0	94.0	98.0	90.0
Medicine*	60.3	91.0	91.0	91.0
Daily Necessities*	105.7	93.3	99.0	88.0
House Equipment*	127.5	?	?	?
Educational Material*	88.0	80.0	80.0	80.0

Note: 1. Question marks indicate that there are no corresponding data.
2. Asterisks indicate a group for which information on wholesale prices is insufficient for this comparison.

Source: *Shanghai Price Data.*

Table 5. THE RETAIL-WHOLESALE PRICE INDEX RATIO BY INDIVIDUAL COMMODITIES IN SHANGHAI, 1955

(base=1952)

Non-glutinous Rice	94.8	White Cloth	91.5
Wheat Flour	94.5	Coloured Cloth	100.4
Pork	87.6	Towel	102.2
Eggs	106.5	Kerosene	105.2
Salt	83.0	Soap	117.0
Soybean Oil	107.0	Coal	97.9

Source and Method: See text.

wholesale prices accordingly. When excess demand for consumer goods resulted from the increase of consumer's income, retail prices would be raised over wholesale prices so that the excess demand may be absorbed. Furthermore, according to the explanation in the *Shanghai Price Data*, the retail price index is made of far more items than those of the wholesale price index, so it is also presumed that the inclusion of new products, which are considered to have high income elasticities, might be a cause of the differences mentioned above.

The arguments depend on the comparison between the group indices and the individual indices. The information in newspapers, though not necessarily a good source, can be used as a rough check. The individual price indices are calculated from information in newspapers concerning the retail price. The indices with as base February, 1952, are compared with the corresponding figures of the individual wholesale price indices in the *Shanghai Price Data.* The results seem to be roughly consistent with the above-mentioned conclusion. In Table 5, the results for February, 1955, for instance, are shown in the form:

$$\frac{\text{February, 1955's retail price index}}{\text{corresponding value of the wholesale price index}} \quad \cdots\cdots\cdots (3).$$

3. Checks on External Trade Prices

The analysis of the external trade price is very interesting in Mainland China, because in socialist countries domestic prices are said to be fixed corresponding to economic plans, and the external trade prices are determined according to "international prices." Though data in yüan prices at Chinese ports are rare in official Chinese publications, valuable information can be obtained from the trade statistics of capitalist countries and the Soviet Union, by using the formula:

$$\text{average price} = \frac{\text{monetary value of trade of a commodity group}}{\text{its quantity value}} \quad \cdots\cdots (4).$$

However, the average price thus obtained should be used with caution: (1) it is advisable to exclude those commodity groups whose quality differences may affect greatly this average price; (2) the monetary values of transaction, given in the statistics on these partner countries are C. I. F. prices for import and F. O. B. for export; ocean freightage and insurance premiums should be adjusted in the analysis of the Chinese economy; (3) some trade values are not directly relevant to Mainland China, for example, when the value of transactions with Mongolia, cannot be separated from those with China in the statistics

Table 6. COMPARISON OF EXTERNAL TRADE AND DOMESTIC PRICES, 1957

(U. S. $/Yüan)

Ratio of Imported Price to Domestic Prices		Ratio of Export Price to Domestic Prices	
Sugar	0.12	Rice	0.54
Rubber	0.24	Wheat	0.58
Cement	0.17	Soybean	0.55
Steel Plate	0.11	Salt	0.05
Steel Tube	0.17	Tung Oil	0.43
Copper Wire	0.09	Cotton Fabric	0.22
Kerosene	0.12	Caustic Soda	0.08
		Coal	0.42

Source: *Hong Kong Trade Statistics* and *Shanghai Price Data.*

of some countries.

Although these defects obstruct our approach to the external trade prices, a preliminary analysis using *Hong Kong Trade Statistics*[1] is valuable because in this case the bias from shipping freightage or insurance premiums is not too large. Furthermore, the analysis is limited to commodities with small price differentials. A comparison of the external prices with domestic wholesale prices in the *Shanghai Price Data* are shown in the form:

$$\frac{\text{external trade price}}{\text{domestic price}} \quad \ldots\ldots\ldots\ldots\ldots\ldots (5)$$

in Table 5. The ratio of commodities exported from China are distributed around the official trade ratio: 1 Chinese yüan = U.S. $0.24, whereas those of imported commodities are distributed in levels lower than the official ratio; this means that domestic prices are concentrated very highly in the imported commodities. The number of commodities considered here is too small to obtain a conclusive result, but the approximation is interesting in reference to the next section.

II. COMPARATIVE STUDY OF WHOLESALE PRICES IN JAPAN AND IN MAINLAND CHINA

1. Price Structures

Naturally there are many difficulties in an international comparison of price structures. Especially, the scarcity of price data in Mainland China makes it much more difficult than in other cases. The wholesale

1 Department of Trade and Commerce, Hong Kong Government, *Hong Kong Trade Statistics, 1957*, Hong Kong, 1958.

prices in the *Shanghai Price Data* will mainly be used. Other prices only for checking purposes. Item-wise price data in Japan are taken from the *Annual Report on Wholesale Price Index* compiled by the Bank of Japan.[1] The most difficult problem in this analysis is to check the comparability of quality. As the number of commodities in the *Shanghai Price Data* is only 47, some bold decisions had to be taken in order to proceed with these data, especially in the comparison of clothing. 38 out of 47 commodities were finally selected.[2] For these commodities, the prices in the *Bank of Japan Data* are adjusted proportionally in order to be comparable with those in the *Shanghai Price Data* for the same quantitative unit in which prices are expressed. After this adjustment, the ratio:

$$R=\frac{\text{Shanghai price}}{\text{Tokyo price}} \quad \ldots\ldots\ldots\ldots\ldots\ldots(6)$$

is calculated. The results are interesting because these ratios are nearly equal *within* those groups of commodities for which the economic use is similar, but they are different *between* these groups. To prove this hypothesis, let us classify the ratios of 38 items into 17 groups by their uses, referring to the classification of the sub-group indices in the *Bank of Japan Data*. The variance analysis applied for this classification reduces the consistently obtained result; the dispersions of the ratios from the average of each group are much smaller than the dispersions

Table 7. F VALUES IN THE ANALYSIS OF VARIANCE, 1951–1957

Year	1951	1952	1953	1954	1955	1956	1957
F	2.19*	1.72	4.43**	4.71**	4.75**	6.45**	4.50**

Note: An asterisk indicates that the disparsions between 17 groups are significantly larger than those within groups at the 5% level. Two asterisks show the same at the 1% level.

1 Hereafter abbreviated as *Bank of Japan Data*. These statistics are compiled from surveys of wholesale prices in Tokyo. Co-ordinating the price index, the business turnover for the whole of Japan is used as weight.

2 For the comparison of different commodities, Profs. S. Ishikawa, K. Yamanouchi, and persons interested in trade with Mainland China have kindly co-operated with the writer. Items excluded from this analysis are the following: articles which either have no counterpart in Japan (printed cloth and coloured cloth), or whose Japanese counterpart varies so violently in price according to quality that the corresponding brand cannot be determined without more detailed information about the specific Chinese commodity (tobacco leaves and towels), or goods for which no reliable price surveys are published in Japan (penicillin and tung oil), or when the nature of the commodity itself cannot be understood (dinitro). From the rest, two items must be excluded because the quantitative units used are not clear (matches and soap).

of these averages from the average value of total ratios, as is shown in Table 7. The average values of each group in Table 8 indicate that the prices of agricultural products are, in general, lower in China and the prices of industrial products are higher, if we compare the prices using the official exchange ratio for the foreign trade of China: 0.00654 Chinese yüan=1 Japanese yen.[1] A similar fact can be detected in a comparison between the developed and the underdeveloped countries. But it should also be considered that part of this fact may arise from differences in the price structure of capitalist and socialist countries.

2. *General Price Level*

Our next problem is to construct an index for the comparison of the general price level in China and Japan. As mentioned above under "Price Structures," the number of items used in the following analysis is by no means sufficient. In order to compare the "general price level" between two countries, we must average the price ratios by

Table 8. COMPARISON OF CHINESE WHOLESALE PRICES WITH JAPANESE PRICES FOR 17 GROUPS OF COMMODITIES

(Unit: 10^5 Yüan/Yen)

	Number of Commodities	1951	1953	1955	1957
Edible Farm Products	3	364	364	373	373
Flour and Flour Products	1	808	802	883	895
Seasoning & Edible Oil	3	1029	938	961	1340
Tea, Tobacco, & Spirits	1	320	347	390	380
Livestock Products	2	414	436	510	547
Fabric & Textile Goods	3	1505	2157	2361	2291
Miscellaneous (Consumer Goods)	1	2251	2011	2185	2185
Miscellaneous (Consumer Durable Goods)	0	2827	2371	2113	1534
Textiles	3	356	676	623	688
Fuel (Coal)	2	643	534	563	476
Fuel (Oil)	3	9548	4655	4642	3961
Chemical Products	3	1438	2478	2913	2338
Metal & Machinery	5	2872	2371	2113	1534
Building Materials (Wood)	1	1824	1156	1557	1347
Building Materials (Others)	3	700	722	707	675
Miscellaneous (Rubber, Leather)	2	1092	2906	2439	1508
Miscellaneous (Organic Fertilizer)	1	310	398	393	376

Note: 1. Price ratios of consumer durables are assumed to be the same as those of metal and machinery.
2. As for the classification of the 17 groups, see text.

1 The ratio is calculated from the official ratio for capitalist countries, which is indicated by the ratio between yüan and U.S.$, and converting U.S.$ yen at the rate of U.S. $1=360 yen.

individual commodities using some mathematical formula. When the price structure is similar between two countries, a comparatively limited number of items is sufficient for the purpose; there will not be too much difference in the price ratio whatever method of calculation is applied. However, when the price structure differs greatly as in the case between China and Japan, the average ratio depends much on the formula chosen, and a great deal of price information is usually required. From among the formulas which could be used for such an analysis, may we suggest the method of price index numbers. The average price ratio, which corresponds to Laspeyres' formula, is defined as in

$$R(J)=\frac{\sum P(C,\ i)\,Q(J,\ i)}{\sum P(J,\ i)\,Q(J,\ i)}=\frac{\sum R(i)\,E(J,\ i)}{\sum E(J,\ i)} \qquad \cdots\cdots\cdots\cdots\cdots\cdots (7)$$

Japanese weight, and the formula corresponding to Paasche's is in

$$R(C)=\frac{1}{\sum R(i)\,E(C,\ i)/\sum E(C,\ i)} \qquad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (8)$$

Chinese weight, where $P(X,\ i)$, $Q(X,\ i)$, and $E(X,\ i)$ are the price, the quantity of transaction and the monetary transaction values of the i-th commodity, and J and C in the position of X show the variable in Japan and in China respectively. As the number of commodities in this analysis is limited to 38, the sum of $E(X,\ i)$ for these commodities is small in comparison with the total transaction value. Thus it is not certain whether the average ratio can represent a comparative ratio between the two countries.

This difficulty can also be found in making price index numbers using a small-size price survey, for instance, in the statistics of underdeveloped countries. To make up for this shortage, the average price index is derived by multiplying the index for a specific commodity by the sum of weights of such commodities, as their prices are varying nearly in proportion to that of the commodity in question. This idea can be applied to this analysis. According to the section on "Price Structure," the individual price ratio, R, is similar *within* 17 commodity groups. This suggests that the price ratios of the other commodities would not differ greatly from the average values of the group to which these commodities are judged to belong from the viewpoint of their economic use. If this assumption can be accepted, we can calculate the total average ratio by applying the weights for each group of commodities for the values in Table 8. For this purpose the Japanese weight can be calculated easily for any year and the weights for 1952 will be used in the following calculation. This weight system is shown in Table 9.

The overall price ratio in Table 10 exceeds very much the value of the official ratio in the foreign trade of China with capitalist countries. This tendency would be more remarkable when we use Japanese weights in the latter years, 1957 for instance. Furthermore, there are great differences in price ratio between the consumer goods group and that of the producer goods. The latter is much higher than the former.[1]

Table 9. THE STRUCTURE OF JAPANESE WEIGHT (1952) BY 17 GROUPS OF COMMODITIES IN WHOLESALE TRANSACTIONS

(Total=1000.0)

Consumer Goods		Producer Goods	
Edible Farm Products	83.3	Textiles	107.4
Flour & Flour Products	28.8	Fuel (Coal)	80.0
Seasoning & Edible Oil	44.0	Fuel (Oil)	21.9
Tea, Tobacco, & Spirits	80.6	Chemicals	53.1
Livestock Products	23.6	Metal & Machinery	212.0
Fabric Finished Textile Goods	85.9	Building Materials (Wood)	75.4
Miscellaneous (Consumer Goods)	38.2	Building Materials (Others)	24.2
Miscellaneous (Consumer Durables)	14.3	Miscellaneous (Rubber, Leather)	21.1
		Miscellaneous (Organic Fertilizer)	6.2

This conclusion reminds us of the result set forth by Professor N. Jasny[2] regarding price comparisons between the United States and the Soviet Union for 1926–1927. The decreasing trend of the overall price ratio in Table 10 should be mentioned in the sense that recent research concerning the price system between the United States and the Soviet Union shows a similar tendency. Professor Eckstein's conclusion for food prices[3] is rather lower than ours, if we compare them with the rate of U. S. $1=360 yen. But they may safely be said to be consistent with each other, because prices of farm products in Japan in 1952 were much lower than those in the United States.

1 The classification of producer and consumer goods is attempted at the level of commodity groups only for the purpose of reference. In order to calculate the ratio for these two classifications, more information about individual commodities is required.

2 Naum Jasny, *The Soviet Prices of Producers' Goods*, New York, Stanford University Press, 1951.

3 Alexander Eckstein, *The National Income of Communist China*, New York, The Free Press of Glencoe, 1961. This author estimates that the conversion rate between the U. S. and China regarding farm products stands at 0.4157 yüan/U. S. $ in the Chinese weight and 1.3609 yüan/U. S. $ in the U. S. weight, in 1952. He used statistics of prices in the local Chinese newspapers as well as in official publications. In order to compare this to our results, edible farm products, flour and flour products, livestock products, and some other products must be averaged using the same weights as Eckstein did.

A calculation using the formula (8) is also required, but the statistical material has been partially published which enables us to estimate the Chinese weight by groups of commodities. The monetary value of

Table 10. THE OVERALL AVERAGE RATIO OF CHINESE TO JAPANESE WHOLESALE PRICE RATIO BY USING THE JAPANESE WEIGHT IN 1952

(Unit: 10^5 Yüan/Yen)

	Overall Average	Consumer Goods	Producer Goods
1951	1566	997	1943
1952	1537	1113	1819
1953	1471	1091	1722
1954	1535	1105	1820
1955	1483	1167	1692
1956	1426	1129	1616
1957	1388	1169	1598

Note: For the calculations and the classifications, see text.

Table 11. COMPARISON OF THE CHINESE-JAPANESE PRICE RATIOS CALCULATED FROM THE *SHANGHAI PRICE DATA* AND THE *NANKAI PRICE DATA* (1951)

	Shanghai		Tientsin			
			Same Commodities as Shanghai data		Different Commodities as Shanghai data	
	Number of Commodities	Average (10^5 yüan/yen)	Number of Commodities	Average (10^5 yüan/yen)	Number of Commodities	Average (10^5 yüan/yen)
Edible farm products	3	364	1	622	3	413
Flour & flour products	1	808	1	972	0	...
Seasoning & edible oils	3	1,029	3	1,135	1	539
Tea, tobacco, & spirits	1	320	1	709	2	1,400
Livestock products	2	414	1	312	2	384
Fabric & finished goods	3	1,505	1	1,119		
Miscellaneous (consumer goods)	1	2,251				
Miscellaneous (consumer durable goods)	0	2,827				
Textiles	3	356	1	423		
Fuel (coal)	2	643	2	659		
Fuel (oil)	3	9,548				
Chemicals	3	1,438	1	2,002	1	3,504
Metals & machinery	5	2,872	2	2,830	2	3,064
Building materials (wood)	1	1,824				
Building materials (other)	3	700	2	1,004	1	572
Miscellaneous (rubber, leather)	2	1,093				
Miscellaneous (organic fertilizer)	1	310	1	462		

production, of foreign trade, and of domestically consumed products by group of commodities are at least necessary to make the weight equivalent to the Japanese case. It might not be impossible to estimate the weight by collecting fragmental information. According to the writer's calculation, which is too preliminary to be published here in detail, the overall average ratio in Chinese weight ranges from 0.00426 to 0.00590 in 1951, from 0.00521 to 0.00710 in 1956, corresponding to different hypotheses in the calculation of the Chinese weight. The overall price ratio by Chinese weight seems much lower than in the Japanese case and could perhaps be close to the official foreign exchange ratio, although such a strong assertion seems very dangerous. These arguments should, therefore, be postponed to the future.

3. *Some Supplementary Work*

In this part, the obtained results are checked with other information.

(1) We can supplement the conclusion with the *Nankai Price Data.* The second column of Table 11 lists the average price ratios from the *Shanghai Price Data*, the fourth column those for the commodities in the *Nankai Price Data* corresponding to items in the *Shanghai Price Data*, and the sixth column gives the average values of *Nankai* items not included in the *Shanghai Price Data.* We see that the Tientsin prices are a little higher than those in Shanghai, but an attempt at calculation by pooling both data indicates a less than 10% rise of the overall price ratio.

(2) The supplementary information of local newspapers should be considered here. For Shanghai, we have the *Shanghai Daily Press*[1] and the *Shanghai Emancipation Daily.*[2] Comparing the individual prices with the *Shanghai Price Data* in 1952 there are only a few differences. Among the additional data, the price of potatoes and of ammonium sulphate requires special attention. The former may represent the price level of edible foods other than cereals, but the price ratio compared with Japanese prices differs very little from the average of edible food in Table 8. The latter shows a value nearly 15% lower than the average price ratio of chemical products in Table 8, which does not include any prices for chemical fertilizers; this fact deserves attention in connection with China's agricultural policy. Other additional material concerns cotton yarn, some metal products, and paper products,

1 *Shanghai Jihpao.*
2 *Shanghai Jiefang Jihpao.*

but the ratios with Japanese prices do not deviate from the results obtained from the *Shanghai Price Data.* The ratio of wood products calculated from prices in newspapers are distributed in a large range above and below the ratio obtained from the *Shanghai Price Data*; this seems to arise from the extreme difficulty in determining the quality of lumber.

(3) One of the weak points in our study is that the analysis of prices of machinery products is not included. Professor Shigeru Ishikawa[1] estimated price ratios for these products, and these may be used for checking purposes although he noted that his attempt was preliminary and conjectural. Using his ratio, 0.01 (yüan/yen) for machinery products, we can derive the overall price ratio in 1952 as 0.01421 in Japanese weight, and the preliminary figures by Chinese weight 0.00476 to 0.00632; these values are a little lower than those from the *Shanghai Price Data.*

1 See, Note 1 in p. 305.