

**The stem family and labour markets:
reflections on households and firms in Japan's economic development**

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Introduction

Traditional Japan's family formation rules have been described as a stem-family system. In terms of John Hajnal's well-documented thesis, 'Two kinds of pre-industrial household formation system', evidently it is neither 'simple' nor 'joint'. However, it is not certain if the Japanese stem pattern is different from what Frédéric Le Play identified as 'stem family' in south continental Europe, but it does differ from the central European 'stem' forms which, according to Hajnal, 'compatible with the general north-west European household formation rules'.¹ In other words, the Japanese stem pattern represents a third system.²

This paper examines the pathways by which traditional Japan's stem family system might have exerted influence on her subsequent economic development. There is a school who argues that Japan's success in modern economic growth should be explained by factors unique to traditional Japan. One such factor is the family system. However, the paper will not try to link a specific set of family and marriage characteristics directly to Japan's eventual success; but it makes an attempt to go some way towards a better understanding of the ways in which Japanese family households and corporate firms functioned for much of the period from early modern to modern times, with special reference to labour markets and skill formation practices.

Unlike the central European stem family structure, the Japanese stem family pattern of marriage and family formation was not compatible with the neolocal

¹ Hajnal, 'Two kinds', p.70. See also Mitterauer and Sieder, *European family*, pp.32-34.

² Saito, 'Two kinds', 'Marriage, family labour and the stem family', and 'Comparative view'. See also Cornell, 'Hajnal and the household in Asia'.

principles that governed the north-west European marriage pattern. The paper begins with a brief look at the Japanese stem family formation rules, as distinguished from both the simple and joint family formation rules, and examines how these rules and characteristics were translated into distinctive traits of economic behaviour in relation to work participation and the supply of labour to the outside market, suggesting that even under this kind of non-European family formation system, household behaviour was not particularly at odds with labour market workings.

The rest of the paper will focus on employment patterns and skill formation practices. I begin with the self-employed who took the largest share of the workforce in early phases of Japan's development. Then I will turn to two male-dominated worlds of the workforce. Section 3 takes up the corporate firm and its core workforce. Origins of present-day large corporations' employment system, and skill formation and human capital management practices, can be traced back to those in Tokugawa merchant houses. However large the average firm size was by Tokugawa standards, they disguised themselves as 'family households' and regarded their all-male employees as 'apprentices' or 'servants'. To what extent, therefore, those merchant house practices exhibited structural resemblance to those actual families were doing, and to what extent the element of skill formation was crucial to maintain such professional practices, will be the focus of discussion. In section 4, I will explore human capital formation in relation to the question of what role the family household had in skill formation during the first phases of industrialisation. Focus is on workshop industries, again male-dominated and mostly urban, but which formed middle- and lower layers of the pyramid of the manufacturing sector in the period of the so-called dualistic development.

1. The stem family

The Japanese family formation rules are closely related to the concept of *ie* in Japanese. According to the social anthropologist Chie Nakane's account, 'The term *ie* is often used in sociological literature as an equivalent of family, but the English term *household* is closer to the conception since it includes all co-residents and is not necessarily restricted only to the members of a family'. Moreover, the *ie* is 'always conceived as persisting through time by the succession of the members. Hence succession to the headship is of great functional importance, and the line of succession is the axis of the structure of *ie*', as a result of which the household is vertically structured.³ The Japanese stem family

³ Nakane, *Kinship and economic organization*, p.2, and *Japanese society*, p.4.

formation rules under the *ie* system thus characterised may be summarised as follows:⁴

1. One son remains in the parents' household, but others have to leave. The *ie* system's well-defined boundary runs between the son-heir and other siblings, as is suggested by the proverb: 'the sibling is the beginning of the stranger'.⁵
2. The marriage of the heir does not necessarily mean that he assumes the headship and management of the *ie*. The takeover 'can take place at any time between the marriage of the heir and the death of his predecessor'.⁶
3. The marriage pattern of the heir and his siblings may diverge: given rule (1) above, it is likely that those who stay in the household tend to marry early and those who leave to marry later.
4. It is only the marriages of the latter group of non-inheriting children, especially male children, who depend on economic conditions such as land accessibility, job opportunities and human capital so far accumulated.

Several points may be made about how this system works. First, the structure of the co-resident group tends to extend, not horizontally, but vertically. Because of rule (1), there is little possibility for two or more couples of siblings to co-reside at the same time, suggesting that the impact of the timing of a non-heir son's leaving home as well as the marriage-out of a daughter on the size and structure of the family labour force cannot be underestimated. Indeed, Thomas Smith's seminal work on Tokugawa-period population registers strongly suggests that those demographic events in the family life-cycle are likely to have been tightly regulated by the household.⁷

Second, in the traditional period, virtually all of those family households under this family formation system are self-employed—peasant farmers, artisans and merchants. For those self-employed, the concept of headship of the family household is somewhat different from what is often assumed as associated with Asiatic patriarchy. The authority of the head is respected as long as he is capable of managing the family business and also looking after other members of the household. The heir succeeds both headship and family property because he is expected to keep the family economy going and, hence, to keep the family line. The property right he receives is therefore a 'right' given to him 'on the ground of his being a co-residential member making a considerable contribution of labour to the [family] economy, and a man on whom the head can

⁴ Saito, 'Marriage, family labour and the stem family', p.27.

⁵ Quoted in Nakane, *Kinship and economic organization*, p.7.

⁶ Cornell, 'Hajnal and the household in Asia', p.153.

⁷ Smith, *Nakahara*, ch.8.

depend in his old age'.⁸ In other words, it is the *ie* itself who owns property. It does not belong to the head as an individual; to borrow the expression from a foreign commentator of the inter-war period, the head of the family is 'merely the manager thereof',⁹ which implies that in certain circumstances a woman could succeed headship in her name—on the ground that she was reasonably capable of managing the family economy.

It should be realised that not all of these traits could apply to the samurai elite; there the concept of *ie* was more Confucian and, hence, genuinely patriarchal. Also important is the fact that the new Meiji civil code was introduced along this line of samurai family law and practice. Legally speaking, therefore, in the period between the Meiji Restoration of 1868 and World War II the commoners' idea of the *ie* and its head being 'merely the manager' became obsolete; the government adopted a more patriarchal version of the *ie*. But at the same time it is important to remember that most of self-employed family businesses of the period were 'still governed by that idea'.¹⁰

Third, one may expect from points (3) and (4) above that among non-inheriting children of the stem family households, interactions between marriage age and labour market conditions—similar to the ones observed for early modern England—were at work also in traditional Japan. However, as far as females are concerned, this is not likely to have been the case. If we take a long view, it turns out that the average female age at first marriage showed more or less a monotonous rise over the past centuries; there were no co-variations with either wages or prices of consumables, or both. In the case of non-inheriting males, such co-variations may have been at work, but with aggregate statistics it is difficult to separate inheriting from non-inheriting as well as from married males. Moreover, it is probably not just wages and prices that determined possible changes in the male age at marriage. Changes in the size of job opportunities that took place before and after the Meiji reforms were considerable. Also, human capital investment may well have varied substantially in association with the changing nature of the labour market. And it is in this respect that we may raise the question concerning the role the vertically-structured stem family on the accumulation of human capital, which will be explored in section 4 below.

⁸ Nakane, *Kinship and economic organization*, pp.2-4.

⁹ de Becker, *Principles and practice*, p.637.

¹⁰ *Ibid.* In the area of property ownership, there was a drastic departure from the past legal practice. Ownership became individualised and Tokugawa restrictions on lease and sales of land were completely lifted, which gave rise to possible disputes within the kin group in relation to family property. For this issue, see Saito and Sato, 'Japan's civil registration systems'.

2. The economy of the self-employed

When Alexander Chayanov put forward a family life-cycle model of the peasant farm and presented one of the theoretical propositions that the family member's workload is determined solely by the alternating consumer/worker ratio (c/w) over the family life-cycle if situations allow the household get access to agricultural land when needed, he based his hypothetical calculations of the changing c/w ratio on the model household having a simple, nuclear family form in a high fertility regime.¹¹ This may give an impression that in a society with a more complex family household structure the fluctuation in the c/w ratio is less problematic. However, it turns out that his assumption about the family form is irrelevant to the theoretical conclusion. Indeed, Ken'ichi Tomobe has shown that most of Japanese villages with the stem family system exhibit the patterns predicted by the Chayanovian rules.¹² Moreover, as I have demonstrated elsewhere, the existence of factor markets, especially markets for land and labour can be compatible with some of the core propositions of the Chayanovian theory.¹³

This has an interesting implication for the study of the family and economic development because it suggests that the stem family system was compatible with the workings of the factor markets. Given the likelihood that the stem family had an affinity with the self-employed as an economic agent, this compatibility can be considered a link between this particular system of the family and economic development.

What I have suggested about the Tokugawa peasant economy is, first, that the land market existed in the form of tenancy contracts.¹⁴ While family land was passed on from generation to generation, and in each generation the land was cultivated almost exclusively by family labour, the effect of the changing c/w ratio was absorbed by the functioning of an intra-village lease market for land. Since there were always households with an excess of landholdings on the one hand and those in want of more landholding on the other, both of which were consequences of different phases of the stem family life-cycle, frequent transactions of a small piece of land did exist and are believed to have functioned well. Since the Meiji reforms, restrictions on land transactions were removed with the grant of individual ownership to the landholders, which led to a sudden increase in the number of land transfers beyond the village boundaries, resulted in a more unequal structure of landholding. However, there is evidence that even in the post-Meiji rural society the Chayanovian adjustment

¹¹ Chayanov, *Peasant farm*, p.xx.

¹² Tomobe, *Shutai kinkō*, chs.3-5.

¹³ Saito, 'Industrious revolution'.

¹⁴ The following paragraphs draw on Saito, 'Land, labour and market forces'.

mechanism was still at work, so that the increase in land under tenancy did not result in the dissolution of the self-employed, peasant farm sector.

Second, while family households with the head working primarily for wages were non-existent in the agrarian sector, the labour market operated for fluctuating seasonal demands in agriculture and also for the rural-urban transfer of manpower. Since the peasantry did not shrink (as evidenced by the statistical fact that the total number of farm households stayed at 5.5 million between the mid-1870s to 1940), the size of the family workforce did not shrink either, suggesting that the extent of the labour market remained relatively small throughout the period from the Tokugawa to the World War II period.

Third, despite the smallness in the extent of the labour market, it worked reasonably well within and outside the agrarian sector. One important consequence of this is that wage differentials between agriculture and industry were narrow. As demonstrated elsewhere,¹⁵ rural and urban markets for unskilled labour in the early nineteenth-century Osaka and Kyoto area worked in close connection with each other. In the process of Meiji industrialisation too the movements of wage series in both agricultural and industrial occupation groups were more or less in unison as far as the period up to 1920 is concerned. After 1920, however, the wage differentials widened, especially between the large corporate and the middle- and small-sized firms in manufacturing, and hence between manufacturing and agriculture.¹⁶ The corporate sector began to 'internalise' its core labour force, and the so-called dual structure emerged in inter-war Japan.

Finally, a few words for changes over time. Given the stem family household formation rules, if fertility of the farm population increased, then the supply of their labour to outside labour markets would increase. This actually happened after the mid-nineteenth century. It is estimated that outflow of the workforce from the agricultural sector was below 1 million before the 1910s but increased to the level well over the 1 million mark, fluctuating between 1 and 3 million during the inter-war period.¹⁷ The pre-World War I period of gradual change corresponded to an era of balanced growth and the inter-war period of increased outflow from agriculture to an era of unbalanced growth.¹⁸ By 'unbalanced', it is meant that equilibrating forces no longer worked between the sectors with and without internal labour markets. However, it should be remembered that within the non-agricultural sector the self-employed or

¹⁵ Saito, 'Industrious revolution', section iv.

¹⁶ Nakamura, *Economic growth*, ch.8.

¹⁷ Umemura, 'Population and labor force', p.246.

¹⁸ For such characterisation, see Nakamura, *Economic growth*.

family-based also increased in absolute numbers throughout the entire period concerned. In periods of recession it is not unlikely that the expansion simply reflected an increase in disguised unemployment, but in the long-run such small business sectors played an unmistakable role in the process of industrialisation. In textiles, especially rural weaving, urban workshop industries such as toy making, and also in family businesses in the tertiary sector, the ways in which business was run, and hence the relationships between business and the family, were similar to those we have observed for the farm household. Masayuki Tanimoto calls this kind of indigenous dynamism ‘another path to industrialisation’, in which it is expected that the stem family occupied a non-negligible role in its process with respect to the allocation of family labour.¹⁹

3. The firm and its employment system

However, it was not in the traditional sector, but in a more dynamic, ‘modern’ sector, that attracted much attention of scholars. During the 1960s and 70s when Japan experienced phenomenal growth in her economy, a strong argument was raised by a group of scholars—historians, economists and sociologists alike—that the Japanese traditional family structure served as a favourable condition to promote modern economic growth. Nakane, for example, has offered a structural perspective for this argument, while the business historian Hiroshi Hazama has provided us some historical and empirical evidence concerning the corporate firm’s employment system in particular. According to Nakane, the firm is ‘organised on the basis of the “life-time employment system” and the work made central to the employees’ lives. The new employee is in just about the same position and is, in fact, received by the company in much the same spirit as if he were a newly born family member, a newly adopted son-in-law or a bride come into the husband’s household’.²⁰ ‘Once employed, a man tends to remain in the same institution until his retirement. Few graduates leave the institution in which they took their first job; they simply step up the ladder to a higher position within the system. In comparison with inter-generational mobility, horizontal mobility (movement from one institution to another) is exceedingly limited’.²¹ ‘The rigid seniority system is often regarded as the “traditional” system ... However, it is interesting to note that this rigid system is a more recent development’: the larger and the more matured the firm, the more likely it exhibits the vertically-structured pattern of organisational management.²²

¹⁹ Tanimoto, ‘Role of tradition’.

²⁰ Nakane, *Japanese society*, p.14.

²¹ Nakane, *Japanese society*, p.117.

²² Nakane, *Japanese society*, p.39.

This organisational structure of the firm and its employment system 'served to underpin Japan's post-war economic growth'.²³

Hazama too sees that the family household and the corporate firm are structurally identical, giving rise to the distinct form of managerial familism and labour management in the process of industrialisation.²⁴ Seniority, life-time employment and welfare provisions, such as company housing, welfare benefits, and retirement allowances, are its ingredients. He regards Tokugawa merchant houses as one of the important origins of 'managerial familism' since the Tokugawa merchants combined the seniority-based status hierarchy with a 'life-time' relationship between the master and shop clerks. The successful clerks, without exception, entered the shop at a very young age, and the ways in which they were trained and promoted from an apprentice to the head clerk, and to the branch-off of his own shop, were 'a type of educational programme for future independent businessmen', known as a 'system of rearing from young' (*kogai seido*).²⁵ Then Hazama traces the evolution of the life-time employment and seniority-based (more precisely 'seniority-plus-merit-based') wage payment systems in manufacturing, and concludes that the Japanese system came into being in the period between the end of World War I and c.1940 when the large corporate firms began to internalise the core labour force, i.e. when the dual structure emerged.²⁶

Thus, both Nakane and Hazama think that life-time employment with the 'system of rearing from young' (*kogai seido*) was the core of the Japanese company system. Also noteworthy is that Tokugawa-period merchant houses' employment practice is supposed to have been an important origin of the modern system. Indeed, the economist Michio Morishima sees this as one of the factors accounting for Japanese 'uniqueness' in his essay 'Japanese enterprise as private sector bureaucracy' included in Hazama's translated work.²⁷

However, we may question such accounts and explanations. There are three interrelated but separate questions; if age-wage curves over the life-time were based on seniority (plus merit) in both Tokugawa and present-day enterprises; if employment was actually for life-time, again in both Tokugawa and present-day enterprises; and if life-time employment was the logical consequence of the 'system of rearing from young' (*kogai seido*).

²³ Nakane, *Japanese society*, p.66.

²⁴ Hazama, *History of labour management*. This is an English version of his 1964 Japanese publication.

²⁵ Hazama, *History of labour management*, pp.20-21.

²⁶ Hazama, *History of labour management*, especially ch.7.

²⁷ Morishima, 'Japanese enterprise', p.xxv.

Let us begin with the examination of job tenure and age-wage profiles in the big business at the end of the post-war growth period (when the economy grew on average at 9.6 per cent per annum—on a per capita basis at 8.5 per cent—from 1956 to 1970).²⁸ A comparison of blue-collar workers' age-wage profiles in Japan and EU countries in the 1970s confirms that the profile for Japan's large firms is more seniority-based compared with France, West Germany and UK, and even with smaller firms of Japan, as far as the age group of 50-54 is concerned, but the contrast becomes less marked for white-collar workers. White-collar workers' wage profiles are seniority-based even in the West. On the other hand, the quit rate between 20- and 25-year-old employees in the large company sector was not low, around 20 per cent. After their mid-20s, however, the rates dropped to 6-7 per cent and then remained at that level until 54 of age, after which the probability of quitting increased sharply towards the age of retirement.²⁹ Of course, even with this level of percentage one could say that 'horizontal mobility' is not negligible. But it is important to realise that for both white- and blue-collar workers, the level of the proportion of mobile workers in the Japanese large corporations is substantially lower than the levels for EU countries. Also important is that the statistics on which those percentages were based are not longitudinal: each age group-specific quit rate is an average of experiences of those who stayed on from the previous time period and of those who entered the firm at the beginning of the time period in question. This implies, first, that it is not possible to calculate cumulative quit rates over the career course of employees, and second, more importantly, that if it is assumed that workers of the latter group are generally more mobile than the average group, then for the core group of employees who entered the firm fresh from school, the 'true' quit rates must have been even a little lower than the 6-7 per cent level.

In other words, the core workforce of the large corporate sector in the post-war period of strong economic growth exhibited patterns characteristic to the system of life-time employment with seniority-based wage payment. Undoubtedly qualifications are necessary. As Kazuo Koike emphasises,³⁰ in Europe and US too there are workers with long-term job tenure; most of them are white-collar workers, for whom age-wage curves can be as steep as for the corresponding Japanese curves. That said, however, it is interesting to note that white-collar wages for 50-54-year-olds are 120 per cent higher and blue-collar wages some 70 per cent higher, than the base level of the 20-24 age

²⁸ The following accounts draw on statistical evidence provided by Koike, *Economics of work*, chs.2-3.

²⁹ This sharp rise reflects a custom that 'Older workers move to other companies when they reach retirement age and as they approach it' (Koike, *Economics of work*, p.31).

³⁰ Koike, *Economics of work*, pp.26, 40-41.

group in post-World War II Japan, suggesting that in this period of strong growth even blue-collar workers were ‘white-collarised’ in terms of employment and payment in the Japanese large corporate sector. It is also noteworthy that over the career span of both blue-collar and white-collar groups there was an extended period in which the rate of quitting remained substantially low.

Turning to the Tokugawa period, is it possible to find similar patterns? In the Tokugawa period, shop clerks of merchant houses were live-in servants. Just like apprentices in craftsmen’s workshops, the standard length of their indenture was ten years, but by the early nineteenth century it was not uncommon for servant-clerks in large merchant houses to serve for more than twenty years (which meant very a high age at marriage). The successful clerk climbed an in-house job ladder by rotating from one department to another.³¹ Table 1 summarises the evidence so far available for those servants-clerks: one for the House of Kōnoike (banking) and the other for the House of Mitsui, Echigoya (drapery), both in the Kyoto-Osaka area.

Table 1. Career courses of servant-clerks in the Tokugawa period

Event	Number and average age (in parentheses)	
	Kōnoike, 1801-48	Mitsui, 1720-1839
Entry	—	1,236 (13)
Promoted to clerk	98 (18)	718 (17)
Promoted to section chief	—	213 (30)
Promoted to manager	47 (37)	123 (36)
Living out	47 (37)	45 (39)

Sources: Saito, ‘Changing structure’, p.213; Nishizaka, *Mitsui Echigoya*, pp. 111, 113, 121-122.

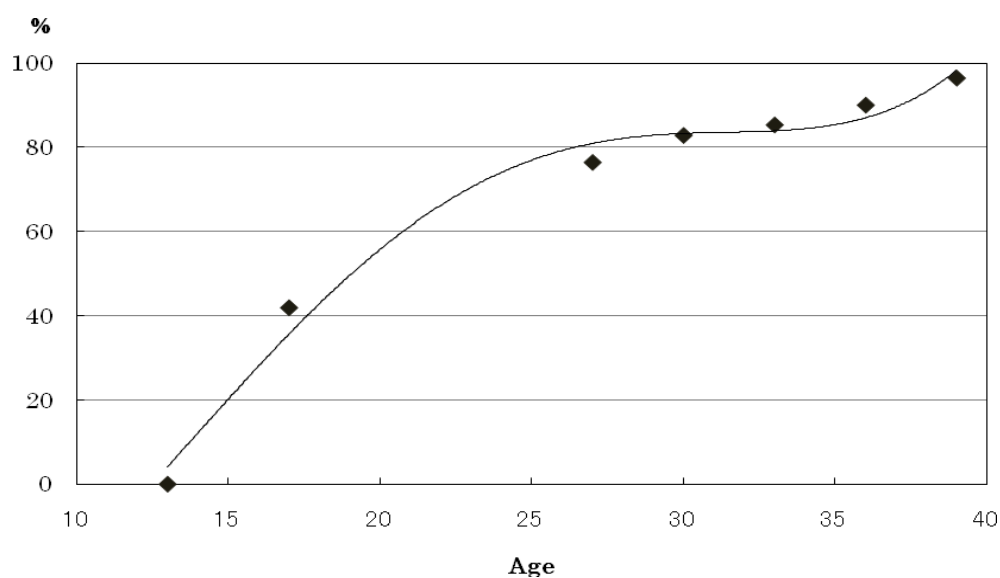
³¹ Saito, ‘Changing structure’, p.213, and ‘Land, labour and market forces’, pp.183-184.

Table 2. Stayers and movers, and the age-payment pattern of servant-clerks in the House of Mitsui, 1720-1839

Age	Status/event	Years of service	Quit rate (%)	Allowances and bonuses (Silver <i>momme</i>)
13	Entry	0	0	0
17	Clerk	4	42	322
27	Staff clerk	10	59	4,400
30	Section chief	3	27	6,500
33	Division chief	3	15	12,000
36	Manager	3	32	16,500
39	Living out	3	63	23,000

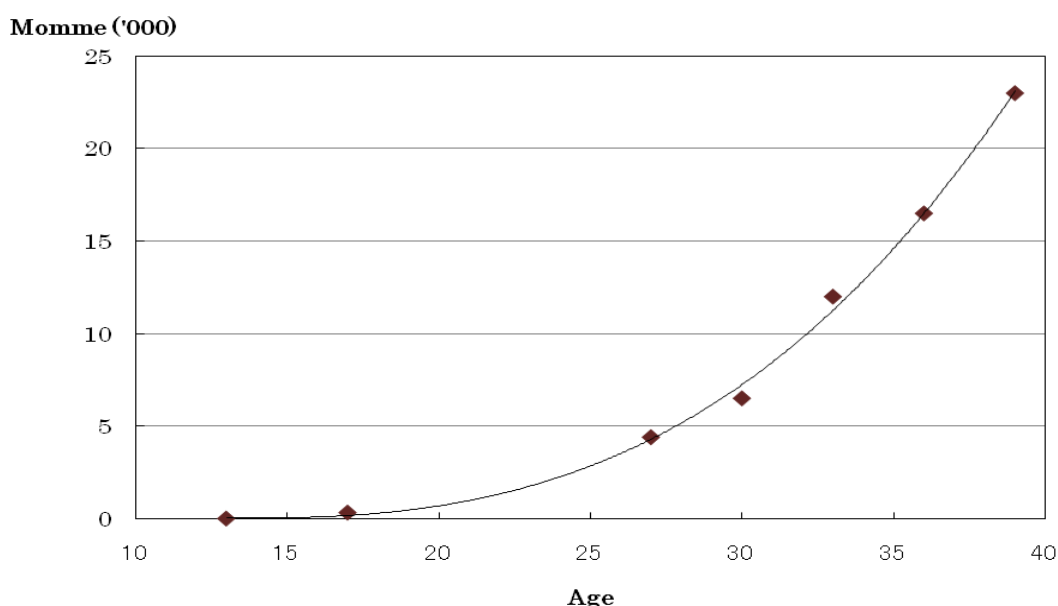
Source: Nishizaka, *Mitsui Echigoya*, pp. 111, 113, 121-122, 154-157.

Figure 1. The cumulative probability of quitting over the career course of servant-clerks in the House of Mitsui, 1720-1839



Source: Table 2.

Figure 2. The age-payment profile of servant-clerks in the House of Mitsui, 1720-1839



Source: Table 2.

The quality of data differs between the two cases, but what the both cases suggest is that while the length of their service was much prolonged—sometimes more than thirty years—a substantial proportion of them dropped out before reaching the top rank of the job ladder in the merchant house. For the vast majority of them employment was not life-time. Moreover, other pieces of evidence shows that those employed in middle points of the career course were not many. The House of Kōnoike, for example, employed those people proportionally more, i.e. 41 per cent, in 1691-1736, but in 1801-48 the percentage decreased to 17 per cent. In the case of Mitsui, Echigoya, only 27 are identified as employed outside the ‘system of rearing from young’, who are believed to have represented only 2-3 per cent.³²

Table 2 and figures 1-2 examine more closely the stayers and movers over the career course in Echigoya. Apprentices (*detchi*) entered the shop on average at 13, but before promoted to clerk (*tedai*) nearly a half of them dropped out. A further half quitted before becoming an office holder, which means that by that time three-fourth of the entry cohort had already quitted. In those early stages of the career course pecuniary rewards were miniscule. After the age of 27, however, while the quit rate became much

³² Saito, ‘Changing structure’, p.213; Nishizaka, *Mitsui Echigoya*, pp.141-146.

lower—though substantially higher in comparison with the level in the 1970s company profile—for a short period of intermediate ranks until the position of manager, the sum of allowances and bonuses increased exponentially—in fact, according to the cubed length of service. Finally, with a brief period, they were allowed to live out and to set up their own household and shop (in some cases, they were recognised as branch shops of Echigoya), with an even larger amount of retirement bonus added to the rewards.

It is evident that there are a couple of significant differences with the post-world War II practice. One concerns the middle period in which the quit rate was lowered and stabilised was very short in the Tokugawa period, and the other is that its level stayed well over the 20 per cent mark. As a result of these characterises, by the age of 33 only 15 per cent of the cohort could stay on the career course. Employment was not for life-time in the Tokugawa mercantile sector. On the other hand, however, the essential pattern looks similar to the one for the 1970s: in the Tokugawa period too, there existed a life-cycle pattern of higher quite rates for early phases of career, followed by a stable period and then by retirement or branching off, together with an extreme kind of seniority-based payment. Moreover, recruitment was in principle made at the start of the career only. It seems certain, therefore, that the so-called ‘system of rearing from young’ became established by the end of the Tokugawa regime, which is believed to have been closely related to the ways in which those employees were trained: skills formed were firm-specific, for which on-the-job training by rotation and promotion was most suitable.

The Tokugawa mercantile system of employment was a product of forces which led to the emergence of an ‘internal labour market’, a quasi but competitive market-like, in-house mechanism of allocation of manpower and skills. As such it has a lot in common with the post-World War II system of employment, which embraces the blue-collar workforce as well. What is missing in this comparison is life-time employment. In the 1960s and 70s, on the face of it, the Japanese corporate firms’ employment came close to ‘life-time’, but it is simply because the firm was expanding at a phenomenal pace. It meant a strong increase in in-house demands for manpower, which enabled the level of quitting decreasing phenomenally during the middle phase of workers’ career, extending this stable period much longer. In other words, the argument that ‘life-time employment’ is an essential ingredient of the Japanese system of employment and has something to do with the Japanese family system is no longer tenable.

4. Human capital formation

The concept of skill formation leads us to the question of stem family and human capital formation. Both in Japan and the West, apprenticeship is an on-the-job method of human capital formation. What is peculiar to the Japanese case is, first, an early emergence of an internal labour market in the white-collar, merchant sector of the Tokugawa period, and second, what Koike calls ‘white-collarisation’ of blue-collar workers³³ in a later stage of industrial development. According to Hazama’s as well as other works, this change began in the inter-war period, but it was in the 1760s and 70s that it gained momentum. Between these two time periods, however, there is a long period in which blue-collar labourers were mobile between firms and across sectors while skill formation was left to workers themselves. What can we say about the relationships between the stem family and the ways in which manufacturing skills were formed in this period? Did the stem family’s vertical orientation led to an increased investment in skill formation?

One salient feature of traditional Japanese craftsmanship is that urban artisans were outnumbered by their rural counterparts and most of the rural craft occupations, moreover, were peasant family by-employments. According to the occupational tables of an 1879 pilot census of Yamanashi,³⁴ most specialised were cabinet makers and smiths—their proportions full-time were at the 60-70 per cent level, although most of those full-time artisans were found in the countryside. Another feature is that compared with the fairly evenly distributed existence of craftsmen and their family helpers ‘apprentices and learners’ were few in numbers. The highest ratio of apprentices and learners, found in smithy, is 1:8; if those by-employed are included in the calculation, then it decreases to 1:12. In other craft occupations, the ratios are far lower and the chance to find an apprentice among part-time craftsmen is virtually nil, suggesting that many of them were trained either by the father at home or taught themselves. Clearly formal apprenticeship was not important in the late Tokugawa and early Meiji period.

There is another way to substantiate this point. Elsewhere I have examined a small sample of 168 pre-World War II ‘inventors’ in relation to their parental occupational background and education and training they received.³⁵ A vast majority of them were those who went to technical schools and universities, suggesting the significance of formal education and research in technical innovations. However, there

³³ Koike, *Economics of work*, pp.x-xiii.

³⁴ Saito, ‘Land, labour and market forces’, pp.188-189.

³⁵ Saito, ‘Machi kōba’, pp. 321-326.

were a small but non-negligible number of inventors of humble origins. There are 41 cases in all; their birth year spreads over the period from 1834 to 1901, but the majority of them were born in 1871-90. Since they received no formal education or just primary schooling,³⁶ it is probably safe to assume that they were those who came through either traditional apprenticeship or similar kinds of on-the-job training.

Table 3 sets out the break-downs of this sample. In this table the medium of training they received is classified into three: home training, formal apprenticeship and factory apprenticeship/learnership. ‘Home training’ includes cases where no mention is made of apprenticeship, learnership or any other kind of training in the accounts given in the records. ‘Formal apprenticeship’ is one with a fixed-term, live-in arrangement (though they did not necessarily complete the mandatory length of service). In the final category of ‘factory apprenticeship or learnership’, while there is evidence that ‘factory apprenticeship’ did exist in early Meiji factories and workshops, such as a tile making factory Konosuke Odaka referred to,³⁷ less formal learnership was probably more numerous. The category here also includes those who simply entered the factory as an operative and taught himself on the job (the size and type of the factory varied greatly). What the table tells us is, first, that formal apprenticeship was not an important channel. Only four of the 41, or one in ten, came through this traditional route and three of the four were rural-born (column 2). Second, on the other hand, there were a substantial proportion of them went to the factory directly. About one in three chose this route, and the majority of them came from the countryside (column 3). Putting the rural-born formal apprentices and factory learners together, this combined group represented one major route to the world of the workshop (11 out of the 41). Third, the numerically most important was home training. There were 20 cases (column 1). Sakichi Toyota, who made Japan’s first power loom and set up a workshop which developed into today’s Toyota Industries,³⁸ belongs to this type. Sakichi’s father was a peasant-carpenter. More significant, however, is the fact that home training was urban craftsmen’s standard way of training their sons: 11 out of 17 full-time craftsmen chose this method (row 3). A case in point is the founder of Kawai Musical Instruments Koichi Kawai, who was a wheelwright-turned-piano manufacturer.

³⁶ Before 1907, compulsory schooling was for four years.

³⁷ Odaka, ‘Actors of Meiji industrial relations’.

³⁸ It is Sakichi’s son, Kiichiro, who founded Toyota Motors.

Table 3. ‘Inventors’ of humble origins: their occupational and training backgrounds

Occupational group	Place/medium of training				Total
	Home	Formal apprenticeship	Factory	Unknown	
Farm					
Farm	3	1	3	1	8
Peasant-craftsman	3	2	5	0	10
Non-farm					
Craftsman	11	1	4	1	17
Merchant	3	0	1	2	6
Total	20	4	13	4	41

Source: Saito, ‘Machi kōba’, p.324.

Thus, there were two separate tendencies: one is that the more professional in manufacturing the more likely sons were home-trained, and the other that when coming from the countryside it was likely through apprenticeship and learnership, be formal or informal. Unfortunately it is not possible to get to know, for most of the cases, whether or not the individual ‘inventor’ was the prospective heir in his parental household. However, given the stem family household formation rules, it is not unlikely that home training was to heir-sons in the craftsman households while the channel of apprenticeship and learnership was to second and third sons of the farm households. The latter, it is worth noting, was a channel through which labour was transferred from the agrarian to the factory sector; and it was there that both on-the-job training and market forces were at work.

This suggests that the latter was more important as an inter-sectoral channel. However, it should not be taken to imply that the end-point of this transfer was always wage labour. In numerical terms, it is probably true that most of them became factory workers. However, the ‘inventor’ sample points to a somewhat different scenario as well. Most of the 41 became founding owners of the firm: there was only one who still held an employee status at the end of his career. Although this cannot be considered evidence for any proposition (since all of them were successful financially), it is worth noting that Masayuki Tanimoto’s work on labour-intensive workshop industries in inter-war Tokyo has identified some life-cycle changes from ‘apprentice’ to ‘labourer’, and from

‘labourer’ to ‘family worker/employer’, suggesting that mechanisms at work were similar to those found in the farm household.³⁹ In this respect, it is interesting to regard the average age at which those people set up their own workshop or factory as an indication of the varying propensity to start a self-employed business across different groups of workers. Of the 41 28 cases allow us to examine at what age the factory was set up. Table 4 shows the results in the form of a two-by-two contingency table (due to the smallness of the sample size, formal apprenticeship and factory learnership columns are put together; similar amalgamations are made within each occupational sector).

Table 4. Average ages of ‘inventors’ of humble origins at starting business

Occupational sector	Place/medium of training	
	Home training	Apprenticeship/learnership
Farm	31.8 (SD=7.09, N=4)	26.3 (SD=6.77, N=10)
Non-farm	43.3 (SD=8.93, N=10)	40.5 (SD=8.06, N=4)

Source: Saito, ‘Machi kōba’, p.328.

This table indicates that the propensity to set up their own business was higher among workers from the countryside while the difference between the home-trained and factory-trained groups was not so significant, as far as the age at which their company was founded is concerned. Indeed, it is impressive that on average the rural-born factory-trained quitted the company as young as 26 to become self-employed.

Both this and Tanimoto’s findings suggest that what was transferred from the peasant to the workshop sector was more to do with business skills rather than manufacturing skills. Manufacturing skills were learned, in those rural cases, not at home but on the shop floor of the established factory. On the other hand, attitudinal qualifications may have been traced back in the farm household. Indeed, according to Thomas Smith, the farm household taught its individual members time discipline and co-ordination skills. He argued that since each crop entailed a number of ‘narrowly timed tasks’ and since double-cropping was virtually the norm, the cropping decisions

³⁹ Tanimoto, ‘From peasant economy to urban agglomeration’.

‘set a work schedule for an entire growing season’, and that the decision making became even more complicated when taking into the consideration the spread of non-farm by-employments. The farm household had to shift family labour ‘back and forth from farming to by-employments, not only seasonally but from day to day and within the day, and also to use the off-farm earnings of individuals for the benefit of the farm and the family. This flexibility encouraged the spread of by-employments and thus put even tighter pressure on agriculture’.⁴⁰

While it is not entirely unlikely that the Japanese family’s vertical orientation has been instrumental in terms of skill formation of the next generation, it seems a little more certain that the persistence of the stem family regime is more to do with the reproduction of the self-employed within the economy, in both early and later phases of industrialisation. However, since the place of the self-employed sector changed over time, it is probably difficult to say that the stem family ‘served to underpin Japan’s post-war economic growth’ even if focused on skill formation.

5. Concluding remarks

To return to the question if the stem family system was instrumental in fostering a fruitful environment for development, especially labour market development to in a peasant society where a large majority of the population was initially self-employed, several remarks may be made.

This paper has shown that the stem family formation rules imply that while the heir son stayed on in the parental household—which explains why, *other factors remaining unchanged*, the self-employed did not easily diminish in the course of development—other children ought to leave home at a fairly young age, so that the average age at marriage tended to be somewhat above the level we would expect for a joint family society, on the one hand, giving rise to the possibility that the labour market was at work for those non-inheriting children. It seems that the inter-sectoral labour market did work in the early phases of industrialisation, especially in the period before the 1910s, without widening sectoral wage differentials. Obviously, however, how agricultural and industrial wages behaved depends on *other factors*; it is difficult to link this intra-sectoral wage scenario straight to the stem family formation pattern.

As far as male children who crossed the boundary between agriculture and manufacturing are concerned, there are two pieces of evidence that investment in human capital was made by the peasant family economy: by sending them to the factory as

⁴⁰ Smith, ‘Peasant time and factory time’, pp.206, 214.

factory apprentices or learners, and by better enabling them to acquire time discipline and co-ordination skills which are thought to have carried more weight when they set up their own workshops and businesses in later stages of their work career. This is certainly another link between the stem family-farm household and the skill-intensive mode of manufacturing in Japan's industrialisation process, although we have to realise that here too *other factors* are important for the return from such investments in human capital to remain positive.

Skill formation was also important in the development of the internal labour market in the Tokugawa merchant house sector. It gave rise to a peculiar system of employment characterised by recruiting the workforce at a very young age and training them through a lengthy period of their work career, and also by seniority-based reward payment, *but not* characterised by life-time employment. The conventional argument emphasised a duality between the firm as a social group and the family; however, the primacy of skill formation in the development of such an employment system points to the possibility that what was at work was quasi-labour market calculations. It is difficult to explain the emergence of such an employment system by familial norms.

In short, what we may say for the question of the relationship between the set of stem family formation rules and labour market development is simply that the former sheds light on the ways in which labour was supplied from the stem-family farm household, how their career in the non-farm world was envisaged, depending of course on the individual's family situations, and how skill formation was placed in such a context. I therefore cannot help wondering if we could ever find a convincing answer to that question.

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