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NATIONAL INCOME OF JAPAN

Description

A study of the national income of Japan from Japanese materials and a critique of existing estimates; analysis of national income according to industrial origin, income payments and size of household income.

1 October 1945

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Note

The present study is issued in unrevised preliminary form so that its contents will be available without loss of time. It will be noted that the manuscript contains typographical and other errata which would have been corrected in the course of further editing.

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Section A. IntroductionJapanese Statistics and National Income Estimates

Because of the peculiarities of Japan's economic system, it is not possible to present an accurate estimate of Japan's national income. The concept of national income applies essentially to a more or less competitive exchange economy in which goods and services are valued by market forces and in which such valuations are recorded by accounting procedures. The concept is not applicable to an economy based upon feudalism or even mercantilism. In the Japanese economy, which has by no means shaken itself free from feudalistic and mercantilistic vestiges, the role played in production by households and government (in contrast to business units) is much greater than in the United States. Under such circumstances, even with the best methods known to statisticians, it is impossible to get statistics on depreciation and obsolescence and other cost items, factor incomes, and gross value data, for unincorporated units. Such data do not exist because these categories cannot be clearly defined and conceived for accounting purposes in a system of household production.

Wages and profits are meaningless when members of a household occasionally engage in the manufacturing, farming, and fishing chores of the household. Interest and business taxes become meaningless when a producing household borrows funds to repair a dwelling in which both production and consumption are carried on, and on which household taxes are paid to the state. It is impossible to determine accurate gross value totals when a given household engages in different occupations, depending on the season of the year, and when a large part of such production is consumed directly by the household. Economic

historians like Weber and Sombart have defined capitalism by its "rational calculation and accounting". If there are no accounting concepts, there can be no statistics.

These obstacles to national income measurements should be differentiated from difficulties arising from deficiencies in already collected and collectible data. Unlike the United States, in Japan there are very few comprehensive economic censuses. The ones that exist have certain basic flaws, such as insufficient details, which render them of limited value only. For example, the corporate statistics do not give any information as to dividends and interest received by corporations, nor wages paid out, nor number employed, etc. Sample studies of family budget, wages and income, cost, etc., often are not representative of Japan as a whole, and are entirely valueless for the present purpose. Often statistical sources cease to be published for reasons of military security, while some surveys are too recent to provide continuous data for past years. Lastly, Japanese statistics lack explanations of the content and precise meaning of the data presented; also, it is difficult to uncover the methods used in gathering the data.

The deficiencies in Japanese statistics arise in part because of the preeminent role of government agencies in statistical work. Private agencies and independent economists do little checking of government statistics. Most economic studies are initiated by independent economists and private research and commercial agencies; however, the government usually continues and completes the studies, obviating discussion among private groups. The principal government agency handling

statistics in the Cabinet Bureau of Statistics, which usually consists of mathematicians and engineers, but very few outstanding economists.

Japanese statistics are frequently inaccurate because of the mechanics of data collection. Data are generally collected in the following manner. The Cabinet Bureau of Statistics (CBS) prepares the regulations governing the survey, which regulations are made into a government ordinance. Questionnaires with instructions, usually drawn up by the CBS, are sent out to all prefectural governors, who distribute them to the mayors, town and village heads, who in turn appoint different individuals as data collectors for each respective survey. The latter are not paid, as their positions are honorary ones. These collectors are not trained research workers, with statistical backgrounds. When the questionnaires are completed, they go through all the foregoing officials again before reaching the central government agency. The latter brings the raw data together, applying different statistical methods, and publishes them. Often there is insufficient explanation of what treatment and steps are taken with the raw data by the central government agency. During the long journey of the returning questionnaires, they pass through hands which may not be disinterested parties to the data being collected, since much of the data are later published with breakdowns as to cities, towns, and prefectures, for purposes of comparison. Since these figures tell a story concerning the efficiency of local government administration, these officials, who are appointed, cannot be disinterested parties.

Japanese economists became interested in national income studies in the early 'twenties. Most of their calculations were based upon income tax data, and attempts to construct a curve of personal income distribution, chiefly to compare with Pareto's law, became a fad among economists in the

latter part of the decade. In 1925 the CBS joined the attempts and came out with its first national income estimate, based upon income tax statistics. There are two detailed studies on the national income in 1930, one by the CBS, the other by Professor S. Hijikata of Tokyo Imperial University. Since these studies, no first-hand, comprehensive estimates have been attempted; hence, all estimates since 1930 are merely extrapolations of one of these studies.

Japanese national income theory and methodology were at first influenced largely by German, and later by British, works. After the two 1930 studies just mentioned; interest in national income theory seemed to have subsided and the tremendous advances and improvements achieved by American economists in the 'thirties were almost entirely missed.

Thus considering the immature development of Japan's business economy, the defects of statistics, and the crudity of national income theory and methodology, it is hardly to be expected that national income studies in Japan should be developed to a satisfactory level. But all these reasons do not explain one peculiarity of Japanese estimates, namely, the existence of an upward bias in most of the studies. The answer to this lies in the political purposes to which national income totals can be put. As an index of economic strength, an index of ability to bear tax burdens, etc., national income totals came into convenient uses for a state bent upon chauvinistic designs and while scrupulous economists kept silent, those not so scrupulous took the lead in using national income totals to boast of the might of Japan in rallying the people to support the war effort.

A. Brief Review of Existing National Income Studies

If new estimates are to be undertaken, it is necessary to show where existing studies fall short of adequacy. As pointed out previously, there are two basic, independent studies, from which stem all the other estimates. These basic studies will be discussed below.

Estimates by Prof. S. Hijikata.

His chief work is found in the book, Kokumin Shotoku no Kosei (Components of National Income), 1933, and in scattered articles in the Tokyo Imperial Univ.'s Keizai-gaku Ronshu, neither of which is available in English. This is unfortunate, for if they were, Colin Clark in his Conditions of Economic Progress would not have passed Hijikata's estimates as "fairly reliable". In Section C, detailed criticisms of Hijikata's studies will be found. Here it suffices to point out the major flaws. (The remarks below apply only to the 1930 estimates and thereafter; Hijikata's book also contains estimates for years before 1930.)

Methodologically, Hijikata's estimates contain much duplication. In his final revisions, he included all taxes; yet in his treatment of government income, he includes all the wage and salary payments made by the government, interest paid by it, and what he calls "government profits". His treatment of finance income is not devoid of duplications; for example, he includes interest on government bonds. His dividend estimates are better than those for the other type of payments; yet his methods of eliminating inter-corporate dividends do not succeed in eliminating much

of such dividends. His interest estimates also contain much inter-corporate interest. Corporate savings are residuals, but because Hijikata considers depreciation and obsolescence as part of national income, these are included as part of savings.

His estimates for wages and salary are cruder. For both it is necessary to use population data, but since at the time of his writing the 1930 Census was not published, he was forced to use extrapolations of the 1920 Census, which estimates were often incorrect. The averages for salary are taken from government salaries since corporate salaries are secret in Japan and are necessarily rough; while the average used for wages are often too large, being derived from unrepresentative samples.

The estimates for entrepreneurial withdrawals are guesses, though rather elaborate statistical techniques are utilized. Writing without benefit of the 1930 Census, he was forced to fit a parabola on the basis of the Business Profits Tax returns to obtain the number of entrepreneurs in home industry and commerce below the exemption point of this tax. The results when checked with the 1930 Census were disastrous. Again, he omits entirely medium and small entrepreneurs; income in mining, declaring that they were too few to be worth considering. Yet the 1930 Census gives 3396 employers and 4569 independents.

His net rent is taken directly from the Shuzeikyoku Nempo Sho, Class C Income Tax. But this tax is levied only on those with taxable income of 1200 yen and over. In this sense this figure is an under-estimation. On the other hand, since he fails to deduct costs incurred in the earning of the rent, the figure includes more than what it should. These general comments are sufficient to indicate the crudity of Hijikata's work; (For more detailed comments, see Section C).

Hijikata's work is important in that it is the basis of several estimates which are extensively used, although its extensive use is partly due to the fact that ^{it is} since the only study made on the basis of aggregating factorial payments or type of income payments, it reveals much that is not found in the other basic study, that of CBS. Studies based upon, and derived from Hijikata's estimates are the following: Estimates published by the Mitsubishi Economic Research Bureau in their Monthly Circular, and in their volume, Japanese Trade and Industry. Various indexes such as prices, bank clearings, wages, foreign trade, assessable income, etc., are used to extrapolate or modify Hijikata's estimates. Prof. Kei Shibata in the Kyoto Imperial University's Economic Journal (Keizai Ronso), the League of Nation's World Economic Survey (1937-38), Mori and Redman in their Problems of the Far East, and others with modifications use Hijikata's estimates.

The other basic study is by the Cabinet Bureau of Statistics' in 1930

which is by all odds the best. This one should not be confused with the 1925 study, which was a hasty affair. A detailed description of this study is given in the monograph of the Japan Economic Federation, National Income of Japan, 1930-39, which also gives a convenient summary of various other studies. A detailed discussion and revision of this study is made in Section B.

Generally speaking, the CBS fails to deduct items which are clearly costs and not part of national income. Also its treatment of government income and business taxes is not satisfactory. Duplications are not entirely eliminated in finance income. For commerce, home industry, and professions, the samples used do not seem to be representative producing an upward bias. Depreciation is not fully deducted, while depletion in mining is not taken into account.

The CBS estimates for 1930 have been the basis for numerous other studies with respect to years after 1930. The three most important ones are the Takahashi, Japan Economic Federation, and the Finance Ministry extrapolations. The estimates of the first are published in Takahashi's Sensō to Nippon Keizai Ryoku, (War and Japan's Economic Strength), 1937. Takahashi employs various indexes, mainly taken from production, to extrapolate without any modification the CBS' 1930 results. In the appendix of his book, he makes 4 sets of estimates using various types of indexes, production, income tax, factor payments, etc. He adopts the estimates

derived from production indexes, which happens to give the largest estimates on the average for the various years.

For manufacturing, fishing, agriculture, and mining, production figures may be suitable, but for trade, the professions, banking, transportation and communication, government, etc., they are not suitable as tax data, especially Business Profits Tax. Instead of making 4 sets of estimates, he could have split the individual categories into more detailed divisions, and applied appropriate indexes. This study is deficient, therefore, because of its all embracing divisions, and use of inadequate indexes.

The Japan Economic Federation, op. cit., overcomes partly these objections by using more minute divisions, and employing a greater variety of indexes. But these things are not carried far enough. Another objection-- and this is applicable to the Takahashi estimates also--is the assumption explained in the following paragraph: (p. 46-47)

"It was assumed that the ratio of net income to gross output kept the same throughout 1930-39, both inclusive. In other words, it was assumed that the percentage of expenses to gross output did not change. This is exactly the same assumption as Mr. Takahashi's Assumption No. 1. It will cover the whole range of agriculture and the aquatic, mining and manufacturing industries."

This ratio may be fixed in a stable economy not undergoing changes in its structure. This cannot be said for the Japanese economy during the 'thirties. Cyclically, the system reached its trough around the last quarter of 1931, after which there was a steady rise. The shift from

light to heavy industries was pronounced already in the latter half of the 'thirties. Cyclical changes alter the cost-output relations, increasing the costs relative to output during the extension stage of the cycle. Industries vary in their ratios of net value added to gross value. For example, in the CBS 1930 study, the ratio for the textile industry was 18.7%, for metals 24.9%, for machine tools 47.5%, for pottery 63.5%, etc. If there is a shift from light to heavy industries, from textile to war industries, the ratio cannot be expected to remain constant. The failure of the Federation to deal with these problems leaves the character of their estimates in great doubt.

Again, most of the Federation's 1938 and 1939 estimates are not based upon official gross production data. Since their estimates were made in 1939, it was not possible for the Federation to secure them; hence, it was compelled to estimate gross production totals. These estimates turned out to be considerably off. Lastly, the choice of indexes in fields where gross production data were not available did not seem suitable.

In spite of the above, the CBS 1930 estimates are indispensable. Unlike Hijikata, the CBS had access to the results of the 1930 Census. Working with a large staff, it was able to send out questionnaires to 28,856 households and 1,289 factories. But most important of all, the method pursued by the CBS is apt to produce the best results--far better than the type of payment method of Hijikata for Japan. This arises from the character

of Japanese statistics. For most of the industries, over-all data on employment, wages, ^{entrepreneurial} withdrawals, rent, interest, etc., do not exist, while for most of the industries and most of the years, over-all gross output data are published annually by the government.

The Finance Ministry employs anticipated income tax totals to extrapolate the CBS 1930 total (no breakdown is attempted). A great deal of interest is shown in the Ministry's estimates because of its announcement of estimates for 1943, 1944, and 1945, years for which no other estimates are obtainable. But very little information is found for these recent estimates. For years before 1940, the Ministry used anticipated income tax receipts, as explained above; it is probable that the same method was used to obtain the recent figures. The following figures were given out by the Ministry:

	(in billion yen)	
	<u>1942/43</u>	<u>1943/44</u>
A Taxes and the like	7	10
B National Bonds	17	21
C Plant Expansion	6	6
D National Consumption	<u>15</u>	<u>13</u>
Total	45	50

These categories appear strange to those working with national income figures. For example, C could be financed out of the receipts of A & B, thus there will be a duplication. National Bonds could be purchased from income earned from the previous year, or proceeds from the sale of assets, or income derived from investments from conquered areas and dependencies, which can amount to a considerable sum.

When A is checked with Budget data, which give 7.4 billion yen for 1942/43, and 9.8 billion yen/1943/44 for total taxes and like, it becomes evident that A is directly taken without modification (except rounding off) from Budget data. But if this is so, A is made up not only of business taxes, but of personal taxes, commodity taxes, income from government property and enterprises, etc., which generally are excluded from national income. If in this respect A includes too much, in another respect, it omits a major item, namely, business taxes collected by local governments, which may come up to about several of billion yen.

It is difficult to trace the origin of the last item D, national consumption. The other items could be lifted from budget and other convenient sources; it is possible that D could be an estimate from the Planning Commission. This is not likely, for the figures do not seem plausible. In 1941/42, the Finance Ministry's estimate for national consumption was around 18 billion yen. With the rapid rise of prices during these 3 years, it is impossible for the value of goods consumed to fall from 18 to 13 billion yen. These figures are absurd. Instead of being derived from the Planning Commission data, it seems more reasonable to suppose that D is a residual obtained by deducting the other three components from total national income, which in turn was derived by extrapolating the 1930 study of the CBS' by means of income tax receipts (anticipated, not realized.)

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Thus to take the Finance Ministry totals too seriously as so many do may be dangerous. It is doubtful that the Finance Ministry intended these figures to represent national income (either net or gross) as known among national income economists. The title of the Ministry's estimate in Japanese characters means "income of the nation's people"; and though Japanese academic economists have used the same characters to denote national income as used by economists in the West, it is also subject to the interpretation of people's income, as used by the man on the street. Since the components of the Ministry's total are not those used in national income studies by economists, even in Japan, and since there is nothing in the Ministry's release of the data to indicate the use of the term "national income in the strict sense known to economics, these estimates should be used with a great deal of caution. (On the basis of these totals the FEA has constructed an elaborate table of gross and net national product.) The Ministry intended these figures not for elaborate use for Government purposes, but for purely propaganda purposes--to try to reduce civilian consumption and urge greater savings for the war program, ^{in order} to combat inflationary tendencies. For this reason the estimates were widely published in daily newspapers and extensively quoted over the radio, and the totals for consumption show a drastic decline each year.

The Procedure to be Followed in this Study

This study will be divided into three parts. In Section B, national

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income is calculated by the gross value-minus-cost (or credit) method. The period covered is from 1930-1942, inclusive; after 1942, lacking over-all data of any kind, the Finance Ministry's total (which is assumed to represent the rate of increase in income tax receipts) will be used to extrapolate the 1942 total for each year. Whenever unsatisfactory, the CBS 1930 estimates for different segments of the economy are modified.

In Section C, the type of income payments (used in the U.S. by Kuznets and the Commerce Department) will be used. Calculations will be for only two years, 1930 and 1937. Frequently, the totals calculated in B will be used as controlling totals to obtain residuals for which direct estimates seem impossible. Also, in this section, which resorts to the extensive use of population statistics, an attempt, to determine the size of different socio-economic groups will be undertaken.

Lastly, in Section C, national income will be divided on the basis of the size of household income, which will give a rough picture of the distribution of income in Japan. This will be done only for 1930.

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SECTION B. DISTRIBUTION OF NATIONAL INCOME ACCORDING
TO INDUSTRIES BY THE GROSS-MINUS-COST METHOD

As stated previously, the gross-minus-cost method is the best approach to Japanese national income calculation. The purpose here is primarily to obtain the best national income total for the economy as a whole, and only secondarily to obtain subtotals for the different industrial segments. Thus, when these two aims conflict, as they often do, the latter yields to the former.

Since the 1930 CBS results are used as bases, its definition of national income must be discussed. The CBS defines national income as "aggregate net profits," but in the actual calculation, this definition boils down to the generally accepted one, namely, the net value of all economic goods and services produced by the nation.¹ There are several deficiencies in the attempt of the CBS to estimate the net value product. These will be summarized below.

Government net value product. Modifications involved on this point were substantial; several complex problems were involved. The CBS' method was to take only salaries and wages paid out by the government, omitting returns on government property or realized interest and at the same time leaving business taxes in for the various industries. In

1. For the CBS methodology, the main reliance will be on Tokei Jiho (Current Statistical Report) published monthly as a medium for the discussion of methodology pursued for different surveys. Number 44, September 1933, issue deals in detail with the national income survey.

the modification, all business taxes and part of agricultural taxes were deducted on the assumption that these were equivalent to services rendered by the government to production. In arriving at the government's net value product, an imputed return to government tangible assets was added to the wages and salaries paid out.

The CBS in the case of government-owned industries used a category "government profit." An examination of such surpluses showed that, except in the case of railroads, they were transferred as revenue to the general account or they were added to the capital of the special account producing such surpluses. In any case, it seems that they were nothing more than depreciation and other costs for which adequate deductions were not made by the CBS, and also interest on capital. The last is, of course, national income and as such was included in their respective industrial categories. (Such government property was excluded in the total for government net value.)

Net Value Product of Finance. The CBS methodology for banking is as follows: since it did not deduct either short or long-term interest as cost from the gross income of other industries, such interest (together with dividends) received by banks were excluded from banking net income. From income other than interest and dividends were minused light, heat and transportation costs plus payroll.

Such a method is apt to result in certain duplication, (especially, since interest on government bonds was not eliminated and since certain cost items, particularly taxes, were not deducted.)

The CBS method was modified by a method which adheres strictly to the net value product formula (since the chief purpose is to obtain a correct total net value product of the economic system.)

Inter-corporate dividends and interests. This problem does not arise in most cases. For mining, manufacturing, agriculture, and fishing, the gross value of production of commodities was used as gross income. For trade and service, total receipts from sale of goods and services were used. In both cases, interest and dividend received were not included as income or receipts. For transportation, communication, and finance, care was taken to leave such incomes.

In the same way, income seeping in from colonial areas was not included.

Depreciation and depletion. Only in few instances was depreciation specifically and directly dealt with. In most cases, i.e., agriculture, home industries, transportation, trade, services, the cost and repair of tools, instruments, and machines were used in place of depreciation. On the whole such substitutes did not fully cover depreciation.

CBS failed to deduct depletion which is an important

item in mining. Consequently an attempt to divide mining net value into the various distributive shares and business savings left a large amount of unaccountable residual.

Minor cost items. In addition to the above, several minor cost items were not fully accounted for. These were: lighting and heating for agriculture, communication, transportation, and advertising costs for manufacturing, and others.

Lastly, reclassification. In the CBS study, construction was grouped with manufacturing, while trade, finance, and parts of service were lumped together under commerce. In this paper, these will be separated into: construction, trade, finance, service, and government, in addition to the categories, agriculture, fishing, mining manufacturing, transportation and communication. This rearrangement is to facilitate comparison with Western studies.

Geographically, the CBS estimates cover what is commonly known as Japan Proper. That is to say, it includes Hokkaido but not Korea, Taiwan, and Karafuto. Such is the case since the CBS has used gross output figures of Japan Proper only. However, this may not have been strictly adhered to in the case of commerce, when the CBS used Kaisha Tokeihyo (Company Statistics). The latter includes interest and dividends received by parent Japanese companies from subsidiaries in the dependencies and elsewhere. From the way the data are compiled for Kaisha Tokeihyo, it is impossible to segregate such income. Hence the inclusion of such incomes, though

small will tend to cause an over-estimation.

Except for the items noted above, the CBS 1930 estimates and method will be used, generally speaking. Thus, indirect taxes are excluded, inasmuch as the gross output was calculated by use of wholesale prices exclusive of consumption taxes. Also, excluded are "the values of services of housewives and other members of the family, services derived from the combined ownership and possession of houses, motor-cars, furniture, and other durable goods used for personal enjoyment, and of earnings from odd jobs and illegal pursuits. It also excludes changes in the value of assets."¹

Agriculture (inclusive of forestry). The estimates for agriculture are subject to many difficulties. First, it is impossible to check the completeness of the coverage of the gross value totals. There is no doubt that certain amount of the product raised and consumed by agricultural households is omitted but probably the amount compared to the total is small. In addition, several minor costs items were not deducted by the CBS for 1930, namely, items such as costs of fuel and lighting, transportation costs, etc. None of these items are very important and even when put together do not constitute a substantial sum. Probably the two factors above will cancel each other to a large degree.

As to depreciation, since the peasants do not in practice bother with it, the CBS took the cost of tools and implements purchased as representing depreciation. This is

1. Japan Economic Federation, National Income in Japan, p. 8, Tokyo, 1939. This monograph gives the most extensive description of the CBS study in English. Much of the calculations and discussion below will refer to this monograph. However, there are a few instances in which its translation and interpretation of the CBS study are not accurate.

probably just as good a method as any. Only, perhaps part of the cost of land and building improvement should have been included.

No interest charges were deducted as a cost item. For the economy as a whole this practice is permissible since the CBS appears to have deducted such incomes from the financial institution's net value product. But for purposes of measuring the net contribution of agriculture to the aggregate net value, such a procedure would tend to overstate agriculture's net value, if one interprets the amount paid by agriculture for interest charges as the value of services rendered by financial institutions to agriculture. Even if there were data making possible the division of the total interest paid out into distributive share and expenses paid out to other enterprises, it will be impossible to determine agriculture's contribution to the aggregate net value because some of the interest is paid on fund borrowed for non-agricultural purposes. Even if all these difficulties are overcome, it does not follow that deduction of agricultural interest paid to banks would give the net contribution by agriculture for this item. There is no reason to assume that interest on funds borrowed from banks is a cost whereas interest on funds borrowed from individuals is not a cost for the determination of a total which denotes agriculture's contribution to the national product. Hence, these figures should not be interpreted as measures of agriculture's relative productivity.

Another problem concerns the treatment of taxes and like burden. No deductions for these items were made by the CBS. Unlike in industry, it does not appear reasonable to consider the total amount of taxes paid by agriculture as equivalent to the amount of government services rendered. Especially is this true for a country like Japan in the process of industrialization. If one considers an extreme case, Meiji Japan, there can be no doubt that the costs of industrialization in which the government took an active and substantial role, must fall heavily on agriculture, the only other major productive source. This is probably the basis of the perennial complaint of the farmers against high taxes and the feeling amongst them that they are being too heavily taxed relative to urban industries -- a feeling which seems to have the support of a considerable number of economists in the field of public finance. (This is especially true prior to the adoption of land taxation on the rental value of land instead of the old registered value of land.)

On the other hand, there is no doubt that government service has been rendered to Agriculture as an economic activity and which service is thereby embodied in the agriculture gross production. The problem is to determine the portion of taxes paid which represent such government service. This is a difficult operation which even in American studies have not been adequately carried through, though attempts have

been made. Short of an exhaustive analysis of public finance, the only alternative is to make some bold assumptions. For 1930, all the expenditures of the Agriculture and Forestry Ministry (in both the ordinary and the extraordinary budgets) were assumed to be the total expenditure of the Central Government to agricultural activity; also all of the receipts from local taxes (except city) on land were added to obtain the total of government expenditures devoted to agriculture production.

1930-31 Fiscal Year (in thousand yen)

31,777	= Agri. and Forestry Ministry: General Account
27,078	= Agri. and Forestry Ministry: Special Account
72,994	= Prefectural Land Tax
9,389	= Prefectural Special Land Tax
32,333	= Town and Village Land Surtax
4,467	= Town and Village Special Land Tax
<u>177,038</u>	= Total Expenditures to Agriculture.

This is equal to about 53% of the total taxes (inclusive of house taxes) paid by agriculture households, and about 4% of total government expenditures. (According to Nelson and Jackson, in Studies in Income and Wealth, vol. 2, p. 329, it was 8.6% for U.S. in 1936.) The 4% is probably an understatement but in the absence of a better percentage, the amount it represents, 177 million yen will be deducted from the CBS 1930 total of 1,883 million yen, giving 1,706 million

yen as the revised total.

Lastly, the problem of subsidies must be taken up. Up to 1939, under the Rice Control Law, the Government was active in the rice market, in much the same role as a central bank in the money market, buying to keep the prices from falling too low and selling to keep them from rising too high, thus attempting to stabilize them. Up to 1935, during the low-price, bumper crop period, the Government's purchases exceeded its sale; after 1935, it was the converse. No trouble is encountered with such transactions. But from 1939, under the Rice Distribution Control Law, the Government in an effort to keep the cost of living low, began to give out subsidies to consumers by buying all rice from the farmers and then selling to consumers at a price lower than the purchase price. Such a differential in no way affects the costs of production and since the price at which the farmers sold to the Government is more nearly the market price (and the price used to arrive at the gross value of output), no modification is necessary here.

For Years after 1930. When the above modifications are made to the CBS total of 1,883 million yen, the revised total for agriculture and forestry will be 1,706 million yen for 1930. For the other years the problem is essentially one of finding adequate gross production figures to extrapolate the revised total mentioned above.

After looking over K. Takahashi's¹ gross production figures, it was decided to use his results for the 1931-1937 years. His gross totals have the same coverage with minor discrepancies as the CBS 1930 gross total, except for forestry. Mr. Takahashi includes fuel wood which the CBS does not. Hence, his total for gross value produced in forestry is 48 million yen larger than the CBS one. Thus, the gross value of forestry produce should read in million yen:

1930 = 170	1936 = 285
1931 = 156	1937 = 369
1932 = 162	1938 = 492
1933 = 201	1939 = 748
1934 = 240	1940 = 868 ^a
1935 = 246	

a. This is an estimate based upon the known total output of timber for 1940. The rest of the data is taken from Norinsho Tokeihyo.

It was decided to adopt the Takahashi data for 1931-37 for though his forestry produce is an overestimate, his agricultural produce one is an underestimation; so that a recalculation would make only a slight difference in the net value figures.

For 1938 and 1939, the Federation's estimates, based upon incomplete data, prove to be too small. The following totals taken from Norinsho Tokeihyo (as quoted in Jiji Domei,

1. In his book, Senso to Nippon Keizai Ryoku.

1944) are the following in million yen:

<u>Norinsho</u>	<u>Federations'</u>
1937 - 4,287	4,328
1938 - 4,621	4,440
1939 - 6,797	5,209 ^a
1930 - 7,183	

a. The discrepancies in the 1937 data are due to the Federation including fuel wood value.

If the gross totals are multiplied by 70% (the CBS percentage of net to gross income, see Federation op. cit., p. 50) the net value product of agriculture for 1938, 1939 and 1940 is obtained. But is this sufficient?

In the above procedure, it is assumed that the ratio of net value added to the gross value of production remained constant since 1930. How valid is such an assumption in agriculture?

Hijikata¹ shows in a graph (in which he plots the net income and gross value of production in agriculture from 1900 to 1930) that this ratio is not by any means constant. It is true that Japanese agriculture has undergone relatively slight changes in its structure (i.e., the amount of land owned or land cultivated; the degree of mechanization and capital invested; labor employed, etc.) But the use of the net-gross ratio in agriculture introduces an added element of

1. S. Hijikata, Kokumin Shotoku no Kosei (Composition of National Income), Tokyo Imperial University, 1932, p. 164.

hazard (when compared to industry). And this results from the peculiar nature of what D. H. Robertson terms the "period of gestation," in agriculture. The expenses of most agricultural production are incurred during the first half of the year while the price and volume (and thus the total value) of agricultural production are realized during the second half of the same year (especially is this true of rice production.) The relation between the amount of expenses incurred and the total value realized is far less than in industry, where both expenses and the sale of the goods produced go on continually throughout the year in a more or less steady stream. Hence, if weather conditions are bad, the crops may be small, with no relation to the total expenses incurred. Or, prices of crops harvested may have nothing to do with the prices the farmers paid for their fertilizer, etc. (All this holds true for the short-run period.)

The above suggests the importance of considering the cyclical factor. The CBS ratio of 70% was established for a period in which the prices of agricultural products were declining, which means that expenses were incurred at a general price level higher than that at which the resulting products are sold. Clearly, on the basis of this factor alone, one would expect the ratio to be an underestimation.

These theoretical considerations force one to go one step further than the Federation's analysis -- and that is

to examine the ratio of net to the gross value of production in agriculture. Nothing better than the average expenses of rice production published by the Agriculture Ministry, were found. From these, wages, rents, interest and other minor expense items which do not come within the CBS definition of agricultural expenses were deducted. In this manner was calculated the total average expenses per chō, which were divided by the average value of rice yield per chō. The following Table shows the results.

The figures in column G of Table 1 indicate that the use of the CBS' 70% ratio of net to gross value for the years after 1931 results in an underestimation of agricultural net income.¹ These results bear out the remarks made above concerning the lag between expenses and gross value realized and show that the assumption of the constancy of the 70% ratio is not valid. Some sort of correction is necessary. Can the index in column G be used for this purpose?

Rice is the crucial crop in Japanese agriculture, accounting for about half of the gross value of the total agricultural production. But does it reflect the cost and net income condition of the other half of agriculture? The others are wheat,

1. When column G is compared with the price index of rice, one can see why the rise and fall of the price of rice is such a heated political subject in Japan. The time lag between the expenses incurred and products sold by the farmers gives the latter a vested interest in inflation making all the difference between ruin or prosperity. The price index shows a steady decline from the peak in 1924 to the bottom in 1931 and steady rise up to 1940.

Table 1

CALCULATION OF THE RATIO OF NET VALUE ADDED TO GROSS PRODUCTION^a

	A	B	C	D	E	F	G
	Total Value of Rice Pro- duced (yen)	Total Areas Under Rice culti.	Average Value of A/B rice per cho (yen)	Average Expenses Per cho (yen)	Ratio of expenses to yield per cho (%) (D÷C)	Ratio of Net value added to gross value (%) (100 - E)	Index No. of F
	In Billions						
1930	1.118	3.24	340	170	50	50	100
1931	.913	3.25	280	153	55	45	90
1932	1.235	3.26	380	151	40	60	120
1933	1.434	3.17	450	174	39	61	122
1934	1.385	3.17	440	170	39	61	122
1935	1.611	3.20	500	182	36	64	128
1936	1.865	3.21	580	197	34	66	132
1937	2.072	3.22	640	226	35	65	130
1938	2.173	3.22	675	240	35	65	130
1939	2.864	3.20	895	292	33	67	134
1940	2.554	3.18	803	377	47	53	106
1941	2.299	3.18	723	380	53	47	94

a. Data from Norinsho Tokelhyo; those for 1939, 1940 and 1941 are as quoted in Jiji Domei Nenkan, 1944. 1941 total is an estimate.

forestry, cocoons, and various miscellaneous crops. To a certain extent one would expect a certain relationship in cost conditions (with the exception of cocoons). But this cannot be said of gross receipts, although weather conditions would affect all of the crops in the volume of production. (In a more detailed study, these problems should be thoroughly investigated.) After looking at the indexes of gross value for crops other than rice, it seems safe to confine the indexes in column G, Table 1, only to half of the gross value of agriculture. Column G, thus modified is shown in the second column of Table 2, which also contains estimates of the national income of agriculture. Except for 1931, the estimates are all larger than those of the Federation; the discrepancy is due to the rejection of the Federation's assumption of a constant ratio of net to gross value throughout the decade of the turbulent thirties, (which, in Japan, were years in which practically no important economic category could have been said to be constant).

What of 1941 and 1942? The Jiji Domei Nenkan, 1944, gives the volume of rice and wheat grown, together with their official rice indexes. The latter appear to be stabilized at the 1940 level so that only volume need to be considered. (Also, the expense items for 1941 show only a slight increase: from 377 yen per cho to 379). Hence, for 1941 and 1942, it may not be far from the facts to extrapolate in the following

Table 2

NET VALUE PRODUCT OF AGRICULTURE

	Index of the ratio of net value to gross (Col. G.)	Modified Column G Index ^a	Modified CBS ratio of net to gross (%)	Gross Value of Production (Million yen)	Index	Net value Product of agriculture (Million yen)
1930	100	100	70	2,706	100	1,706 ^b
1931	90	95	67	2,217	79	1,346
1932	120	110	77	2,601	106	1,815
1933	122	111	78	3,250	135	2,296
1934	122	111	78	2,940	122	2,078
1935	128	114	80	3,428	146	2,484
1936	132	116	81	3,793	163	2,783
1937	130	115	81	4,328	186	3,177
1938	130	115	81	4,621	199	3,392
1939	134	117	82	6,797	296	5,050
1940	106	103	72	7,183	275	4,683

a. Calculated by adding 100 to each value in Col. G and dividing by 2.

b. The drop in net value added in 1940 was due largely to huge increases in expenses, especially fertilizer costs which rose about 50%.

manner:

	<u>Rice</u>	<u>Wheat</u>	<u>Total</u>	<u>Index</u>	<u>Net value Product of Agriculture</u> (million yen)
1940	60,874	26,879	87,753	100	4,683 ^a
1941	55,088	23,918	79,006	91	4,265
1942	66,772	23,484	90,256	103	4,826

a. Taken from Table 2.

It is possible to make estimates for 1943 and 1944 on the basis of published figures of the goals of planned agricultural production established by the Government. But these seem much too large (about double the 1942 volume) to be attainable in an economy beset with labor shortages. Besides, goals in agriculture are difficult to attain due to the heavy reliance of farming processes upon weather conditions.

Fishing. The gross value totals in this industry probably fail to include amounts consumed by the fishermen on their fishing trips, portions of clams, crabs, and other miscellaneous fishes caught near the shores, and other minor items. The underestimation here is probably offset in a large measure by the fact that the CBS failed to deduct certain minor cost items such as portions of depreciation, etc.

CBS included taxes and other burdens. Since these are assumed to measure the degree of government services rendered to fishing, they are cost items to be deducted. The revised total, therefore, is 186 million yen for 1930, deducting

4 million yen, estimated in the previous section from 190 million yen.

Gross Value for Years after 1930. The Takahashi-Federation totals of gross production are much too large, e.g., 487 million yen compared to the CBS 294 million yen for 1930. This is because the larger ones include fishery manufacturing. In Table 3, gross value data together with the calculation of net value are presented.

Table 3
PRODUCTION IN, AND NET VALUE ADDED BY, THE AQUATIC INDUSTRY
(in million yen)

	<u>Takakashi Federation Totals for gross value</u>	<u>Norisho Totals^a</u>	<u>Index of Totals</u>	<u>Net value</u>
1930	487	289	100	186
1931	423	253	89	166
1932	428	256	90	167
1933	490	286	100	186
1934	537	312	109	203
1935	553	318	110	205
1936	328	368	129	240
1937	350	385	133	248
1938	371	442	153	285
1939	393	623	216	403
1940	---	796	273	509

a. Includes only coastal fishing, deep sea fishing, trawler fishing and fishing in Siberian waters -- data for all of which are obtainable from Norinsho Tokeihyo, 1939. (For 1939 and 1940, as quoted in Jiji Domei Nenkan, 1944). The CBS gross value is 294, 5 million yen more than b. This slight difference may be due to that part of fishery which is not covered by Norinsho Tokeihyo. This discrepancy is taken into account by extrapolating the CBS net value figure of 190 million by an index instead of the more direct method of multiplying gross value totals by 64%.

It was assumed in Table 3 that the ratio of net value

to gross value was constant. If there were any statistical material, it would have been possible to investigate the trends in expenses. But there is none. In all likelihood though this ratio is not constant, the changes may be so small that such an assumption is defensible. There have been very little structural and technological changes and shifts within the aquatic industry, as for example an examination of an index of physical production will show. (In 1930, this index stood at 106, with 1929 as base year, and in 1940, at 127.9.) Whatever substantial changes occurring were largely due to price changes, which, unlike in agriculture, do not upset entirely the cost-gross value relationship. The exceptions may be the years 1939 and 1940, when the institution of gas rationing may have increased costs relative to gross receipts. Hence, the net value estimates for these two years may be too large, but modifications were not made since quantitative measure of increases in expenses were not obtainable.

For 1941 and 1942, there is nothing better than the number of workers engaged in fishing with which to estimate the volume of production. Instead of the general wholesale price index, the index of food prices was used.

The following is the calculation:

	No. of workers ^a (<u>in thousands</u>)	<u>Index</u>	Wholesale ^b <u>Price index</u> <u>of food</u>	<u>Adjusted</u> <u>Index</u>	<u>Net value</u>
1940	274	100	100	100	509 ^c
1941	288	105	102	107	545
1942	281	103	106	109	555

a. According to the semi-annual investigation of the Welfare Ministry. The 1942 figure is as of July 1942, while the others are as of Dec. The July figures would have been better but they were not available. However, the discrepancies are probably so small as to be inconsequential.

b. CBS.

c. Taken from Table 3.

Mining. Substantial modifications of the CBS 1930 study are necessary here. First of all, the CBS failed to deduct depletion, an important item in mining. The questionnaires sent out for mining contain an item for depreciation of tools, and machinery only. Also, in Section C, an attempt to separate the total national income of 250 million yen of CBS 1930 study resulted in a large residual of about 60 million yen after deduction for various factor payments, corporate profits, and taxes. Part of this residual is due to the failure of CBS to deduct depletion. (Hijikata, by the factor payment method, estimates 167 million yen for mining inclusive of corporate savings for 1930.)

Since there is no adequate information available on depletion, it was decided to use the percentages of depletion to gross income as specified by the U.S. Federal income tax statute. These are: 27.5% for petroleum, 5% for coal mining

and 15% for metal mines.¹ These were applied to the gross output of petroleum, 15 million yen, of coal, 194 million yen, and of metals, 64 million yen, to obtain a total depletion of 25 million yen for 1930.

Also, taxes of 9 million yen needs to be deducted, assuming that government service to this amount was rendered to mining. Thus, a total of 34 million yen of cost item will be minused from the CBS 250 million yen to give for 1930, 216 million yen, as the revised 1930 total.

For Years after 1930. After 1936, the Japanese government ceased the publication of gross value of production statistics. For the period up to and including 1937, it was decided to use the official gross production totals as the basis of the extrapolation of the CBS' 250 million yen as net value added by mining in 1930. For short periods the use of gross value production figures are less objectionable; especially is this true for the Japanese mining industry which seemed to have undergone very little change for the period up to the outbreak of the "China Incident." Since then, undoubtedly the needs of a war economy (which are qualitatively and quantitatively different from those of a peace economy) have caused vast and significant changes within the industry.

1. These percentages appear reasonable when compared with the amounts deducted by various mining companies whose balance sheets appear in the Kabushiki Kaisha Nenkan, 1939 (Yearbook of Stock Companies). Depletion deductions ranged from 5 to 20%.

Therefore, it seemed best to use indexes based upon income payments for years after 1936. In Japan as elsewhere, the needs of planning in the economic sphere have forced the government to collect rather comprehensive wage and employment statistics. Especially from 1939 on, these statistics become rather plentiful. The annual payrolls for 1939, 1940, and 1941 on the basis of data supplied by the Cabinet Bureau of Statistics were calculated. For 1938 and 1939, the 1939 results were extrapolated backwards by use of the Bank of Japan indexes of mining employment and earnings. To these figures were added for each year, the total net profits of mining companies as supplied by Kaisha Tokeihyo. The total of these constitutes about 65% of the total net value added by mining each year. Such an index, is a far better guide than gross value of output (even if available) since being actual income data, they reflect whatever changes occur during these years.

Table #
NET VALUE PRODUCT OF MINING

	Gross Value of output (million yen)	Net Profit of mining cos. (mil. yen)	Total payroll (mil. yen)	Total of b and c	Index number of a	Net Value (mil. yen)	Index Number of d	Net Value (mil. yen)
1930	308				100	216		
1931	242				79	171		
1932	255				83	179		
1933	354				115	248		
1934	432				141	305		
1935	504				164	354		
1936	589	113	183	296	196	413	100	
1937	--	131	225	356			120	495
1938		179	313	492			166	685
1939		186	410	596			201	829
1940		209	461	670			227	935
1941		233	553	786			266	1,097
1942				844			285	1,175

- a. 1930 figure is CBS'. The other years are official data, as cited in the Japan Economic Federation monograph, op. cit., p. 55. The latter, by the use of the physical production index and the wholesale price index, estimates gross output for 1937, 1938, 1939, which estimates are not used here.
- b. Taken from Kaisha Tokeihyo, 1938. Later years are taken from Jiji Domei Nenkan, 1944.
- c. Each of the last three years was calculated in the following manner: the daily payroll of the entire industry was obtained by multiplying the average daily earnings of men and women workers (CBS data) by the number of male and female workers (Welfare Ministry data); for 1939, (2.722 x 482,000) - (1.086 x 52,000). This sum was multiplied by estimated average number of days worked per year: 300 x 1,368,000 = 410,400,000 yen. The number of days worked was arrived at in the following way: figures on total days worked and number of workers are published up to 1935. Dividing the former by the latter, one gets the following number of days worked per worker: 256 in 1930, 252 in 1931, 264 in 1932, 270 in 1933, 271 in 1934 and 272 in 1935. With the upward swing of the business cycle, there is a trend toward greater number of days worked. Unfortunately no later figures are available. The Factory Statistics for 1939, when already labor shortages began to appear in different parts of the economy, gives 3,003 hours worked on the average (obtained by dividing total workers and total hours worked); this divided by 10 hours per day gives 300. 300 working days out of 354 may appear too small until one remembers that it is an average including days worked by those employed only part of the year.

For 1938 payroll, the 1939 total is extrapolated backward by using the Ek. of Japan's index of mining earnings and employment,

which were converted to a 1937 base year:

$$410 \times \frac{115}{126} \times \frac{117}{135} \times \frac{290}{300} = 313 \text{ million yen for } \dots$$

The last fraction $\frac{290}{300}$ is used because an average working day of 290 is assumed. For 1937 and 1936, 280 and 275 are taken as the average days worked.

$$410 \times \frac{100}{126} \times \frac{100}{135} \times \frac{280}{300} = 225 \text{ million yen for 1937}$$

$$410 \times \frac{90}{126} \times \frac{90}{135} \times \frac{275}{300} = 183 \text{ million yen for 1936}$$

- f. This column is the same as the Federation's with the exception of its 1932, which was miscalculated.
- h. Obtained by extrapolating 477 by the indexes in g. See the text for the estimates of 1942.

For 1942, estimates of corporate profits and total payroll are made in the following manner:

	a	b	c	
	Co. Profit	Index	Est. Profit	No. of workers (thousand)
1941	45,864	150	233	581
1942	49,588	108	252	585

	d	e	f
	Index of Mining Earnings	With 1941 Base	Adjusted Index
1941	194	100	100
1942	205	106	107

	g	h
	Estimated Payroll	Estimated Payroll
1941	553	553
1942	592	592

- a. According to Toyo Keizai investigation for mining companies.
- b. 1941 from Table 4.
- c. Welfare Ministry report.
- d. Bank of Japan index.
- f. 1941 figure from Table 4.

Now, if 252 and 592 are added 844 is obtained (or an index of 285 with 1936 as base year). Extrapolating, one gets a net value total of 1,359.

The above method of estimating mining income after 1936 was chosen, instead of the Federation's, for two reasons. The index of mining volume is not available after 1939. Secondly, the use of general wholesale price index to adjust volume index (used by the Federation) is too crude a procedure. No wholesale index of mining prices is available.

The method in Table W after 1939 probably produces a slight over-estimation. This is due to the fact that profits and payroll rise faster than the other incomes under post-1939 conditions of full employment and increasing prices.

Manufacturing. Being a large field, manufacturing will be divided into privately-owned factory industry, government-owned factory industry, home industry, and others, and separate calculation for each made. But unlike the CBS study, construction in accordance with American practice will be separated and put into a category of its own. For convenience, the estimates for each of the four subdivisions of manufacturing will be made on the basis of the CBS 1930 estimates, and after these have been totalled for each year, the corrections of the 1930 estimates will be applied to the grand totals. (For the precise demarcation of each of the four subdivisions, see Japan Econo. Federation's monograph, p. 57-71.)

Privately-Owned Factory Industry. Private manufacturing not covered by Factory Statistics will be classified under home industry. Hence, by definition, the coverage of this group, privately-owned factory industry, will be the same as that of Factory Statistics.

The Federation has used the gross values given in Factory Statistics up to 1937 and estimates of gross value for 1938 and 1939 (by means of indexes of the volume of industrial production and wholesale prices) to extrapolate the CBS' net value for factory industry. How valid is such a procedure?

Japanese factory industry underwent considerable changes in the thirties. Between 1930 and 1939, the gross

value of output of the textile industries increased only about 60% while that of the heavy industries increased fourfold. The ratio of net to gross value in textiles was 18.7% in 1930 while that of heavy industries averaged 40%. Clearly, such a structural shift could upset the over-all net-gross relationship of factory industry as shown in the CBS 1930 study.

In the Takahashi-Federation study, net value for 1931-37 was derived by extrapolating the CBS' over-all total of net value for factory industry, 1,899 million yen. Such a method fails to take into account the aforementioned shift in the composition of Japanese factory industry which by 1935 had already started.

In addition to structural factors, technological changes within a given industry can upset the net-gross ratio of 1930. Such changes must have been considerable for industries such as chemical, metallurgical and machine tool industries. For example, the entrance of the Zaibatsu into the heavy industries bringing with it modern and mass production methods could have forced competitors to adopt these newer methods, thus resulting in a greater use of capital than before.

In addition to the above criticisms, the 1938 and 1939 estimates are objectionable because of the inadequacy of their gross production estimates. After an extended discussion, the Federation decides to use gross estimates

for these two years based upon the combined index of physical production and wholesale prices, rejecting estimates based upon employment and wholesale prices. Since then, official estimates have been made available in Factory Statistics.

GROSS VALUE OF OUTPUT OF FACTORY INDUSTRY
(In million yen)

	<u>Factory Statistics</u> ^a	Federation Estimates based on: ^b	
		<u>Production Index</u>	<u>Employment Index</u>
1938	19,667	17,396	18,873
1939	24,360	18,613	20,571

- a. Excludes electric and gas industries which are included in the Federation's.
- b. The Bank of Japan's wholesale index was used in both instances.

Why did the Federation err in reflecting the estimates based upon employment indexes which turned out to be closer to the truth? Its rejection was made on the grounds that per capita productivity of labor had fallen due to the influx of new workers. But it failed to see that this factor was more than offset by the increased mechanization of factory industry (mentioned in the previous paragraph) which raised rather than lowered per capita productivity.

The estimates in Table 5 are based also on gross output -- but with a difference. The Factory Statistics publishes not only gross value of output but also total cost of raw materials, cost of fuel, and the volume of gas and electricity, which went into the production process. In the CBS definition of net income or net value added, the

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major item of expense to be deducted from gross output is the cost of raw material. This item together with fuel costs constituted in 1930 more than 90% of the total of expenses which need to be deducted from gross value figures.¹ The other expenses constituting about 9% were: advertising, transportation, communication, motive power and depreciation. In other words, by deducting raw material and fuel costs from the gross output, a figure is derived which to the extent of 86% is pure net value.² On the other hand, in the Federation-Takahashi method, only 31.5% of the total used is pure net value. Hence, in effect, in Table 5 method only 9% of the total expenses are assumed to be thus constant.

By including fuel and raw material costs in the calculation, structural shifts, changes in prices, labor productivity, and others affecting the net-gross ratio are largely accounted for. Thus, the margin of error in these estimates are far less than in those of the Federation.

1. Gross value in the CBS 1930 study equalled 6,023 million yen, out of which net value added was 1,899, leaving total expenses of 4,124; of which raw material and fuel costs were 3,747 or about 91%.
2. It was not possible to estimate the cost of motive power from the physical volume of gas and electricity given in Factory Statistics. Besides the problem of finding adequate time series of average prices of gas per cubic meter and electricity per kilowatt hours, there was the possibility that some of the fuel bought was used for the generation of electricity by individual factories and by electric power companies and the possibility that the cost of gas itself may have been included in fuel costs. At any rate, an attempted estimate of the cost of motive power indicated a good possibility of such overlappings. (E.g., in 1937, the gross value of production of the gas and electric industries was about half a billion but the amount used by factories was more than twice this amount.)

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Table 5.

NET VALUE PRODUCT OF FACTORY INDUSTRY
(in million yen)

Year	Gross value ^a of Factory Production	Cost of ^b raw material	Cost of ^c fuel	a-(b ^d + c)	Net ^e value
1930	5,962	3,605	142	2,215	1,899
1931	5,178	3,055	110	2,013	1,731
1932	5,982	3,415	114	2,453	2,110
1933	7,871	4,709	156	3,006	2,585
1934	9,390	5,748	209	3,433	2,952
1935	10,837	6,726	243	3,868	3,326
1936	12,258	7,717	281	4,260	3,664
1937	16,419	10,580	489	5,350	4,601
1938	19,667	11,939	687	7,081	6,090
1939	24,360	-	-	-	7,613

a, b, & c are taken from Factory Statistics.

e. 1,899 is the CBS' 1930 total which includes gas and electric. The figures in this column were derived in the following manner: $\frac{1,899}{2,215} = 86$ percent, which percentage was applied to the 2,215 totals in column d. It was assumed that the other expense items, totalling 318 in 1930, varied proportionately with column d, which constitutes net value plus other expenses. For 1939, it was impossible to obtain data for b and c. Hence, a combined index in the following manner was constructed:

	Gross value of output	Index	Wages paid from <u>Factory Statistics</u>	Net profits of mfg. cos. from <u>Kaisha T.</u>
1938	19,667	100	1,442	1,314
1939	24,360	123.9	1,927	1,571

	Index of Wages + Profits	$\frac{A + B}{2}$	Net value Product
1938	100	100	6,090
1939	126.8	125	7,613

It is possible to compare these estimates with those of the Federation. They are generally lower than the Federation's for those years when the latter's gross output totals are correct. For example, in 1937, the latest

year for which the Federation's gross output figure is reliable, estimates in Table 5 are 8 million yen less than the Federation's net value. The explanation for this is obvious. Whereas gross output increased only 275% from 1930 to 1937, the cost of raw material and fuel rose 300%. In short, the ratio of net to gross value failed to remain constant -- the assumption on which the Federation worked.

Government-Owned Factory Industry. Statistics for an adequate estimate for government-owned factory industry are scarce. If time permitted, it might have been fruitful to go through the national budget, both on the revenue and expenditure sides, and by judicious subtractions and additions, come out with a good estimate of this segment of manufacturing for each year. But the complexity and peculiarities of Japanese national budget make this method too laborious for such a study as this. Hence, the procedure adopted by the Federation, op. cit., p. 35, was adopted. The latter extrapolates the CBS net value for 1930 by the use of a combined index of the number of persons employed and horsepower in use by government industries, which is adjusted by a wholesale price index. But this is satisfactorily done only for 1936. Hence, estimates for years after 1936 and up to 1939 are made in Tables 6 and 7.

Table 6
INDEX OF ESTIMATED VOLUME OF PRODUCTION IN GOVERNMENT INDUSTRIES

	Number of persons ^a engaged (in 1000)	Index	Horsepower used (in 1000)	Index	Combined Index ^b
1930	140	100	725	100	100
1931	166	118	595	82	100
1932	185	132	927	128	125
1933	197	141	1,408	194	167
1934	187	134	1,321	183	158
1935	114	82	865	119	100
1936	115	82	984	135	109
1937	122	87	1,138	157	122
1938	127	91	1,200	165	128

- a. Both persons engaged and horsepower used are given in Factory Statistics. No data for 1939, also, horsepower used for 1938 an estimate.
- b. What is dubious about the combined index is in the one to one weights assigned. This is difficult to justify, but there are no ready alternatives.

Table 7
ESTIMATED VALUE PRODUCED IN GOVERNMENT INDUSTRIES

	a. Book of Japan Wholesale price index	b. Adjusted Combined Index	c. (million yen) Estimated value of Output	d. Changes in ratio of Net-Gross value of production	Ratio of cost to gross %	Ratio of Net-Gross
1930	100	100	410	61	39	
1931	84	84	344	59	41	
1932	80	101	414	57	43	
1933	99	165	677	59	41	
1934	98	154	636	61	39	
1935	102	102	418	62	38	
1936	109	119	488	63	37	
1937	131	160	656	64	36	
1938	137	165	677	61	39	
1939						

Table 7 (continued)

	<u>Index</u>	<u>e</u> Net Value (million yen)	<u>f</u> Index of Sale of State Property
1930	100	167	100
1931	105	147	82
1932	110	186	100
1933	105	290	140
1934	100	259	200
1935	97	165	270
1936	95	190	460
1937	92	246	150
1938	100	276	155
1939		290	165

- c. The 1930 figure belongs to CBS. The rest of the years are calculated by multiplying 410 by b.
- d. The first column in d is obtained by dividing the cost of raw material by the gross value, as given in Factory Statistics. The second column is obtained by subtracting from 100. This index is used to adjust the CBS 1930 ratio of net-gross value of 40.8%.
- e. Obtained by multiplying column c, index of d and 40.8%.
- f. See text.

It is to be noted that in Table 7 the 1930 CBS ratio of net-gross value is adjusted by the ratio of raw material cost to gross value as given in Factory Statistics for private factories. There may be several difficulties in following such a method. But probably it results in estimates closer to the truth than by leaving it unmodified. Government industries, like others, are affected by more or less the same force which induces changes in costs.

Why do the net value estimates in Table 7 fluctuate so unevenly -- showing little relation to most

business indexes and the upward trend of the cyclical swing that Japan experienced after 1931? The totals in column e reach a peak in 1933 and then decline to a bottom in 1935 -- a behavior which is contrary to the movement of most Japanese indexes. The explanation probably lies in the practice of the Japanese government which from time to time sells its industrial properties. From the column entitled "Proceeds of Sale of State Property" of the Extraordinary Revenue of the national budget,¹ an index of such sales which is shown in column f, Table 7 is made. These sales rose considerably in 1935 and 1936, which were years in which net value fell sharply.

For 1939, budget figures are used. The revenues for the monopoly (mainly tobacco and camphor) and printing bureaus, army arsenal, Senju Woolen Factory, naval dockyard, naval explosive factory and fuel depot, for 1938 and 1939, are 2,305 and 2,406 million yen, respectively, for 1938 and 1939, which represent a 5% increase or a net value total of 290 million yen for 1939.

Home Industry. Over-all quantitative information for this segment of Japanese economy is nil. Probably those of the Federation, p. 66-69, are about the best. The Federation's method is to utilize the gross value of

1. Japan-Manchukuo Year Book, 1940, p. 237.

production totals in the Shokosho Tokeihyo (Statistical Returns of the Commerce and Industry Ministry) which covers production of all firms in certain selected branches of industries, especially light industries where home industries flourish. These gross value totals are compared with the Factory Statistics' gross value covering the same classes of goods. From these comparisons, the Federation constructs a time series of the ratio of the value of output of home industry to that of private factories of five or more workers for years after 1930. Gross value, thus obtained, is multiplied by 32% (CBS 1930 ratio of net to gross value) to arrive at net value. Here again the assumption of constancy of 32% is modified by applying the index in column d of Table 7. These calculations are presented below.

Table 8

NET VALUE PRODUCED IN HOME INDUSTRY
(million yen)

	a	b	c	d	
	Federation's percentage of output of home to factory industry	Value of Output of Home Industry	Net Value	Index of changes in the net- gross ratio	Modified net value
1930	27	1,631	903	100	903
1931	27	1,398	769	105	807
1932	25	1,495	822	110	904
1933	21	1,653	909	105	954
1934	22	2,066	1,136	100	1,136
1935	22	2,384	1,311	97	1,272
1936	21	2,574	1,416	95	1,345
1937	20	3,284	1,806	92	1,662
1938	18	3,540	1,954	100	1,954
1939	18	4,385	2,412	--	2,412

(Footnotes on next page)

(Footnotes to Table 8)

- a. See its monograph, p. 66-69, for the method of calculation. The figure for 1930 is CBS'.
- b. The Federation's percentages are applied to totals of gross factory industry taken from Table 5, column a.
- c. Obtained by multiplying b by 55% (CBS 1930 ratio).
- d. Taken from Table 7.
- e. Column c x d.

Other Industries. Different indexes from those of the Federation, whose method of calculation is not clearly explained, are employed. For newspaper and journal publishing, the income figures reported under "Printing and Publishing" of the Business Tax in the Annual Report of the Tax Bureau (Shuzeikyoku Nempo Sho) are used.

Table 9
NET VALUE ADDED IN MISCELLANEOUS INDUSTRIES
(million yen)

	<u>Publication</u>		<u>Net Value</u>	<u>Cinema Film</u>	
	<u>Income (Taxable)^a</u>	<u>Index</u>		<u>Index of Business Activity^b</u>	<u>Net value</u>
1930	6.08	100	32	100	3.8
1931	5.44	89	23	87	3.3
1932	5.67	93	30	90	3.4
1933	6.68	110	35	97	3.7
1934	7.64	126	40	103	3.9
1935	8.48	139	42	106	4.0
1936	9.43	155	50	106	4.0
1937	11.29	166	60	115	4.3
1938			61	108	4.1
1939			69	--	4.1

- a. The income figures come from "Printing and Publishing" of the Business Tax, Shuzeikyoku. For 1938 and 1939, the gross value for printing and book making of Factory Statistics is used. These are 259 million yen for 1937, 265 for 1938, 297 for 1939, which yield an index of 100, 102, and 115.
- b. This index is the Oriental Economist's index, which was discontinued after 1938.

Estimates for 1940, 1941 and 1942

The estimates for manufacturing up to and including 1939 are not completed. These separate estimates are brought together in Table 10.

Table 10
ESTIMATES OF NATIONAL INCOME OF MANUFACTURING INDUSTRIES
(in million yen)

	Factory Industry	Gov't. Industry	Home Industry	Publication & Cinema	Total
1930	1,899	167	903	36	3,012 ^a
1931	1,731	147	807	26	2,711
1932	2,110	186	904	33	3,233
1933	2,585	290	954	39	3,868
1934	2,952	259	1,136	44	4,391
1935	3,326	165	1,272	46	4,809
1936	3,664	190	1,345	54	5,253
1937	4,601	246	1,662	64	6,573
1938	6,090	276	1,954	65	8,385
1939	7,613	290	2,412	73	10,388
1940					13,505 ^b
1941					15,582
1942					17,867

a. Inclusive of salt-manufacture (7million yen) which in the totals after 1930 is included in Factory Industry.

b. See below.

From 1940, no gross production figures are available for factory industry. Hence, the method pursued in mining for years after 1937 was used. The following is the calculation.

Table 11
(in million yen)

	Total Payroll	Index	Net Profits of Cos.	Index	Combined Index	Net Value
1939	2,779	100	1,571	100	100	10,388
1940	3,134	113	2,299	146	130	13,505
1941	3,899	140	2,700	161	150	15,582
1942	4,433	160	2,916	185	172	17,867

1. The first 3 years were calculated in the same manner as in mining payroll, namely, by using the total of no. of mfg. workers.
(footnote continued on next page)

(footnote continued from table 11)

- published by the Welfare Ministry, and the CBS' average daily earnings and no. of days worked. For 1942, the total no. of workers in mfging. as of July 1942 (Welfare Ministry) was used together with the Bank of Japan earnings index. It would have been better to use the CBS earnings index, which includes earnings in small firms and is based upon a larger sample than that of the Bk. of Japan, but the index was not obtainable in a suitable form. At any rate, the discrepancies are slight for interest here is only in the rate of increase.
2. Taken from Kaisha Tokeihyo, as reported in Toyo Keizai Nenkan, 1943. The 1942 total is an estimate from the 1941 total and is based upon the rate of increase in net profit of mfging. cos. as shown by the investigation of Toyo Keizai Shimpo of 125 mfging. cos. in 1942.
 3. Indexes of a and b are added and divided by 2. Thus, equal weights are used in combining of net profits and payroll. Is one justified in doing this (instead of adding the absolute totals of each in mining)? In mfging, the unincorporated firms play an important part, unlike in mining. Hence, one needs to consider a type of income, (akin to profits) known as entrepreneurial withdrawals, which in 1940 amounted to at least 847 million yen according to tax statistics; adding this to net profits one obtains a figure about the size of payrolls, thus justifying the one-to-one weights.
 4. Net value for 1939 is obtained from Table 10, by adding all the items.

The foregoing calculations were carried out on the basis of the CBS' 1930 estimates. As it was convenient to make corrections afterwards, the CBS estimates for 1930 were used. Now it is necessary to consider the deficiencies in the CBS study and make appropriate corrections to the figures in the last column of Tables 10 and 11.

Several cost items were not deducted by CBS. These were insurance fees, short-term interest, association and guild fees, rent to corporate bodies, and taxes. If adequate material were available, it would have been best to deduct all of these from manufacturing (both domestic and factory industry.) Lacking such material, it was deemed best to leave all of the above mentioned items -- except taxes -- in, and to deduct insurance fees received from insurance cos., interest from banks, and rent paid from real estate cos., and ignore completely net value of associations and guilds. This was the procedure followed by CBS, though for banking it failed to make sufficient deductions. Since a different method from the CBS' was adopted for gov't., taxes were deducted here. (The amount of such taxes have been estimated in Section C).

Another difficulty lies with gov't. industries. After wages and salaries, there is still 78 million yen of what the CBS calls gov't. returns or profits. This latter item is not consistent with the treatment of gov't. net value product adopted in the present study. Part of this residual is returns on capital used by gov't. enterprises. From the 1930 National Wealth study, the total amount of capital so used can be estimated to be about 450 million yen, 6%

of which gives 27 million yen. The remainder, 51 million yen, was transferred to the General Account and expended by the Gov't. for various purposes. Part of this amount is actually equivalent to business taxes and constitute services rendered by the Gov't. to its industries. Another part is depreciation for which adequate accounting is not made. And still another part is for all the miscellaneous services received from gov't. for which gov't. industries fail to account properly. Thus, the total deductions are as follows for 1930.

	<u>Million yen</u>
Taxes	
Factory Industry	90
Home Industry	71
Gov't. Industry	51
Total deductions	<u>212</u>

This amount minused from a total of 3012 million yen from Table 10 gives 2800 million yen for manufacturing. Using the index derived from the last column of Table 10 and Table 11, the following is obtained:

(Million yen)					
	<u>Index</u>	<u>Revised Total</u>		<u>Index</u>	<u>Revised Total</u>
1930	100	2,800	1937	222	6,216
1931	91	2,548	1938	267	7,476
1932	107	2,996	1939	330	9,240
1933	129	3,612	1940	417	11,676
1934	148	4,144	1941	513	14,364
1935	163	4,564	1942	572	16,016
1936	180	5,040			

Construction

This new category is made up of construction and engineering

which the CBS placed under manufacturing. The CBS total of 470 million yen in 1930 will be modified to the extent of 2 million yen for taxes. Being calculated by the factor payment method, the problem of other costs (as encountered in manufacturing) does not arise. The index to be used is based on income figures reported under "construction" in the Business Profits Tax in the Shuzeitkyoku. After 1937 and up to 1941, construction statistics of the Commerce Ministry are available. For later years, the estimates are based upon the building tax, which reports floor area and cost of new buildings. In the table below, the calculations are given:

Net Value Product of Construction
(in Million yen)

	Income From Contracting	Index	Net Value		Net Value a
1930	53.5	100	468	1938	897
1931	50.7	95	445	1939	1,104
1932	56.4	105	492	1940	1,011
1933	71.6	134	627	1941	2,260
1934	87.7	164	767	1942	2,026
1935	99.8	186	870		
1936	113.0	212	991		
1937	133.4	246	1,150		

a. Estimates for 1938-1940: index based on expenses of new construction published by the Commerce Ministry and reported in Jiji Domei. 1937=486 million yen, 1938=381, 1939=466, 1940=427, giving indexes of 100, 78, 96, & 88.
Estimates for 1941 & 1942: index based on building tax, cost of new buildings coming within the tax: 1940=11.6 million yen, 1941=25.8, 1942=22.6, whose indexes are: 100, 223, & 200.

Transportation and Communication

As in manufacturing, the CBS 1930 totals will be used without modifications at the outset; later certain corrections will be applied.

The most accurate estimates of the Federation are found in this section. Here for the most part (83% of the total net value in transportation and communication), the Federation relies on the same sources and methods employed by CBS for 1930. Hence, it can actually calculate the net value instead of merely extrapolating. But since the Federation's study was published in 1939, its calculations are good up to and including 1937. For years after 1937, Railway Statistics (Tetsudo Tokai) was not available. This statistical year book was not available for the present study for post - 1937 but its crucial information were obtainable through the Jiji Domei Nankan, 1943 and 1944. Hence, fairly good estimates for years after 1937 can be made. In the tables below are presented the data of the Federation up to and including 1937 and from 1938 to 1942, for the different segments of transportation and communication.

Table 12
NET VALUE PRODUCT OF RAILWAYS

	a Gross Profits	b (in million yen)		d	
		By State Railways	Net Value	By Other Railways	Total net value of all railways
		Salaries and Wages		Net Value	
1930	173	136	309	183	492
1931	167	134	301	170	471
1932	161	137	298	162	460
1933	191	138	329	162	491
1934	205	142	347	164	511
1935	215	148	363	167	530
1936	244	154	398	171	569
1937	263	166	429	184	613
1938	299	196	495	197	692
1939	372	226	598	221	819
1940	373	276	649	296	945
1941	342	327	669	372	1,041
1942	376	365	741	408	1,149

(footnotes for Table 12)

- a. 1930 figure belongs to CBS and the rest up to 1937 belong to the Federation. 1938-1941 data are taken from Railway Statistics as presented in Jiji Domei Nenkan, 1944. For 1942, the Railroad Ministry's budget data (Special Account) item entitled receipt of State R.R. is used, for 1941 and 1942; a 10% increase is shown.
- b. 1930 figure belongs to CBS and the rest up to 1937 to the Federation. For 1938-1942 the total receipts given in the R.R. Ministry's budget is used and deducting from them the gross profits shown in a, one obtains residuals which contain salaries and wages. With 1937 as base year, the following index nos. are obtained: 117, 136, 166, 197, and 220. The steep rise in the last few years are due mainly to the increase in earnings also shown in the CBS transportation earnings index.
- c. a plus b.
- d. 1930 figure belongs to CBS and the rest up to 1937 belong to the Federation. After 1937, gross profits of private local railways as given in Jiji Domei Nenkan, 1944 are used: 44 million in 1937, 47, in 1938, 53 in 1939, 71 in 1940, and 89 in 1941. For 1942, the rate of increase as shown in c is used. These give index nos. of: 100, 107, 120, 161, 202, and 222 for 1937-1942 inclusive.

Table 13
NET VALUE ADDED BY POSTS, TELEGRAPHS AND TELEPHONES
(in million yen)

	a <u>Revenue</u>	b <u>Less Expenses</u> 9.2%	c <u>Net Value Added</u>
1930	229	21	208
1931	229	21	208
1932	243	22	221
1933	262	24	238
1934	279	26	254
1935	299	27	271
1936	320	29	291
1937	375	34	340
1938	415	38	377
1939	471	43	428
1940	514	47	467
1941	687	63	624
1942	802	74	728

Note: All the figures for 1930 are from CBS, and all those for 1931-1937 are from the Federation. Those from 1938-1940 come from Jiji Domei Nenkan, 1944; the last two years are from budget estimates of the Communication Ministry.

For the rest of transportation, the estimates are not as good as those above. In 1930, this group consisted of the following: motor vehicles 36 million yen, jinrikisha and carts 38 million yen, shipping 41 million yen and other carriers and communications 26 million yen, a total of 141 million yen. Since no adequate index can be found, an index based upon the net value added by State railways (col. c, Table 12.) is used instead of the Federation's index of freight despatched by the State railways. The following table shows the calculation together with the summary for transportation and communication.

Table 14

NET VALUE ADDED BY TRANSPORTATION AND COMMUNICATION
(in million yen)

	a	b	c		Total
	Net Value	Net Value	Net Value added by	Index of a. Net Value	for all
	<u>Added by R.R.</u>	<u>Added by Comm.</u>	other transportation		<u></u>
1930	492	208	100	141	841
1931	471	208	97	137	816
1932	460	221	96	135	816
1933	491	238	106	149	878
1934	511	254	112	158	923
1935	530	271	117	165	966
1936	569	291	128	180	1,040
1937	613	340	138	195	1,148
1938	692	377	160	231	1,300
1939	819	428	193	272	1,519
1940	945	467	210	296	1,708
1941	1,041	624	217	306	1,971
1942	1,149	728	240	338	2,215

a. From Table 12.

b. From Table 13.

c. Extrapolation of CBS 1930 net value by index based on a.

Modifications

The first modification deals with the item Gov't. profits or net returns. For this purpose, the accounts of the railroads as presented in the Annual Report of the Department of Railways are examined. As to State railways, the CBS gives 173 million yen, an amount which is taken directly from the Annual Report for the fiscal year 1930-1931. It should be noted that the State railway account is a special account independent of other special and general accounts (operating much in the same manner as the TVA finances in the U.S.) That is to say, any deficit or surpluses in the revenue account are made up by bond floatation or by transfer to the capital account.

The Annual Report shows that what the CBS termed "gov't. profits" were disposed of in the following manner:

	<u>1930-1931</u> (million yen)
Interest Charges	86
Subsidies to Local R.R.	8
Additional Work Expenses	3
Balance: to capital acc't.	76
Total (Gross profits)	<u>173</u>

The first two items will be included as national income, the subsidy item not being included in the local railway account. But most of the last item is questionable. The revenue account under "maintenance expenses" do not show any charges for depreciations. Of course, since various repairs, renewals, alterations, extension of tracks and station accommodations, replacement of obsolete items are debited to the revenue account one can consider these as a form of depreciation deduction but far from sufficient to cover all of

depreciation. The fixed property of the State railways was valued in 1930 as 3,347 million yen, and if a 5% depreciation is assumed, a total deduction of 167 million yen is obtained. The total maintenance expenditures were only 85 million yen. If the "balance" of 76 million yen and "additional work expenses" of 3 million yen were considered to be depreciation and added to 85 million yen, the total will be 164 million yen. Thus a total of 79 million yen must be deducted for 1930 from the CBS study for State R.R. The revised breakdown for State R.R. will be for 1930:

	<u>Million yen</u>
Wages & Salaries	136
Interest Paid-out	86
Subsidies to Local R.R.	8
	<u>230</u>

For private railways and tramways, the CBS has been careful not to include interest and dividends received from other corporations -- which sum is a considerable income for tramways. But the CBS included in its category, "gross profits," the amount paid out in interest, a total of 45 million yen; this leaves a net profit of 41 million yen. The only deduction here is the item, taxes, of 7 million yen.

No information is obtainable as to what the CBS' 9.2% deduction from gross operating revenue in communication constitutes. A 91% net-gross value percentage does not make sense, even for communication whose consumption of raw materials is relatively small.

U.S. Commerce Dep't. national income study gives an average of 67%

net value for U.S. communication industries of gross operating revenue for the years 1929-1934.

Hence, instead of using 9.2% of CBS, the total estimated tangible wealth of the industry was taken from the 1930 national wealth study (about 210 million yen), and multiplied by 6% to obtain 13 million yen. To the latter was added 121 million yen of wages and salary paid (taken from the previous study) to get a total net value of 134 million yen, or 60% of the gross operating revenue. This appears to be a more reasonable amount than that of the CBS. A deduction of 74 million yen is necessary (CBS: 208-134 new total).

CBS excluded subsidies paid to other transportation, notably, marine and air transportation. For this reason the latter has a minus net value and the former is only half of Hijikata's figure, (which though is much too large). In 1930, these transportation industries received about 14 million yen (direct subsidies), which gives a total of 155 million yen for other transportation.

The following are the revisions:

(million yen)	1930	
	<u>841</u>	CBS total net value
	79	Deduction for State R.R.
	7	Deduction for other R.R.
	74	Deduction for Communication (State)
	<u>14</u>	Plus subsidies to other transp.
	695	Revised national income

For the other years, the totals are using an index based upon the last column in Table 14.

	<u>Index</u>	<u>Revised Total</u>
1930	100	695
1931	97	674
1932	97	674
1933	104	723
1934	110	765
1935	115	799
1936	124	862
1937	137	952
1938	155	1,077
1939	181	1,258
1940	203	1,411
1941	234	1,626
1942	264	1,835

Trade

The CBS category, commerce, will be broken up into: trade (including wholesale and retail trade and brokerage), finance (including banks, trust companies, mutui, real estate, insurance companies, and personal finance), and service (including amusement and catering activities). This threefold division is more in keeping with American practices.

Several deductions must be made from the 1930 total of 1,888 million yen. The CBS did not deduct from total receipts the following cost items: transportation and communication costs, bad debts, and portions of depreciation (the latter because only purchase of tools and implements and their repair were deducted). In Section C, these were estimated to be about 107 million yen. Also, estimated tax payment of 74 million yen will be deducted. The total deductions amount to 181 million yen, which when minused from

the CBS total of 1888 million yen leaves 1707 million yen for trade for 1930.

For years after 1930

Probably, the most unsatisfactory part of the Takahashi Federation study is the estimates for Commerce. They have extrapolated the CBS 1930 net income of 2,706 million yen for Commerce (constituting $1/4$ of the total national income) by a single index, namely, by an index of tonnage of freight despatched by State railways adjusted by the general wholesale price index. There may be some justification for such practices if this division of the economy were fairly homogeneous. But this is far from being the case. This field embraces such diverse activities as: banking, restaurant, bath-houses, besides retail and wholesale trade. Forces affecting the net income of one activity may have little to do with the others. There can be no adequate single index to cover activities as diverse as the above. Commerce must be divided into its various component parts and estimates made separately for each. In doing so, the tax data of Shuzaikvoku Nempo Sho will be drawn upon extensively. In a field such as this where there is no guide (e.g., gross production), it is best to rely as much as possible upon income figures.

It is difficult to see any intimate relation between receipts of State railway and Commerce. Such a method is much too risky for an

1. In commerce, the retail trade in 1930 was responsible for more than half the national income, whereas the wholesale trade accounted for only 15%. And yet for the adjustment, the Federation uses the wholesale price index, instead of the retail price index. Such a ridiculous result is apt to be produced when one index is stretched to cover so many diverse fields.

extrapolation that extends over a decade. Besides changes in the type of merchandise carried (and, hence, changes in the profit margin marked up on the commodity) ---- which change may be substantial due to long-term changes in taste¹ changes in the structure of retailing and wholesaling (e.g., rise of department stores which were not very important in 1930), there may be the rise and decline of substitute transport facilities ---- for example, the rise of coast-wise marine and automobile transportation or the decline of cart transportation. In addition, a substantial portion of the State railway freight is not made up of consumer goods. While much of the consumer goods never see the inside of a State railway freight car. Thus, for short periods of 2 or 3 years, index of freight carried may not be unsatisfactory but for longer periods there are too many pitfalls.

The method followed in Table 15 is, follows: two indexes were combined; one based upon the net profits of commercial companies, most of which are wholesale and retail firms, and the other based upon the assessable income of individual entrepreneurs in the sale of goods as reported in the Business Tax of Shuzeikvoku Nempo Sho. Being unable to segregate wholesaling and retailing of the two time series, both are added to arrive at an index which is used to extrapolate wholesale and net incomes. In Table 15 are presented the calculations.

1. Especially is this true for the years after 1936, when with the institution of a semi-war economy, a great number of substitute material and goods appeared on the retail counter; e.g. su - fu (staple fiber)

Table 15
 VALUE ADDED IN WHOLESALING AND RETAILING
 (In million yen)

	a		b		c	d
	Commercial Co. net Profits	Index	Individual Entrep's net profit	Index		
1930	440	100	449	100	100	1,707
1931	324	74	418	94	84	1,434
1932	386	88	456	102	95	1,622
1933	480	110	518	115	112	1,912
1934	554	124	566	126	125	2,134
1935	542	123	615	137	130	2,209
1936	608	138	680	151	144	2,458
1937	680	155	793	177	166	2,834
1938	754	171	901	201	186	3,175
1939	883					3,715
1940	1,050					4,445
1941	1,244					5,239
1942	1,207					5,080

- a. Taken from Kaisha Tokeihyo, 1938; recent years from Toyo Keizai Nenkan 1943, Jiji Domei, Asahi Nenkan, 1944. The figure for 1942 is estimated on the basis of Toyo Keizai Shimpo investigation, which showed a decrease in profits from 46,356 thousand yen in 1941 to 44,902 in 1942, a decrease of 3%.
- b. Taken from Shuzeikyoku Nempo Sho, 1938; Individual Business Tax, Sale of Goods. The 1938 figure comes from Asahi Nenkan, 1942. Business income earned after 1938 is taxed differently under the tax reform instituted in 1940 (applicable on incomes earned in 1939). A rough (somewhat arbitrary) method of deducting income previously not taxed was used to modify the Shuzeikyoku figures; the modification was only a trifle, amounting to less than 1% of the total for each year.
- c. Index of a and of b divided by 2.
- d. Estimates after 1938 were made by using net profits of column a with 1938 as base year. The index numbers were 117, 140, 165, 160, for 1939-1942 inclusive.

RESTRICTED

Finance

The CBS method described above produces an overestimation (in the net value product total for the economy as a whole) for banking proper. The total for banking is 140 million yen according to the CBS 1930 study. This is shown below (using Copeland's method outlined in the Journal of Political Economy, vol. 40, p. 24-26). From the Annual Report of the Bureau of Banks (Ginko Kyoku Nempo, 1932) the following data are obtained. The total of gold and silver stock and banking house and fixture equals 574 million yen for all special, ordinary and savings bank in Japan. This divided by the proprietorship equity (capital, surplus, undivided profits) of 3605 million yen gives 16%. If real estate for banking uses in Japan is also underestimated to the extent of 2%, this gives 18%, which when applied to 201 million yen of net profit gives a property income of 36 million yen. When added to total payroll of 111 million yen (Hijikata's estimate), a net value product for banking of 147 million yen is obtained.

This latter total comes close to the CBS total of 140 million yen. But the total of 147 million yen is appropriate only when short- and long-term interest and dividends paid by other industries to banks have been properly deducted from their net value. In the CBS method, this was not done; hence, to use such a total will result in duplications.

Only by a strict adherence to the net value product formula would such duplications be omitted (though banking net value product contribution to the economy would be minimized). This would require that total interests received by banks be minused from total interest paid out, even though a minus quantity is obtained. This is done below:

(totals obtained by going through the profit and loss statements of the Annual Report of Bank Bureau).

	Million yen		
	1930	1934	1938
Interests & Dividends Paid Out:	783	720	753
Minus Interests & Dividends Received:	952	908	1,157
Equals Interests & Dividends originating:	-169	-188	-404
Plus payroll	110	120	-
Plus additions to surplus	48	58	-
Minus net valuation adj. made	-30	+8	-
	<u>+19</u>	<u>-18</u>	<u>-</u>

Unfortunately, these are the only three years for which the Annual Report of the Bank Bureau is available; and no other publication presents the profit and loss accounts of all the special banks, and (the consolidated accounts) of the ordinary and savings banks in Japan proper. Without such accounts, it is impossible to calculate banking income. Nor can one find any single reliable index (such as profits, payroll, etc.) to extrapolate for other years. (E.g., profits, additions to reserves and payroll were larger in 1934 than in 1930.) So many factors are involved that any effort to extrapolate on the basis of data other than from the profit and loss accounts may result in a total with a huge margin of error. Even in the above data, the payroll totals are shaky, with a large margin of error. Because of these reasons, it was thought best to assume that for the economy as a whole, banking should be assigned a zero net value product for each year. (Of course, this does not mean that banking contributed nothing to the total value product of the economy. If such a measure is desired, one can consider the CBS' 140 million yen as a fairly good estimate, as pointed out previously.) The only thing that can be said in favor of such an assumption is that for

the economy as a whole, it eliminates most of the duplication of the CBS' 140 million yen, and probably does not err substantially on the side of omission. (To those who cannot stomach a negative or zero net value product, see Copeland's discussion in Income and Wealth, vol. 1, p. 24-26, National Bureau of Economic Research.)

A major change must also be made for the CBS' 6 million yen for gov't. postal savings. It is difficult to see how it arrived at this figure. But if duplications are to be avoided, total interest received must be deducted from interest paid out. (No account need be taken of payroll for this item has been included under gov't. net value product. Also no account need be taken of additions to surplus before net valuation readjustments, since such amounts are either transferred to other gov't. accounts or to its own reserves from which transfers to other accounts are made -- in both cases, will show up, like taxes, in gov't. net value product.) The gov't. publishes profit and loss statements of postal savings from which the following figures of "interest originating" are taken up to 1939, after which the average rate of increase between 1936-1938, (16%), was assumed: (these are all minus quantities, in million yen)

1930	-23	1935	-73	1940	-130
1931	-33	1936	-68	1941	-151
1932	-30	1937	-80	1942	-174
1933	-47	1938	-97		
1934	-66	1939	-112		

For trust, mujin, and insurance cos., the CBS method (excluding insurance premiums besides all interest income) does not appear to produce overestimates. A rough check by adding payroll, corporate savings, and "interest originating" gives a total about that of the CBS.

Therefore, no modifications are made for these (although with better data insurance net value may prove to be too large, especially since the CBS did not deduct insurance fees).

For real estate, the CBS states that rent paid out by those renting residential land and houses, minus cost of repair and maintenance of such property, was taken. It does not appear that rent paid out by business units are included here, so that no duplication is involved. However, taxes of 10 million yen (estimated previously) must be deducted.

In the following two tables are shown the estimates for other years, together with the explanation of indexes selected, (and also a summary of finance).

Table 16
NET VALUE OF INSURANCE COS., TRUST COS., MUTUAL AID SOCIETIES
(million yen)

	(a)		(b)			(c)		
	Mutual Aid Societies Net Profits of mujin	Net Value	Insurance Companies Business Expenses	Index	Net Value	Net Profit of trust	Index	Net Value
1930	2.19	11	136	100	67	15	100	11
1931	2.00	10	137	101	68	15	100	11
1932	1.92	10	145	107	72	15	100	11
1933	2.05	10	159	117	78	18	120	13
1934	2.14	11	177	130	87	21	140	15
1935	2.24	11	187	138	92	22	147	16
1936	2.55	13	199	146	98	23	153	17
1937	2.63	13	221	163	109	25	167	18
1938	2.92	15	253	186	125	26	174	19
1939	3.21	16			175			20
1940		17			227			23
1941		18			250			28
1942		18			268			31

- a. Net profits taken from Toyo Keizai Nenkan, 1941. After 1939, capitalization of mujin societies as given in Jiji Domei Nenkan, 1941 is used. With 1939 as base, one gets 105, 111, 114; for 1940, 1941, 1942, respectively. The net value for 1930 is from CBS.
- b. Business expenses of insurance cos. as reported in Shokoshō Tokaihyō, 1938, and Jiji Domei Nenkan 1941. After 1938, the Mainichi Nenkan, 1944, reports new contracts which give indexes of: 100, 140, 182, 200, 214 for 1938 to 1942 inclusive 1930 net value is CBS'.

(note continued from Table 16)

c. As reported in Japan - Manchukuo Year Book, 1941. For years after 1938, the index of bank profits: 176, 188, 218, 263, 291.

Table 17
SUMMARY OF FINANCE

	Rent from Residential Land and Houses		Net Value	Net Value Total of Table XIII and Gov't. Grand Total Postal Savings : of Net Value	
	Amt.	Index			
1930	366	100	260	66	326
1931	350	96	250	56	306
1932	356	97	252	63	315
1933	373	102	265	54	319
1934	379	104	270	47	317
1935	400	109	283	46	329
1936	414	113	294	60	354
1937	460	125	325	60	385
1938			335	62	397
1939			348	99	447
1940			374	137	511
1941			390	145	535
1942			403	143	546

a. The first column comes from Shuzeikvoku Nempo Sho, Class C Income Tax, column entitled Rent from Houses and Land. The total for 1938 (fiscal year 1939) is not usable, for the exemption line was lowered from 1,200 yen to 1,000 in that year so it becomes no longer comparable with the previous years. The amount of the rent (in the first column) is larger than the net value column. This is because the former includes rents other than residential. For years after 1937, there is nothing better than the CBS cost of living index for laborers from which the rental index is. This is used in spite of the fact that this index minimizes the rise in the living costs. Because of rise in costs, net value added in a did not rise in proportion to the actual rises in rents.

Services

Included here are:

1. Amusement: Movie theatres and film production, other theatres and the like.
2. Catering: Hotels and boarding houses, restaurants, barbers, hairdressers, bath-houses.
3. Domestic Service
4. Professions: Service such as religious, legal, private educational, medical, and cultural.

The above is a rearrangement of the CBS classification: 1 and 2 are taken from commerce.

The Japan Economic Federation states in their monograph that the CBS in its 1930 study took "the full value of the total gross receipts" as the income of professionals. But this interpretation is not borne out by the CBS' Tokei Jiho (Statistical Review) which commenting on the methodology points out that net income was used (income after various costs are deducted.) Hence, no correction for this is necessary.

The total net value for services is as follows for 1930:
(million yen)

1. Amusement	41
2. Movie-film prod.	4
3. Catering	271
4. Domestic Service	198
5. Professional	473
Total	987
6. Minus taxes	22
	<u>965</u>

1. & 3. Taken directly from CBS study.
2. Transferred from manufacturing.
4. Estimated by subtracting 141 million yen from CBS' 339 million yen.
5. Detailed breakdown:

(footnote continued from preceding page)

(million yen)	<u>Services</u>
101	Religious (taken from CBS)
190	Medical (taken from CBS)
41	Private School (estimate based on Hyibata)
141	Others: writers, artists, dancers, actors, lawyers, etc,
<u>473</u>	(based on CBS)

6. CBS included taxes - Estimated Section C.

For years after 1930, the tables below indicate the indexes used to extrapolate the above.

Table 18
(million yen)

	a <u>Restaurants</u>			b <u>Amusement Bus</u>			c <u>Barbers and Bathhouses</u>	
	<u>Taxable Income</u>	<u>Index</u>	<u>Net Value</u>	<u>Taxable Income</u>	<u>Index</u>	<u>Net Value</u>	<u>Retail Price Index</u>	<u>Net Value</u>
1930	27.9	100	123	75	100	41	100	94
1931	26.1	94	116	70	93	38	87	92
1932	26.8	97	119	72	96	39	88	83
1933	28.9	104	128	77	103	42	93	87
1934	31.4	113	139	82	109	45	96	90
1935	34.6	124	153	87	116	48	97	91
1936	37.8	136	167	94	125	51	103	97
1937	41.1	147	181	104	140	57	112	104
1938			199			60	127	119
1939			223			61	144	135
1940			275			63	168	158
1941			279			66		180
1942			283			70		207

	d <u>Hotels and Boarding Houses</u>			e <u>Total for Amusement, Catering and Domestics</u>		
	<u>Taxable Income</u>	<u>Index</u>	<u>Net Value</u>	<u>Total Net Value</u>	<u>Index</u>	<u>Revised Net Value</u>
1930	14.9	100	53	311	100	492
1931	13.5	90	48	294	95	467
1932	13.3	89	47	288	93	458
1933	14.5	97	51	308	99	487
1934	15.4	103	55	329	106	522
1935	16.8	112	59	351	113	556
1936	17.7	118	63	378	121	595
1937	19.0	127	67	409	131	645
1938			69	447	144	708
1939			72	491	158	777
1940			77	573	184	905
1941			80	605	195	959
1942			83	643	207	1,018

(note for Table 18)

- a. "Taxable Income" is taken from the Business Tax (Individual) Shuzeitkyoku Nempo Sho, section on restaurants. Net value for 1930 is from CBS study. After 1937, use is made of the CBS cost of living index, section on food costs.
- b. "Taxable Income" is taken from the C Class Income Tax, section on "Amusement". It is larger than the CBS net value for 1930 because of differences in the coverage of amusement activities. After 1937, the Asahi Shimbun's cost of living index, section on entertainment costs, is used.
- c. After 1940, the CBS' retail price index of 114, and 131 for 1941 and 1942 with 1940 as base is used. No better index could be found; the only defense for this index is that it has closer relation to the net value of barbers and bathhouses than freight carried by State railroads.
- d. "Taxable Income" is taken from Shuzeitkyoku Nempo, section on "hotels".
- e. "Total net value" is obtained by adding net values of (a) to (c).
"Revised net value" equals 1 to 4 in the previous page.

[Faint, illegible table content]

For the income of professionals, the CBS used (for years after 1930) an index of the number of teachers, medical and religious professions, adjusted by a wage index. This is not very satisfactory. The elasticity of professional salaries is less than the general index of earnings.

For the earnings index of the former, the average salary figures supplied by the Report on Family Budget Investigation (Kakei Chosa Hokoku) was used. One need not be too much concerned here over the fact that these investigations are not representative for Japan as a whole. The crucial question is whether these figures for successive years are comparable enough to be made into a time series. They seem comparable except for the 1926-27 investigation, which is not needed. The CBS in the investigation covers more or less the same families each year, although the number sampled may differ slightly. Unfortunately, no investigation was conducted for 1930 and after 1939, so that for these years, one must depend on the earnings index. Table 19 shows the calculations.

Table 19
Net Income of Artists, Teachers, Medical and Religious
Professions (in million yen). Also Summary for Service

	a		b		c	d	e
	(1,000)		Index of earnings				
	Actual	Index	Average Mo.	Index	Adjusted	Net	Total
	Number		Salary (yen)		Index	Income	For Service
1930	1,567	100	82.30	100	100	473	965
1931	1,571	100	81.06	98	98	464	931
1932	1,605	102	81.87	99	101	478	936
1933	1,662	106	82.31	100	106	501	988
1934	1,698	100	85.84	104	112	530	1,052
1935	1,790	114	85.56	104	119	563	1,119
1936	1,835	117	86.30	105	123	582	1,177
1937	1,901	121	89.11	108	131	620	1,265
1938	1,953	124	92.40	112	139	657	1,365
1939	2,128	136	97.77	119	162	766	1,543
1940	2,200	140	104.61	127	178	842	1,747
1941	2,200	140	111.46	136	190	899	1,858
1942	2,300	146	122.21	149	218	1,031	2,049

- a. Taken from Federation, up to 1939; most of them are fairly good figures taken from Teikoku Tokei Nenkan and budget estimates. After 1939, the estimates are those of the OSS.
- b. Average salary -- for 1932-1939 inclusive has been taken from Kakei Chosa Hokoku and Jiji Domei Nenkan, 1944. Use was made of only that portion of the income of the salaried-employee's family which is earned by the principal, excluding property income and the earnings of the other members of the family -- all of which have already been included in the study. The family budget studies are as of Sept. to Aug. of the following year, but the figures were used as of the August year, e.g., the 1931-32 study appears in the Table for 1932. The 1930 and 1931 figures were obtained by calculating the average of the "miscellaneous income" (mainly professional income) of class C Income Tax. For years after 1939, the CBS wholesale index was used since it is not true (as the Federation maintains) that the earnings of this group moved more closely with the changes in the industrial wage index. Even the wholesale index may exaggerate the rise.
- c. Index in a times that of b.
- d. 1930 total is a revised total calculated previously.
- e. Grand total of service net value. Obtained by adding to column d, column c of Table XX.

Government Service

In the CBS study, this was included under professional and public services. Here it will be made into a separate category and a different method of calculation adopted. The method to be followed consists in adding wages and salary paid by the government to the imputed return of government assets.

The CBS states that under Public Service is included the salaries of all gov't employees, and the members of the armed forces on active duty, excluding railway and communication employees. No mention is made of pensions and annuities. It seems that the latter are included, for its total of 676 million yen (public service plus public education) comes close to that of Hijikata (after duplications in the latter's total are deducted). Hijikata's details are for 1930:

<u>Salaries Paid</u>	(Million yen)
91.4	General Civil Service
5.2	Imperial Household employees
233.1	Public education
69.3	Local officials
35.1	Police
109.1	Armed Forces (including perquisites)
145.6	Pensions, Annuities and Assistance
<u>688.8</u>	Total

Hyikata's total will be substituted for that of CBS. For the other years, the totals are: (million yen).

	1 Pension & Annuities	2		3		4 Local officials and police Others				5 Total Value
		Armed Forces Index	Value	Education Index	Value	Index	Value	Index	Value	
1930	146	100	109	100	233	100	104	100	97	689
1931	149	119	130	90	200	98	102	100	97	678
1932	145	138	150	84	188	100	104	98	95	682
1933	157	157	171	87	195	102	107	99	96	726
1934	161	166	181	92	205	103	107	103	100	754
1935	163	174	190	97	216	107	111	107	104	784
1936	167	260	283	103	229	115	120	110	107	906
1937	171	430	469	110	246	121	126	119	115	1,127
1938	182	600	654	111	248	120	125	123	119	1,328
1939	193	830	905	122	273	139	145	129	125	1,641
1940	205	1,020	1,112	134	300	178	185	136	131	1,933
1941	218	1,230	1,341	136	302	195	203	143	138	2,202
1942	232	1,400	1,526	156	347	209	218	150	145	2,468

1. Up to 1938, data from Teikoku Tokei Nenkan. After 1938, a 6% rate of increase was assumed.
2. The 1935 and later index based upon C.S.S. estimates of the total no. in the armed forces. Straight line interpolations for 1930-1934.
3. Index based upon the total expenditures of prefectural, municipal, and village gov'ts. on education, which were the following for 1930-1942 (in million yen): 446, 402, 375, 390, 411, 432, 458, 492, 496, 545, 599, 603, and 695, respectively. Later years' data from Asahi Nenkan, 1944.
4. Index based upon total expenditures of local gov'ts. on employees and office supplies as reported in their budget (Toyo Keizai Nenkan). These totals are for each year from 1930-1942 in million yen: 127, 124, 127, 130, 131, 136, 146, 154, 152, 177, 226, 248, and 266.
5. Index for 1930-1938 based upon total salaries paid to general civil service and Imp. Household employees (T. Tokei Nenkan). These totals in million yen are: 163, 163, 160, 162, 168, 175, 180, 194, 200. After 1938, a 5% increase was assumed.

It is necessary now to estimate the amount of property income produced by governmental assets. Two methods are generally pursued -- one by taking the total amount of actual interest paid out by the gov't. on its debt, and the other by estimating the total gov't. tangible wealth and imputing a rate of return. For Japan, these two types of estimates give roughly the same amount for 1930.

The National Wealth Survey of 1930 by the CBS showed the following: (excluding property used for production already included previously, i.e., in mining, agri., manufacturing, transportation, and communication.)

(Million yen)

2,268	land
342	harbors and canals
483	bridges
2,662	trees
346	water-supply equipment
1,050	buildings
93	goods in store
2,069	miscellaneous
<u>9,324</u>	total wealth

The rate of interest on outstanding gov't. equities was 5%, which applied to the above total gives a return of about 466 million yen. This is little larger than Hyakata's realized gov't. interest of 444 million yen.

Under the State Property Law, the gov't. publishes annual estimates of the value of gov't. property, including local gov't. property. The definition of property under this law does not coincide exactly with the components making up the 9,324 million yen above. But these annual totals can serve as a rough basis for the extrapolation of the 466 million yen for 1930.

(million yen)

	1 Value of Gov't. Property		Total Wages and Salary	Total Value of Gov't. Service
	<u>Billion yen</u>	<u>Value</u>		
1930	9.3	466	689	1,155
1931	9.0	450	678	1,128
1932	9.2	460	682	1,142
1933	9.6	480	726	1,206
1934	10.0	500	754	1,254
1935	10.3	515	784	1,299
1936	11.1	555	906	1,461
1937	11.4	570	1,127	1,697
1938	12.1	605	1,328	1,933
1939	13.6	680	1,641	2,321
1940	14.9	745	1,933	2,678
1941	15.8	790	2,202	2,992
1942	18.5	925	2,468	3,393

1. Taken from Toyo Keizai Nenkan, Okura-sho Nempo, and Asahi Nenkan.
To obtain the net return, each total was multiplied by 5%. After
1935, a 12% adjustment for the inclusion of Colonial property made.

SUMMARY
Income from Abroad.

It is to be noted that this study, unlike the CBS study of 1930 and the Federation's monograph,¹ does not include the last item in the CBS table, which the Federation erroneously interprets as the "Balance of International Payments." A glance at the Japanese characters for item 8 compels one to agree with S. Shiomi's interpretation,² "Balance of International Investments, and Yields from International Enterprises." The latter forms only a part of the balance of international payments. There is justification for the inclusion of item 8 in a national income study if it is construed in the Shiomi manner. For, as the latter points out, item 8 is supposed to adjust certain "incongruities in that while the net earnings of Japanese nationals from sources in countries other than Japan proper are excluded, the earnings of non-Japanese nationals from sources in Japan proper are included."³ Hence, the minus 63.6 million yen recorded in item 8 of the CBS study means an excess of the total of income derived by foreigners (from their direct and indirect investments in Japan proper) over the total of income derived by Japanese (from their direct and indirect investments abroad.) The difference of these two components is added to the national income to determine the aggregate income

1. p. 5 and other places.

2. Kyoto University Economic Review, p. 39, 43-44, vol. 9
Dec. 1934.

3. op. cit., p. 43.

produced by Japanese labor and capital irrespective of their geographic location.

It was decided to omit this item on the following grounds: The limitations of this item were admitted by the CBS itself when it was forced to exclude from it the income from Japanese investments and enterprises in the colonial areas such as Korea, Taiwan, and others within the yen bloc. But since the latter is quantitatively many times more important than the balance of international investment payments with U.S., Britain, Germany and other foreign (in contrast to colonial) countries, the omission of the former and the inclusion of the latter may give a more distorted picture of the Japanese national income than if the item were completely omitted. And for 1930, this is exactly what happens. The CBS records minus 63.6 million yen for this item but if the colonial aspect is included, this cannot be a negative. For the interest, dividends and profits received by Japanese from their investments in the colonies are so much greater than those paid to Koreans, Formosans, etc., from the net national product of Japan as to more than wipe out the minus quantity recorded from foreign countries.

The difficulties above could have been avoided if it were possible to estimate the balance of investment payments with the colonies. But as the CBS points out, this was too complex. Unlike that of the foreign countries, such transactions would not be recorded through the foreign exchanges

and hence not noted in the balance of international payments account published by the Finance Ministry up to 1937. Even for foreign countries, the crudity of balance of international payments statistics (especially with regard to short-term capital movements) should make one realize that the minus 63.6 million yen is only a rough figure with a wide margin of error.

In view of the conceptual limitations of the item and its negligible quantity, it is not worth the while to make elaborate estimates on the basis of the CBS definition.¹ The Takakashi figures up to and including 1937 are not used because, for one thing it is not known how Takahashi arrived at them, and secondly, their inclusion would make the national income totals before and after 1937 non-comparable.

Up to this point, the item as defined by the CBS, namely, balance of international investment payments with foreign countries was discussed. For years especially after 1937, such balance with the colonial countries increasingly assumes greater proportions. But this net income from colonial areas, as the CBS even in 1930 pointed out, is extremely difficult to estimate. Since the totals in this study (as well as those of the CBS 1930 study and Takahashi) do not include this item, they are underestimations of the total income of Japan Proper, as far as this item alone is concerned. (This is part of the explanation for the huge size of former Finance

1. This is necessary because the Government ceased publication of balance of international payments data after 1937.

Minister Kaya's estimates for the present war year, since the balance with the colonial countries is always a positive figure from the Japanese angle).

Several remarks need to be made about the methodology involved. Foremost of all is the validity of such a long period extrapolation. (1930-1942, a period of 12 years.) Since no original study was made after 1930, this criticism can be made of not only these estimates but all. And to do an original investigation into the Japanese national income in the United States and with the present resources is, of course, out of the question. Hence, with all the dangers involved in such a long period extrapolation, there is no other choice but to use this method.

Throughout, this factor was constantly kept in mind and every attempt was made to select data which would take into account whatever dangers that may reside in a long term extrapolation. Such dangers may arise from not only drastic but slow, imperceptible structural changes within the economy; they may arise from cyclical changes, from price-cost relationship changes and others already mentioned. For this reason whenever possible actual income figures rather than volume times value data were used since the former generally reflect all these changes, while the latter often do not. When the latter were used, adjustments for changes in cost-price relationship were attempted. It is hoped, therefore, that many difficulties inherent in such extrapolations were overcome.

Attention is also called to the negligence of fiscal-calendar year differences in this study. It is to be noted that the Federation in its criticism of Hijikata, Takahashi, Oriental Economist, and others, frequently makes much of this point. Budget figures, say in transportation and communication, for 1940-1941 were used as belonging to the 1940 calendar year. And this is precisely what the Federation does in its own calculation (p. 79, 82). No attempt to adjust for the three-month discrepancy was made because such a procedure has little meaning without the assumption of an even rate of increase throughout a given year; such an assumption is hard to validate. Besides, the correction is apt to be very small.

National income in 1930 prices.

No elaborate effort to deflate the national income for each year was attempted. The Table on the following page is presented for those who wish to get a rough idea of the influence of the price level on the national income.

Estimates for 1943-1945.

After 1942, economic data are too scarce to make possible estimates as calculated below. Probably, the only method available is that of Mrs. M. Daugherty, who uses the annual totals labelled and issued by the Finance Ministry as "national income" to extrapolate the 1942 total. In Section A, it was shown that the Finance Ministry's "national income" figures are actually neither net nor gross national income. They are merely summation of estimated government receipts from taxes, stamps, and

Year	National Income in current Prices		Adjusted by ¹ wholesale price index		Adjusted ² by cost of living index	
	Billions of Yen	Index	Wholesale Index	Adjusted Index	Cost of living Index	Adjusted Index
1930	10.2	100	100	100	100	100
1931	9.1	89	84	106	87	103
1932	10.3	101	92	110	88	115
1933	12.0	118	108	109	94	126
1934	13.0	127	109	117	96	132
1935	14.2	139	110	126	98	142
1936	15.8	154	115	134	103	150
1937	18.4	180	141	128	112	161
1938	20.7	202	159	127	129	157
1939	25.9	253	175	145	142	178
1940	29.6	289	188	154	168	172
1941	34.8	340	200	170	173	197
1942	37.5	367	218	168	181	203

1. Commerce and Industry Ministry's wholesale price index for the entire country.
2. The cost of living index up to and including 1938 as taken from the League of Nation Statistical Yearbook (probably an adjusted Asahi Shimbun index). After 1938, Cabinet Bureau of Statistics' index. The latter is chiefly an urban index.

No attempt to interpret the above adjusted indexes as approximating physical volume indexes should be made. The wholesale indexes do not cover prices of services such as transportation, communication, finance, government, and other services. The summary table shows the smallest increase in net value for these industries.

government enterprises, and from sale of government bonds, plus estimated total of private plant expansion and consumption. Though not national income, they probably serve as the best available indexes of the rate of change in national income for recent years. Considering the components of the Finance Ministry estimates, one can be sure that the national income totals based on them are greatly over-estimated. These are 113 for 1943, 141 for 1944, and 192 for 1945, (1942 = 100), using Mrs. Daugherty's figures which were shifted from fiscal to calendar year basis. The totals shown in the summary table were derived from these indexes. (The total for 1945 is, of course, unrealized national income; no adjustment for the recent activities of the B-29s has been made for 1945).

Estimates of National Income in Japan 1930-1945

(Million Yen)

(Year)	Total in Current prices	Agri- culture	Fishing	Mining	Manu- facturing	Con- struction	Transp. & Com.	Trade & Finance	Ser- vice	Gov't	
1930	10,224	1,706	186	216	2,800	468	695	1,707	326	965	1,155
1931	9,148	1,346	166	171	2,548	445	674	1,434	306	931	1,128
1932	10,338	1,815	167	179	2,996	492	674	1,622	315	936	1,142
1933	12,117	2,296	186	248	3,612	627	723	1,912	319	988	1,206
1934	13,019	2,078	203	305	4,114	767	765	2,134	317	1,052	1,254
1935	14,242	2,484	205	354	4,564	870	799	2,219	329	1,119	1,299
1936	15,779	2,783	240	413	5,040	991	862	2,458	354	1,177	1,461
1937	18,419	3,177	248	495	6,216	1,150	952	2,834	385	1,265	1,697
1938	20,682	3,392	285	685	7,476	897	1,077	3,175	397	1,365	1,933
1939	25,910	5,050	403	829	9,240	1,104	1,258	3,715	447	1,543	2,321
1940	29,606	4,683	509	935	11,676	1,011	1,411	4,445	511	1,747	2,678
1941	34,781	4,265	545	1,097	14,364	2,260	1,626	5,239	535	1,858	2,992
1942	37,501	4,826	555	1,175	16,016	2,026	1,835	5,080	546	2,049	3,393
1943	42,430										
1944	52,858										
1945	72,079										

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Index of National Income in Japan 1930-1945

(1930=100)

(Year)	Total in Current prices	Agri- culture	Fishing	Mining	Manu- facturing	Con- struction	Transp. & Com.	Trade	Fi- nance	Ser- vice	Gov't.
1930	100	100	100	100	100	100	100	100	100	100	100
1931	89	79	89	79	91	95	97	84	94	96	98
1932	101	106	90	83	107	105	97	95	97	97	99
1933	119	135	100	115	129	134	104	112	98	102	104
1934	127	122	109	141	148	164	110	125	97	109	109
1935	139	146	110	164	163	186	115	129	101	116	112
1936	154	163	129	191	180	212	124	144	109	121	126
1937	180	186	133	229	222	246	137	166	118	131	147
1938	202	199	153	317	267	190	155	186	122	141	167
1939	253	296	216	384	330	239	181	218	137	160	201
1940	290	275	273	433	417	216	203	260	157	181	232
1941	340	250	282	508	513	482	234	307	164	193	259
1942	367	283	300	544	572	433	264	298	167	212	294
1943	415										
1944	517										
1945	705										

APPENDIX 1

The table below contains estimates of national income made on the basis of the CBS 1930 estimates. No changes were made in any of its totals, nor in the industrial groupings. The CBS groupings or classification may prove to be convenient frequently because the Japanese Census of 1930 is based on this classification. The explanation as to methodology is contained in another paper written earlier. Generally speaking, the CBS 1930 methods were used and the indexes found in section B were employed.

Appendix 1 Table 1 NATIONAL INCOME IN JAPAN PROPER, 1930-1942
(in million current yen)

<u>Year</u>	<u>Agri.</u>	<u>Fishery</u>	<u>Mining</u>	<u>Mfing.</u>	<u>Commerce</u>	<u>Transp. (Comm.)</u>	<u>Public & other ser- vices</u>	<u>Grand Total</u>
1930	1,883	190	250	3,482	2,704	841	1,347	10,697
1931	1,485	169	196	3,158	2,378	816	1,183	9,385
1932	2,003	171	207	3,727	2,601	816	1,294	10,819
1933	2,535	190	287	4,498	2,983	878	1,373	12,744
1934	2,293	207	351	5,162	3,275	923	1,475	13,686
1935	2,742	209	409	5,683	3,406	966	1,583	14,998
1936	3,071	245	477	6,249	3,707	1,040	1,599	16,388
1937	3,506	253	572	7,729	4,202	1,148	1,720	19,130
1938	3,743	291	792	9,287	4,632	1,300	1,852	21,897
1939	5,574	410	957	11,498	5,361	1,519	2,104	27,425
1940	5,172	519	1,083	14,522	6,330	1,708	2,313	31,647
1941	4,707	555	1,269	17,850	7,330	1,971	2,397	36,079
1942	5,327	566	1,359	19,901	7,271	2,215	2,743	39,382

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Appendix 2. CABINET BUREAU OF STATISTICS' 1930 NATIONAL IN-
COME ESTIMATES
(million yen)

Grand Total	10,636		
Agriculture	1,883	Retail trade	1,409
Agriculture proper	1,788	Stock exchange	8
Dairy and poultry	15	Other exchanges	31
Forestry	35	Banks	140
Public owned	45	Trust companies	11
		Mujin	11
		Insurance companies	67
Aquatic	190	Gov't. postal savings	6
Fisheries	180	Rent from land & houses	270
Aquatic culture	10	Movie theatres	17
		Other theatres	9
Mining	250	Others	15
Metals	52	Hotels	53
Coal	160	Restaurants	123
Petroleum	10	Barbers, etc.	75
Quarrying, etc.	28	Bath-houses	19
		Transportation	841
Manufacturing	3,483	State railways	310
Home industry	903	Other railways	183
Public industry	167	Communications (Gov't.)	208
Private factory industry		Auto	36
Textile	407	Jinriksha & carts	38
Metallurgical	138	Shipping	41
Engineering	330	Aviation	1
Pottery	103	Other carriers	22
Chemical	357	Communications (private)	4
Woodwork	44	Public Service and Professions	1,347
Printing	112	Public officials	399
Food	216	Teachers	318
Gas & electric	131	Medical prof.	190
Miscellaneous	60	Religious workers	101
Construction	470	Domestic service and others	339
Movie Film	4		
Publication	32	Balance of Inter., Investment payments	64
Salt-manufacture	7		
Commerce	2,706		
Wholesale trade	440		

Appendix 3. NATIONAL INCOME OF THE DEPENDENCIES

Technically, the colonies of Japan are Chosen, Taiwan, Karafuto, Nanyo (South Seas), and Kwantung. The Cabinet Bureau of Statistics did not include these areas in their 1930 study; no official estimates are available. There are three non-official estimates -- one by Hijikata in the Keizaigaku Ronshyu, vol. 8, no. 7, another by Takahashi in his Senso to Nihon Keizairyoku, and a third by the Japan Economic Federation, op. cit., p. 87-96, p. 15-22, p. 29-30. Writing last, the Federation was able to improve on the other estimates in several respects and its estimate is by all odds the most reliable of the three. In Table I is presented the Federation's estimates.

For agriculture, aquatic, mining, and manufacturing, official gross production figures were used. Rearranging the Federation's table, in Table II is presented the gross value of output of each colony for the four industries. The Federation states that these were taken from the Statistical Returns of the Colonial Dept., the 30 Years of Statistics of the Kwantung Gov't., and 31st. & 32nd., Statistical Reports of the Kwantung Gov't.

Table II is the sole empirical basis of Table I. Unable to find any material relating to the ratio of net to gross product, the Federation used the ratios established by the CBS 1930 study for Japan Proper, which were 70 percent for agri., 64 percent for aquatic industry, 81 percent for mining, and

Appendix 3

Table I. NATIONAL INCOME OF THE COLONIES, 1930-1937
(in million yen)

<u>Year</u>	<u>Agri.</u>	<u>Aquatic</u>	<u>Mining</u>	<u>Mfing.</u>	<u>Sub- Total</u>	<u>Others</u>	<u>Total National Income</u>
1930	678	77	38	259	1,053	316	1,369
1931	618	67	34	255	975	292	1,267
1932	753	70	44	291	1,158	347	1,505
1933	799	85	59	319	1,261	378	1,640
1934	924	62	81	366	1,433	430	1,863
1935	1,115	72	101	476	1,765	529	2,294
1936	1,361	84	128	542	2,114	634	2,748
1937	1,483	94	161	707	2,445	734	3,179

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Appendix 3

Table II. GROSS VALUE OF OUTPUT OF COLONIAL AGRICULTURE, AQUATIC, MINING, AND MANUFACTURING, 1930-1937
(million yen)

<u>Year</u>	<u>Chosen</u>	<u>Taiwan</u>	<u>Karafuto</u>	<u>South Sea</u>	<u>Kwantung</u>	<u>Total</u>
1930	1,027	525	90	14	84	1,740
1931	970	473	82	19	80	1,624
1932	1,155	568	66	17	109	1,915
1933	1,343	529	93	22	101	2,088
1934	1,503	603	119	23	121	2,368
1935	1,893	740	129	29	146	2,938
1936	2,364	786	144	33	166	3,493
1937	2,776	890	182	47	213	4,109

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43 percent for mfing., (an extensive search into the statistical material may reveal information which may be used to modify these ratios, but this will take too much time.) Herein lies the weakness of all national income studies of colonial areas. If these ratios coincide with the true ratios it could be only by accident. If agriculture (which is the overwhelmingly important economic activity in the colonies) is taken as an example, one sees that in Chosen mulberry trees are of little importance while sugar is an important crop in Formosa, characteristics which are not present in Japanese agriculture. Nor are fertilizers -- one of the major expense items -- so extensively used in the colonies as in Japan Proper. The total cost of tools and buildings probably are higher in Japan Proper. Or if manufacturing is taken, there is not the preponderant importance of the textile industry (in the first half of the 1930's) nor the emphasis on heavy industry (in the late 1930's) in Japan Proper; instead as in Chosen, the food and chemical (agri.) industries are most important -- all factors which point to a different ratio of net to gross products.

Since no convenient data are at hand, no attempt to modify the ratios used by the Federation is made. But the above limitations should be kept in mind in using Table I. To hazard a guess about the character of the Federation estimates insofar as the use of Japan Proper ratios of net to gross is considered, one may say that the estimates for the

agricultural and aquatic sections are undervaluations. Deductible expenses such as cost of seeds, tools, buildings, fertilizer, fodder, and the like are higher per yen of agricultural products in Japan Proper than in the colonies -- which is merely another way of saying that the ratio of such expenses to gross is larger in Japan. (This is on the assumption that the agricultural products were valued at Japan Proper prices in obtaining gross value totals.) The Nippon Rodo Nenkan, 1935, p. 79, on the basis of data from the Agricultural Ministry and Dept., of Overseas Affairs gives the following cost averages per koku of rice (gen-mai brand) for 1933:

(in yen)	<u>Japan Proper</u>	<u>Chosen</u>	<u>Taiwan</u>
Seeds & the like	0.27	0.33	0.24
Fertilizer cost	4.13	3.25	4.10
Cost of various materials	0.67	0.77	0.92
Agricultural implements	<u>0.62</u>	<u>0.44</u>	<u>0.34</u>
Total	5.69	4.79	5.60

The same is probably true with the fishing industry, though no data are available.

When one comes to mining and manufacturing, one can say with certainty that the use of Japan Proper net - gross ratio results in an underestimation of colonial net product. On the assumption that colonial mining and manufacturing are less mechanized than those of Japan Proper and that the cost of raw materials are about the same, one gets lower costs for

machinery depreciation and obsolescence and fuel and motive power per yen of mining and manufactured products for the colonies. This is partly the reason for the fact that in the 1930 CBS-study of national income of Japan Proper, the ratio of net to gross value for home industry was larger than the ratio for factory industry (55 percent and 32 percent respectively). (Of course, this ratio is not by any means a labor productivity ratio, for labor costs are not deductible expenses).

If one assumes that capital funds are scarcer in the colonial areas than in Japan Proper, one can expect the former's industries to be concentrated more in those industries which require less machines and raw material -- whose costs together constitute most of what is termed "deductible expenses."

And if one adds to the above the suspicion that the gross value totals may have significant omissions (e.g., in the amount of farm products consumed by agricultural households, for the construction industries, in the completeness of the coverage of home industry production, etc.), then, one can conclude that, generally speaking, the Federation's net product totals for colonial mining, fishing, agriculture, and mfing., are probably underestimates.

The column "Others" in Table I includes commerce, transportation and communication, the services and professions. Being unable to secure factor payment and firm accounting data, the Federation relied almost entirely on population

data. Its method was as follows: for these fields in Japan Proper, 30.4 percent of the gainfully occupied persons obtained 45 percent of the national income. In the colonies, 15.9 percent were engaged in these occupations; if the same proportion as in Japan Proper was to obtain, 23.5 percent of the total colonial income would go to the 15.9 percent. The 23.5 percent is equivalent to 30 percent of net product of agriculture, aquatic, mining, and mning. Probably this is just as good a method as any, in the absence of information on factor payment. Being thus dependent upon the net product of the rest of the economy, this method possesses all the limitations stated above.

The Federation does not present the colonial income according to each colony. And to construct such a table on the Federation's data may take some time. Since Hijikata's estimates are presented in this manner, these are reproduced in Table III (Taken from Keizaigaku Ronshyu).

Table III. HIJIKATA'S ESTIMATE OF COLONIAL INCOME
(in million yen)

<u>Year</u>	<u>Chosen</u>	<u>Taiwan</u>	<u>Karafuto</u>	<u>South Sea Is.</u>
1931	1,193	448	86	19
1932	1,389	547	80	19
1933	1,536	497	106	21
1934	1,730	702	149	22
1935	1,936	700	153	26

Estimates for Years After 1937 --