Who Grew Rich?
Anatomy and Intergenerational Dynamics of Economic Elites under Japan's Modernization

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Abstract

The transition from a feudal to a modern society has a substantial impact on income distribution. We explore how transition to a modern society and its economic consequence, particularly industrialization, affected the composition and inter-generational mobility of top income people, in the late nineteenth and early twentieth centuries Japan. We analyze newly constructed individual-level data of economic elites on income, occupation, education, social stratum and family relationship, and find that the regime change and industrialization provided commonage people a new opportunity to grow rich and escape from the fetter of their social strata and fathers' income, but that this process resulted in emergence of a new group of economic elites reproduced intergenerationally.

Keyword: Income distribution, Inequality, Economic elites, Social mobility, Modernization, Industrialization, Japan
JEL classification numbers: D31, N15, N85, O15, O53

1 Introduction

Income distribution has become a major subject of economics in recent years given the increasing income inequality worldwide that is even prevalent in advanced countries (Atkinson and Bourguignon 2015). In the field of economic history, the implications of the Industrial Revolution in the eighteenth and nineteenth centuries in terms of income inequality and living standards (Allen 2009; Clark and Cummins 2014; Hobsbawm 1968, Hudson 1992; 1975; Lindert 1986, 1994, 2000; Lindert and Williamson 1983, 1985, 1991) have been a subject of interest. The debate continues, but a broad consensus has been reached that at least dating from the late eighteenth century to the early nineteenth century, income inequality increased, which can be interpreted as a phase of rising income inequality in the "Kuznets Curve" (Kuznets 1955).

In the literature, particularly in the series of studies by Lindert and Williamson, who have been leading the quantitative historical research on income distribution, the main focus is wage and salary distribution, not property income (Dumke 1991). On the other hand, Piketty (2014) and Atkinson and Piketty eds. (2007, 2010) emphasized the significance of property income and its impact on the historical dynamics of income inequality. These studies are distinctive in that they focused on the highest earning segment of the population. This strategy enabled them to obtain a consistent long-term measure of income distribution for many countries, and their long-term comparative studies have aroused new interest regarding top income earners. A series of works by Piketty include controversial points (Hudson and Tribe eds. 2016; Boushey et al. eds. 2017), but his overall view reminds us that it is essential to reconsider the implications of the Industrial Revolution, or industrialization more generally, from a broader perspective.

An important work related to this point is Cain and Hopkins (1993a, 1993b), which proposed a hypothesis whereby the traditional British elite group, "gentlemen," survived the Industrial Revolution and even the two World Wars. This group characterized British Imperialism. Gentlemen in Britain were originally landed aristocrats, but from the nineteenth century, they transformed, absorbing major capitalists in the financial and trade sectors in order to maintain their dominant position in economic, social, and political respects. In this sense, British society was immobile as

well as unequal. In the recent article, Allen (2019) retabulated the social tables in England and Wales from the seventeenth century to the nineteenth century and revealed many interesting findings on the dynamics of income distribution during the Industrial Revolution at the macro level. Allen (2019) found that the landed class and the bourgeoisie had the greatest income gains in the eighteenth century, and the income of the bourgeoisie caught up with that of the landed class in the nineteenth century.

The duration of elite groups beyond generations has attracted interest and been a subject of historical social mobility studies in recent years. Clark and Ishii (2013), Clark (2014), and Clark and Cummins (2015) developed a new methodology to measure social mobility using surnames. A series of studies by Clark and coauthors indicated that social mobility was substantially lower than had previously been believed when the focus was unobservable fundamental status. Meanwhile, there are studies on intergenerational social mobility based on data that link information between generations. Long and Ferrie (2013) compared intergenerational occupational mobility between Britain and the United States since 1850. They found that the United States was indeed a mobile society in the nineteenth century but mobility declined in the twentieth century. Dribe and Helgertz (2016) analyzed Swedish data linking three generations from the nineteenth century to identify the influence of grandfathers on class and occupational status after controlling for the influence of fathers.

Integrating the perspectives and insights of these studies, this paper investigates the structure and mobility of economic elites during Japan's transition to a modern society and industrialization using data from the late nineteenth and early twentieth centuries. Japan is particularly interesting during this period in the context of the historical research on this subject. Japan was under the feudal system for more than 250 years until the broad regime change, the Meiji Restoration, occurred in 1868. After the Meiji Restoration, Japan introduced modern institutions and technologies from the West to initiate modern economic growth and industrialization. Regime change and industrialization generated new economic elites while old elites remained due to their status in the feudal society. We explore the dynamics of the incomes of the old and new elites using unique

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individual-level data.

These data are from two series of Who's Who books, *Jinji-Koshin-Roku* and *Nihon-Shinshi-Roku*. *Jinji-Koshin-Roku* was edited by a credit bureau, Jinji Koshinjo, from 1903 while *Nihon-Shinshi-Roku* was edited by a social club, Kojunsha, from 1889. *Jinji-Koshin-Roku* contains detailed individual-level biographic information (for example, educational background, family, and social stratum) and basic personal data such as name, birthday, and living area. The 1934 issue also provides individual-level personal income tax data. Although the 1903 issue of *Jinji-Koshin-Roku* does not contain personal income tax data, the 1899 issue of *Nihon-Shinshi-Roku* does. Hence we merged the information from the 1903 issue of *Jinji-Koshin-Roku* and the 1899 issue of *Nihon-Shinshi-Roku*. The personal income tax data from the 1899 issue of *Nihon-Shinshi-Roku* and the 1934 issue of *Jinji-Koshin-Roku* are for 1898 and 1933, respectively.[1] From the personal income tax data, we can back out the income at the individual-level, which includes property income, wages, and salaries. The year 1898 was 30 years after the Meiji Restoration and during the period of modern industrialization in Japan, whereas the year 1933 was when the Japanese economy, which had improved and expanded during World War I, was overcoming the Great Depression.

We contribute to the existing literature in the following three ways. First, by analyzing the relationship between social stratum, occupation choice, and income using the data described above, we reveal how the transition to a modern society and industrialization affected the structure of economic elites at the individual level. Our study, therefore, provides us with a deeper understanding of the historical dynamics of income distribution.

Second, in the context of Piketty (2014) and Atkinson and Piketty eds. (2007, 2010), this paper sheds light on the internal structure of the top income group that was the focus of their study. Both works found that in most of the current advanced countries, income was highly concentrated in the top income group in the period before World War II. For instance, the top 1% income group earned around 20% of the national income in the United States, the United Kingdom, Canada, Austria, France, Germany, Sweden, and Japan. This paper explores the composition and change over time

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[1]We supplement the personal income tax data for 1933 with the 1934 issue of *Nihon-Shinhi-Roku*. See Section 3.

at the individual-level, focusing on Japan.

Third, this paper investigates the mechanism of intergenerational income mobility. That is, we show that occupation choice was crucial for a person to escape the restraints of their social stratum and dependence on their father's income. We show that income mobility also resulted in the emergence of a new group of economic elites reproduced intergenerationally.

In these three ways, we contribute to the literature on income distribution in prewar Japan at the same time. Quantitative research on income distribution in Japan dates back to the prewar period (Hayakawa 1944; Shiomi et al. 1933), but a series of works by Ryoshin Minami created a new epoch (Minami 1996, 1998, 2008). Minami systematically collected the household tax documents in prewar Japan to gather individual-level income data for 210 municipalities. By combining this data with the income tax statistics, Minami estimated the national-level Gini index for 1923, 1930, and 1939 and found an increasing trend in income inequality. Whereas Minami's estimation was based on unique solid data, the data points are limited to three years. Moriguchi and Saez (2008, 2010) estimated long-term annual data on the share of the top income group in the national income from 1886 to 2005, comparable with the estimation by Piketty (2003) and Piketty and Saez (2003), and found that the share of the top income group in Japan was as high as that of the top income group in the United States and European countries before World War II.

By focusing on the top income group, Moriguchi and Saez obtained a consistent long-term measure of income inequality. Meanwhile, concerning wealth persons, detailed individual-level information related to income distribution are available. Yazawa (2004) collected individual-level data on personal income tax, occupation, and social stratum for 5,000 wealthy persons for 1936 from *Nihon-Shinshi-Roku* (Japan's Who's Who) to identify three groups with small overlaps; namely, (a) peerage, (b) families with asset management firms, and (c) diet members. He argued that these groups were formed and maintained based on different institutions; that is, the peerage system, the tax system, and the election system. The author also noted that these three groups covered just 10% of the 5,000 observations, and the other 90% included people of various occupations. Yazawa et al. (2006) collected individual-level data comparable to those of Yazawa (2004)

of around 5,000 wealthy persons in Tokyo Prefecture for each year 1910, 1917, 1924, 1930, and 1936. The data were collected from various issues of *Nihon-Shinshi-Roku* to examine the mobility of the wealthy within a generation. The authors found that out of 5,016 persons with observations for 1910, 324 persons remained in the high income group in 1936. The authors also found that those who had occupations in primary industry, asset management, and heavy industries tended to remain in the high income group with a high probability, and the status of peerage contributed to a person remaining in the high income group.

Yazawa (2004) and Yazawa et al. (2006) shed new light on the history of income distribution in Japan based on the individual-level data of wealthy persons, but we consider that the potential of the data and the data sources have not been fully exploited. First, using individual-level data from these sources, we can systematically analyze the effects of each person's occupational, educational, and social backgrounds on their income and thereby explore the implications of transition to a modern society and industrialization on the economic elites. As mentioned above, the year 1898 was 30 years after the Meiji Restoration and during the early phase of industrialization in Japan. The year 1898 thus provides a valuable opportunity to explore the economic and social impacts of the transition to a modern society and early industrialization based on individual-level data. Second, we can link data from two generations; that is, father and son, by connecting the information from the 1899 issue of *Nihon-Shinshi-Roku*, the 1903 issue of *Jinji-Koshin-Roku*, and the 1934 issue of *Jinji-Koshin-Roku*. These linked data enable us to measure intergenerational income mobility and to analyze the associated affective factors.

The remainder of this paper is organized as follows. Section 2 provides an overview of the structural change and its implications for functional income distribution. In Section 3, we describe the basic features of individual income distribution using the individual-level data. In Section 4, we analyze the impact of a person's educational, occupational, and social background on their income. In addition, we analyze the impact of a father's income on the next generation's income. Section 5 concludes the paper.

2 Structural change in modern Japan's economy and society

2.1 Meiji Restoration

The Meiji Restoration in 1868, and the subsequent reforms, transformed Japan from a feudal society that had been governed by the Tokugawa Shogunate for more than 250 years, to a modern, more liberal and industrialized society. In 1871, the Meiji government allowed commoners to have a family name in 1870 and granted people the freedom to establish residence in any location they wanted, choose any occupation, and to marry anyone regardless of their social strata (Gordon 2014, pp.64-65; Shinbo 1995, pp.46-47; Sonoda et al. 1995, p.239). Additionally, in 1870, the government established the Ministry of Industry (*Kobu Sho*) to promote industrialization. The Ministry hired many foreign advisors to import Western technologies and create social infrastructure, railways in particular, and model plants for modern industries. Japan's industrialization from the late nineteenth century to the early twentieth century was achieved through the adoption and assimilation of Western technologies. In contrast, the former government, Tokugawa Shogunate, had a seclusion policy that restricted international trade, immigration, and emigration until 1866 (Gordon 2014, pp.70-72; Shinbo 1995, pp.77-79). Therefore, the people who had Western knowledge were in demand at the time as Japan strove for change.

As part of the modernization policies, the Meiji government introduced a modern education system in 1872 and provided access to education for anybody who could afford it. This system was composed of three tiers; that is, primary, secondary, and tertiary education. From the early 1870s, nationwide networks of modern primary schools were established, reorganizing traditional informal schools. Middle schools and vocational schools were established for secondary level education. Tertiary level education was carried out by universities and professional schools (Ministry of Education 1972). Under the modern education system, anyone had the opportunity to pass the entrance exam for imperial universities regardless of their social strata. Japan is known as an academic career-based society, particularly after World War II. Even before World War II, many bureaucrats graduated from the Imperial University of Tokyo since the introduction of the entrance

exam for bureaucrats in 1894 (Amano 2007, 2017; Dore 1976).

One of the main reforms of the Meiji Restoration, directly related to income distribution, was the abolition of the feudal strata and its economic privileges. Under the Tokugawa regime, around 300 feudal lords had territories with their scale measured in terms of *kokudaka*, the quantity of rice produced. The feudal lords claimed approximately half of the rice products as tax, and from the tax revenue they paid salaries to their vassals; that is, the samurai, who worked for the lords as bureaucrats. After the Meiji Restoration, ex-feudal lords and samurai were paid in rice (money after 1875) by the new government. In 1870, the government cut the payments. That is, the revenue of the ex-feudal lords was reduced to 10% of their *kokudaka* while the revenue of the samurai was also reduced to 10% of their earnings under the Tokugawa Regime. It is remarkable that there was an essential difference in the treatment of the ex-feudal lords and the samurai. The income of the samurai indeed declined to 10% of their previous income, but the income of ex-feudal lords did not decline because the income they had earned under the Tokugawa regime was just a small portion of *kokudaka* after deducting peasants' (tax payers) revenue and samurai salaries. Indeed, the income of many ex-feudal lords increased due to this treatment. In 1876, government payments were securitized. That is, the government delivered government bonds to ex-feudal lords and the samurai and, in exchange, the government stopped its annual payments to the ex-feudal lords and the samurai. The ex-feudal lords received large amounts of government bonds and, accordingly, their wealth persisted in the modern regime, as we will see later (Ihii 1991, pp.146-148; Nakamura 1985, pp.140-141; Ochiai 2015; Shinbo 1995, pp.41-43).

The influence of social strata in the former feudal society remained in other respects. After the Meiji Restoration, the government divided people into three strata: *kazoku* (peerage), *shizoku* (samurai), and *heimin* (commoner). The people could not change their social strata unless they received a new title from the government and/or were adopted by other families.[2] Ex-feudal lords had become peerage together with aristocrats since the ancient period, and peerage were granted

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[2]Only one child of aristocrats inherited the title from their fathers. The children of some higher-ranked aristocrats could receive a lower-ranked title, but this was the exception.

privileges for education,[3] land preservation, and the House of Peers,[4]. However, the samurai lost their privileges (Asami 2015; Gordon 2014, pp.64-66; Ito and Momose 1990, pp.241-243; Otabe 2006; Sonoda et al. 1995, pp.70-80).

2.2 Industrialization and change in the functional distribution of income

The adoption of Western institutions and technologies after the Meiji Restoration accelerated the growth of the Japanese economy (Figure 1). According to Angus Maddison's estimation,[5] while the annual growth rate of per capita real GDP was 0.05% and 0.41% in the period from 1820 to 1850 and from 1850 to 1870, it became 1.6% from 1870 to 1890, and the steady growth continued. Compared with the per capita GDP of the United Kingdom in 1830, the end of the Industrial Revolution, Japan's per capita GDP increased from 42% in 1870 to 71% in 1898 and 112% in 1933. Hence, from a macro perspective, the Japanese economy's income levels reached those of the United Kingdom at the end of the Industrial Revolution between our two data points of 1898 and 1933.

The industrial structure also changed during this period. Figure 2 illustrates the real production of agriculture and manufacturing industries at the 1934 to 1936 price and the ratio of production at the current price. It shows that agricultural production had a positive trend, but manufacturing production increased much faster from the 1870s. Consequently, manufacturing production, which accounted for 56% of agricultural production in 1874, exceeded agricultural production in 1899, just after our first data point, 1898. Then, in 1933, our second data point, manufacturing production was 3.74 times larger than agricultural production. In this sense, the first data point represents the early phase of industrialization while the second data point represents its mature phase.

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[3]Sons and daughters of peerage were granted access to exclusive secondary schools, *Gakushuin* (for males) and *Joshi Gakushuin* (for females). Furthermore, graduates from the higher program of Gakushuin could attend the Imperial University of Tokyo and Imperial University of Kyoto without taking an examination if a vacancy existed (Otabe 2006, p.47).

[4]Dukes and marquises were appointed as life-long members of the House of Peers when they turned 30 years old. Counts, viscounts, and barons were appointed as members of the House of Peers with a term of seven years through mutual election within the same title groups (Otabe 2006, p.45).

[5]"Maddison Historical Statistics" (`https://www.rug.nl/ggdc/historicaldevelopment/maddison/`).

Figure 1 and Figure 2

The progress of industrialization changed the functional distribution of income through changes in the allocation of production factors and factor prices. We estimate the long-term data on functional income distribution by the following procedure. Minami and Ono (1978) estimated the capital share of the secondary and tertiary industries for 1896 to 1970. Based on the capital share by Minami and Ono (1978) and the net domestic product of secondary and tertiary industries from Ohkawa et al. (1971), we calculated the profit income of the secondary and tertiary industries. Additionally, we calculated rent for agricultural land based on the data on the paddy field and upland field areas as well as the data on rents for paddy and upland fields per *tan* (0.1 ha). The data on the field areas are taken from the various issues of *Teikoku Tokei Nenkan* (Statistical Yearbook of the Japanese Empire), and the data on rents for paddy and upland fields per *tan* (0.1 ha) are from Umemura et al. (1966). Then, we calculated the share of profit income and rent for agricultural land in total net domestic income.[6]

Figure 3 shows that the share of land rent was declining. On the other hand, the share of profit had an upward trend. Consequently, from 1904, profit became the largest source of asset income. We might say that Japan transitioned to a capitalist society during this period. The spike in the profit share in the late 1910s reflects the boom during World War I. In this period, the profit rate increased sharply, which, in turn, accelerated capital formation.

Figure 3

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[6]We excluded imputed house rent.

3 Anatomy of the economic elites

3.1 Data and descriptive analyses

3.1.1 Data

The change in functional income distribution was associated with individual income distribution due to the distribution of individual production factors such as income, physical capital, and human capital. To examine the structure and mobility of economic elites in early twentieth century Japan, we collect personal income tax data and biographical information on the Japanese elites. We obtain the personal income tax (class III income tax) data of elites for 1898 and 1933 from two Who's Who books: the 1899 issue (5th issue) of *Nihon-Shinshi-Roku* and the 1934 issue (10th issue) of *Jinji-Koshin-Roku*, respectively. These two publications are the most famous Who's Who books in Japan both at that time and currently, and they provide individual-level information including name, occupation, home address, and personal income tax data for political, social, and economic elites in Japan. Furthermore, the 1903 issue (first issue) of *Jinji-Koshin-Roku* provides individual-level data including birth date, social stratum, educational background, and family information, which are not contained in the 1899 issue of *Nihon-Shinshi-Roku*.[7] Hence, for 1898, we supplement the data of *Nihon-Shinshi-Roku* with the 1903 issue of *Jinji-Koshin-Roku*. For 1933, we basically obtain the data from the 1934 issue of *Jinji-Koshin-Roku*; however, in case personal income tax data are missing in this source, we supplement the data using the 1934 issue (38th issue) of *Nihon-Shinshi-Roku*.

The 1899 issue of *Nihon-Shinshi-Roku* covers wealthy people who paid personal income tax of not less than 4 yen in the cities of Tokyo, Yokohama, Yokosuka, Osaka, Kobe, Nagoya, and Kyoto while the 1934 issue covers "noted persons" and wealthy persons who paid the personal income tax (class III income tax) not less than 50 yen or business tax not less than 70 yen in the cities of Tokyo, Osaka, Kyoto, Yokohama, Kobe, Nagoya, Fukuoka, Shizuoka, Chiba, and

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[7]For information on birth year, family, and education, we supplement the 1903 issue of *Jinji-Koshin-Roku* with the 1915 issue (fourth issue).

Kawagoe including their neighboring counties. On the other hand, the 1903 and 1934 issues of *Jinji-Koshin-Roku* cover "the gentlemen and their families who are known to society."

From these sources, we obtained 3,208 and 13,922 observations of persons with personal income tax data for 1898 and 1933, respectively. Note that because the personal income tax was based on the previous year's income, the personal income tax data reflect the income in 1897 and 1932. However, for simplicity, we call the first and second data points 1898 and 1933 unless we note otherwise. We back out income for those persons based on personal income tax rates. For comparison, we estimate the top 1% income in 1898 and 1933 from the income tax statistics (Tax Bureau of the Ministry of Finance 1902, 1933) assuming the Pareto distribution, which is 647 yen and 3,025 yen, respectively. All of the 3,208 observations for the year 1898 and 13,916 of the total 13,922 observations for the year 1933 were for top 1% income earners in these years,[8] respectively. We drop six persons for 1933 whose income was less than 3,025 yen from the samples. The income distribution of the sample is tabulated in Table 1. The samples are composed of very wealthy people in the top 1% income group in each year. Hereafter, we call our samples the economic elites.

Table 1

3.1.2 Background and income of the economic elites

We now examine the social, occupational, and educational background of the economic elites. Table 2 tabulates the economic elites by social stratum, occupation, education, and income. Concerning social stratum, 58.3% of the economic elites were commoners in 1898 while the ratio increased to 86.6% in 1933. Accordingly, the ratio of peerage and samurai declined sharply in this period. It is unsurprising that due to economic development after the Meiji Restoration, successful commoners grew rich faster than peerage and samurai who had been privileged in the feudal regime.

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[8]The numbers of Japanese households were 8,620,205 and 12,557,931 in 1898 and 1933, respectively. We estimated the income of the top 86,202 and the 125,579 income earners in 1898 and 1933, respectively.

Table 2

We classify occupation into four large categories: bureaucracy, politics, professional work, and business. The bureaucracy category includes central government officials (judges, prosecutors, governors, and ambassadors), local government officials, and those in the military. The politics category includes ministers, members of parliament in the House of Peers and the House of Representatives, and local assembly members. Professional work includes lawyers, medical doctors, professors, accountants, and tax attorneys. Note that some of the sample individuals had multiple occupations. In these cases, we double-counted their occupations and, accordingly, the total number is larger than the number of the sample individuals. In 1898, the largest portion of the economic elites worked in business (44.4%), but it is remarkable that the percentage of those in bureaucracy was substantial (27.2%). In 1933, however, the percentage of those in business increased to 70.9% while the percentage of professionals declined to just 6.9%.

Concerning educational background, the modern education system established in 1872 was already reflected in the educational background of the economic elites in 1898. In this year, more than 30% of the economic elites had an educational background of secondary education or higher including overseas studies. From 1898 to 1933, educational backgrounds were gradually upgraded. For income, Table 2 reports the basic sample statistics. Not surprisingly, the income mean substantially increased from 1898 to 1933. As we stated above, the minimum income of the 1898 samples is the top 1% income for this year. Meanwhile, the minimum income for the 1933 income is the top 0.98% income.[9]

Next, we look at the background interactions. Table 3 shows occupation choices by social stratum. Before the Meiji Restoration, social strata restricted people's choice of occupation (for example, commoners had no opportunity to participate in bureaucracy or politics before the regime change in principal). We find that, in 1898, commoners could choose any occupation such as politics, bureaucracy, professional, or business. At the same time, each stratum had a characteristic for occupation choice. In 1898, more than half of the economic elites from the commoner class

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[9]Calculation from the income tax statistics assumes the Pareto distribution.

worked in business. On the other hand, those from the samurai class tended to choose bureaucracy or to become professionals. This is consistent with Sonoda et al. (1995), which stated that in the early Meiji era, samurai occupied higher positions in the bureaucracy. Meanwhile, most economic elites from the peerage class worked in politics and "others." This characteristic of peerage perhaps reflects their privilege to be elected as members of the Upper House (Asami 2015, p.129). Because others includes landowners and asset holders, we infer that peerage people could be rich due to the rents from the assets they assumed from the feudal regime. From 1898 to 1933, the ratio of those working in business substantially increased across social strata. That is, 65.2% and 35.4% of economic elites from the samurai class and the peerage class worked in business in 1933, respectively. Working in business was becoming necessary to be a member of the economic elite.

Table 3

Table 4 shows the interaction between occupation and educational background. In 1898, the economic elites working in bureaucracy and as professionals tended to have a higher level of education, which is not surprising. Meanwhile, it is remarkable that the educational background of business elites was minimal, which suggests that higher education was not necessary for success in business during this period. This situation changed substantially in 1933. While the educational background of the economic elites generally reached a higher level, the change was greatest for business elites. As economic development proceeded and the economy became more complex, the value of higher education would increase for those working in business.

Table 4

Table 5 shows the interaction between social stratum and educational background. In 1898, educational background was not at a high level for peerage and commoners while a majority of the samurai had a background of higher education. This suggests that education was the most powerful and patented weapon for samurai, which helped them to become wealthy at that time. In 1933, both samurai and peerage became more highly educated although a majority of commoners did not have a background of higher education.

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Table 5

Additionally, we look at the income hierarchy within economic elites by dividing them into three groups: the top 0.01% income group, the top 0.1% income group, and the top 1% income group. Table 6 shows these interactions with social stratum.[10] Here, we see the composition of these three income groups by social stratum. In 1898, a majority of the top 0.01% income group was composed of the elites from commoners, and the commoners' advantage in the group was further intensified in 1933. Looking at the share of peerage in each income group, we find that in both 1898 and 1933, the highest share of the peerage belonged to the top 0.01% income group; however, overall, the share of the peerage in each income group decreased from 1898 to 1933. Lastly, we find that the share of samurai in the top 0.01% income group was small both in 1898 and 1933. In the samurai stratum, there were few very wealthy individuals.

Table 6

Table 7 shows the share of each occupation in the three income level groups. A majority of the top 0.01% income group was composed of businesspersons in 1898, and this tendency dramatically intensified in 1933. In the early 1930s, an individual was unlikely to become wealthy without working in business.

Table 7

3.2 Regression analyses

Using the individual-level income data backed out from the individual-level personal income tax data, we can see how the income of each economic elite was associated with their social, occupational, and educational background by applying regression analysis. The basic specification is:

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[10]In the same way that we estimated the top 1% income in 1898 and 1933, we estimate the top 0.01% income in 1898 and 1933 from the income tax statistics (Tax Bureau of the Ministry of Finance 1902, 1933) assuming the Pareto distribution; the result is 5,302 yen and 64,837 yen, respectively. We estimate the top 0.1% income in 1898 and 1933 from the same resource, which is 1,852 yen and 18,912 yen, respectively.

$$Income_i = \beta_0 + \beta_1 Samurai_i + \beta_2 Peerage_i + \beta_3 Age_i$$

$$+ \beta_4 Politics_i + \beta_5 Bureaucracy_i + \beta_6 Professional_i + \beta_7 Business_i + \epsilon_i \tag{1}$$

The dependent variable is the log income of each individual. All independent variables are a dummy variable except age. For example, $Samurai_i$ takes value one if person i belonged to the samurai stratum, and zero otherwise.

The estimation results are reported in Table 8. Column (1) is the result of baseline regression for 1898. Here we regress the log income of each person on their social stratum, age, and occupation. The reference category for social stratum is commonage while the reference category for occupation is others. We find that the income of a member of the economic elite from the peerage stratum was significantly higher than that of an economic elite from the samurai or commonage stratum, on average. The estimated coefficient on peerage, 0.752, indicates that the income of a peerage economic elite is 2.12(=exp (0.752)) times larger than that of a commoner economic elite, on average. As stated in Section 2, ex-feudal loads received large amounts of national bonds when the feudal land tax was abolished in 1876. The high average income of peerage reflected that they included wealthy ex-feudal loads (Ihii 1991; Ishikawa 1972; Shibahara 1981). For the occupation variables, the coefficients on politics and business are significantly positive, and the magnitudes are fairly large. The magnitude of the coefficient on business, 0.379, indicates that by having a job in business, an economic elite from the commonage stratum could compensate for around half of the average income gap between commonage and peerage. Column (2) adds educational variables. Only the coefficient on overseas study is positive and significant while the coefficient on holding a bachelor degree (B.A.) is significantly negative, which may reflect a correlation between educational background and occupational choice; specifically, a correlation between BA and a professional occupation. Column (3) adds a dummy variable, large firm, which takes a value of one if a person had a position at a business firm ranked in the top 10% of all the joint-stock companies in terms of capital. The magnitude of the coefficient on size is significantly positive, and the magni-

tude is large; the sum of the coefficients on business and size is 0.175+0.746=0.921. This implies that a position at a large firm had a positive impact on income greater than the impact of belonging to peerage.

<center>Table 8</center>

Columns (4) to(6) are the counterparts to columns (1) to (3) for 1933. Column (4) indicates that the income gap across social strata narrowed compared with the year 1898, but there was still a substantial gap between peerage and commonage. A part of this gap was compensated for by working in business, but compared with 1898, the portion of the income gap compensated for by working in business shrank, even in the case of a business position in a large firm. The difference from the results for 1898 may reflect the extension of the commonage coverage.

Table 8 shows that educational background did not have a positive impact on income except for the experience of overseas education. It is possible, however, that the effects of educational background depend on occupations. Table 9 examines the possibility by interacting education variables with occupation variables. We find that even overseas education did not have an overall positive impact, but only for politicians (1898 and 1933), bureaucrats (1933), and businesspersons (1933). More interestingly, all of the educational backgrounds; that is, high school, B.A., Ph.D., and overseas education had a positive impact for businesspersons in 1933, which suggests that human capital formed by formal education became useful for businesses during this period.

<center>Table 9</center>

We find that occupational choice had a substantial impact on income within the economic elites. Given this, it is important to see the determinants of occupational choice. We explore the impact of an individual's social strata and educational background on the choice of occupation by estimating the following logit model on occupational choice:

$$ln(p_i/(1 - p_i)) = \beta_0 + \beta_1 Samurai_i + \beta_2 Peerage_i + \epsilon_i \tag{2}$$

<center>17</center>

where p_i is the rate of choosing each occupation: politics, bureaucracy, professional (work), and business. Table 10 reports the estimation results. The right side of the column for each occupation adds educational variables as explanatory variables. We find that social strata is strongly associated with occupational choice. Compared with commonage, peerage tended to choose positions as bureaucrats and politicians for their occupations while samurai tended to choose bureaucrat and professional occupations, which is consistent with Sonoda et al. (1995). On the other hand, commonage tended to choose business as an occupation. Basically, this tendency did not change from 1898 to 1933. Additionally, educational backgrounds were associated with occupational choice. Business and a high level of education were negatively associated both in 1898 and 1933 while bureaucracy and professional work were positively associated with a high level of education in both years. As we noted, a higher level of education became valuable for business in 1933; however, the average education level for businesspersons was lower than that for bureaucrats and politicians. A profession in business might have been a way for an individual to raise their status in society while avoiding the need for higher education.

Table 10

4   The intergenerational dynamics of the economic elites

One of the unique features of our dataset is that we can identify father-son relationships, which enables us to investigate the dynamics of economic elites over generations. First, we identify the 1898 samples for the individuals whose sons or themselves were also included in the 1933 samples. These individuals represent the economic elites whose family survived as economic elites from 1898 to 1933. The samples totaled 735. Of these samples, the cases where the same persons are included in both the 1898 and 1933 samples are 377 while the cases where sons of the samples for 1898 are included in the 1933 samples are 394. We note that in 36 cases, the same persons and their sons are included in the 1898 and 1933 samples. In some of the 394 cases where the sons are included in the 1933 samples, fathers had multiple sons included in the 1933 samples.

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The data for fathers are for 1898 while the data for sons are for 1933. We identified 458 father-son pairs. For 2,473 individuals in the 1898 samples, neither their sons nor the individuals themselves are not found in the 1933 samples. The exit rate is 77.1% (2,473/3,208). On the other hand, 13,087 persons in the 1933 samples are new entrants in the sense that neither the individuals nor their fathers are not included in the 1898 samples. The entry rate is 94.0% (13,087/13,916). The exit and entry rates indicate that the mobility of the economic elites in prewar Japan was high. (See Table 11)

Table 11

Entry and exit change the composition of economic elites in an evolutionary manner, so to speak. To see the direction of evolutionary change, Table 12 compares the attributes of exiters with the total samples and survivors as of 1898. By comparing the composition of exiters and each attribute for the total samples; that is, social stratum, occupation, education, and income, we can see the direction of evolution through exits. First, for social stratum, the percentage of samurai is substantially higher for exiters than in the total samples while the percentage of commoners is substantially lower for exiters. Thus, commoners proliferated, substituting for samurai. In the same manner, for occupation, we can see that through exits, workers in business proliferated, substituting for bureaucratic and professional workers. For education, clear direction cannot be seen, which implies that educational background was not a condition for an economic elite or elite family to survive. Finally, for income, unsurprisingly, higher income individuals proliferated.

By comparing the composition of new entrants as of 1933 in Table 12 with the composition of the total samples as of 1898 in Table 13, we see the effect of new entries on the evolutionary change in the composition of attributes of economic elites. Not surprisingly, for new entrants, the percentage of commoners is substantially higher. For occupation, while the percentage of busi-nesspersons is substantially higher for new entrants than in the total 1898 samples, the percentages of bureaucratic and professional workers are much lower in new entrants. Additionally, we find that new entrants had a higher level of education than the total samples for 1898. Thus, new entries

contributed to the proliferation of commoners, businesspersons, and persons with a higher level of education.

Table 13

Next, Table 13 and Table 14 focus on survivors; that is, the individuals who are in both the 1898 samples and 1933 samples and the pairs of fathers in the 1898 samples and sons in the 1933 samples. Table 13 compares occupations between 1898 and 1933. For the father-son pairs, in 82.8% of the cases, fathers worked in business and their sons also worked in business. In the other cases, the ratio of sons that chose the same occupation as their fathers was lower than 50%. In many of these cases, the sons worked in business. This finding may reflect that the sons' choice of business as their occupation enabled the families to survive as economic elites. For the individuals who are in both the 1898 samples and the 1933 samples, many of them unsurprisingly had the same occupations, but some individuals who had non-business occupations in 1898 worked in business in 1933.

Table 13 and Table 14

Table 15 shows the transition matrices for income from 1898 to 1933 for the survivors. Here again, we divide the survivor observations into father-son pairs and the individuals who are in both the 1898 samples and the 1933 samples. Overall, Table 15 suggests that income mobility among the survivors is high. Many of the samples in each quintile in 1898 moved to the other quintiles in 1933. At the same time, it is remarkable that the richest samples; that is, the samples in quintile V, tended to stay in the same quintile.

Table 15

To confirm these tendencies, we estimate equation (3), adding the logged value of a father's income in 1898 as an explanatory variable to equation (1) for 1933 based on the father-son samples.

$$S\,on : Income_i = \beta_0 + \beta_1 Father : Income_i + \beta_2 S\,on : S\,amurai_i + \beta_3 S\,on : Peerage_i$$

$$+ \beta_4 S\,on : Age_i + \beta_5 S\,on : Politics_i + \beta_6 S\,on : Bureaucracy_i \tag{3}$$

$$+ \beta_7 S\,on : Professional_i + \beta_8 S\,on : Business_i + \epsilon_i$$

The estimation results are reported in Table 16. Columns (2) and (3) of Table 16 report the results in cases where we add education variables and the size of firms in which businesspeople work, similar to columns (2) and (3) of Table 8.

Table 16

First, the results of the baseline regression in column (1) of Table 16 show that the coefficient on the log of a father's income is 0.321. This represents the elasticity of a son's income to his father's income. Dribe and Helgertz (2016) report that the elasticity in Sweden from 1815 to 2011 was 0.18. As the authors' data cover around 200 years, a direct comparison is difficult, but intergenerational income mobility within elites in early twentieth century Japan was significantly lower than the estimated result of Dribe and Helgertz (2016). Second, the coefficients on business are 0.401 (column (1)) and 0.414 (column (2)), both of which are statistically significant. Moreover, working in a large-sized firm has a statistically positive effect on the amount of income. As the standard deviation of the log of a father's income was 1.23, this result suggests that by choosing business as an occupation, a person could almost compensate for the one standard deviation difference in a father's income.

It is possible that the impact of a father's income on his son's income depended upon the son's occupation choice. To check this, column (4) adds the interaction terms of a father's income and sons' occupations. All of the interaction terms are not statistically significant at the conventional level, but in cases where a son's occupation was politics or a large firm, the coefficients of the interaction terms are positive and weakly significant. This implies that in cases where a son chose politics or a large firm for his occupation, the positive impact of a father's income was amplified.

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We return to this issue later.

Note that the results in Table 16 are affected by selection bias in the sense that the samples for both fathers and sons may have some attributes that differ from the other samples. To address this concern, we estimate the following two-step sample selection model (Heckman 1979).

$$
\begin{aligned}
Son : Income_i = \beta_0 &+ \beta_1 Father : Income_i + \beta_2 Son : Samurai_i + \beta_3 Son : Peerage_i \\
&+ \beta_4 Son : Age_i + \beta_5 Son : Politics_i + \beta_6 Son : Bureaucracy_i \\
&+ \beta_7 Son : Professional_i + \beta_8 Son : Business_i + u_1
\end{aligned}
\tag{4}
$$

and we assume that $Son : Income_i$ is observed if

$$
\begin{aligned}
0 < \gamma_0 &+ \gamma_1 Father : Income_i + \gamma_2 Father : Samurai + \gamma_3 Father : Peerage \\
&+ \gamma_4 Father : Politics + \gamma_5 Father : Bureaucracy \\
&+ \gamma_6 Father : Professional + \gamma_7 Father : Business + \gamma_8 Father : Age + u_2
\end{aligned}
\tag{5}
$$

where u_1 and u_2 have correlation ρ.

The estimation results are reported in Table 17. First, we examine the selection equations in the bottom panel. Not surprisingly, the sons whose fathers' incomes were higher in 1898 were likely to survive as elites in 1933. Additionally, those whose fathers' social strata were peerage in 1898 had advantages over other social strata with respect to their sons survival as elites in 1933. Those whose father's occupation was business in 1898 were likely to survive as elites in 1933 while those whose father's occupation was bureaucracy had the opposite effect.

Table 17

The top panel of Table 17 shows the estimation results for intergenerational income mobility after controlling for selection bias. Compared with Table 16, we find that the coefficient on the log of a father's income; that is, the elasticity of a son's income to a father's income, is smaller. Thus, we confirm the result that intergenerational income mobility within economic elites was fairly high.

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Additionally, for the coefficient on the son, business is significantly positive and the magnitude is close to 0.4. Here again, we conclude that by choosing business, a son can compensate for a one standard deviation difference in their father's income. Meanwhile, note that the interaction terms between father's income and son for politics and son and large firm is positive and significant at the 10% level. This result implies that a son's choice of working in politics or a large firm amplified the difference in income in the father's generation. This finding suggests that economic development from industrialization gave rise to a new group of economic elites, and that this group was reproduced over generations.

To examine the last point, we estimate the following equation:

$$ln(p_i/(1 - p_i)) = \beta_0 + \beta_1 Father : Income_i + \beta_2 Samurai_i + \beta_3 Peerage_i + \epsilon_i \tag{6}$$

where p_i is the rate of choosing each occupation: politics, bureaucracy, professional (work), and business. Table 18 reports the estimation results. First, the results of the baseline regression in column (1) of Table 18 show that the impact of a father's income depended on the son's choice of occupation: it influenced the son's choice of working in business positively while it did not influence the son's choice of working in politics and professional work. Furthermore, the impact of a father's income negatively influenced the son's choice of working in bureaucracy. Second, column (2) adds the father's choice of occupation as an independent variable. The results show that a father's choice of occupation positively influenced the son's choice of the same occupation. In other words, sons tended to choose their fathers' occupations. These results confirm the view that new economic elites working in business emerged and were reproduced over generations.

Table 18

5 Concluding Remarks

The transition to a modern society and industrialization had a substantial impact on income distribution in Japan. At the macro level, the share of land rent declined while the share of profit in the non-agricultural sector increased. Profit exceeded land rent in the early 1910s, and profit continued to be greater than land rent after that. This symbolizes that Japan transitioned to a capitalist society just before the World War I.

The structural change in functional income distribution was reflected in individual income distribution. We collected the individual-level personal income tax data for economic elites for 1898 and 1933 to investigate the impact of regime change and industrialization on income distribution. We used a series of descriptive and regression analyses. When we control for the effect of occupational background, peerage earned greater income than commonage, but a large part of the gap was compensated for if the occupation of commonage was business because those who worked in business earned substantially more than those in other occupations. In addition, there was a higher probability that commonage chose business as their occupation compared with peerage and samurai, who tended to choose bureaucracy, politics, and professional occupations.

We further investigated the intergenerational income mobility within economic elites by constructing the data linking the information between fathers and sons. We found that a father's income had a significant positive impact on a son's income. In this case again, a son's choice of business had a substantial positive impact on his income comparable to the impact of his father's income. Note, however, that the impact of a father's income was greater for the sons that chose business and politics as their occupation, and the sons of businesspersons tended to choose business as their occupation. Whereas commoners working for business shook the traditional income hierarchy with ex-feudal lord peerages at the top, they formed a new group of economic elites that reproduced intergenerationally.

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Table 1: Samples by income class

	1898		1933	
1000 yen and less	338	(10.5)	0	(0.0)
1000 − 3000 yen	1653	(51.5)	0	(0.0)
3000 − 5,000 yen	538	(16.8)	990	(7.1)
5,000 − 10,000 yen	391	(12.2)	4,794	(34.4)
10,000 − 20,000 yen	154	(4.8)	4,797	(34.5)
more than 20,000 yen	134	(4.2)	3,335	(24.0)
Total	3,208	(100.0)	13,916	(100.0)

Table 2: Basic features of the samples

		1898		1933	
Social Stratum	Peerage	480	(15.0)	254	(1.8)
	Samurai	857	(26.7)	1,613	(11.6)
	Commoner	1,871	(58.3)	12,049	(86.6)
Occupation	Politics	183	(5.3)	589	(4.2)
	Bureaucracy	940	(27.2)	954	(6.9)
	Professional	483	(14.0)	1,285	(9.2)
	Business	1,533	(44.4)	9,863	(70.9)
	Others	312	(9.0)	2,240	(16.1)
Education	Highschool	330	(10.3)	1,845	(13.3)
	B.A.	349	(10.9)	1,943	(14.0)
	Ph.D.	221	(6.9)	585	(4.2)
	Oversea Study	354	(11.0)	621	(4.5)
Income	Mean	5,792.8		20,234.8	
	Std. Dev.	23,893.9		42,710.3	
	Min.	700		3,108	
	Max.	1,156,948		1,911,879	

Note: Percentage in parentheses.

Table 3: Occupation choice by social stratum

A.1898

	Total	Politics	Bureaucracy	Professional	Business	Others
Commoner	1,978	50	327	228	1,309	64
	(100.0)	(2.5)	(16.5)	(11.5)	(66.2)	(3.2)
Samurai	953	23	457	237	199	37
	(100.0)	(2.4)	(48.0)	(24.9)	(20.9)	(3.9)
Peerage	520	110	156	18	25	211
	(100.0)	(21.2)	(30.0)	(3.5)	(4.8)	(40.6)
Total	3,451	183	940	483	1,533	312
	(100.0)	(5.3)	(27.2)	(14.0)	(44.4)	(9.0)

B.1933

	Total	Politics	Bureaucracy	Professional	Business	Others
Commoner	12,049	424	620	967	8,722	2,054
	(100.0)	(3.5)	(5.1)	(8.0)	(72.4)	(17.0)
Samurai	1,613	70	268	294	1,051	117
	(100.0)	(4.3)	(16.6)	(18.2)	(65.2)	(7.3)
Peerage	254	95	66	24	90	69
	(100.0)	(37.4)	(26.0)	(9.4)	(35.4)	(27.2)
Total	13,916	589	954	1,285	9,863	2,240
	(100.0)	(4.2)	(6.9)	(9.2)	(70.9)	(16.1)

Note: Figures in parentheses are percentage of the persons with each occupation to the total
number of persons for each social strata. Because some persons had more than one job
over different occupation categories, the sum of the percentage is larger than 100.0.

Table 4: Educational background by occupation

A.1898

	Total	Highschool	B.A.	Ph.D.	Oversea Study	Others
Politics	183	16	11	10	36	127
	(100.0)	(8.7)	(6.0)	(5.5)	(19.7)	(69.4)
Bureaucracy	940	166	235	73	143	441
	(100.0)	(17.7)	(25.0)	(7.8)	(15.2)	(46.9)
Professional	483	35	104	152	166	184
	(100.0)	(7.3)	(21.5)	(31.5)	(34.4)	(38.1)
Business	1,533	107	33	13	36	1,364
	(100.0)	(7.0)	(2.2)	(0.9)	(2.4)	(89.0)
Others	312	33	12	2	24	252
	(100.0)	(10.6)	(3.8)	(0.6)	(7.7)	(80.8)
Total	3,451	330	349	221	354	2,235
	(100.0)	(9.6)	(10.1)	(6.4)	(10.3)	(64.8)

B.1933

	Total	Highschool	B.A.	Ph.D.	Oversea Study	Others
Politics	589	100	152	32	67	291
	(100.0)	(17.0)	(25.8)	(5.4)	(11.4)	(49.4)
Bureaucracy	954	229	387	99	102	221
	(100.0)	(24.0)	(40.6)	(10.4)	(10.7)	(23.2)
Professional	1,285	200	252	442	301	372
	(100.0)	(15.6)	(19.6)	(34.4)	(23.4)	(28.9)
Business	9,863	1443	1247	154	254	6,992
	(100.0)	(14.6)	(12.6)	(1.6)	(2.6)	(70.9)
Others	2,240	94	124	16	43	1,994
	(100.0)	(4.2)	(5.5)	(0.7)	(1.9)	(89.0)
Total	13,916	1,845	1,943	585	621	9,472
	(100.0)	(13.3)	(14.0)	(4.2)	(4.5)	(68.1)

Note: Figures in parentheses are percentage of the persons with each educational background to the total number of persons for each occupation. Because some persons had records of oversea education in addition to records of domestic education, the sum of the percentage is larger than 100.0.

Table 5: Education background by social stratum

A.1898

	Total	Highschool	B.A.	Ph.D.	Oversea Study	Others
Commoner	1,978	127	146	97	121	1,480
	(100.0)	(6.4)	(7.4)	(4.9)	(6.1)	(74.8)
Samurai	953	152	177	108	150	406
	(100.0)	(15.9)	(18.6)	(11.3)	(15.7)	(42.6)
Peerage	520	51	26	16	83	349
	(100.0)	(9.8)	(5.0)	(3.1)	(16.0)	(67.1)
Total	3,451	330	349	221	354	2,235
	(100.0)	(9.6)	(10.1)	(6.4)	(10.3)	(64.8)

B. 1933

	Total	Highschool	B.A.	Ph.D.	Oversea Study	Others
Commoner	12,049	1395	1329	415	368	8,879
	(100.0)	(11.6)	(11.0)	(3.4)	(3.1)	(73.7)
Samurai	1,613	397	507	160	168	537
	(100.0)	(24.6)	(31.4)	(9.9)	(10.4)	(33.3)
Peerage	254	53	107	10	85	56
	(100.0)	(20.9)	(42.1)	(3.9)	(33.5)	(22.0)
Total	13,916	1,845	1,943	585	621	9,472
	(100.0)	(13.3)	(14.0)	(4.2)	(4.5)	(68.1)

Note: Figures in parentheses are percentage of the persons with each educational background to the total number of persons for each social strata. Because some persons had records of oversea education in addition to records of domestic education, the sum of the percentage is larger than 100.0.

Table 6: Income level by social stratum

A.1898

	Income top 1%	Income top 0.1%	Income top 0.01%
Commoner	1,871	1,147	364
	(58.3)	(55.7)	(57.0)
Samurai	857	501	75
	(26.7)	(24.3)	(11.7)
Peerage	480	412	200
	(15.0)	(20.0)	(31.3)
Total	3,208	2,060	639
	(100.0)	(100.0)	(100.0)

B.1933

	Income top 1%	Income top 0.1%	Income top 0.01%
Commoner	12,049	3,090	484
	(86.6)	(86.4)	(84.8)
Samurai	1,613	370	46
	(11.6)	(10.3)	(8.1)
Peerage	254	116	41
	(1.8)	(3.2)	(7.2)
Total	13,916	3,576	571
	(100.0)	(100.0)	(100.0)

Note: Percentage in parentheses.

Table 7: Income level by occupational choice

A.1898

	Income top 1%	Income top 0.1%	Income top 0.01%
Politics	183	158	68
	(5.7)	(7.7)	(10.6)
Bureaucracy	940	573	77
	(29.3)	(27.8)	(12.1)
Professional	483	233	24
	(15.1)	(11.3)	(3.8)
Business	1,533	1,017	409
	(47.8)	(49.4)	(64.0)
Others	312	232	103
	(9.7)	(11.3)	(16.1)
Total	3,208	2,060	639
	(100.0)	(100.0)	(100.0)

B.1933

	Income top 1%	Income top 0.1%	Income top 0.01%
Politics	589	155	53
	(4.2)	(4.3)	(9.3)
Bureaucracy	954	102	21
	(6.9)	(2.9)	(3.7)
Professional	1,285	177	19
	(9.2)	(4.9)	(3.3)
Business	9,863	2,926	519
	(70.9)	(81.8)	(90.9)
Others	2,240	476	32
	(16.1)	(13.3)	(5.6)
Total	13,916	3,576	571
	(100.0)	(100.0)	(100.0)

Note: Percentage in parentheses.

Table 8: Baseline regressions on income

	1898			1933		
	(1)	(2)	(3)	(4)	(5)	(6)
Samurai	-0.0580	-0.0597	-0.119**	-0.117***	-0.121***	-0.157***
	(-1.42)	(-1.46)	(-2.98)	(-5.84)	(-5.86)	(-7.73)
Peerage	0.752***	0.742***	0.682***	0.575***	0.554***	0.533***
	(12.23)	(11.95)	(11.31)	(11.84)	(11.17)	(10.91)
Age	0.0114***	0.0108***	0.00742***	0.00111*	0.00103*	0.00000434
	(8.23)	(7.64)	(5.32)	(2.16)	(2.00)	(0.01)
Politics	0.344***	0.325***	0.325***	-0.0396	-0.0404	-0.0223
	(4.71)	(4.47)	(4.61)	(-1.23)	(-1.26)	(-0.70)
Bureaucracy	-0.0590	-0.0277	-0.0140	-0.476***	-0.478***	-0.428***
	(-1.16)	(-0.54)	(-0.28)	(-18.05)	(-17.56)	(-15.93)
Professional	-0.170**	-0.252***	-0.247***	-0.200***	-0.203***	-0.160***
	(-3.06)	(-4.35)	(-4.38)	(-8.55)	(-7.67)	(-6.11)
Business	0.379***	0.403***	0.175**	0.203***	0.199***	0.0429*
	(6.77)	(7.09)	(3.05)	(13.06)	(12.74)	(2.52)
Highschool		0.00513	-0.0762		0.0462*	-0.0715***
		(0.09)	(-1.44)		(2.37)	(-3.60)
B.A.		-0.175**	-0.247***		-0.0201	-0.143***
		(-3.06)	(-4.44)		(-1.01)	(-6.99)
Ph.D.		0.129+	0.0918		-0.0372	-0.117**
		(1.67)	(1.22)		(-0.97)	(-3.10)
Oversea study		0.279***	0.271***		0.0704*	0.0708*
		(4.71)	(4.71)		(2.06)	(2.11)
Large firm			0.746***			0.345***
			(14.00)			(21.72)
Constant	7.259***	7.256***	7.452***	9.347***	9.350***	9.427***
	(98.30)	(93.83)	(97.70)	(333.19)	(329.30)	(334.90)
N	3073	3073	3073	13899	13899	13899

t statistics in parentheses

+ *p* < 0.10, * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001

Table 9: Baseline regressions on income, *cons.*

	1898		1933	
Samurai	-0.107**	(-2.67)	-0.154***	(-7.58)
Peerage	0.686***	(11.15)	0.491***	(9.73)
Age	0.00751***	(5.36)	0.000224	(0.44)
Politics	0.195*	(2.37)	-0.0451	(-1.06)
Bureaucracy	-0.0154	(-0.26)	-0.327***	(-6.71)
Professional	-0.337***	(-4.61)	-0.140***	(-3.61)
Business	0.182**	(2.89)	0.0116	(0.63)
Highschool	0.0623	(0.47)	-0.152**	(-2.81)
B.A.	-0.314*	(-2.00)	-0.0953+	(-1.93)
Ph.D.	0.0183	(0.08)	-0.335***	(-3.67)
Oversea study	0.121	(0.88)	-0.0165	(-0.21)
Large firm	0.772***	(14.30)	0.323***	(19.82)
Politics*Highschool	0.388+	(1.66)	0.0770	(0.89)
Politics*B.A.	0.375	(1.32)	-0.198*	(-2.52)
Politics*Ph.D.	-0.228	(-0.74)	0.280+	(1.88)
Politics*Oversea study	0.485*	(2.51)	0.338**	(3.07)
Bureaucracy*Highschool	-0.135	(-0.92)	-0.161*	(-2.09)
Bureaucracy*B.A.	0.00239	(0.02)	-0.278***	(-3.88)
Bureaucracy*Ph.D.	0.104	(0.51)	0.113	(1.11)
Bureaucracy*Oversea study	0.108	(0.76)	0.311***	(3.33)
Professional*Highschool	-0.0860	(-0.48)	-0.00895	(-0.12)
Professional*B.A.	0.291*	(2.01)	-0.00486	(-0.07)
Professional*Ph.D.	0.131	(0.62)	0.240*	(2.54)
Professional*Oversea study	0.146	(1.02)	-0.245**	(-2.93)
Business*Highschool	-0.252	(-1.64)	0.122*	(2.20)
Business*B.A.	-0.205	(-0.97)	0.00408	(0.08)
Business*Ph.D.	-0.0547	(-0.17)	0.115	(1.37)
Business*Oversea study	-0.0333	(-0.17)	0.220**	(2.67)
Constant	7.455***	(92.16)	9.441***	(329.37)
N	3073		13899	

t statistics in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10: Occupation choice

A. 1898

	Politics		Bureaucracy		Professional		Business	
Samurai	-0.271	-0.290	1.574***	1.351***	1.015***	0.748***	-1.939***	-1.712***
	(-1.11)	(-1.15)	(17.59)	(14.13)	(9.84)	(6.26)	(-20.56)	(-16.47)
Peerage	2.102***	2.019***	0.461***	0.578***	-1.802***	-1.780***	-4.067***	-4.418***
	(12.27)	(11.51)	(3.66)	(4.40)	(-5.24)	(-5.00)	(-14.72)	(-15.84)
Highschool		-0.146		1.024***		-0.367+		-0.892***
		(-0.51)		(7.89)		(-1.79)		(-6.16)
B.A.		-0.489		1.793***		0.937***		-2.643***
		(-1.44)		(13.57)		(6.38)		(-13.40)
Ph.D.		-0.270		0.151		2.204***		-2.758***
		(-0.69)		(0.82)		(11.83)		(-8.89)
Oversea Study		0.823***		0.0778		1.156***		-1.240***
		(3.44)		(0.53)		(7.17)		(-5.74)
Constant	-3.320***	-3.339***	-1.440***	-1.757***	-1.977***	-2.456***	0.743***	1.280***
	(-26.89)	(-25.58)	(-25.01)	(-26.55)	(-28.52)	(-28.64)	(15.32)	(21.39)
N	3,208	3,208	3,208	3,208	3,208	3,208	3,208	3,208

B. 1933

	Politics		Bureaucracy		Professional		Business	
Samurai	0.218+	-0.0230	1.301***	0.655***	0.938***	0.297***	-0.338***	-0.166**
	(1.66)	(-0.17)	(16.56)	(7.82)	(12.90)	(3.30)	(-6.02)	(-2.70)
Peerage	2.796***	2.493***	1.867***	1.241***	0.179	-0.689**	-1.564***	-1.411***
	(20.15)	(16.50)	(12.54)	(7.69)	(0.82)	(-2.73)	(-11.78)	(-10.18)
Highschool		0.419***		1.564***		0.940***		0.342***
		(3.39)		(15.88)		(10.06)		(5.45)
B.A.		0.662***		2.072***		1.016***		-0.280***
		(5.84)		(22.81)		(11.10)		(-4.96)
Ph.D.		0.413*		1.949***		3.844***		-1.837***
		(1.97)		(13.98)		(33.23)		(-17.77)
Oversea study		0.249		-0.111		1.236***		-0.498***
		(1.49)		(-0.87)		(10.57)		(-5.05)
Constant	-3.311***	-3.487***	-2.914***	-3.730***	-2.439***	-3.182***	0.964***	1.052***
	(-66.97)	(-58.08)	(-70.67)	(-56.27)	(-72.73)	(-60.95)	(47.30)	(44.45)
N	13916	13916	13916	13916	13916	13916	13916	13916

Note: t statistics in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11: Survival, exit, and entry of economic elites

		1898	1933
Total		3,208	13,916
Survivor	Total	735	829
	Same persons	377	377
	Fathers-Sons	394	458
Exit		2,473	0
Entry		0	13,087

Table 12: Comparison of survivors and exiters as of 1898

		Total		Survivors		Exiters	
Social stratum	Peerage	480	(15.0)	103	(14.0)	377	(15.2)
	Samurai	857	(26.7)	137	(18.6)	720	(29.1)
	Commoner	1,871	(58.3)	495	(67.4)	1,376	(55.6)
Occupation	Politics	183	(5.7)	49	(6.7)	134	(5.4)
	Bureaucracy	940	(29.3)	120	(16.3)	820	(33.2)
	Professional	483	(15.1)	69	(9.4)	414	(16.7)
	Business	1,533	(47.8)	474	(64.5)	1,059	(42.8)
	Others	312	(9.7)	73	(9.9)	239	(9.7)
Education	High school	330	(10.3)	71	(9.7)	259	(10.5)
	B.A.	349	(10.9)	74	(10.1)	275	(11.1)
	Ph.D.	221	(6.9)	45	(6.1)	176	(7.1)
	Oversea study	354	(11.0)	82	(11.2)	272	(11.0)
Income	Mean	5792.8		11,024.0		4,238.0	
	Std. Dev.	23,893.9		47,448.8		7,849.8	
	Min.	700		722		700	
	Max.	1,156,948		1,156,948		114,979	

Note: Percentage in parentheses.

Table 13: Comparison of survivors and new entrants as of 1933

		Total		Survivors		New entrants	
Social stratum	Peerage	254	(1.8)	111	(13.4)	143	(1.1)
	Samurai	1,613	(11.6)	132	(15.9)	1,481	(11.3)
	Commoner	12,049	(86.6)	586	(70.7)	11,463	(87.6)
Occupation	Politics	589	(4.2)	65	(7.8)	524	(4.0)
	Bureaucracy	954	(6.9)	97	(11.7)	857	(6.5)
	Professional	1,285	(9.2)	66	(8.0)	1,219	(9.3)
	Business	9,863	(70.9)	573	(69.1)	9,290	(71.0)
	Others	2,240	(16.1)	119	(14.4)	2,121	(16.2)
Education	High school	1,845	(13.3)	146	(17.6)	1,699	(13.0)
	B.A.	1,943	(14.0)	191	(23.0)	1,752	(13.4)
	Ph.D.	585	(4.2)	45	(5.4)	540	(4.1)
	Oversea study	621	(4.5)	96	(11.6)	525	(4.0)
Income	Mean	2,0234.8		4,4176.9		18,718	
	Std. Dev.	4,2710.3		112,444.80		33,182.70	
	Min.	3,108		3,588		3,108	
	Max.	1,911,879		1,323,505		1,911,879	

Note: Percentage in parentheses.

Table 14: Transition of occupation between generations (survivors)

A. Father-son

		Son					
		Total	Politics	Bureaucracy	Professional	Business	Others
Father	Politics	42	15	9	6	25	5
		(100.0)	(35.7)	(21.4)	(14.3)	(59.5)	(11.9)
	Bureaucracy	52	11	15	7	23	8
		(100.0)	(21.2)	(28.8)	(13.5)	(44.2)	(15.4)
	Professional	43	3	6	20	18	5
		(100.0)	(7.0)	(14.0)	(46.5)	(41.9)	(11.6)
	Business	321	5	4	10	266	47
		(100.0)	(1.6)	(1.2)	(3.1)	(82.9)	(14.6)
	Others	37	6	3	3	11	16
		(100.0)	(16.2)	(8.1)	(8.1)	(29.7)	(43.2)
	Total	458	29	32	37	320	78
		(100.0)	(6.3)	(7.0)	(8.1)	(69.9)	(17.0)

B. Same person

		1933					
		Total	Politics	Bureaucracy	Professional	Business	Others
1898	Politics	13	8	6	1	4	1
		(100.0)	(61.5)	(46.2)	(7.7)	(30.8)	(7.7)
	Bureaucracy	73	7	43	9	23	3
		(100.0)	(9.6)	(58.9)	(12.3)	(31.5)	(4.1)
	Professional	31	3	10	16	6	4
		(100.0)	(9.7)	(32.3)	(51.6)	(19.4)	(12.9)
	Business	236	11	8	4	211	24
		(100.0)	(4.7)	(3.4)	(1.7)	(89.4)	(10.2)
	Others	39	10	8	2	19	11
		(100.0)	(25.6)	(20.5)	(5.1)	(48.7)	(28.2)
	Total	377	37	67	29	257	42
		(100.0)	(9.8)	(17.8)	(7.7)	(68.2)	(11.1)

Note: Percentage in parentheses.

Table 15: Transition of income between generations (survivors)

A. Father-son

			Son				
		Total	I (Low)	II	III	IV	V (High)
Father	I (Low)	42	5	2	5	8	22
		(100.0)	(11.9)	(4.8)	(11.9)	(19.0)	(52.4)
	II	41	7	9	12	5	8
		(100.0)	(17.1)	(22.0)	(29.3)	(12.2)	(19.5)
	III	82	17	18	11	21	15
		(100.0)	(20.7)	(22.0)	(13.4)	(25.6)	(18.3)
	IV	101	17	11	11	21	41
		(100.0)	(16.8)	(10.9)	(10.9)	(20.8)	(40.6)
	V (High)	192	15	15	21	34	107
		(100.0)	(7.8)	(7.8)	(10.9)	(17.7)	(55.7)
	Total	458	61	55	60	89	193
		(100.0)	(13.3)	(12.0)	(13.1)	(19.4)	(42.1)

B. Same person

			1933				
		Total	I (Low)	II	III	IV	V (High)
1898	I (Low)	82	23	8	11	16	24
		(100.0)	(28.0)	(9.8)	(13.4)	(19.5)	(29.3)
	II	65	17	8	11	12	17
		(100.0)	(26.2)	(12.3)	(16.9)	(18.5)	(26.2)
	III	72	16	4	6	17	29
		(100.0)	(22.2)	(5.6)	(8.3)	(23.6)	(40.3)
	IV	63	8	6	8	20	21
		(100.0)	(12.7)	(9.5)	(12.7)	(31.7)	(33.3)
	V (High)	95	10	4	8	13	60
		(100.0)	(10.5)	(4.2)	(8.4)	(13.7)	(63.2)
	Total	377	74	30	44	78	151
		(100.0)	(19.6)	(8.0)	(11.7)	(20.7)	(40.1)

Note: I-V of each 1898 and 1934 are split by quintiles of
income for each of all economic elites in 1898 and 1934.

Table 16: Regressions on intergenerational income mobility

	Son: Income (logged)							
	(1)		(2)		(3)		(4)	
Father: Income (logged)	0.321***	(8.61)	0.328***	(8.66)	0.308***	(8.04)	0.268**	(2.84)
Son: Samurai	-0.204	(-1.55)	-0.173	(-1.27)	-0.190	(-1.40)	-0.177	(-1.31)
Son: Peerage	0.0398	(0.28)	0.00408	(0.03)	0.00539	(0.04)	-0.0215	(-0.14))
Son: Age	0.00530	(1.32)	0.00399	(0.98)	0.00347	(0.86)	0.00300	(0.74)
Son: Politics	0.148	(0.76)	0.153	(0.78)	0.161	(0.82)	-2.037	(-1.54)
Son: Bureaucracy	-0.448**	(-2.62)	-0.423*	(-2.42)	-0.401*	(-2.31)	-2.144	(-1.19)
Son: Professional	0.0823	(0.50)	0.0389	(0.20)	0.0435	(0.23)	-1.045	(-0.76)
Son: Business	0.401***	(3.89)	0.414***	(3.99)	0.228+	(1.81)	1.127	(1.06)
Son: Highschool			-0.0452	(-0.38)	-0.100	(-0.84)	-0.100	(-0.84)
Son: B.A.			-0.189+	(-1.79)	-0.242*	(-2.27)	-0.219*	(-2.04)
Son: Ph.D.			-0.0200	(-0.08)	-0.0784	(-0.31)	0.00540	(0.02)
Son: Oversea study			0.208	(1.50)	0.205	(1.48)	0.189	(1.36)
Son: Large firm					0.287*	(2.57)	-1.038	(-1.24)
Son: Politics * Father: Income (logged)							0.237	(1.62)
Son: Professional * Father: Income (logged)							0.204	(0.96)
Son: Professional * Father: Income (logged)							0.123	(0.76)
Son: Business * Father: Income (logged)							-0.112	(-0.88)
Son: Large firm * Father: Income (logged)							0.160	(1.61)
Constant	6.700***	(19.09)	6.730***	(19.09)	6.944***	(19.29)	7.313***	(8.96)
N	458		458		458		458	

t statistics in parentheses
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 17: Heckman analyses for intergenerational income mobility

	Son: Income (logged)									
	(1)		(2)		(3)		(4)		(5)	
Father: Income (logged)	0.257***	(3.94)	0.269***	(4.09)	0.244***	(3.69)	0.196+	(1.82)	0.205+	(1.92)
Son: Samurai	-0.158	(-1.18)	-0.130	(-0.95)	-0.145	(-1.07)	-0.123	(-0.91)	-0.144	(-1.07)
Son: Peerage	0.0901	(0.63)	0.0578	(0.38)	0.0585	(0.39)	0.0424	(0.28)	0.0381	(0.25)
Son: Age	0.00354	(0.85)	0.00253	(0.60)	0.00193	(0.46)	0.00199	(0.48)	0.00171	(0.41)
Son: Politics	0.0138	(0.07)	-0.0000167	(-0.00)	0.0117	(0.06)	-2.611+	(-1.78)	-2.739+	(-1.88)
Son: Bureaucracy	-0.382*	(-2.23)	-0.371*	(-2.14)	-0.348*	(-2.02)	-2.515	(-1.35)	-2.575	(-1.40)
Son: Professional	0.0559	(0.34)	-0.0335	(-0.17)	-0.0335	(-0.17)	-0.136	(-0.09)	0.111	(0.07)
Son: Business	0.379***	(3.68)	0.396***	(3.84)	0.211+	(1.69)	-0.218	(-0.26)	1.032	(1.00)
Son: Highschool			-0.0665	(-0.57)	-0.121	(-1.04)	-0.0700	(-0.61)	-0.110	(-0.95)
Son: B.A.			-0.156	(-1.49)	-0.206+	(-1.95)	-0.139	(-1.32)	-0.187+	(-1.76)
Son: Ph.D.			0.0885	(0.36)	0.0347	(0.14)	0.110	(0.44)	0.0583	(0.23)
Son: Oversea study			0.195	(1.41)	0.193	(1.41)	0.174	(1.26)	0.160	(1.17)
Son: Large firm					0.286**	(2.61)			-1.201	(-1.47)
Son: Politics * Father: Income (logged)							0.287+	(1.77)	0.299+	(1.87)
Son: Bureaucracy * Father: Income (logged)							0.251	(1.14)	0.262	(1.21)
Son: Professional * Father: Income (logged)							0.00673	(0.04)	-0.0219	(-0.12)
Son: Business * Father: Income (logged)							0.0729	(0.75)	-0.101	(-0.82)
Son: Large Firm * Father: Income (logged)									0.178+	(1.83)
Constant	7.661***	(8.81)	7.591***	(8.72)	7.881***	(9.04)	8.183***	(7.23)	8.139***	(7.26)
SELECT										
Father: Income (logged)	0.274***	(9.10)	0.274***	(9.10)	0.274***	(9.10)	0.274***	(9.10)	0.274***	(9.10)
Father: Samurai	-0.0798	(-0.97)	-0.0798	(-0.97)	-0.0798	(-0.97)	-0.0798	(-0.97)	-0.0798	(-0.97)
Father: Peerage	0.369**	(3.15)	0.369**	(3.15)	0.369**	(3.15)	0.369**	(3.15)	0.369**	(3.15)
Father: Politics	0.0592	(0.48)	0.0592	(0.48)	0.0592	(0.48)	0.0592	(0.48)	0.0592	(0.48)
Father: Bureaucracy	-0.202*	(-1.97)	-0.202*	(-1.97)	-0.202*	(-1.97)	-0.202*	(-1.97)	-0.202*	(-1.97)
Father: Professional	0.328**	(2.85)	0.328**	(2.85)	0.328**	(2.85)	0.328**	(2.85)	0.328**	(2.85)
Father: Business	0.679***	(6.25)	0.679***	(6.25)	0.679***	(6.25)	0.679***	(6.25)	0.679***	(6.25)
Father: Age	0.0180***	(6.96)	0.0180***	(6.96)	0.0180***	(6.96)	0.0180***	(6.96)	0.0180***	(6.96)
Constant	-4.462***	(-16.70)	-4.462***	(-16.70)	-4.462***	(-16.70)	-4.462***	(-16.70)	-4.462***	(-16.70)
ρ	-0.271		-0.246		-0.268		-0.212		-0.206	
N	3137		3137		3137		3137		3137	

t statistics in parentheses
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 18: Job Choice for the intergenerational dataset

	Son: Politicss			Son: Bureaucracy			Son: Professional			Son: Business		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Father: Income (logged)	-0.148	-0.00981	-0.0639	-0.430*	-0.234	-0.354	-0.270	0.0431	-0.0535	0.447***	0.301*	0.270*
	(-0.89)	(-0.05)	(-0.29)	(-2.23)	(-0.97)	(-1.40)	(-1.52)	(0.20)	(-0.23)	(4.18)	(2.56)	(2.25)
Son: Samurai	0.315	-0.0240	0.0592	1.025+	0.0916	-0.354	1.391***	1.087*	1.025+	-0.753*	-0.296	-0.448
	(0.28)	(-0.02)	(0.05)	(1.95)	(0.16)	(-0.56)	(3.44)	(2.24)	(1.88)	(-2.46)	(-0.86)	(-1.24)
Son: Peerage	3.764***	2.730***	3.163***	2.231***	0.200	0.262	0.595	-0.303	-0.509	-1.997***	-0.929*	-1.002*
	(6.32)	(3.58)	(3.75)	(4.75)	(0.35)	(0.42)	(1.14)	(-0.46)	(-0.66)	(-6.38)	(-2.31)	(-2.37)
Father: Politics		1.751***	1.654**		0.710	0.710		0.761	-0.206		0.666	0.781+
		(3.48)	(2.98)		(1.39)	(1.28)		(1.23)	(-0.28)		(1.64)	(1.80)
Father: Bureaucracy		0.338	0.313		0.894*	1.112*		-0.129	-0.206		0.422	0.471
		(0.61)	(0.55)		(1.97)	(2.31)		(-0.24)	(-0.32)		(1.12)	(1.21)
Father: Professional		0.308	-0.267		-0.138	-0.457		2.459***	1.808**		-0.123	0.264
		(0.38)	(-0.29)		(-0.24)	(-0.70)		(4.94)	(3.13)		(-0.30)	(0.58)
Father: Business		-0.622	-0.394		-2.426***	-2.242**		-1.083+	-0.743		1.893***	1.971***
		(-0.86)	(-0.52)		(-3.59)	(-3.14)		(-1.96)	(-1.22)		(5.31)	(5.28)
Son: Highschool			-0.522			2.066**			0.943			0.474
			(-0.65)			(2.98)			(1.28)			(1.37)
Son: B.A.			0.266			1.309*			1.079+			0.550+
			(0.45)			(2.08)			(1.68)			(1.83)
Son: Ph.D.			1.965+			2.036*			3.663***			-1.142+
			(1.76)			(2.32)			(4.43)			(-1.80)
Son: Oversea study			-0.291			-0.163			1.268*			-0.125
			(-0.52)			(-0.30)			(2.17)			(-0.33)
Constant	-3.146*	-4.104*	-3.962*	0.275	-0.0192	-0.211	-0.532	-3.069+	-3.433+	-2.476**	-2.813**	-2.798**
	(-2.14)	(-2.28)	(-2.17)	(0.17)	(-0.01)	(-0.10)	(-0.36)	(-1.65)	(-1.67)	(-2.80)	(-2.81)	(-2.76)
N	458	458	458	458	458	458	458	458	458	458	458	458

Note: t statistics in parentheses
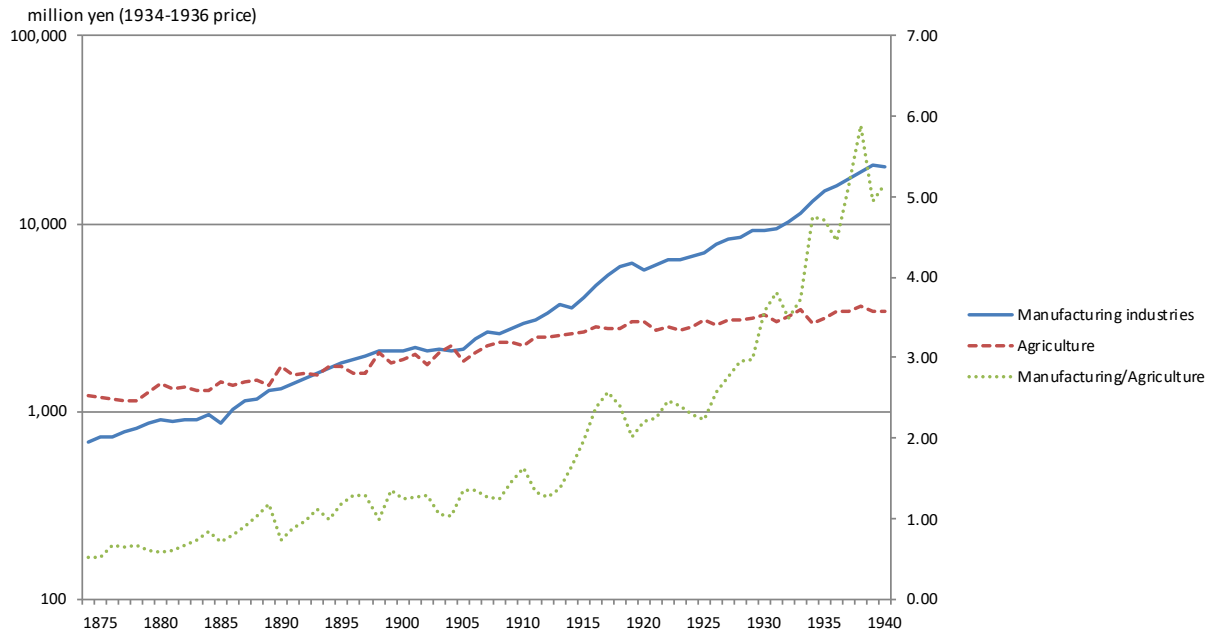$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 1: Start of modern economic growth in Japan: Comparison of per capita GDP with UK
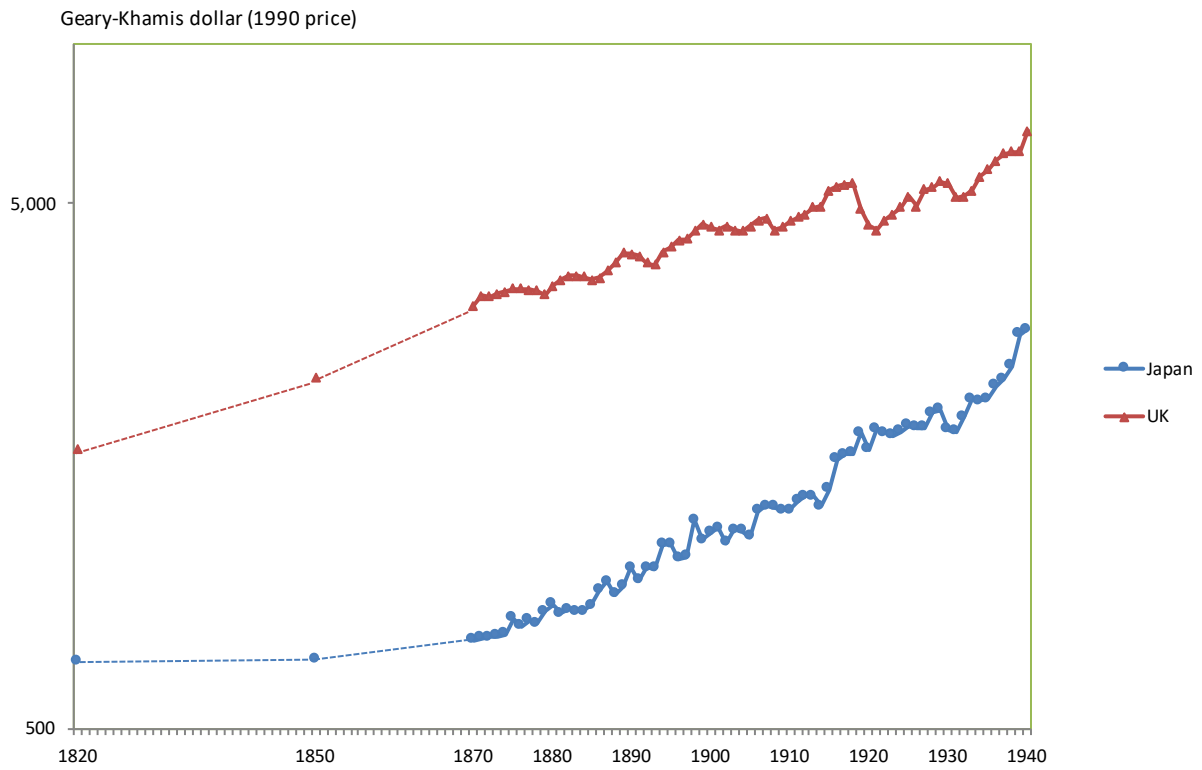
Source: Estimation by Angus Maddison (http://www.ggdc.net/maddison/oriindex.htm).

Figure 2: Progress of industrialization

million yen (1934-1936 price)

Source: Umemura et al. (1966), pp.146-147, pp.152-153; Shinohara (1972), pp. 140-147.

Figure 3: Functional income distribution