Income Distribution in Prewar Japan

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Abstract

This chapter surveys the literature on income distribution, focusing on research covering the prewar period. From the literature, it has been established that prewar Japanese society exhibited high income inequality and that the inequality increased over time. This evidence is consistent with findings on the functional distribution of income, which indicates that the capital share was increasing in Japan in this period. In addition, this chapter expands on the existing research by using a new individual-level data set to explore the relationship between assets and income. It suggests that a substantial part of the income of the core top income earners derived from their assets.

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1. Introduction

Increasing income inequality is one of the most serious problems in the contemporary world, and Japan is no exception to this problem. In this context, it is natural that Piketty (2014) has been attracting great interest from general audiences, as well as from academia. Piketty (2014) is impressive because it is based on extensive research and a rich long-term data set for the major developed countries, including the results of Moriguchi and Saez (2010), who studied long-term change in the top income share in Japan (Atkinson and Piketty 2010). As Moriguchi and Saez (2010) pointed out, there is much literature on the long-term development of income distribution patterns in Japan. In this chapter, I first survey this literature, focusing on research into the prewar period. I focus on the prewar period, which is unique in that studies based on individual level data exist for this period, and, moreover, there is scope to extend these studies. Then, using the new data set, I explore the relationship between income and assets at the individual level in Japan during the prewar period.

The chapter is organized as follows. Section 2 and section 3 survey the literature, with section 2 focusing on the functional income distribution and section 3 focusing on the individual income distribution. Section 4 relates the individual distribution of income to the distribution of assets. Section 5 concludes the chapter.

2. Functional distribution of income

The functional distribution of income in Japan has been studied since the prewar period (Hijikata 1933; Yamada 1951), but the systematic estimation of long-term economic statistics in the 1970s substantially improved the income distribution estimates. The most important work on this issue is by Minami and Ono (1978a, 1978b), who estimated the functional distribution of income in the private, nonagricultural sector by industry, focusing on the manufacturing and mining industries (M industry) and the service sector (S industry).

Figure 1 shows the change in the capital share (capital income/total income) from 1906 to 1940, using data from Minami and Ono (1978a). While there was a pro-cyclical fluctuation, a clear upward trend can be observed in the capital share, which rose from 0.39 in 1906 to 0.54 in 1940. Compared with the downward trend of the capital share in Britain and France in the same period (Piketty 2014), the upward trend in Japan is noteworthy. Further, the level of the capital share in Japan was substantially higher than that in Britain and France in the same period.

Figure 1

Combining the estimates of capital income by Minami and Ono (1978a) with the estimate of capital stock by Ohkawa et al (1966), I can decompose the capital share of the private M and S industries into the rate of return on capital (r) and the capital stock as a proportion of income (K/Y), following Piketty (2014) (Figure 2). That is:

Capital share (rK)/Y = r × (K/Y)
   r: Rate of return on capital
   K: Capital stock
   Y: Total income

Figure 2

There is no clear trend in r in the prewar period in Japan, which is similar to the situation in Britain and France (Piketty 2014). On the other hand, K/Y exhibited an upward trend in Japan, whereas it exhibited a downward trend in Britain and France (Piketty 2014). In other words, the upward trend in K/Y was the major factor behind the upward trend of the capital share in Japan, which may reflect the fact that Japan was in an earlier stage of economic development and industrialization in this period compared with Britain or France.

It is interesting that Minami and Ono (1978a) estimated the income distribution by dividing each industry into the corporate sector and the noncorporate sector. The noncorporate sector refers to the sector composed of self-employed persons and small, unincorporated firms. In the prewar period, this sector accounted for a substantial part of the Japanese economy. For instance, in 1906 and 1940, the noncorporate sector's share in the total income of the M and S was 74.7% and 53.1%, respectively (Minami and Ono 1978a, p.161).

Figure 3 shows the capital shares in the two sectors in the M and S industries. Although there was no upward trend for the corporate sector, a clear upward trend can be observed for the noncorporate sector. Therefore, the upward trend in the aggregate capital share can be attributed to the upward trend in the noncorporate sector.

Figure 3

The observation that the capital share trend was flat for the corporate sector is supported by data for the cotton spinning industry, for which detailed and precise

firm-level measures of outputs and inputs are available. The cotton spinning industry was a typical industry, composed of large firms. Fujino et al (1979) aggregated the firm-level data to obtain industry-level data for this industry. Figure 4 is based on the data from Fujino et al (1979). It confirms that there was no upward trend in the capital share for the cotton spinning industry.

Figure 4

Minami and Ono (1978b) explain the upward trend in the capital share in the noncorporate sector using the unlimited labor supply model of Arthur Lewis (Lewis 1954; Fei and Ranis 1964; Minami 1973; Yoshikawa 1994). Figure 5 summarizes the unlimited labor supply model and its implications for income distribution. The basic idea is that the noncorporate sector has excess labor for which the marginal productivity is lower than the wage, in the early stage of economic development, because the marginal productivity of this labor is lower than the minimum subsistence level. Given this, when economic development proceeds and labor moves from the noncorporate sector to the corporate sector, the marginal productivity of labor in the noncorporate sector rises, which, in turn, increases the capital share. Minami (1973) showed that the marginal productivity in the agricultural sector in Japan was indeed lower than the real wage before the 1960s.

Figure 5, Table 1

3. Individual distribution of income

One of the reasons that Piketty (2014) has attracted wide-ranging interest is that it is based on long-term data on individual income distributions that are comparable across major developed countries. Piketty (2014) was able to undertake such research by focusing on the top income share as a measure of income inequality. As data on income tax revenue and the number of income taxpayers by income bracket are available for major countries over long time periods, it was possible to estimate the income of the top income group, assuming a Pareto distribution. Then, dividing this by the national income, Piketty obtained long-term data on the top income share.

Using this methodology, Moriguchi and Saez (2010) estimated the income share of the top 0.01%, 0.1%, 0.5%, 1%, 5% and 10% groups in Japan. Figure 6 shows the top 1% income share for the prewar period. Except for a decline in the 1890s, there is a moderate upward trend in the top 1% income share. This feature is common to the top

0.01% and 0.1% income shares. In addition, the level and trend in the top income share in Japan was similar to those in France and the U.S. (Moriguchi and Saez 2010; Piketty 2014).

Figure 6

In the prewar period, income taxes generally covered only a small portion of people because of high exemption points. As a result, only between 4% and 13% of households paid class III income tax in Japan (Terasaki 1986). As mentioned above, Piketty (2014) chose a clever strategy to overcome this data limitation assuming the Pareto distribution of income. For prewar Japan, as well as income tax data, another important data source for studying income distribution is available, the household tax (*kosu wari*) records.

The household tax was a local tax, introduced in 1878. The most distinctive feature of the household tax is that it covered almost all the households in each city, town, or village. Indeed, the percentage of households covered was higher than 90% in most cases (Minami 1996, p.6). A further advantage is that the income in the household tax records includes interest on public and corporate bonds, which was not included in the class III income tax records.[1] Until the 1910s, the amount of tax for each household was determined at the discretion of the authorities of each city, town, or village and, hence, the household tax records did not contain information on the income of each household. In 1921 and 1922, the Household Tax Act and the Detailed Regulations for Enforcement of that act were legislated. Following the change in the legal framework, the records of the household tax came to include detailed household-level information, including the name of the householders, income, income after exemptions, and estates (Minami 1996, p.5). For these reasons, there are great advantages in using the household tax records. However, there are also shortcomings. First, these records were made and preserved by individual cities, towns, and villages, and hence it is not easy for researchers to collect them systematically. Second, 13 large cities, including Tokyo, Osaka, Nagoya, and Kyoto, did not impose the household tax (Minami 1996, p.18).

Ryoshin Minami and Akira Ono collected the records of 210 cities, towns, and villages. Using this household tax data and other sources, Minami (1996) studied the long-term income distribution in Japan. In particular, Minami (1996) estimated a Gini index at the national level for 1923, 1930, and 1937. With respect to the high income

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[1] The interest on public and corporate bonds was separated from the class III income tax records and formed part of the class II income tax records.

group (income ≥ 1,500 yen), the index was calculated with the class III income tax data, whereas for the group whose income was less than 1,500 yen, the index was calculated with the household tax data. Then, the two indices were combined to obtain a Gini index at the national level. Although the income information from the household tax records has limitations, as mentioned above, Minami (1996) was able to present a retroactive estimation of the Gini index from the 1890s.

The result is shown in Figure 6. It indicates that the Gini index had an upward trend in prewar Japan, which is consistent with the trend in the top 1% income share, and that it reached 0.547 in 1937. This is substantially higher than the index in modern Japan and other developed countries in the 1980s and 1990s. It should be noted that the estimated Gini index in prewar Japan is based on income before redistribution. The Gini index before redistribution in modern Japan was 0.317 (1989) and 0.326 (1994). By comparison, it was 0.411 in the U.S. (1986), 0.428 in the U.K. (1986), and 0.417 in France (1984) (Nishizaki et al. 1998, p.26)[2].

As the literature surveyed indicates, prewar Japanese society was characterized by large income inequalities, with the top income group including very wealthy people. Yazawa (2004) investigated the attributes of those wealthy people in 1936, using the 1937 issue of *Who's Who Japan (Nihon Shinshiroku)*. *Who's Who Japan* contains individual-level information about noteworthy and rich individuals,[3] including their name, address, affiliation, class III income tax, and business profit tax. The 1937 issue provides information on 187,000 persons. A shortcoming of the source is that it covers only people who resided in major cities and their suburban counties. In the case of the 1937 issue, the areas covered are located in 21 of Japan's 47 prefectures. Using these data, Yazawa (2004) examined the top 5,000 persons (0.013% of the adult population) in terms of their class III income tax and found three overlapping social groups. The first group consisted of 259 persons, who founded and invested in their asset holding companies, including the holding companies of the zaibatsu, huge business groups (Morikawa 1992; Okazaki 2001). The second group consisted of 98 nobles, and the third was composed of the 88 Diet members (Yazawa 2004, pp.96–97).

4. The relationship between income and assets at the individual level

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[2] It should be noted that the Gini index is not an ideal measure of income inequality because it implicitly assumes a weighting of a unit of income for each person according to his/her position in the distribution, and it is sensitive to an income change in the lower income group (Atkinson 2015, p.17).

[3] In the case of the 1937 issue, the criterion of wealth was that a person paid more than 50 yen in class III income tax or more than 70 yen in business profit tax.

Although *Who's Who Japan* is a valuable source, it covers only the major cities and their suburban areas, as mentioned above. This means that it excludes the large landowners in rural areas. Therefore, other sources, including (A) "Zenkoku kinmanka obanzuke" (Ranking list of wealthy persons in Japan) and (B) "Zenkoku tagaku nouzeisha ichiran" (List of high taxpayers in Japan) are useful in gaining a picture of the wealthy class in Japanese society. Both sources were compiled by credit bureaus, source (A) by Teikoku Koshinjo and source (B) by Tokyo Shobunsham. Both lists cover all of the 47 prefectures and both were published in 1933, by the publisher Kodan Kurabu. (A) provides information on the individual-level assets, evaluated by the credit bureau, whereas (B) provides information on the individual-level class III income tax. From the class III income tax data, I can calculate the class III income. Using these two sources, I can make a significant contribution to the existing literature by matching the income tax information with the asset information at the individual level.

Detailed investigations using these sources are left for future research, but some basic observations are provided here. First, I examine the top 100 income earners (Table 2). The incomes reported here are calculated from the class III income tax paid. The average income of this group was 388,201 yen, which is 1,218 times larger than the average income of the adult population in 1933.[4] The person with the largest income was Takakimi Mitsui, head of the of Mitsui family and the President of Mitsui Gomei Gaisha (the holding company of Mitsui Zaibatsu). A total of 52 persons in the top 100 lived in Tokyo Prefecture, with Osaka and Hyogo having the second and third largest concentrations of top 100 persons, respectively.

Table 2

Second, Table 3 shows the basic statistics for the top 104 asset holders. As the asset data from source (A) are based on the evaluation of the credit bureau, the data are rounded. The average assets of the top 104 asset holders amounted to 58.48 million yen, which is 21,815 times more than the average assets of the adult population in 1930.[5] Compared with Table 2, it is found that assets were much more concentrated than income, which is consistent with the data for France for the same era (Piketty 2014).

[4] The average income of the adult population is obtained by dividing the national disposable income by the adult population. The disposable income is obtained from the Economic Planning Agency (1965), whereas the adult population is from the Statistics Bureau, Ministry of Internal Affairs and Telecommunication (2006).

[5] The average income of the adult population is obtained by dividing the national private assets by the adult population. The data on national private assets in 1930 are from the Economic Planning Agency (1976).

Table 3

An interesting question is how closely were the incomes and the assets correlated. Matching the list of top 100 income earners with the list of large asset holders (330 persons who owned assets of no less than 5 million yen in 1933), I find that 76 of the top 100 income earners had assets of no less than 5 million yen. In other words, most of the top 100 income earners were large asset holders at the same time. Figure 7 provides a scatter diagram, indicating the correlation between assets and income. As the Figure shows, there was a close correlation between asset and income, which suggests that the top 100 income earners were as wealthy as they were because they owned large assets.

Figure 7

A regression analysis provides additional evidence. We regress the income of each person on his/her assets. In this regression, we assume that assets are zero for those persons whose assets were less than 5 million yen. As shown in Table 3, even with this assumption, the coefficient for assets is positive and strongly significant, and the R^2 is as large as 0.686. Thus, it can be inferred that a substantial part of the income of the top income group, very narrowly defined, was derived from their assets. That said, it should be noted that among the 24 persons who were in the top 100 income earners, but were not in the list of large asset holders (assets of no less than 5 million yen), we find famous professional corporate executives, including Nagafumi Aruga (executive director of Mitsui Gomei Gaisha), Yunosuke Yasukawa (executive director of Mitsui & Co.), and Tamaki Makita (executive director of Mitsui Mining), which suggests that the salaries of these corporate executives were sufficiently high for them to be included in the top income earners, even though they did not derive their large incomes from their assets.[6]

Table 4

5. Concluding remarks

Japan is an attractive field for conducting research on income distribution from an historical perspective. Rich sources of relevant information and data are available from the late nineteenth century to the present for such research. Exploiting this advantage,

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[6] Indeed, the bonuses of the corporate directors were very high (Okazaki 1999).

many scholars have studied the historical evolution of income distribution in Japan. This chapter surveyed the literature on income distribution, focusing on the research on the prewar period. From the literature, it has been established that prewar Japanese society exhibited high income inequality and that the inequality increased over time. This evidence is consistent with the findings on the functional distribution of income, which indicated that the capital share was increasing in Japan in this period.

These findings support Piketty (2014) , but, at the same time, this chapter indicates the limitations of this view and its approach. First, the mechanism of the increase in the capital share in prewar Japan was different from that specified by Piketty (2014). In prewar Japan, the major driving force behind the increase in the capital share was the change from a situation of unlimited labor supply, in the sense of Lewis (1954), and the decline of excess labor in the noncorporate sector. This suggests that, to understand the functional income distribution, the structure of the economy should be taken into account.

Further, this chapter explored the relationship between assets and income and found that a substantial part of the income of the core top income earners was derived from their assets. This is consistent with Piketty (2014), but it is notable that, in this paper, it was revealed by examining the individual-level data on income and assets. As Piketty (2014) and Atkinson and Piketty (2010) showed, tax statistics are a useful source for investigating the individual income distribution, but additional data is required to understand more precisely the relationship between income and assets.

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Figure 1 Overtime change in capital share in non-agricultural sector
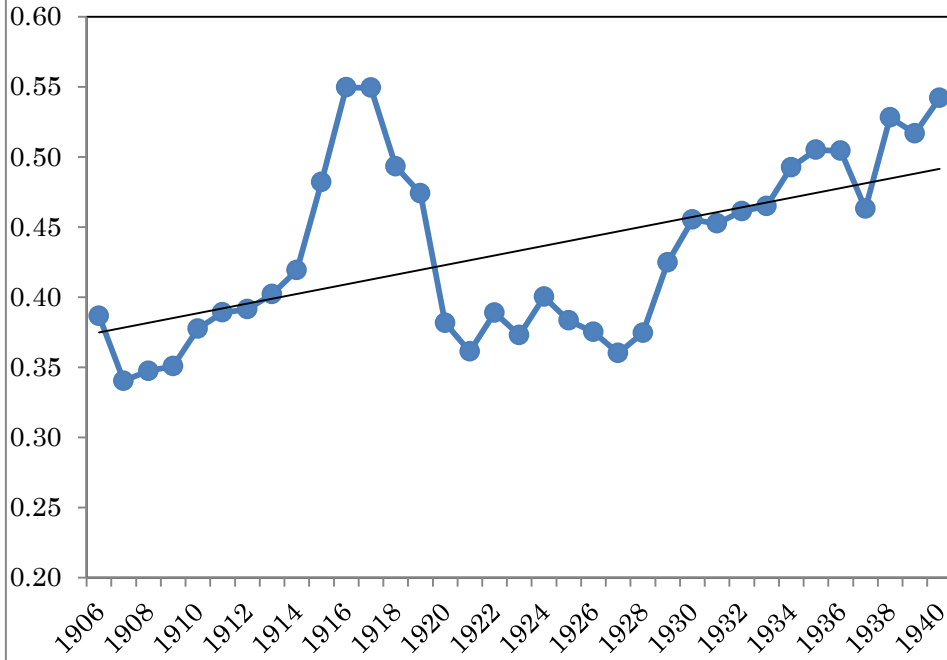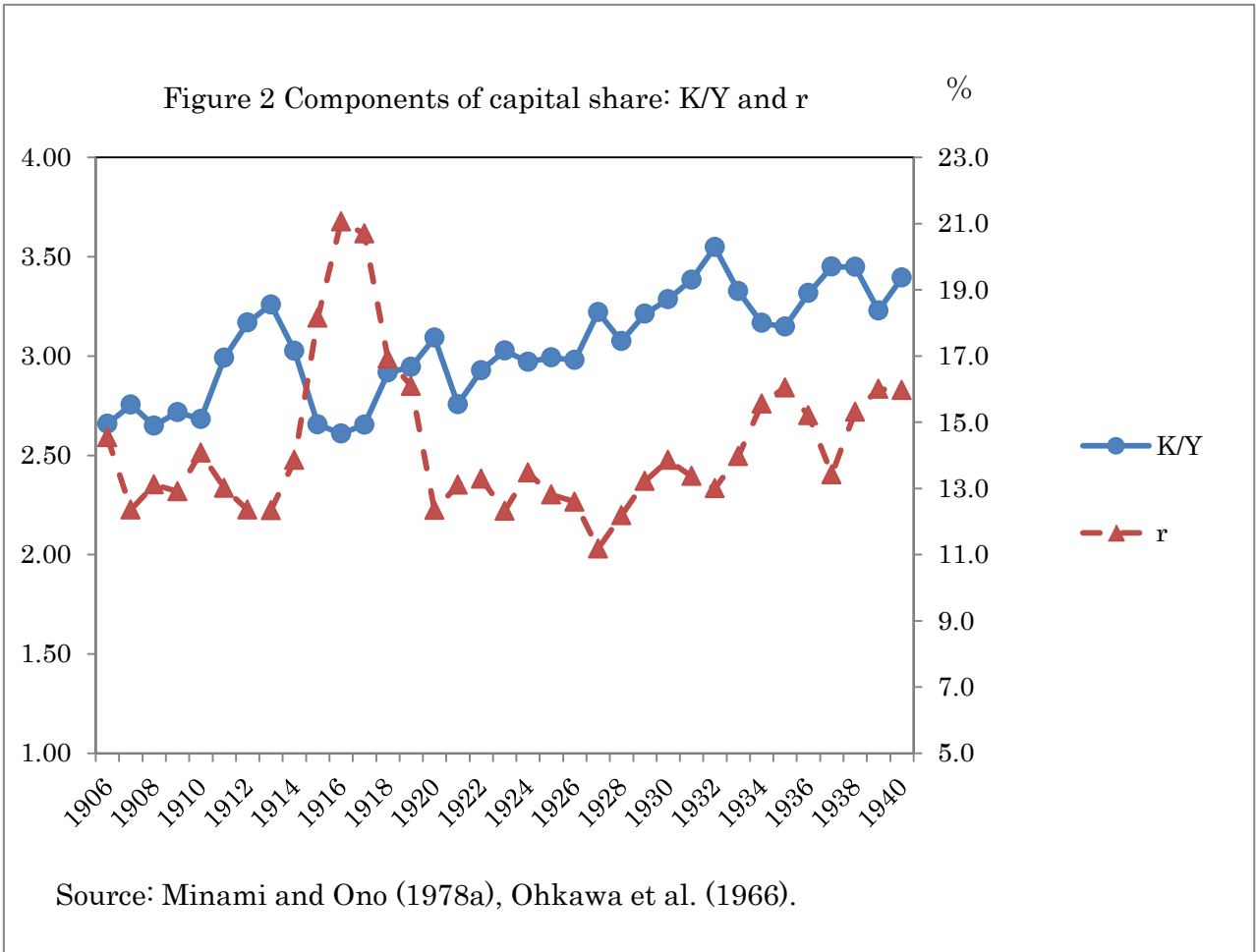
Source: Minami and Ono

Figure 2 Components of capital share: K/Y and r

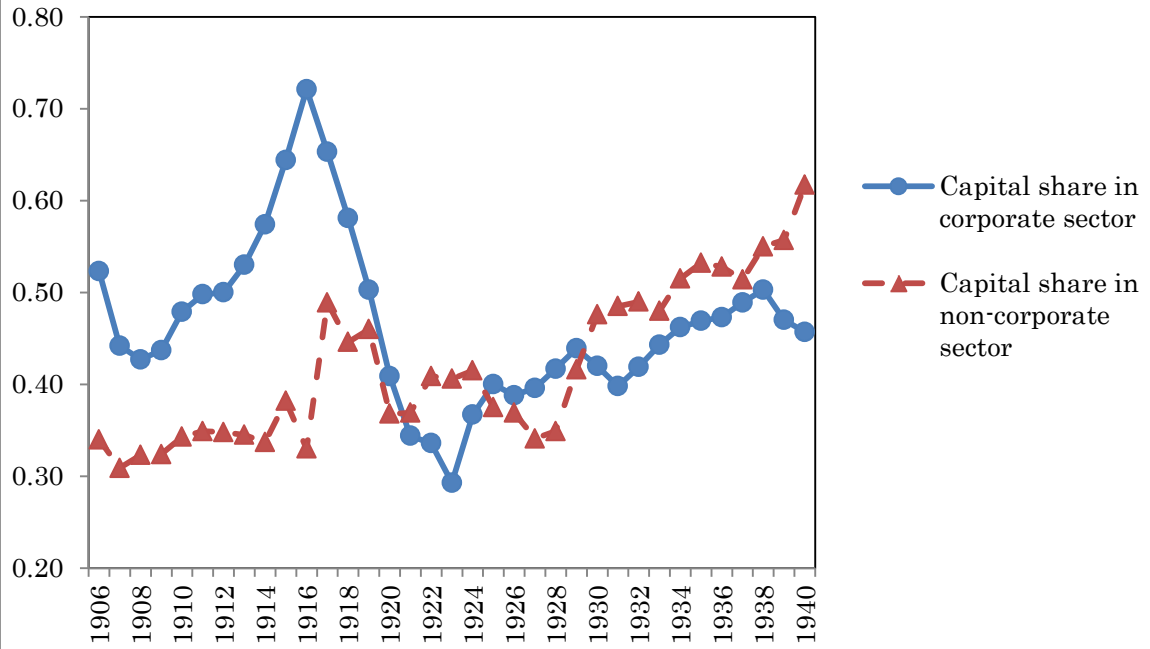Source: Minami and Ono (1978a), Ohkawa et al. (1966).

Figure 3Capital share in corporate and non-corporate sector

Source : Minami and Ono (1978a).

Figure 4 Capital share in the
cotton spinning industry
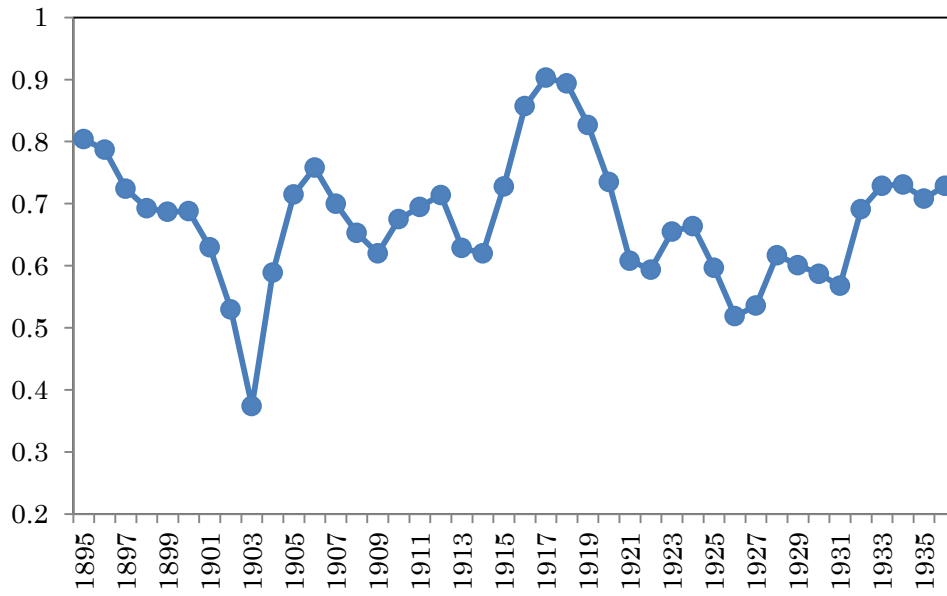
Source: Fujino, Fujino and Ono (1979).

Figure 5 Lewis turning point and capital share of
non-corporate sector

Labor productivity

Average productivity

Minimum
subsistent
level

Wage

Marginal productivity

Labor input

Lewis turning point

Capital share

1

Labor input

Economic development

Figure 6 Indices of income inequality
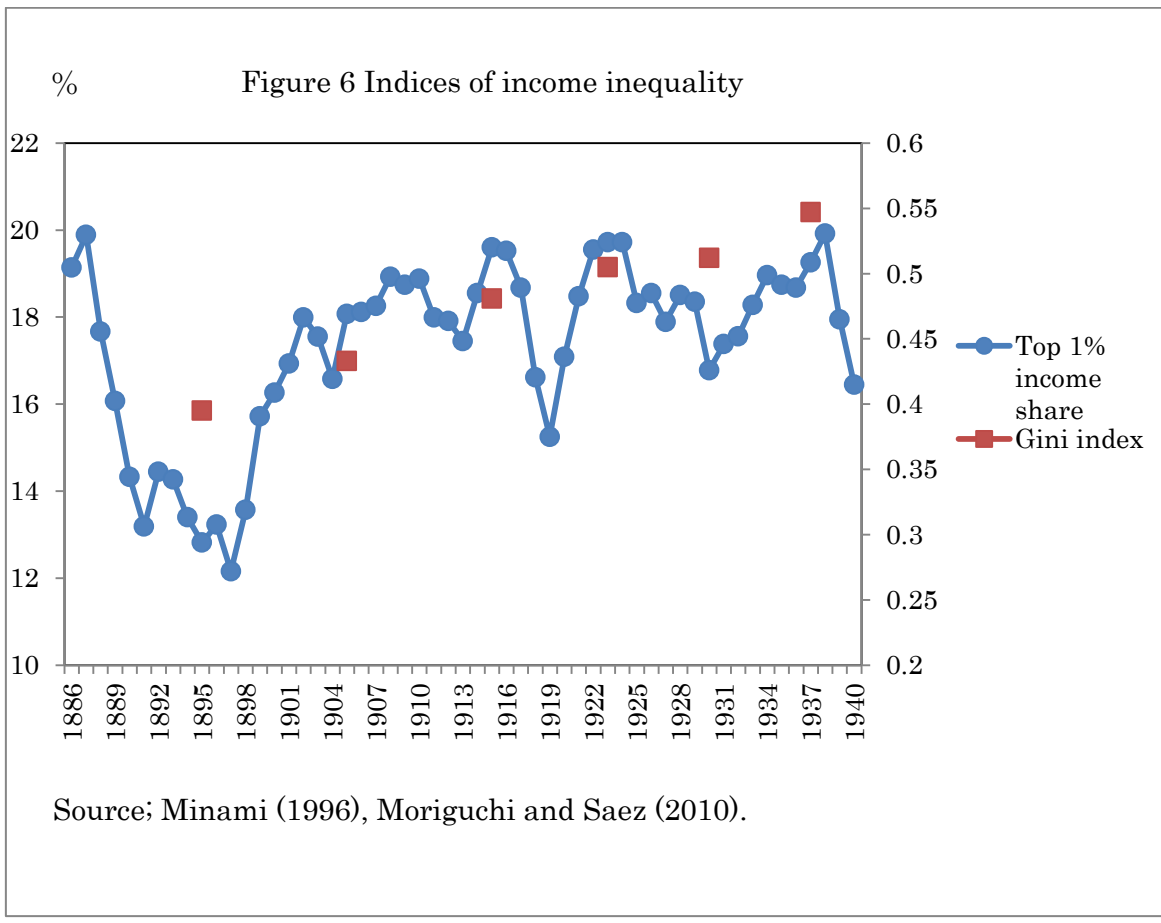
Source; Minami (1996), Moriguchi and Saez (2010).
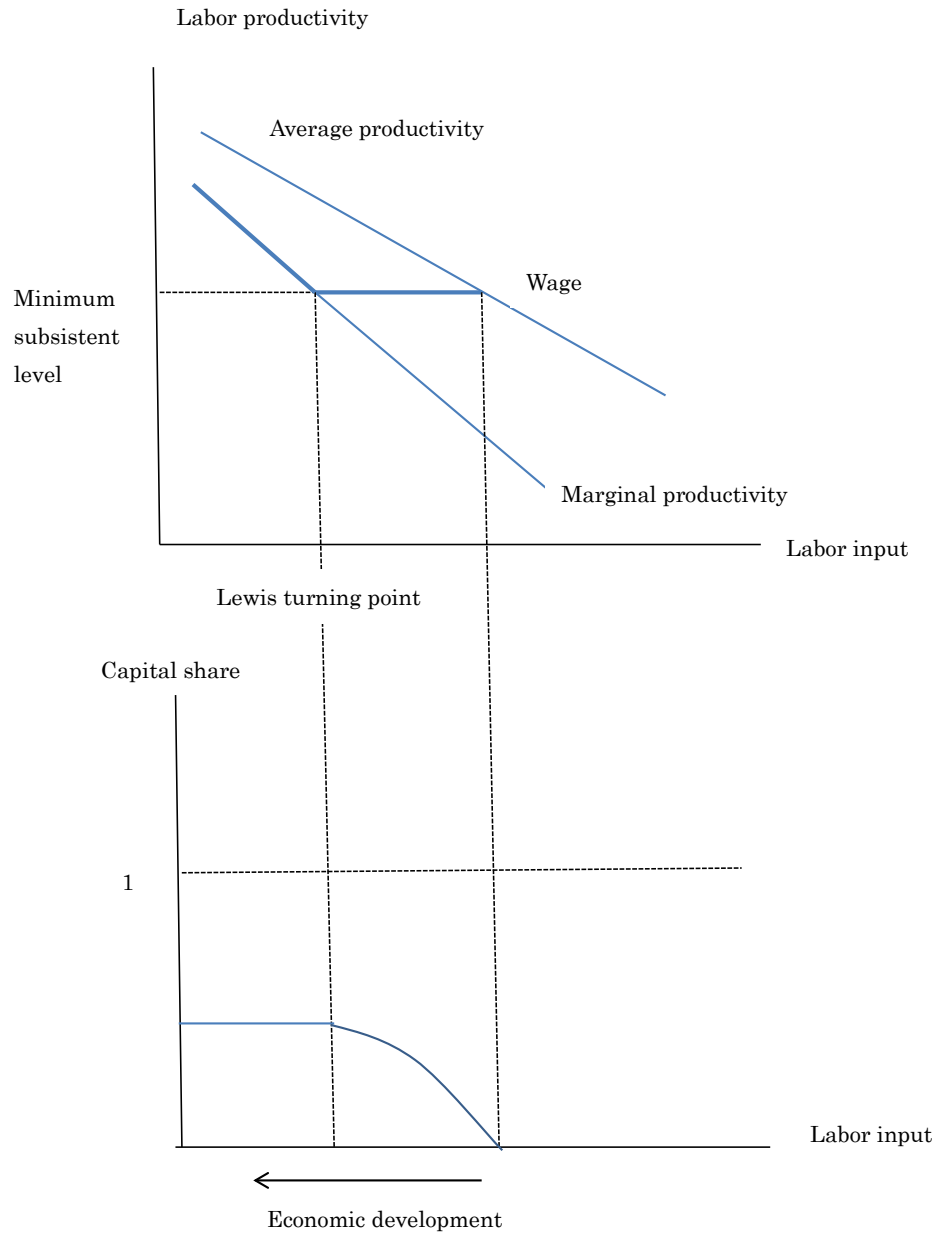
Figure 7 Correration between asset and income for top 100 income earners in 1933
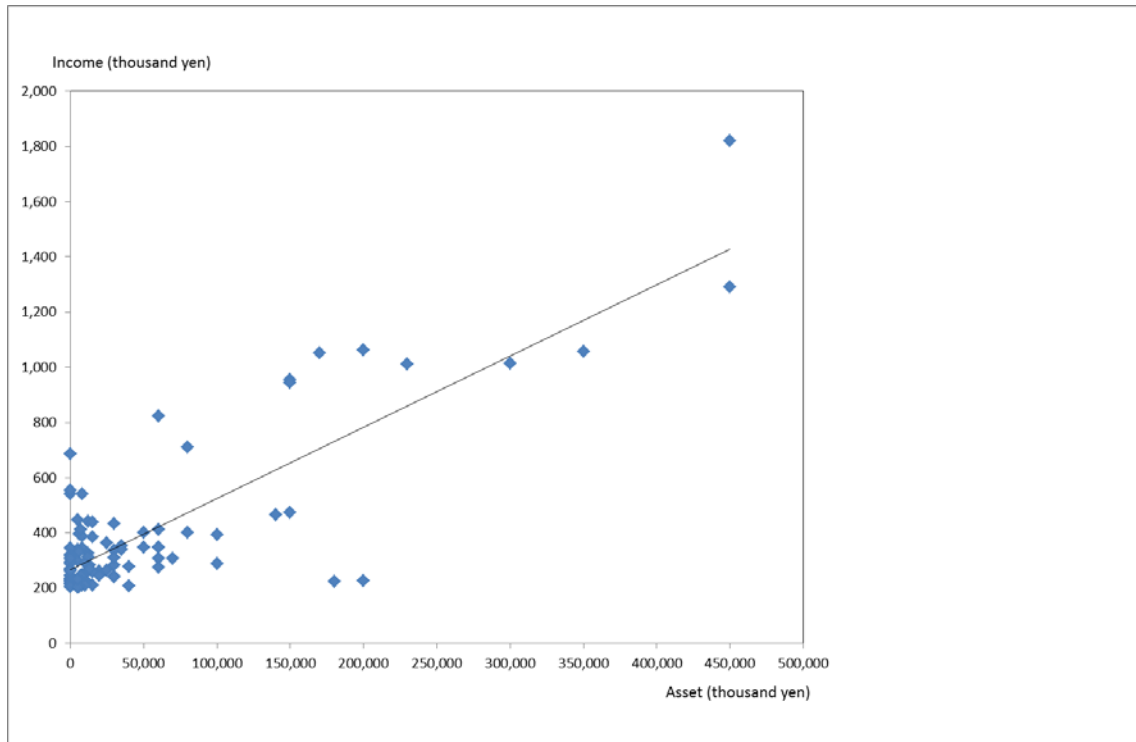
Table 1 Lewis turning point in Japan

	(1) Average productivity in agriculture		(2) Marginal productivity in agriculture		(3) Real wage in agriculture		(4) (3)/(2)
	yen/person		yen/person		yen/person		
1900		130		22		108	4.9
1920		196		33		122	3.7
1938		238		70		118	1.7
	1,000 yen/ person		yen/person		yen/person		
1955		460		259		219	0.8
1970		1142		642		495	0.8
1990		2371		1333		969	0.7

Minami (2002), p.215.

Table 2 Top 100 income earners by prefecture in 1933

	Number of top 100 income persons	Income			Average/(average income of the adult population in Japan)
	persons	Average yen	Max yen	Min yen	
Total	100	388,201	1,820,695	202,226	1,218
Tokyo	52	444,051	1,820,695	207,434	1,393
Osaka	22	292,866	540,176	204,438	919
Hyogo	10	364,928	1,012,681	210,134	1,145
Aichi	4	367,956	554,331	276,018	1,154
Kyoto	2	351,830	433,930	269,730	1,104
Nigata	2	456,738	711,250	202,226	1,433
Hokkaido	2	341,568	401,894	281,242	1,072
Mie	1	231,402	231,402	231,402	726
Yamagata	1	238,350	238,350	238,350	748
Nara	1	684,835	684,835	684,835	2,149
Toyama	1	244,690	244,690	244,690	768
Fukui	1	249,618	249,618	249,618	783
Fukuoka	1	216,138	216,138	216,138	678

Source: "Zenkoku tagaku nouzeisha ichiran," Economic Planning Agency (1965).

Table 3 Top 104 asset holders by prefecture in 1933

	Number of top 104 asset holders	Asset			Average/(average asset/adult population in Japan in 1930)
		Average	Max	Min	
		ten thousand yen	ten thousand yen	ten thousand yen	
Total	104	5,848	45,000	1,200	21,815
Tokyo	58	7,700	45,000	1,200	28,724
Hyogo	13	5,169	30,000	1,200	19,283
Osaka	10	2,820	5,000	1,200	10,520
Aichi	5	2,180	400	1,200	8,132
Kyoto	3	2,933	4,000	1,300	10,942
Shiga	2	3,250	3,500	3,000	12,124
Nara	2	1,750	2,000	1,500	6,528
Nigata	2	5,000	8,000	2,000	18,652
Kanagawa	1	2,000	2,000	2,000	7,461
Gifu	1	1,500	1,500	1,500	5,596
Shimane	1	4,000	4,000	4,000	14,921
Chiba	1	3,000	3,000	3,000	11,191
Toyama	1	2,000	2,000	2,000	7,461
Hokkaido	1	5,000	5,000	5,000	18,652
Miyagi	1	3,000	3,000	3,000	11,191
Yamagata	1	3,000	3,000	3,000	11,191
Yamaguchi	1	3,000	3,000	3,000	11,191

Source: "Zenkoku kinmanka obanzuke," Economic Planning Agency (1976).

Table 4 Asset as a determinant of income

Dependent variable: Income		
Asset	0.00258	（8.67)
Const.	265667	(19.23)
Obs	100	
R^2	0.686	