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: The Transformation of ‘Labour-intensive
Industrialization’ in Modern Japan**

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Abstract

The argument of “labour intensive industrialization” in East Asia, which has been raised by Kaoru Sugihara and Kenneth Pomeranz, seems to rest on the “peasant economy” as a concept. In deed, the plural employment strategy of peasant household has often been regarded as the typical examples of the “industrious” behaviour that characterizes “labour-intensive industrialization”. In other words, the argument has emphasized the agrarian bases of the “labour-intensive industrialization” in East Asia.

The notion of industrialization, however, intrinsically implies the process of de-agriculturization. How can we extend the notion of “labour-intensive industrialization” originally based in an agrarian setting to the non-agrarian sphere? The paper explores this question by analyzing the foundation of the small scale industries in 19th and 20th century Japan, during the transformation of the economy’s base from peasant economy to urban agglomeration. The weaving and the export-oriented “miscellaneous” industries, particularly toy industry, will exemplify the argument. Besides the centralized factory system, the development of the dispersed production system based on the household economy including a certain level of skill formation played the significant role in the industries.

Reiterating the relatively high proportion of small and medium enterprises in the industrial organization, as well as the high self-employment rate among the working population in the contemporary Japan, the analysis is expected to show an another path of industrialization in East Asia.

From Peasant Economy to Urban Agglomeration : The Transformation of ‘Labour-intensive Industrialization’ in Modern Japan

Masayuki TANIMOTO

1. Introduction

This chapter explores the labour-intensive industrialization in modern Japan, by focusing on the development of small-scale industries in both rural as well as urban areas.

Recent studies on the history of indigenous industries have revealed that Japan’s modern economic growth included the development of various other forms of industrial organization other than the factory system¹. However, although the quantitative importance within the entire economy might differ, it has been widely recognized that apart from the modern factory, other production forms can also be found in the industrial history of various areas and countries. In fact, inspired by the concept of ‘flexible specialization’ proposed in the seminal paper by Sabel and Zeitlin (1985), several other papers and books have focused on the small-scale industries in the economic and business history of Europe and North America². It is now clear that diversity in the production forms alone is not sufficient to account for the nature of industrialization. How, then, can we discuss the ‘uniqueness’ of Japan’s industrialization by focusing on the development of small-scale industries?

The argument of ‘labour-intensive industrialization’ has revealed an important clue regarding this question. In the ‘flexible specialization’ thesis, the concept of ‘craft’ has played a significant role in accounting for the capability of the workforce to cope flexibly with the changing demands requiring high quality in the Western countries. On the other hand, the quality or the price range of goods manufactured by the small-scale industries was generally much wider in Japan than in the West (Tanimoto 2006). The essential factors of the labour force of Japan’s small scale industries, therefore, might have been much broader than the concept of ‘craft’, which usually have been recognized as the basis of producing high quality products. Since the phrase ‘labour-intensiveness’ implies various aspects of the workforce, such as ‘industriousness’, ‘skill’ or ‘low wage’, this concept appears to be more applicable in the case of accounting for the nature of the labour force that constitutes the competitive edge of the small-scale industries in modern Japan. This is mainly why we relate the argument of ‘labour-intensive industrialization’ to the

¹ With regard to the historiography of this field, see Tanimoto (2006).

² See Berg (1994), Herrigel (1996), Sabel and Zeitlin (1997), Scranton (1997), Hudson (2004) and so on.

development of the small-scale industries.

In the past, several studies have attempted to account for Japan's industrialization by relating to the concept of 'labour-intensive industrialization'. Heita Kawakatsu applied the notion of Akira Hayami's 'Industrious revolution'—which is conceptualized from the changing behaviour of the peasant households in the 17th century—to the argument regarding the nature of Japan's industrialization (Hayami 1979/2001, Kawakatsu 1994). Kenneth Pomeranz also rests the foundation of Japan's industrialization on family farming that developed during the Tokugawa period (Pomeranz 2000, 2001). The peasant economy commonly played a significant role in Osamu Saito's model of 'two kinds of pre-modern, Smithian, economic growth', which attempted to distinguish the trajectories between Europe (particularly, England) and Japan (Saito 2005). Thus, it was the common feature of studies related to the argument of 'labour-intensive industrialization' to emphasize the role of the Japanese peasant economy.

We completely agree with these studies with regard to the role of peasant economy or family farming that characterized the labour supply behaviour in Japan. In fact, the plural employment strategy of the peasant household will be the central issue of the following section that discusses the cotton weaving industry in modern Japan. However, industrialization has intrinsically been accompanied by urbanization or de-pastoralization. How can we extend the notion of 'labour-intensive industrialization' that is originally based on the agrarian setting? From this point of view, we notice a missing link in the available literature. The studies mentioned above focused mainly on the pre-modern period and did not tackle the industrialization process itself. Kaoru Sugihara's recent paper is important in this context. This paper formulated the argument of 'labour-intensive industrialization' and attempted to apply the notion fully in order to characterize the East Asian development, covering the period from the Tokugawa era to post-World War II along with a discussion on non-agrarian industrialization (Sugihara 2003). However, thus far, the paper has not succeeded in providing a concrete image of this missing link. The link, which was pointed out in the paper in a practical manner, was limited to the affluent and relatively highly qualified labourer who originated in a legacy of the peasant society. How did people maintain their agrarian nature under non-agrarian settings? Empirical studies on industrialization itself are now required.

This chapter attempts to discuss the unique link between the peasant society and 'labour-intensive industrialization' by focusing on the development of the small-scale or non-factory style manufacturing industries in modern Japan. The next section briefly overviews the comparative feature of the employment form in modern Japan. The third section introduces the development of the rural weaving industry at the turn of the 20th century followed by three sections that discuss the urbanization and development of urban small-scale industries during the interwar period. The last section is the conclusion.

2. The quantitative weight of self-employment in comparative history

It is difficult to conduct a historical comparison of the weight of small-scale industries among countries because of the lack of data or the differences in the demarcation of the size of firms and workshops in the industrial statistics of each country. On the other hand, the population censuses of many countries provide the data on the industrial status of the gainfully occupied population after the 1930s, which enables us to calculate the self-employment ratio. Since the self-employed workers comprised the ‘employer’, ‘working on one’s own account’ and the ‘family worker’, the proportion of their sum to the total gainfully occupied population might show the weight of the population working at workshops other than factories. Thus, we regard the self-employment ratio as an approximate number to the weight of small-scale industries.

Figure 1 shows the correlation between the self-employment ratio and the per capita real GDP of each country from the 1930s to ca. 1970. In general, it is true that there existed a negative correlation between the per capita real GDP and the self employment-ratio. This implies that the economic growth expressed by the rise of per capita real GDP entails the increase in the number of ‘employed workers’, typically in the large workshops. However, as seen in **Figure 1**, we have to also note that the horizontal range of the self-employment ratio was considerably wide. This implies that there existed rather large differences in the absolute self-employed ratios among countries having similar per capita real GDP. The locus for the U.K. whose self-employment ratio had constantly fallen below 20% forms one extreme in this figure. The U.S., Sweden and Germany (West Germany during the post-War period) appear to follow the U.K. as the second group. The ratios were higher in the case of France and Italy; however, they could not reach Japan’s level. It is clear that the locus for Japan forms an extreme opposite to that for the U.K., and the absolute ratio is consistently four times as high as that of the U.K. and twice as high as that of the second group.

Thus, the self-employment ratio not only reflected the degree of economic development but also mirrored a specific employment pattern in each country. Japan’s locus in **Figure 1** revealed the relatively vital roles of self-employment and possibly, the small-scale industries in Japan’s modern industrialization. Based on this recognition, we proceed to the analysis of the small-scale industries in modern Japan.

3. Rural industrialization in modern Japan

The development of the rural weaving industry

It is a widely accepted view in the proto-industrialization literature that the weaving industry originated in the rural economy, in combination with the agricultural works. In this literature, the

putting-out system is often viewed as the classical form for the organization of production in the proto-industrialization age (Mendels 1972 Ogilvie and Cerman 1996). In view of this argument, the fact that the weaving industry developed as a rural industry under the Tokugawa regime—the pre-modern period in Japan—might not be an eye-catching fact.

Nevertheless, we believe that the weaving industry is a good example for considering the relationship between the peasant economy and industrialization in Japan. This is because the peasant-based weaving industry continued or even expanded in modern Japan, substituting the imports from Britain and British India.

It is certain that the transplanted factory system took hold in a certain industry, such as the cotton *spinning* industry in Japan. However, in the case of the cotton *weaving* industry, the producers were divided into two different categories. One category included weaving mills that were attached to the cotton spinning companies. Such mills were equipped with British power looms, and they employed numerous young female workers, just as in the case of the cotton spinning mills. This type represents the factory system directly transplanted from the Western countries. However, it should be noted that this production system produced a maximum of only about one-third of the total cotton fabric production in 1914. The rest of the cotton weaving was carried out in regional industrial districts (*sanchi*) where clothiers and other manufacturers worked together in areas characterized by a highly concentrated presence of merchants dealing in products and materials. Even in 1905, the number of workers in ‘factories’—production units employing 10 employees and more—accounted for only 12% of the total number of workers in the entire industry. The statistics³ show that 30% of the workers were employed in workshops having less than 10 workers and that 50% of the workers were working in workshops that were organized under the putting-out system. In addition, the average number of workers at these workshops was less than two. The power loom ratio (the number of power looms divided by the total number of looms) remained as low as 16% (Abe 1989) in 1914. Since we are able to identify continuity in both technology as well as production systems, the weaving industry can be viewed as one of the typical industries that express the indigenous development pattern—industrialization based on small-scale workshops.

It is also notable that the contemporary workers clearly discriminated between these two types of weaving. ‘The Working Conditions of Weaving Workers (*Orimono Shokko Jijo*)’⁴—the well-known industrial report published by the central government in 1903—pointed out a distinction between the ‘factory’ pattern of labour organization and that of the ‘peasant’s sideline business’. The report stated that ‘It is more beneficial for local women to weave fabrics according to a piece rate at home than to work for the factory that binds them for a long period of time.

³ Ministry of Agriculture and Commerce ed. *Noshomu Tokeihyo* (The Statistical Charts of Agriculture and Commerce), 1905

⁴ Reprinted by Koseikan in 1971, Tokyo.

Therefore, in general, female workers at weaving factories are looked down upon in villages'. (p.178). The report also recognized two, separate sources of labour in the following remark: 'Today, most of the local women employed at factories seem to come from financially-pressed families'. (Ditto).

What, then, was the distinctive feature of the 'peasant's sideline business' type of labour organization? We exemplify this by considering a weaving district throve at the turn of the 20th century.

Piece weavers and the peasant household

The Iruma region, a south-western part of Saitama prefecture adjacent to Tokyo, was a cotton-weaving district developed immediately after the Opening of the Ports in 1859⁵. By the 1880s, the driving force was the import of machine-made cotton yarn from overseas, which was followed by domestic cotton spinning mills, which replaced the expensive hand spun yarn provided by proximate rural areas. The production initially developed under the *Kaufsystem*, in which rural factors collected and purchased fabrics from weavers scattered around villages. However, at the end of the 1880s, the putting-out system, which was a new form of production organization at that time, replaced the *Kaufsystem* along with an increase in the total volume of production. Further, it continued to be a prevalent form of production organization until the mid-1920s. In this form of production, the direct producer—a *Chin-ori* (literally, a 'piece rate wage weaver')—was supplied with the dyed and warped yarn by the putting-out master and the producer wove the weaving fabrics according to the piece rate.

According to the order list of Takizawa Kumakichi—a leading putting-out master in Iruma distribution—the distribution of piece workers ranged widely from a lower social stratum to an upper one. However, a closer look at the distribution reveals that a higher concentration of piece weavers was found not in the lower but in the middle layer of the farming households within the village. Indeed, of the total orders placed in 1914, piece weavers that belonged to the brackets of '9 or less household units'⁶ to '20 or less household units' received 49% of the orders, while 39% was given to those who belonged to the brackets of '6 or less household units' and below. As the proportion of the number of resident households to the total number showed 32.2% for the former and 56.7% for the latter, the middle layer of the farming households—comprising the owner-tenant peasants and owner-peasants—formed the main source of piece weavers for the Takizawas. In this respect, the source of labour supply of the putting-out system clearly differed from that of factory production, as the latter largely depended on the lowest layer with less farming land. In other words,

⁵ The historical facts pertaining to the weaving industry in Iruma are obtained from Tanimoto (1998).

⁶ 'Unit' ('*Ko*' in Japanese) is the benchmark of the local taxation estimated by the income or asset of each household. The wealthy households have a relatively larger number.

the piece weaver existed within the households that were more inclined toward agriculture. A question, then, may arise regarding the distinctive characteristics of piece weavers as labour suppliers.

The remarkable feature was that the order placed by the Takizawas with the piece weavers showed strong and continuous seasonal fluctuations. Indeed, the orders in May and June accounted for less than 10% of the yearly totals of almost all the years from 1896 to 1920. It may be readily expected that the seasonal fluctuations had an inverse relation to the labour demand for farming work other than weavings at the peasant households. In the region, the May–June period was the harvest time for wheat and tea and the peak season for silkworm breeding (for springtime). From around 1910, the seasonal reduction in the order quantity during the July–September period corresponded exactly with the labour demand for the summer and autumn silkworm breeding, which was introduced in this region around the same time. The manner in which the piece rate fluctuated according to the season should also be noted. The rate rose sharply during the July–September period when the order level was the lowest. It may be indicated that the piece rate was strongly influenced by the labour demand for farming work other than weavings.

The distinctive pattern of labour supply among the piece weavers may be explained by the logic of labour in the peasant households, whose workforce comprised self-employed workers, such as employers and family workers. As discussed above, the piece weavers were found not only in the lower layer but also in the middle layer of the Iruma villages, and the main source of piece weavers was peasant families of a substantial scale (including tenant peasants). Thus, the weaving production was firmly connected to the structural linkage—the linkage between labour demand and labour supply—within the peasant household. In a peasant household, a fixed number of family members had to cope with the seasonal fluctuation in labour demand and consequently produce surplus labour that fluctuated accordingly. However, the surplus labour thus generated in a peasant household might not have necessarily constituted a stable unit of hired labour to be supplied to the factory. Therefore, even if the seasonal fluctuation in labour demand in a peasant household generated surplus labour, it might have worked against producing a regular form of surplus labour that the factory production required. In a peasant household, there also existed the labour demand for an irregular form of labour such as housework, which also prevented the family members from being supplied as stable, quantifiable units of hired labour for factory production. With such rigidity in the organization of labour in the peasant household, the ‘plural self-employment strategy’, particularly in the case of female family members, served to adjust the imbalance between the demand and supply of labour. In this manner, piece weaving, whose spatial and temporal restriction was not strong, was tailor-made to match the peculiar labour structure in a peasant household. Predetermined by the seasonal fluctuation in labour demand that prevented the externalization of a regular unit of workforce, a peasant household thus integrated piece weaving

into its organization of production. In doing so, the peasant household sought an effective measure to realign and mobilize its internal workforce. Therefore, it may be assumed that the integration of piece weaving into such an organization of labour formed a part of the reproduction ‘strategy’ of a peasant household.

4. The emergence of urban small-scale industries

In the previous section, we focused on the rural industry in order to exemplify the development of the small-scale industry, emphasizing on the workings of the peasant households as the basis of the labour supply. However, as we mentioned at the beginning of this chapter, industrialization intrinsically entailed de-agriculturalization or urbanization. In fact, **Table 1** shows that Tokyo and Osaka, which were the two biggest urban areas, occupied more than 20% of the total population of the manufacturing industries in 1909, and this proportion increased during the course of time. In particular, it is notable that the share of male manufacturing workers in these urban areas, particularly Tokyo, clearly exceeded that of the female manufacturing workers. The population of male manufacturing in Tokyo was an all-time highest number. In addition, the number of workers per factory (workshops employing five people or more) was relatively small or at least, did not exceed the number of workers per factory in most of the prefectures presented in the table. These facts suggest that although industrialization entailed industrial development in the urban settings, it was not merely the expansion of factories such as spinning and silk reeling—which had employed masses of female labour—or the formation of large factories in heavy industries based on male labourers. To begin from the conclusion, urban industrialization was largely characterized by the increase in the number of small-scale manufacturing workshops. We will exemplify this statement through the observation of the small-scale industries in the early 20th-century Tokyo.

First, we attempt to show the quantitative weight of the small-scale industries, measured by the working population. This weight can be calculated by a combination of the data obtained from population census—that covered, in theory, all the working population—and the factory statistics⁷, which limited the object to workshops employing five or more employees. **Table 2** shows that around 1908, nearly 70% of the working population in the manufacturing sector was estimated to be engaged in workshops employing less than five workers. The proportion, which covered the male workers, was consistently over 60% up to the mid-1930s and it declined sharply before 1940 due to the commencement of the controlled economy as a result of the Sino-Japanese War. The absolute number had also been growing by then.

⁷ Although the central government executed the first *Kokusei Chosa* (The First National Census of Population) in 1920, several municipal governments including that of Tokyo had already done this in 1908. On the other hand, the central government annually issued *Kojo (Kogyo) Tokei Hyo* (The Statistical Charts of Factory) from 1909 onwards.

Second, the information regarding the age of the working population was another clue to approach the nature of the urban manufacturing workers. Although we have already seen the increase in the total number of male workers from 1908 to 1920, this increase differed significantly according to age. As seen in **Table 3**, in 1920, the highest net increase in the number of male workers was observed in the age group of 16 to 20 years, and the male below the age of 30 accounted for the most part of the increase. Since the estimated net inflow of the male population in Tokyo accounted for more than 60% of the increase, it is clear that the growth in the population of male manufacturing workers was based on migration, particularly, the migration of younger age groups. This implies that a certain number of juvenile male workers being grown outside Tokyo, possibly the rural areas, headed towards Tokyo in order to seek employment. We might regard this phenomenon as a reflection of the decision made by the source of labour supply—the peasant household. Based on the single inheritance system commonly observed in modern and pre-modern Japan, in theory, the children other than the successors had to find their way outside the family farming agriculture. In fact, some estimation suggests that there was equilibrium among the constant number of farming households mentioned above—the natural rate of population increase and the outward population from the countryside (Honda1952, Saito1998). We can possibly assume that the urban industries worked to absorb the juvenile population that was destined to move out of their homes.

It is also noteworthy that the industrial status of the workers varies according to age. **Figure 2** shows that majority of the changes were from ‘labourer’ to ‘employer’ (‘working on one’s own account’). It appears that the crossing point occurred somewhere in the early 30s. In other words, in 1924, more than half of the male manufacturing population over the age of 30 were the workers other than the employed labourers. In that case, is it possible to interpret this as the life course of the male workers employed in the manufacturing sector? As a matter of course, this figure only expressed the cross-sectional data. On the other hand, **Table 3** also reveals the decrease in the number of ‘labourers’ over the age of 30 in 1920 and the constant increase in the number of ‘employers’ (‘working on one’s own account’) up to the age of 45. We can at least confirm that there definitely existed the behaviour of changing the industrial status, as seen in **Table 3** where the chronological change in each worker’s status is directly traced from 1908 to 1920. Based on these findings, we assume that **Figure 2** reflects the existing life course—from employed labourers to independent traders—of the workers in the manufacturing sector. With regard to Figure 2, it should also be pointed out that the diminishing rate of the whole ‘labourer’ was much higher than that of the ‘labourers’ employed by factories with 30 or more employees. As the absolute number of the former far exceeded that of the latter, it appears that as compared with the typical factory workers, the juvenile workers working in relatively smaller workshops had a stronger tendency to quit the employee status. This implies that the life course of the workers described above might have been

more applicable to the small-scale industries than to the large factories. In other words, these life courses led to the constant establishment of the small-scale workshops, which enabled juvenile newcomers to find jobs in the urban area. Then, how did the small-scale industries survive or even develop in the urban settings? We attempt to approach this question by focusing on the cases during the interwar period in Tokyo.

5. The structure of the small-scale industries in interwar Tokyo

Scale, industrial type and its equipment

Table 4 is based on the data extracted from an industrial census executed by the Tokyo Municipal Office in 1932 (*Kogyo Chosa-sho*). It indicates the proportion of small workshops run on a self-employment basis in the manufacturing sectors. In the light of the number and the composition of the workers, the workshops belonging to the category of capital 2000 yen and more (and less than 5000 yen) appear to be the upper threshold for self-employment-based workshops. These workshops occupied 87.8% of the total workshops and factories and employed 49.3% of the total workers. With regard to the composition of the workforce, it is apparent that family workers, including employers, played significant roles. The high proportion of the use of the word ‘apprentice’ in the Census is also impressive. The number of ‘apprentices’ exceeded that of ‘labourers’. This implies that these workshops greatly depended on labour force other than the ‘labourers’ who were the main work force of the large factories.

The bottom part of the table shows the industrial structure of the small-scale workshops. The largest category was ‘miscellaneous’; it is certain that a part of it comprised industries manufacturing traditional consumer goods, such as umbrellas or writing brushes. The wood or the textile industry also had a long tradition in supplying traditional goods. However, the metal and chemical manufacturing industries—which were apparently based on the ‘new’ materials—and the machines themselves were certainly non-traditional products. In fact, goods made from new materials comprised a considerable part of the miscellaneous goods. Thus, we can point out that the conspicuous feature of the products manufactured by small-scale industries was the combination of ‘traditional’ and ‘modern’ factors, such as consumer preferences, product materials, skills possessed by the producers and production equipment. In fact, as seen in Table 4, several workshops belonging to the layer of capital 2,000 to 5,000 yen were equipped with prime movers. The small-scale workshops were not simple equivalents of the traditional handicraft manufacturing industry.

However, the equipment differed considerably among the workshops. **Figure 3** clearly reveals the difference in the per capita fixed capital according to scale. Regardless of the difference in the industrial character, as compared with the large factories, almost all the small-scale

workshops rested their production more on labour than on capital. In this sense, we can certainly regard the nature of the small-scale workshops as being labour-intensive. How then did the labour-intensive workshops manage to survive or even develop under the potential competition with the capital-intensive factories? In order to approach this question, let us focus on the nature of their workforce.

The nature of the workforce

As mentioned above, the workforce of the small-scale workshops comprised three types of workers—‘family workers’, ‘labourers’ and ‘apprentices’. We can see the attributes of the workers in **Table 5**, which is based on the investigation of small-scale works in the mid-1930s. With respect to gender, we should point out the high proportion of male workers, accounting for more than 70% in each type. This gender bias is in contrast to that in the textile industries of both types—factories as well as sideline jobs—and suggests the different nature of the workforce in urban small-scale industries. On the other hand, it is noteworthy that the age range clearly differed among the workforce types. The number of ‘apprentices’, which is the highest among these three, converged in teens, accounting for three third of the workers in the same age group. In contrast, ‘family workers’, including employers, accounted for more than 80% of the workers over the age of 30. In between were the ‘labourers’ accounting for the highest number in the twenties, with the smallest number of persons among these three. These facts enable us to assume that there existed the movement to change the industrial status from that of an ‘apprentice’ to ‘labourer’ and from ‘labourer’ to ‘family worker (employer)’. We have already mentioned the existence of the latter movement as we discussed the establishment of workshops in accordance with aging in **Figure 2** and **Table 3**. We will now focus on the significance of the former process—from ‘apprentice’ to ‘labourer’.

Table 6 presents a compilation of the data on the training period, which was investigated in 1936. The number in each column shows the percentage of workshops that replied with regard to the necessary training during the concerned period. According to this investigation, more than 45% of the manufacturers in every 26 trades replied that they needed training for more than two years. In the case of six trades of these 26, more than 40% of the manufactures claimed that a period of five years of training was necessary. This is in sharp contrast to the case of domestic workers shown in the same table. Fifty percent of the domestic workers could work without any training and another 25% could work with training for less than one month. These observations clarify that workforce with a certain level of skill was required for the small-scale workshops, and this nature of the workforce provided the foundation for the ‘apprentice’ being distinguished from the simple notion of ‘juvenile labourer’. We do not possess any concrete evidences to confirm that an institutionalized apprenticeship equipped with a formal training period or restriction of job entry

was effectively working in these trades at that time. However, we can probably assume that there existed the substantial needs for the training of the workers, and it was natural that some system, although in the absence of a formal institution, emerged to meet the demand. The fact that the word ‘apprentice’ was commonly used in the official investigation might be a proof of such an existence.

The investigation on the ‘apprentices’ supported this speculation. **Table 7** revealed that more than half of the juveniles had intended to undergo training at the workplace. Judging from the data on age, working period and the experience of changing jobs, it appeared that a majority of the ‘apprentices’ had worked at the same workshop for at least two years. These findings are almost consistent with the data on the training period, which is shown in **Table 6**. On the other hand, as we see in the following part of this section, the low wages of these juvenile workers were profitable to the employers. The employers also required ‘apprentices’ as cheap labour. Though we do not possess any further information to analyse the equilibrium between the training cost and the low wages, we can probably assume that being trained as ‘apprentice’ during their teenage, if informally, was built in the early stage of the life course of the workers in the small-scale industries.

We must estimate the role of the family workers to be more than what is shown in the tables. The average number of family workers other than employer was a maximum of approximately 0.5 in all the layers. However, to take this at face value would be an underestimation. These numbers appear to reflect the number of workers who were engaged in industrial work on a full-time basis. On the other hand, the significant nature of family labour, particularly that of the employer’s spouse, might be the capability in responding flexibly to the labour demand from the workshops. Flexibility probably implies two phases. One is adaptability to the fluctuation in the labour demand, and the other is adaptability to various kinds of fragmentary work undertaken in the workshops. The latter included the domestic as well as office work for the workshop. Keeping the significance of the workshop ‘apprentices’ in mind, we must realize that domestic needs such as boarding and other facilities for a live-in apprentice were directly related to the performance of the workshop. **Figure 4** is a quantitative expression of the role of the spouse in the small-scale workshops. The spouse rate of men in the twenties differed considerably according to the industrial status. The employer’s rate exceeded that of the labourer’s by 30 points during the first half and 20 points in the latter half. On the other hand, salaried workers traced almost the same trajectory as the labourers. As the earnings of the salaried workers might have exceeded the other two, the necessary condition for marriage, such as income level, could not account for these differences. One possible explanation could be the needs. The employers required their spouses in order to manage their workshops in an appropriate manner. In other words, the spouse played an indispensable role in the survival of the small-scale workshops.

Productivity and earnings

What was the outcome of these small-scale workshops? **Table 4** presents the average value-added labour productivity of the workshops in each layer. Since the income data tended to be underreported in fear of the tax imposition, the calculated value-added might be smaller than actual one. Despite this, the great differences in the value-added productivity among the layers were apparent. The productivity of the largest layer, 500 thousand yen or more, was recorded to be four times as high as that of the layer, two thousand yen or more. The productivity increased in accordance with the increase in the capital scale. As per capita fixed capital differed according to the capital scale of the workshops, as shown in **Figure 3**, the rise of the physical labour productivity based on the utilization of machines or prime movers might account for most of the productivity rise. In other words, the market value of the products of the small-scale workshops could not compensate for the relatively low physical productivity. Although some products might have realized the high market value based on unique technology or skills, in general, the small-scale workshops should be recognized as an industrial sector with relatively low productivity.

However, the difference in productivity was not the decisive factor for undermining the *raison d'être* of the small workshops. Let us refer to the earnings of these workshops, which are shown in **Figure 5**. It is clear that the scale largely influenced the earnings⁸, and the earnings of the smaller-scale layers fell significantly below the wages of labourers employed in the large-scale factories. However, it should be noted that the earnings of the workshops in the layer, capital 2000 yen or more, apparently exceeded the highest wages of the employed labourers and even the earnings of the next layer, capital 1000 yen or more, almost equalling the second highest wage level of the factory labourers. This level of earnings might have not discouraged the employed labourers to establish their own workshops. In fact, the wages of employees who worked in workshops whose capital were under 10,000 yen, and which employed more than half of the total employees, could not reach the level of earnings mentioned above. This implied that the employees with lower wages could not possibly increase their income as long as they remained in their employee status, assuming the low labour mobility from small workshops to the large ones. In other words, the establishment of one's own workshop must have appeared as a promising option, although it involved considerable risks. The differential wages according to the scale of workshops, which also reflected the existence of juvenile workers as 'apprentices' mentioned above, enabled the small workshops to earn a certain amount of earnings although their value-added labour productivity was considerably low as compared with that of the large-scale factories. On the other hand, this motivated the adult labourers to establish their own workshops.

In sum, we may assume a particular life course different from that of the wage labourers who were employed throughout their lifetime. The labourers migrated from the rural areas and worked in small workshops during their teenage; they underwent some on-the-job training and developed a certain level of skills. After being employed as adult labourers in the twenties, some of

⁸ The costs, including the wages for the employees, were already deduced from the earnings of the workshops.

them might succeed, possibly with some luck, in establishing their own workshop. In considering their rural origin and the nature of their workforce—family workers and ‘apprentices’—on which the established workshops were based, we can probably compare these workshops to the family farming managed by peasant households. In other words, the urban small-scale workshops can be recognized as a reproduction of the peasant households under non-agrarian settings. This nature of self-employment was widely and commonly prevalent in both rural as well as urban settings and formed an important basis for labour-intensive industrialization in modern Japan.

6. The origin of the competitive edge—evidences from export-oriented small-scale industries

The sections thus far discussed the prevalence of the small-scale industries in both rural as well as urban settings. These findings suggest that the existence of the small-scale, labour-intensive industries was not the mere remnant of the old-fashioned industries or the symbol of economic backwardness, but the sign of dynamism from the bottom of the economic structure. However, the industry would not exhibit its dynamism without a competitive edge against the rivals. We will now discuss the origin of the competitive edge of the small-scale workshops by focusing on the development of the export-oriented industries, which might be the best arena to exemplify it as export in itself forces severe competition. After an overview of the transformation of the export-oriented industries, we focus on the toy manufacturing industry in Tokyo as a representative of the urban export-oriented small-scale industries.

The transformation of the export-oriented industries

It is a well-known fact that the textile industry occupied the largest part of the export trade. In fact, raw silk (silk thread) continuously stood in the first position by the early 1930s, and the second position transformed from silk cloth to cotton yarn in the early 1890s, then to the cotton cloth after World War I. However, the export trade was not monopolized by the textile goods such as cloth, thread or yarn. Although the individual categories only accounted for the small proportion, the sum of various consumer goods (hereafter, miscellaneous goods) other than the textiles mentioned above occupied a considerable proportion of the export of the manufacturing products. In fact, by the 1930s, the sum of the following products contended the second position along with the cotton cloth or yarn: matches, knitted goods, hats, footwear, buttons, accessories, ceramics, glassware, enamelled ironware, straw plaits, fancy mats, western-style umbrellas, brushes, trunks and toys.

Apart from the volume, the changing patterns in the composition of the export-oriented miscellaneous industries were also noteworthy. We can roughly distinguish three different patterns among the export of the miscellaneous goods in **Figure 6**. Ceramics and lacquer ware comprise the

first pattern whose export began soon after the Opening of the Ports in 1859. The next pattern comprised goods whose export surged in the 1880s. This group included matches, trunks, straw plaits and fancy mats, accounting for a significant part of the entire export trade from the 1880s to the 1900s. It is also notable that the exportation of these goods commonly decreased sharply in the 1920s and could not recover their weight throughout the interwar period. Accessories, knitting goods, glassware, enamelled ironware and toys composed the third pattern. The exportation gradually increased from the 1880s onwards, surged during World War I and almost maintained a constant level in the 1920s. In the 1930s, there was a rapid increase in the export of some goods, for instance, toys, which we will focus on in the following section.

Thus, the development of the exportation of the miscellaneous goods entailed the replacement of the leading products. We can assume the evolutionary process of production, such as technological change or change in location, behind these changes. The miscellaneous goods exported soon after the Opening of the Ports were characterized as traditional craft products, attracting an overseas consumer market with a peculiar taste for the Japanese style. Their production system, including technologies, skills and the nature of workers, must have been strongly consistent since the Tokugawa period. On the other hand, the straw plaits and fancy mats that occupied 40% of the miscellaneous goods exports during the late 19th century were inferior goods as compared with those available in the overseas market, such as carpets. Although matches were a new product in the Asian areas, Japanese matches were inferior to the imported ones from the European countries. With regard to the production system, the sideline business in the peasant household accounted for a large portion of the production of straw plaits and fancy mats. Further, even if the factory system was adopted, it was established in the countryside and was based on the handicraft technology with indigenous materials. Apart from this, matches were produced mainly in the urban settings based on the imported technology. However, these two types of production systems involved labourers of a common nature—they commonly employed female unskilled labour to produce relatively simple, uniform products. In this sense, they were typical labour-intensive industrial sectors but entirely different from the traditional crafts industry based on skilled male workers.

In contrast to these two types, the distinct feature of the products in the third type was the ‘new’ items produced by the ‘transplanted’ technology with ‘new’ materials such as metals or chemical products: rubber or celluloid. In addition, it is noteworthy that each individual industry in the third type manufactured various kinds of products with different uses or designs. Although the goods continued to be inferior in quality, these manufacturers were required not only to supply low-price goods but also to respond closely to the taste of consumers. In other words, these industries had to be endowed with the ability to acquire market information and hold ‘skilled’ labour in the broad sense in order to embody the market information into the products.

This transformational pattern also emerged in the transition of the exports of the textile products. The cotton cloth, which can be characterized as consumer goods, exceeded the raw silk, which was categorised as intermediate goods, in the 1930s. Within the cotton industry, the exports transformed from yarn to cloth during World War I. If we notice the difference within the category of the cloth, it was the transformation from plain silk cloth (*Habutae*) or plain cotton cloth (shirting and sheeting) to striped or patterned cotton cloth. All these processes show the direction of transformation from simple, uniformed products to the finished goods which were required to respond to the changing taste of the consumer.

Table 8 sheds light on this direction of transformation from another angle. This table compares the export markets of industries that occupied a significant position in the total exports of 1937. The export markets were divided into four areas: A includes ‘Manchuria’ (the North-east part of China) and the ‘Kwantung Leased Territory’, China; B includes the rest of Asia; C includes Central and South America, Africa, Oceania and the Middle East; and D includes Europe and North America. In terms of the manufacturing products, the barriers to entry appeared to be highest in the case of markets in the industrialized countries in D. On the contrary, this barrier could have been lowered by the political influence in area A. Areas B and C could have been located in between. In fact, the machine-manufacturing industries—which were technologically backward as compared with those in the Western industrialized countries of those years—mostly limited their market to A. In contrast, almost all the raw silk was exported to Area D, particularly, to the U.S., on the basis of the concrete relation between the weaving and knitting industries in that country and the supplier of the intermediate goods in Japan. With respect to the consumer goods, cotton cloth exports were the largest in volume; the cotton cloth exports to the D area accounted for less than 10% of the total exports. In comparison with these exports, the distinct feature of the miscellaneous goods was the relatively high proportion of exports to the D area. Area D was the largest market for toys, accessories, ceramics and table lamps, and these goods almost coincided with the items included in type three.

Therefore, the export-oriented development of the miscellaneous industries during the interwar period could be realized by the penetration into the markets of the high-income countries under competition with the counterparts in the industrialized countries. This was one of the industrial frontiers for the Japanese economy in those years, and it appears to be a forerunner of the industries exporting finished consumer products to the Western industrialized countries after World War II. In the following section, we will analyse the competitive edge of these industries by focusing on the development of the toy manufacturing industry in interwar Tokyo.

The competitive edge of the toy manufacturing industry in interwar Tokyo

The development of exports

The output of the toy manufacturing industry in Tokyo, which accounted for more than 50% of the total output of toys in Japan during most of the interwar period, rose rapidly during World War I—from 0.3 million yen in 1914 to 1.92 million yen in 1918. Production stagnated during the first half of the 1920s but recovered in the latter half and increased conspicuously immediately after the Showa Depression around 1930. This trajectory paralleled that of the total output of the manufacturing industry in Tokyo and the overall growth rate exceeded that of Japan in the 1930s. However, according to the statistics for 1939, ‘factories’ employing fewer than five people accounted for 40% of the total number of employees, and they produced 30% of the total output of ‘metal toys’⁹. The comparable numbers for ‘toys other than metal’ were 71% and 55%, respectively. In fact, a 1936 municipal survey of the manufacturing industry in Tokyo regarded the toy manufacturing industry as one of the typical industries in which the putting-out system was widely prevalent¹⁰. It is evident that production forms other than the factory played a significant role in this industrial growth. It is also noteworthy that unlike the traditional Japanese toys, most of the toys manufactured in these periods were not made from paper or wood, but from ‘new’ materials, such as metal from 1900 onwards and rubber and celluloid from 1910 onwards. Thus, toy manufacturing in Tokyo was a newly emerging small-scale industry during the interwar period, and its trajectory of production embodied that of the industrial growth in interwar Japan.

The driving force behind this growth was the expansion of the export market. The total value of the Japanese toy exports increased rapidly during World War I, then stagnated and recovered through the 1920s, declined around 1930 and conspicuously increased in the 1930s. This trajectory was almost parallel with that of production. Although we are unable to accurately calculate the proportion of exports to output due to the limitations of the available statistics¹¹, we can hardly deny the significant role of exports in the growth of the toy manufacturing industry.

As we have already suggested in **Table 8**, the main markets were consistently North America and Western Europe, accounting for more than half of the total. With regard to Asia, British India was the largest market, followed by Dutch East India in the 1930s. On the other hand, the volume of exports to China was rather small. Thus, in general, the Japanese toy exports targeted markets of high-income areas, including the wealthy layers in the colonies. **Figure 7** shows the transition of toy imports of the U.S. and the U.K.. Before World War I, German products dominated both the import markets (Hamlin 2004). It was after the end of the War that Germany regained its

⁹ Tokyo Municipal Office ed. *Tokyo-fu Tokeisho* (Statistics of Tokyo Prefecture), 1939

¹⁰ Tokyo Municipal Office ed. *Tonyasei Shokogyo Chosa* (Survey on Small Manufacturing and Processing Workshops under the Putting-out System), 1937

¹¹ If we calculate the export dependency rate as the value of exports divided by production, using *Dai-Nihon Bōeki Nenpyō* (The Annual Overseas Trade Statistics of Japan) and *Kōjō Tōkeihyō* (The Statistical Charts of Factory), we find that is much higher than 100% in most of the years during the 1920s and 1930s. This reveals the coverage problem in the production statistics—not including small workshops—as well as the difference in prices between the production and export stages.

position in the import markets; however, the absolute value of the importation of toys stagnated in both the markets during the 1920s, reflecting the development of toy industries after World War I in the U.S. and the U.K. (Brown 1996). In other words, the market which Japan's toy manufacturing industry resumed to target was the highly competitive one among the Western industrialized countries. Under this severe market environment, the import of Japanese products began to increase in the late 1920s, and it expanded throughout the 1930s until World War II began. Particularly in the U.S., Japan's products exceeded those of Germany in 1934, and Japan dominated the import market thereafter. This form of industrial rivalry—competing for the affluent market for the industrial finished goods—appears to have pioneered an important type of world trade, which expanded after World War II.

Production organization

Figure 8 is a brief illustration of the production organization of the toy manufacturing industry¹². The key actor was the merchant organizer (*ton'ya* or *seizō-ton'ya*), who can be literally compared to the wholesaler but played many more roles than that of a genuine distributor (*oroshi-shō*). The merchant organizers were located between manufacturing workshops and the domestic and export markets, connecting the manufacturers to the distributors. They often related to the production process by coordinating the workshops and manufacturers, who took charge of the partial processes. With regard to the manufacturers, it is notable that they include a large number of non-factory workshops as well as factories. The definition of factory in this section is a workshop that employed more than four workers and was listed in the Directory of Factory published by the Ministry of Commerce and Industry. The number of non-factory workshops further exceeded the number of factories. As mentioned in the previous section, the workforce comprised employers, family workers, 'apprentices' and adult labourers. Based on their work in the production organization, the manufacturers can be categorized into two types. One is the core manufacturer producing finished goods and the other is the rather small workshop working on partial processes. The factory tended to cover the former; however, it was not rare that the non-factory workshops provided the finished goods to the wholesalers. In contrast, the work assigned to the domestic workers was limited to partial processing or simple assembly work, and even the small workshops placed order with the domestic workers. The gender bias in the workforce was also different as the female occupied the most part of the domestic workers. Thus, the distinct feature of the toy manufacturing industry in Tokyo was the co-existence of different types of actors who were engaged in a series of production processes. We refer to this system as dispersed production organization.

¹² The historical facts on the toy manufacturing industry in the following part of this section are obtained from Tanimoto (2007).

The origin of the competitive edge of the toy manufacturing industry lay in this organizational character. In fact, it was usual to economize the labour cost by subcontracting to the domestic workers. The employment of the juvenile workers as ‘apprentices’ might have also had a similar effect on the labour cost of small-scale workshops. However, toys were not goods whose demand was determined mostly by price. It was the fashionable goods, which had to match or even develop the taste of consumers in order to increase their production. In this context, it is rather notable that each actor—merchant organizer, factory workshop and non-factory workshop—included firms that had the ability to design the goods. The records of the registration of the designs and devices, either to the National Patent Office or to the trade association of toy manufacturing, reveal that the either firm categorized as the three actors mentioned above sometimes succeeded in registering its ideas. In other words, several small workshops as well as merchant organizers and ‘factories’ were capable of creating the original models of products. Therefore, we should not simply assume that the relationship between the merchant organizer and the manufacturer or between the consigner and the consignee among manufacturers is complementarities or exploitation within the division of labour. While the influential merchant organizer vertically coordinated the production process under its own control, there were manufacturers, including the non-factory workshops, who designed and produced the finished goods on their own accounts. These manufacturers sometimes held relatively strong positions in the negotiation processes with merchant organizers. The relationship between the merchant organizers and the manufacturers included competition on the same grounds as well as the transactions based on the vertical division of labour. Thus, the production organization of the toy manufacturing industry was by no means static for the traders, and this competitive nature among the traders was maintained through the vigorous new entries based on the orientedness of the establishing independent workshops built into the life course of the workers.

Agglomeration

In addition to the endogenous factor of the organization, we can point out some other external factors that support the competitive edge of the industry. One of the conspicuous features of the toy manufacturing industry in Tokyo was the agglomeration of the traders within a relatively small area. For example, in 1933, the location of more than 40 merchant organizers was almost entirely limited to only two blocks in the commercial centre of Asakusa-ku (ward). Metal toy manufacturers were concentrated in the three blocks of Honjo-ku (ward), particularly, 39 in Umayabashi (block); further, the number of celluloid toy manufacturers was recorded as being 36 in Kameido (block), followed by 22 in two other blocks near Kameido. The highly concentrated location of the traders suggests the positive effects of agglomeration, reminding us of the arguments by Alfred Marshall and others regarding the effects of external economies in industrial clusters (Marshall 1920). For instance, with regard to merchant organizers, proximity to other traders engaged in the same

industry might have increased the opportunities to acquire market information, which was indispensable for the sales of fashionable goods. The agglomeration also facilitated the development of the division of labour among traders that might have increased the productivity of the industry.

Moreover, it was noticeable that the traders located within each cluster were not limited to toy traders. In fact, as the directory of celluloid traders of 1939 indicates, it is better to say that the celluloid toy workshops were located within the agglomeration of traders in various celluloid goods. This appears to have been true of traders in metal or rubber toys as well. These facts suggest that the traders might have moved in among the industries that used the same material. Indeed, by matching the trade directories of different years, we can confirm that several celluloid toy manufacturers changed their product into other celluloid goods during the course of time and vice versa. This flexibility among traders appears to have relieved the blows of market fluctuations on them. Although this buffer function was probably limited, as market trends of the industries would not have been conversely correlated in order to compensate the slump of the other industry, it might have provided more opportunities to survive, at least for traders with a relatively high ability to respond to the unstable economic environment.

Meanwhile, the coexistence of the related types of industries within an area was important for the toy traders as well. Mould producers were a typical example. In order to acquire the fruits of product innovation, it was vital for traders to possess the moulds. However, a relatively high level of skills was required to produce the moulds, and it was rather difficult for the traders, particularly small workshops, to internalize this process. In this situation, the mould 'factories' generated within the agglomeration of the metal-processing workshops near the agglomeration of toy traders or the mould-processing workshops whose location overlapped with that of the celluloid toy manufacturers played an important role in actualizing the originally generated ideas as real products. Similar roles were played in the areas of businesses that required relatively high skills, such as manufacturing springs and gears and printing tin plates. The agglomeration of related industries provided complementary factors that were indispensable to the development of the dispersed production organization based on small workshops.

Institutional supports

On the other hand, the agglomeration of potentially competing traders also raised problems that might have retarded the development of the industry. The main problem of this kind in the toy manufacturing industry was the imitation of products. Numerous examples of the imitation problem can be seen in the advertisements of toy trade journals. The crib of ideas or the imitation of products greatly affected the sales of the developers. In particular, they suffered heavy losses in cases where information regarding an idea or an expertise was delivered swiftly to the imitators, as the period of profitable sales tended to be short for fashionable goods, and it was the nature of the agglomeration that caused a heavy information flow among traders, facilitating the acquisition of

crucial information by imitators. Thus, it was a sort of problem that could not be fully solved by the parties themselves and required institutional support.

The patent system institutionalized by the central government was one method of coping with this problem. On the basis of some cases, we can confirm that acquiring the authorized 'patent' or 'registration' probably brought various benefits to the toy traders. However, it should be noted that the traders often criticized the patent system because the registration procedure was extremely time-consuming, usually more than six months. In this context, it should be particularly mentioned that the manufacturers' association of the Tokyo celluloid toy products executed the registration of designs from the late 1920s onwards. The designs created by the members of the association were proposed to the jury on a weekly basis, examined for their uniqueness and finally judged with respect to their validity for registration. On the other hand, the entire inspection of export goods by the manufacturers' association was made legally compulsory from 1925 onwards. While quick registration might have attracted traders, the combination of the registration system and the inspection of export goods worked effectively in maintaining the system. Thus, the association's measures to set the transactions in order were particularly significant for an industrial organization that comprised numerous 'independent' traders and operated in urban settings lacking an intimate social relationship found in rural communities.

7. Concluding remarks

Thus, Japan's modern economic growth entailed the development of small-scale industries. The rural weaving industry played a significant role in substituting the imported cotton cloth after the Opening of the Ports and increased the volume of production up to the interwar period under the putting-out system combined with the strategy of the peasant household. The distinctive feature of this industrial growth was the lack of conspicuous process innovations and investments in the fixed capital, such as mechanization or adoption of the factory system. In other words, the industrial growth was brought about mainly by the input of labour, particularly, the labour allocated within the peasant household. We can definitely characterize this process as labour-intensive industrialization and confirm the role of peasant economy in modern Japan. This process was the first phase of the missing link between the peasant society and the labour-intensive industrialization.

The second phase of the missing link, which was the main target of this chapter, was urban industrialization based on the small-scale industries. In accordance with the population growth, the increased number of non-successors of the peasant household—defined by the single inheritance system—was excluded from the rural society. The urban small-scale industries absorbed this population. The excluded non-successors entered this field during their teenage as 'apprentices', transformed into adult labourers in the twenties and then, with some luck, several established their own workshops. In fact, the small workshops—mainly comprising family workers

and ‘apprentices’—contained a significant proportion of the urban industrial workforce. In considering the origin and composition of the workforce, these urban workshops can be compared to the peasant households reproduced in urban settings.

As the per capita fixed capital positively correlated to the scale of workshops, the small-scale workshops were certainly the actors of labour-intensive industrialization. Then, how could these workshops sustain their business under competitive circumstances? Keeping the difference of value-added productivity in mind, the wage differential by scale, together with the flexibility of family workers, was one of the foundations of these workshops. In this context, the ‘apprentice’ might be seen as a convenient source of low-wage labour. However, as we emphasized in the case of the toy manufacturing industry, the urban small-scale industries rested their competitive edge on the adaptability to the change in demand or the consumers’ tastes. A certain level of skills, together with the ability to acquire market information, enabled the workshops to cope with these issues. ‘Apprenticeship’, if only informal, worked to form these skills required to establish the workshops. The economy of agglomeration in the urban settings, together with the institutional support, also worked to support their competitive edge.

This pattern of industrial development was typically seen in the export-oriented urban small-scale industries. This form of industrial rivalry—competing for the affluent market in industrial finished goods—appears to have pioneered an important type of world trade, which expanded after World War II. In this sense, the notion of the labour-intensive industrialization might cover the long period of Japan’s industrialization.

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Figure 1 Correlation between per capita real GDP and self-employment rate

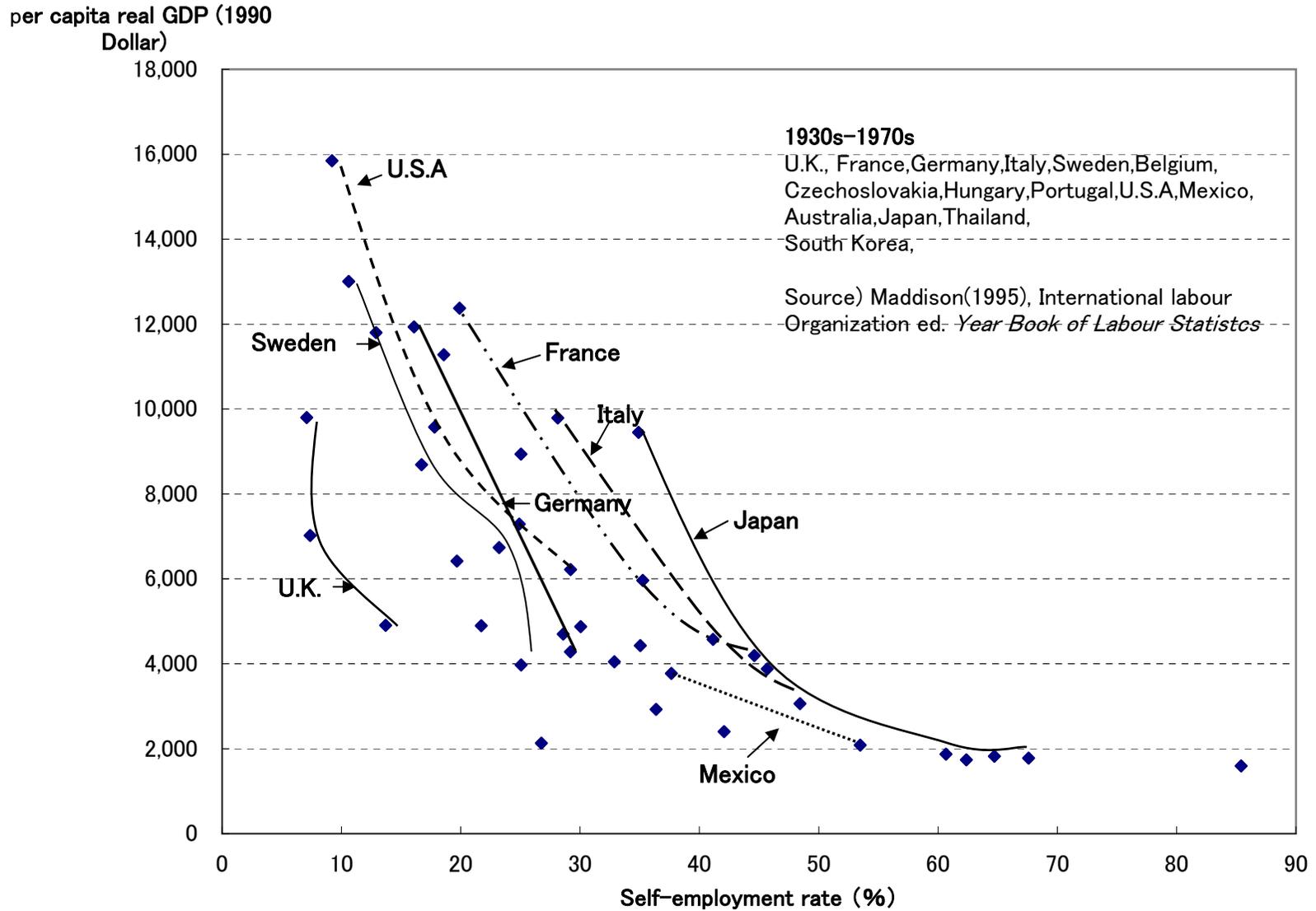


Table 1 Working Population of Manufacturing Industries by Prefecture

Prefecture	Factory Statistics			Census of Population
	Distributon of male workers %	Number of workers per factory Person	Proportion of female workers %	Distributon of male workers %
1909				
Total	100.0	24.9	61.6	
Tokyo	16.2	25.7	41.3	
Osaka	14.3	37.7	50.1	
Hyogo	11.0	30.8	47.1	
Aichi	6.9	25.6	69.0	
Kyoto	6.4	11.9	48.7	
1920				
Total	100.0	32.5	52.9	100.0
Tokyo	15.9	32.8	33.1	15.2
Osaka	14.8	31.6	45.6	11.0
Hyogo	11.9	50.0	37.8	11.0
Aichi	6.5	26.8	61.6	4.9
Kanagawa	5.2	65.9	33.2	4.9
1935				
Total	100.0	27.8	45.7	
Tokyo	18.0	23.2	23.9	
Osaka	16.5	26.1	35.4	
Hyogo	8.7	43.4	39.4	
Aichi	8.4	24.3	51.0	
Fukuoka	5.0	52.8	24.1	

Source) Ministry of Agriculture and Commerce ed. *Kojo Tokei Hyo* 1909,1920,1930,1935 (The Statistical Charts of Factory)

Naikaku Tokeikyoku ed. *Kokusei Chosa* 1920(National Population Census)

Note) Factory Statistics included the workshops employing 5 employees or more, or being equipped with prime movers.

Table 2 The Working Population of Small Workshops in Tokyo (Male)

	1908	1920	1930	1940	
Area	City	Prefecture	Prefecture	Prefecture	
Gender	Male	Male/Female	Male/Female	Male/Female	
Number of workers in manufacturing industries(A)	227,008	454,975	535,148	1,048,226	
Number of workers in small worksops(B)	157,647	331,151	374,172	466,262	
(B) / (A)	%	69.4	72.8	69.9	44.5

Source) Tokyo Municipal Office ed. *Tokyo-shi Shisei Chosa Genpyo 1908* (Population Census of Tokyo 1908)

Naikaku Tokeikyoku ed. *Kokusei Chosa 1920,1930,1940*(National Population Census)

Ministry of Agriculture and Commerce ed. *Kojo Tokei Hyo 1909,1920,1930,1940* (The Statistical Charts of Factory)

Table 3 Changing Number of Male Workers according to Industrial Status by Age (Tokyo, 1908-1920)

Age in 1908	4-8	9-13	14-18	19-23	24-28	29-33	34-38
Age in 1920	16-20	21-25	26-30	31-35	36-40	41-45	46-50
(Change of the number during 1908-1920 in each cohort)							
Total male workers	137,443	117,295	52,630	10,152	3,144	-1,247	-1,268
Net inflow of the male population	104,872	94,401	21,933	-13,955	-8,255	-5,045	-2,280
Labourers(Manufacturing industries)	50,448	27,444	671	-8,866	-4,576	-2,437	-870
Empliers(Manufacturing industries)	613	4,272	10,186	9,477	4,216	222	-724

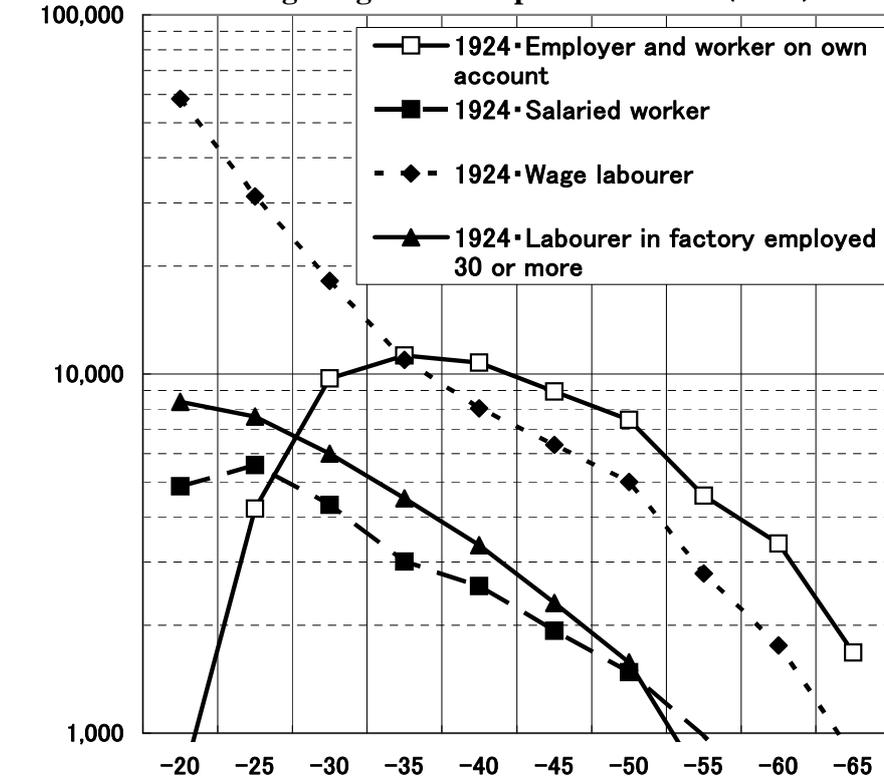
Source) Tokyo Municipal Office ed. *Tokyo-shi Shisei Chosa* (Tokei) Genpyo 1908,1920 (The Census of Population in Tokyo,1908,1920)

Tokyo Municipal Office ed. *Tokyo-shi Tokei Nenpyo* (Statistical Chart of Tokyo City), annual edition.

Note) The numbers of this table are calculated by matching the population of the same cohort between 1908 and 1920.

The number of dead persons during 1908 to 1920 were already deducted from the population in 1908.

Figure 2 Number of gainful workers in Tokyo according to age and occupational status (male)



Source) Tokyo Municipal Office ed. *Tokyo-shi Shisei Chosa Toukei Genpyo 1924* (Population Census of Tokyo)

Table 4 Content of workshops classified by the size of capital in Tokyo 1932

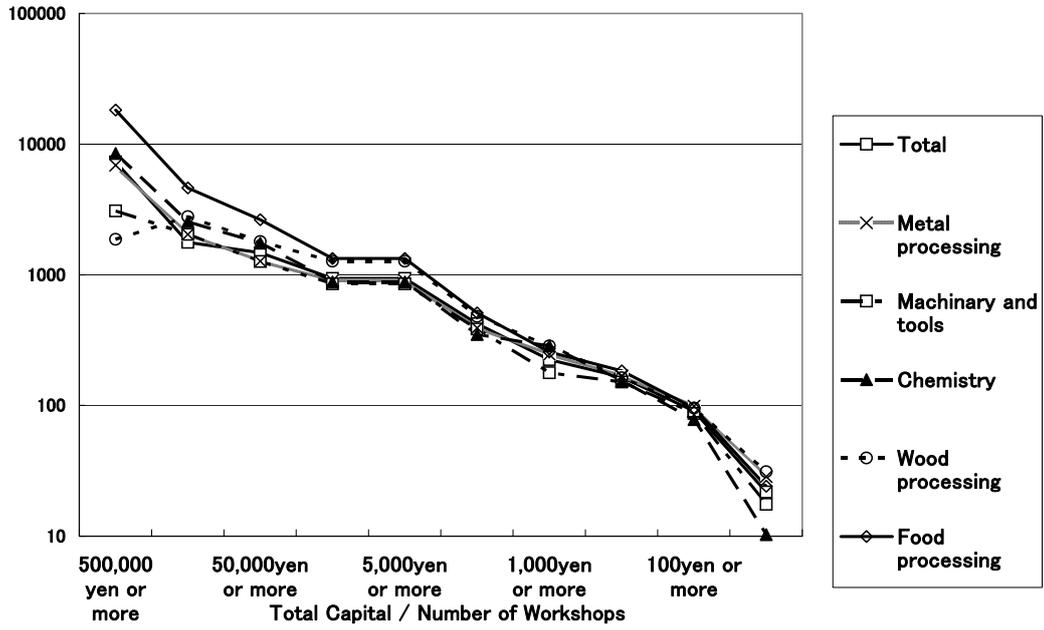
Class by capital	Number of works	Proportion of work Workers per workshop						Value-added* per worker (Index)
		(%)	Total (Person)	Employer and family Male	Female	Employee Adult	Apprentice	
Less than 100 yen	1,378	0.5	1.67	1.00	0.32	0.08	0.23	44.2
100 --	16,396	7.5	2.06	1.09	0.28	0.15	0.49	63.7
500 --	18,262	10.9	2.68	1.16	0.33	0.29	0.80	66.2
1000 --	19,929	14.4	3.24	1.19	0.31	0.46	1.11	82.3
2000 --	16,389	16.0	4.39	1.21	0.28	1.13	1.53	100.0
5000 --	4,903	7.4	6.76	1.17	0.20	2.82	2.03	146.5
10 thousands --	3,665	10.8	13.24	1.01	0.15	7.94	2.46	194.7
50 thousands --	641	3.9	27.31	0.82	0.12	18.97	2.54	240.2
100 thousands --	663	10.2	69.37	0.36	0.04	54.91	2.01	306.0
500 thousands --	282	18.3	292.14	0.35	0.13	222.15	2.90	417.0
Total	82,508	100.0	5.44	1.14	0.29	2.30	1.13	
Proportion of workers by industry								
(%)	miscellaneous	Wood	Food	Textile	Metal	Chemical	Machine	Printing
Under 5000	14.1	4.5	9.3	5.1	5.2	1.8	6.0	2.9
5000 and more	5.0	1.2	4.1	8.1	5.4	6.1	13.5	5.6

Source) Tokyo Municipal Office ed. *Kogyo Chosa-sho* (Census of Industry), 1934

*Value-added=Revenue-Expenditure+Wage,Salary+Intrest-Rental cost of capital(Capital×0.08)

Fixed Capital / Number of Workers (Yen)

Figure 3 Capital intensity according to firm size (1932 Tokyo)



Source) Tokyo Municipal Office ed. *Kogyo Chosa-sho* (Investigation of manufacturing Industries), 1934

Table 5 Labour Structure of Small Workshops in Tokyo (4 wards, 1935)

	(%)					
Age	-14	15-20	21-30	31-50	51-	Total
(Male)						
Worker	0.0	2.3	10.6	3.5	0.3	16.8
Apprentice	1.2	25.6	6.6	0.1	0.0	33.6
Family Worker (including Employer)	0.1	1.8	4.7	15.4	3.1	25.1
Others	0.2	3.1	1.0	0.1	0.0	4.5
Total	1.6	32.8	23.0	19.1	3.4	79.9
(Female)						
Worker	0.1	2.5	1.2	0.5	0.1	4.3
Apprentice	0.1	6.5	0.4	0.0	0.0	7.1
Family Worker (including Employer)	0.1	0.8	1.8	3.6	0.5	6.7
Others	0.1	1.4	0.3	0.1	0.0	1.9
Total	0.3	11.3	3.7	4.2	0.6	20.1

Source) Tokyo Municipal Office ed. *Shokogyo Chosa-sho* (Investigation of Small Manufacturing Workshops), 1937

Note) The investigation covered four wards: Shinagawa, Toshima, Arakawa, Jyoto.

Table 6 Term Required to Form the Skill (ca.1936)

	(%)						
	Unnecessary	Less than One month	One month to six month	Six months to one year	One year to two years	Two years to five years	More than five years
Small Workshops (Average of 26 trades)	0.9	10.0	8.6	5.1	5.4	49.6	20.5
Domestic Works	50.6	26.1	9.2	1.9	2.0	10.2	

Source) Tokyo Municipal Office ed. *Tonyasei Shokogyo Chosa* (Survey on Small Manufacturing and Processing Workshops under the Putting-out System), 1937
 Tokyo Municipal Office ed. *Naishoku Chosa* (Investigation of Domestic Works), 1935

Table 7 Information on 'Apprentice' (2990 boys) from survey in 1930s, Tokyo

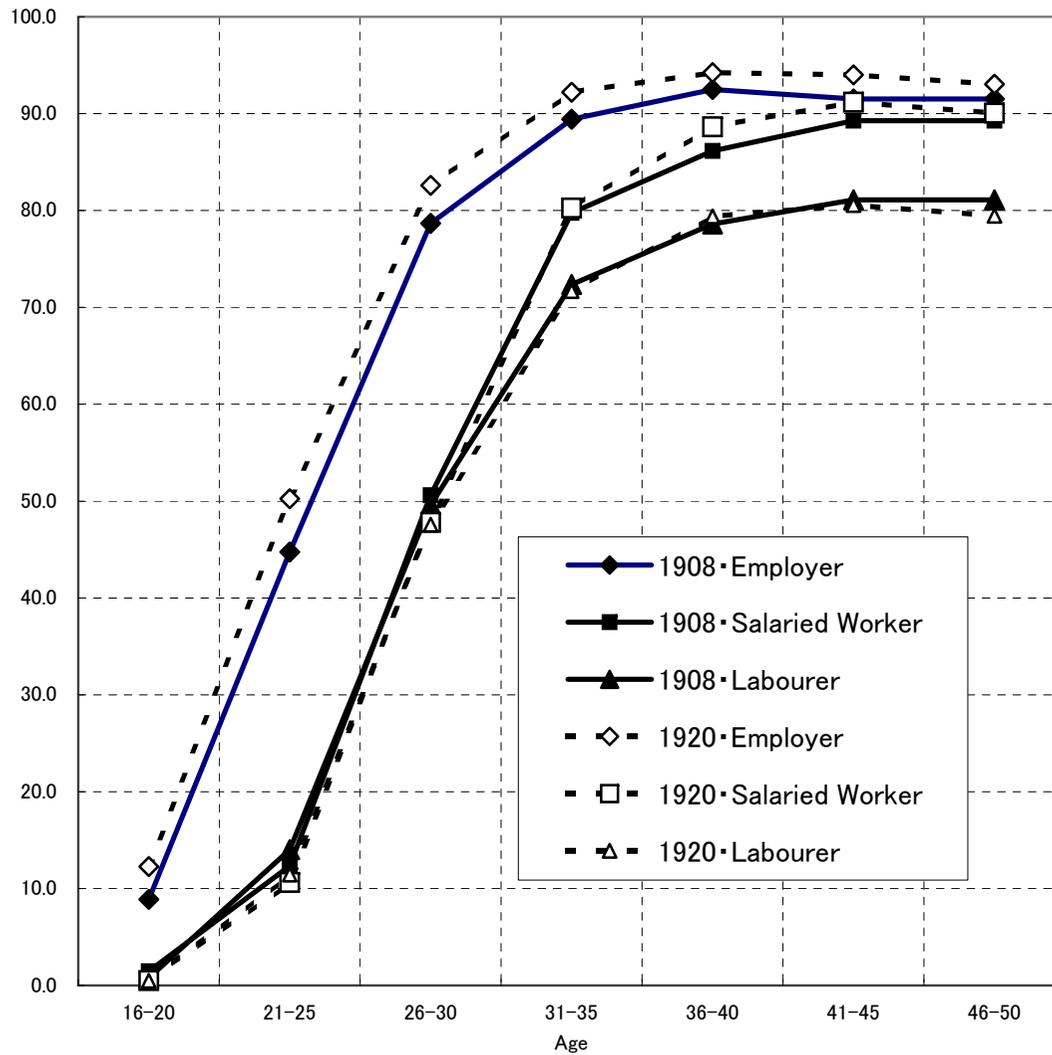
Age	(person)	Motive for apprentice	(person)	(%)	Number of change	(person)	(%)
Under 13	1	Skill formation	1,646	55.1	0	2,434	81.4
13	14	Supporting parent's household	501	16.8	1	402	13.4
14	83	No reason	382	12.8	2	86	2.9
15	302	Self-support	284	9.5	Over 2	15	0.5
16	633	Others	27	1.0	Unknown	53	1.8
17	830	Unknown	148	4.9			
18	816						
19	125						
20	98						
Over 20	88						
Total	2,990						

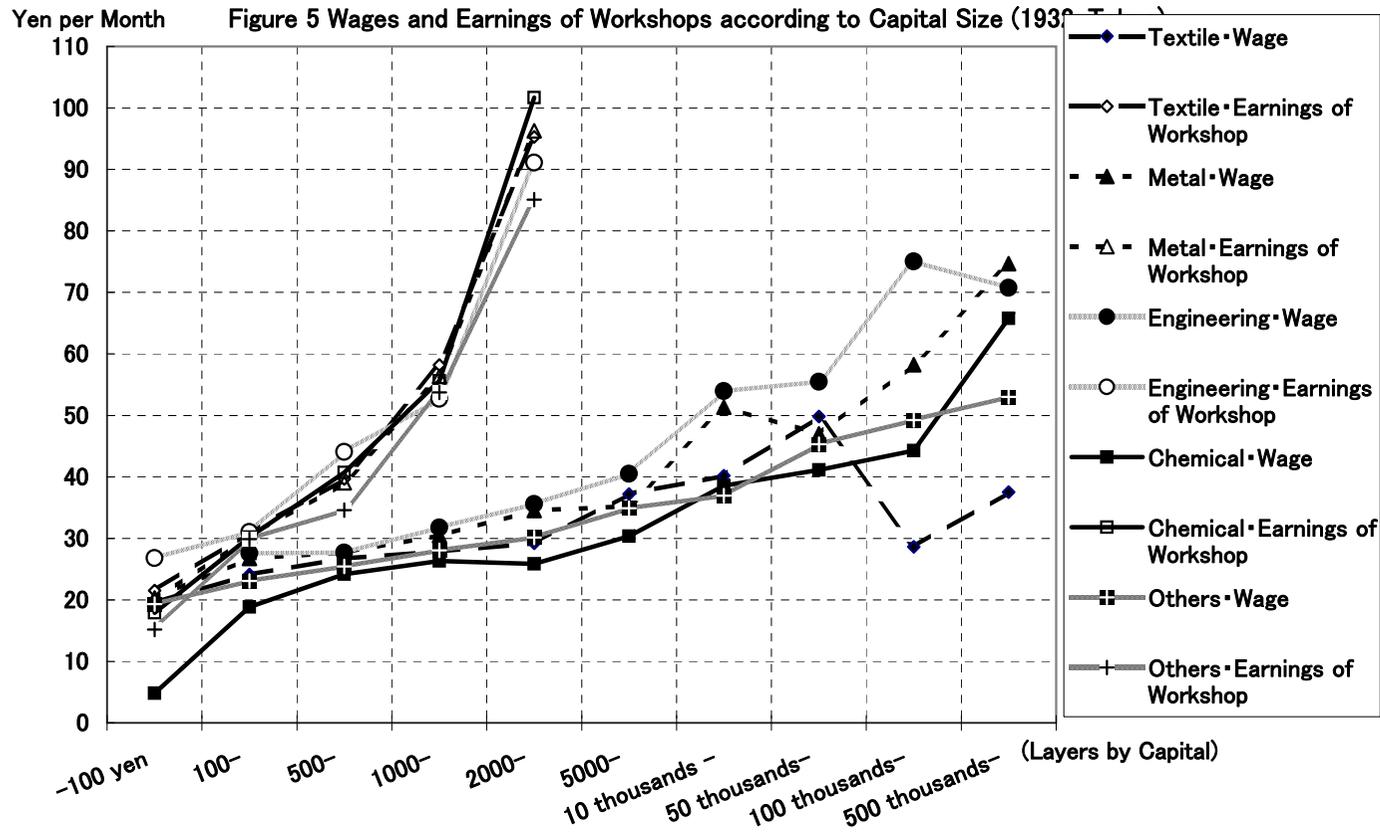
Source) Tokyo Prefectural Office ed. *Chusho Kigyo no Keiei Jijyo to Totei no Roudouj Jijyo Chosa Dai Nibu*, 1939

(Investigation on the Manegement of Small and Medium Firms and the Working Conditions of Apperentices, Part2)

Figure 4 Spouse rate according to age (Male, Manufacturing Industry)

% Source) *Tokyo-shi Shisei Tokei Genpyo 1908,1920* (Population Census of Tokyo, 1908,1920)

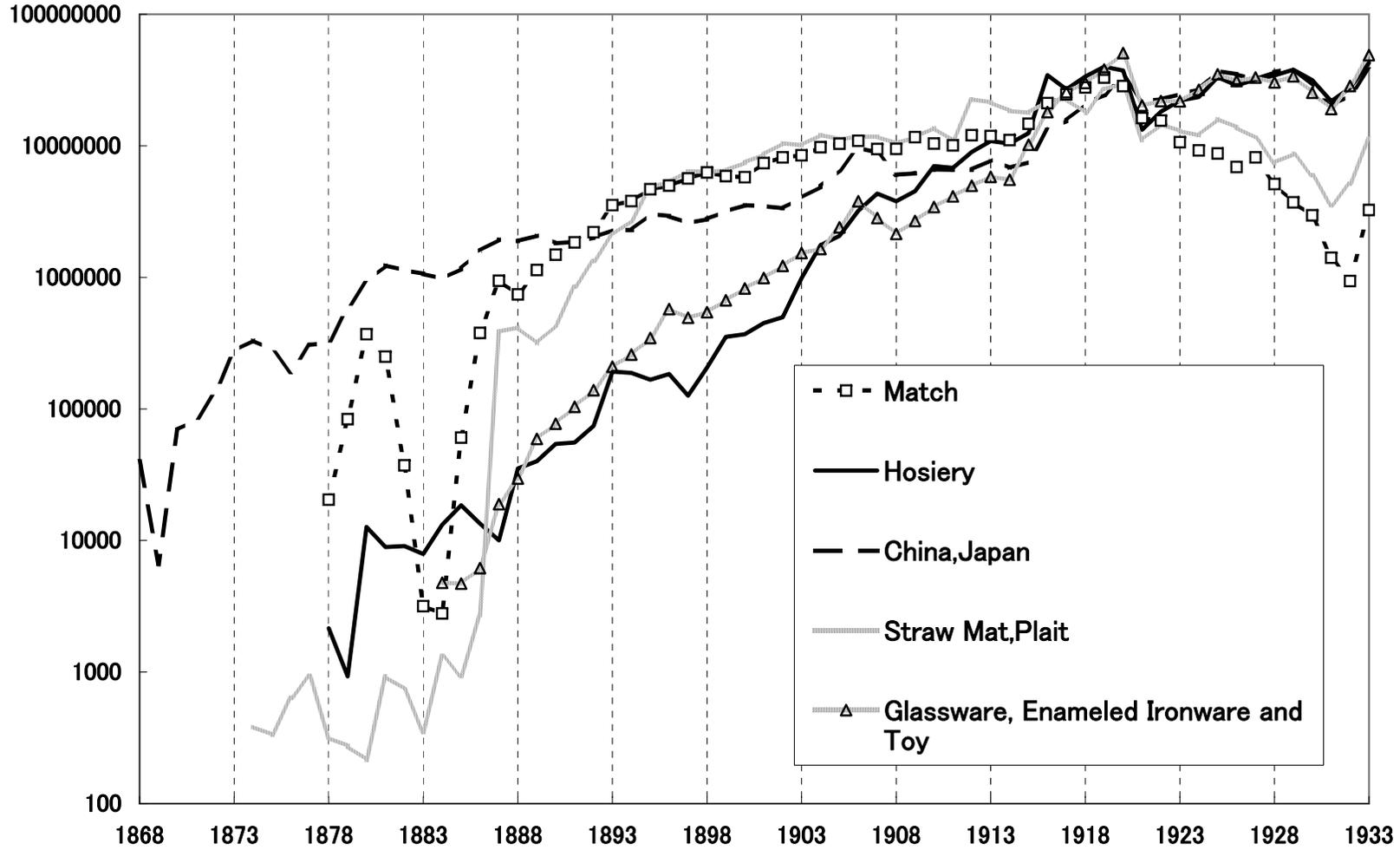




Source) Same as Table 4

(Yen)

Figure 6 Export trade of miscellaneous goods



Source) Toyo Keizai Shinpo-sha ed. *Nihon Boeki Seiran* (Statistical Book on Japan's Oversea Trade), 1935

Table 8 Japan's Export Trade (1937)

	Machinery and parts	Raw Silk	Cotton Cloths	Miscellaneous Goods			
				Accessories	Ceramics	Lamps and parts	Toys
Sum of Export Trade (Million Yen)	227.7	407.1	573.1	15.5	54.0	22.0	83.2
(Proportion by Areas)							
China (including Manchuria,Hong Kong) :A	64.4	0.0	18.5	4.7	11.3	15.3	3.3
Other Asian Countries:B	26.8	2.1	33.7	34.3	20.4	21.6	13.1
Rest of the World:C	4.3	2.9	39.6	26.5	22.1	21.2	18.6
Europe and North America:D	4.0	95.0	8.3	34.4	46.2	41.9	65.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source)Ministry of Finance ed. *Dai-Nihon Bōeki Nenpyō* (The Annual Overseas Trade Statistics of Japan)

Figure 7-1 Import of toy (U.S.A)

Source) *Foreign Commerce and Navigation of the U.S.*

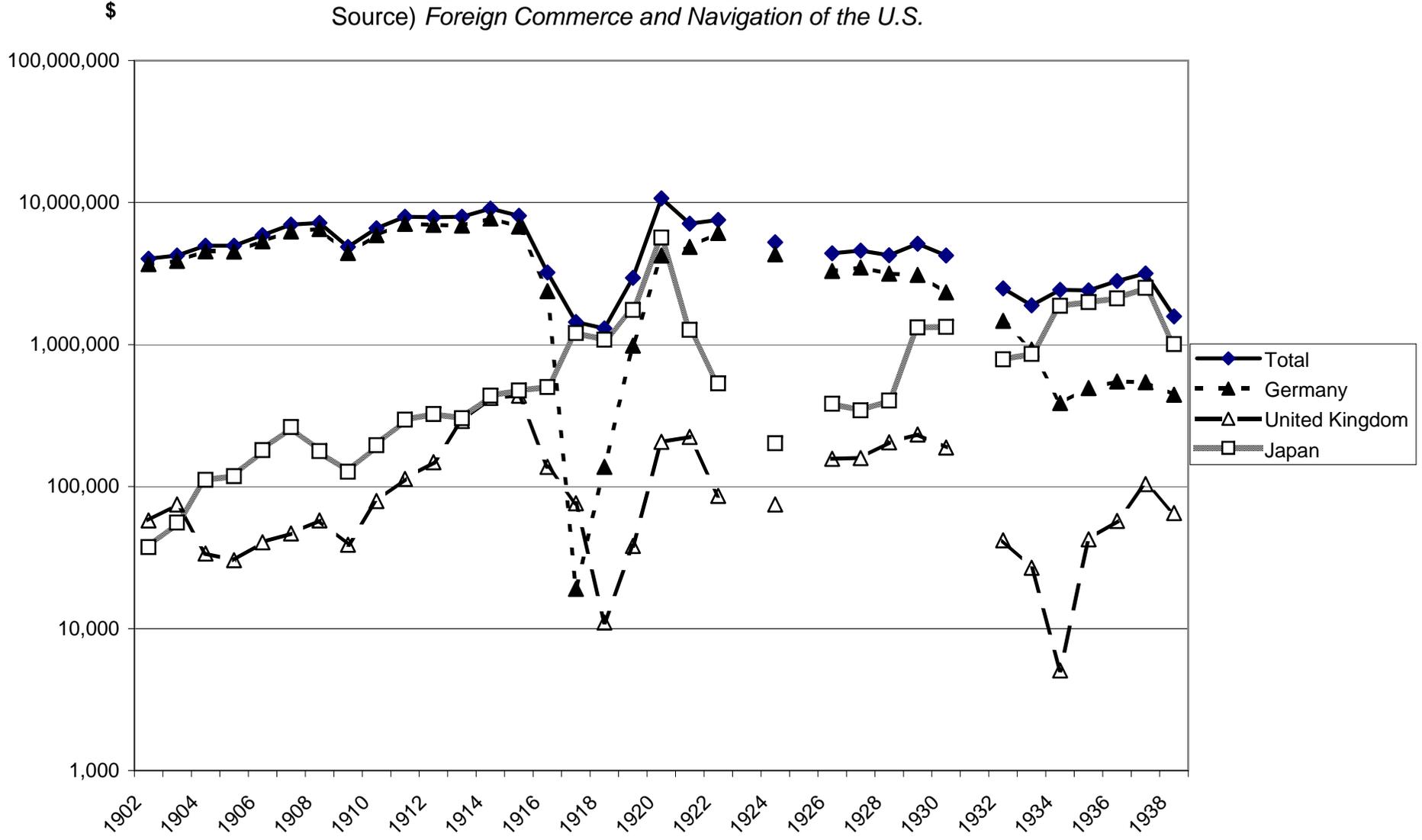
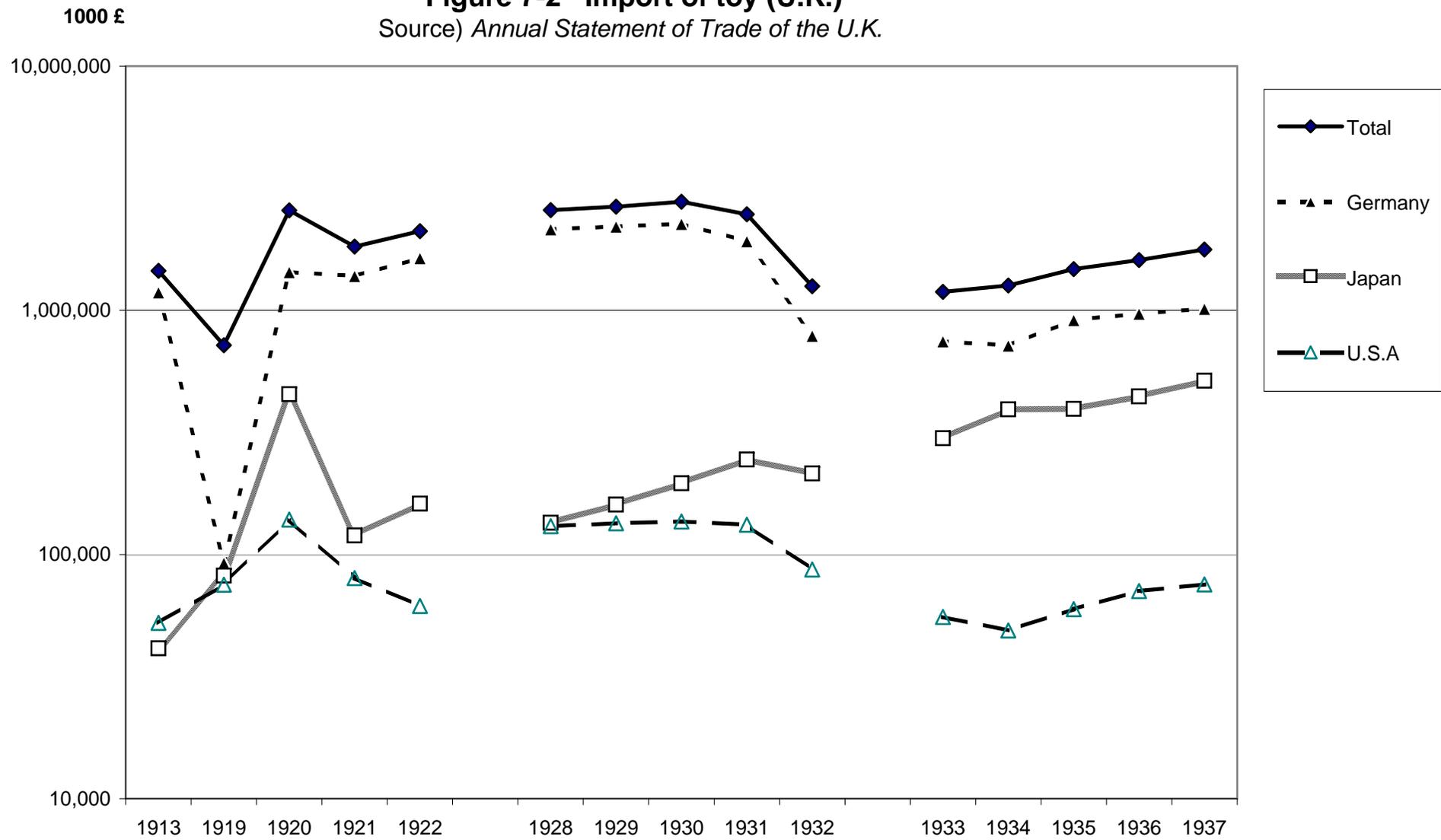


Figure 7-2 Import of toy (U.K.)
 Source) *Annual Statement of Trade of the U.K.*



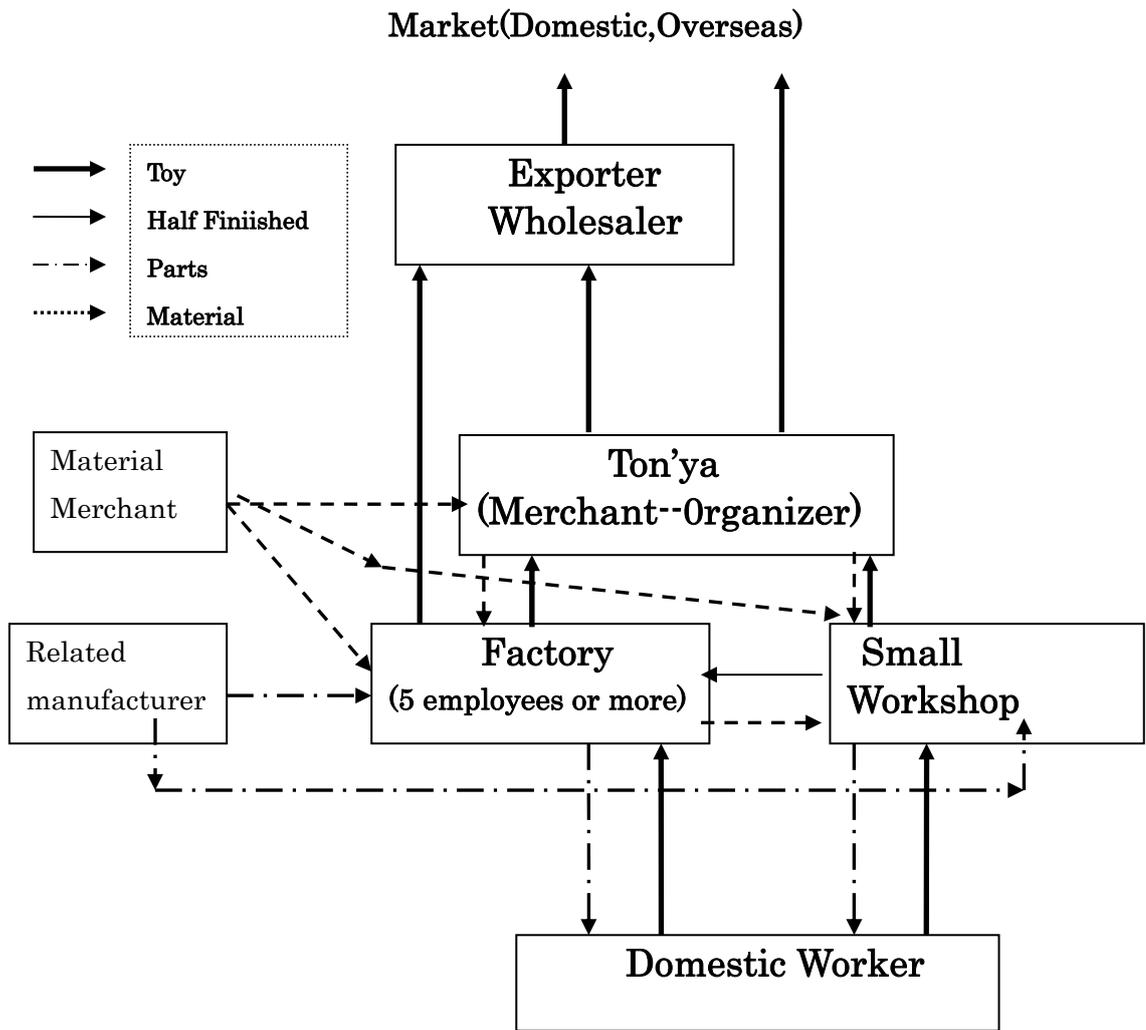


Figure 8 Production Organization of the Toy Manufacturing Industry in Tokyo