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1727-1894**

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Osamu Saito

1. Introduction

The early modern European paradox—a divergence between the slow but unmistakably upward trend in per capita GDP and the long decline in real wages—has invited scholarly speculations on how to ‘model’ an economy exhibiting such seemingly conflicting tendencies. Apparently no consensus has emerged so far. What seems certain at this stage of research, however, is that those contrasting trends were results of market-led, ‘Smithian’ growth, associated with the rise of metropolitan cities, overseas and long-distance trade, proto-industrialisation, increasing pace of proletarianisation and, in the case of England and the Low Countries, agricultural investments made by enterprising landlords. All this, as Jan Luiten van Zanden and Philip Hoffman et al. hint in their contribution to this volume, seems to suggest that the growth of European economy was accompanied by widening income differentials during the early modern period, just as many countries experienced in later periods in much the same way as the Kuznetz curve indicates for the modern phase of growth. According to this interpretation, therefore,

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pre-modern growth also bred inequality.

Do we have to expect that East Asian peasant economies experienced similar changes in the level of real wages and wage differentials during the period before the onset of industrialisation? In his recent article on Asia, Jeffrey Williamson (2000) found that real wages lagged behind per capita GDP in all the Asian countries before World War I, suggesting that inequality increased during the first globalisation boom. Japan's wage-GDP ratio too, according to his estimates, underwent a sharp decline from the 1870s onwards before flattering out in the interwar period. But, apart from the estimation problem concerning the Japanese case, what about trends before the impact of world trade was felt? Did growth in pre-globalisation Asia also breed inequality?

The present chapter will address this question by looking at wage data in Japan for 1727-1894, linking the latter half of the Tokugawa to the early Meiji era. In Japan too, this period saw the growth of commerce and industry. During the late Tokugawa years, it was the countryside where trade and industry proliferated and, however modest the pace could have been, grew steadily. After the opening of the country into world trade in 1859,¹ the sudden emergence of export markets enabled the rural economy, especially of silk-producing eastern Japan, to grow further. In short, growth in eighteenth- and nineteenth-century Japan was market-led and rural-centred (Smith 1973; Saito 1983; Shimbo and Saito forthcoming).

However, since there were long swings in the series of wages and prices over the 170-year period, and since there is no single time-series covering the entire period, I should like to examine the evidence I could marshal so far in Saito (1998),

¹ Japan was under the Tokugawa shogunate's 'seclusion' policy from the 1630s to 1859. For one thing, the term 'seclusion' may be a misnomer because, as a trade policy, the point of the regulations was to bring overseas trade under strict control by confining foreign merchants to one port, Nagasaki. There were two other trade channels as well, i.e. the Tsushima and Satsuma routes. On the other hand, it is true that the volume of overseas trade did decline during the long 'seclusion' period.

first phase by phase. The focus is not simply on the trend in the general level of real wages, but more on its relationship with the trend in wage differentials within the working population in the context of changing phases of the eighteenth- and nineteenth-century economy. Wage labour in that period was supplied in most cases from peasant households. In such a society, it is true that wage earnings were not synonymous with family income of the poor peasant household. Apart from the well-known fact that most of those data are on wage rates, not on total earnings that workers actually received, wage work was often to supplement the peasant household's meagre earnings from farming, so that it cannot be a straightforward matter to translate the evidence on wage differentials into income inequality. However, given the paucity of pre-modern data on income differentials, the first step is to explore wage data thoroughly and then to examine their relationship to macro measures of output growth.

The first phase, 1727-1820, was a period in which the Kinai economy grew. The Kinai was Tokugawa Japan's most advanced core region. But its growth slowed down towards the end of the eighteenth century. Productivity growth in agriculture tapered off, and some of the region's manufacturing activities died back as a result of competition from remote regions that started 'exporting' labour-intensive products of cottage industries to the core region. In the Kinai during this period, a contraction in occupational wage differentials took place with the real wage level for unskilled farm workers rising. This was the conclusion from my own observations based on nominal and real wage series for the Kinai area, more specifically for a village near Osaka and for Kyoto (Saito 1978). Section 2 of the present chapter will confirm this conclusion with a slightly different set of real wage series.

For the trends in the 1820-1894 period, there is no agreement among the specialists. The general price level changed course around 1820 as the shogunate debased the currencies and the nation entered an inflationary phase. Scholars working on contemporary sources such as the Mitsui House's wage books find that

the real wage level for builders declined sharply towards the end of the last decade of the Tokugawa regime, i.e. the late 1860s (Umemura 1961; Kusano 1996), while those using data for carpenters and other building craftsmen in Edo (later renamed Tokyo) compiled by Meiji trade associations retrospectively tend to emphasise that real wages did rise between 1830 and 1894 despite erratic movements due to shorter-term monetary shocks as well as external disturbances such as famines and earthquakes. In particular, the Sano series of carpenters' wages has often been referred to as evidence of a growing economy in the late Tokugawa period (Sano 1962; Hanley and Yamamura 1977; Hanley 1997). It was also chosen by Williamson (1998) for his database of Asian wages and relative factor prices, which in turn is utilised by Robert Allen in Chapter 4 of this volume to bridge a gap between the earlier series and the modern, government statistics-based series. Undoubtedly there are data problems with any of these materials. Data from Tokugawa merchant houses tend to show nominal wage rates fixed for long periods, suggesting that adjustments to price changes were made, at least in part, with allowances and other extra payments. On the other hand, a close look at the retrospective surveys reveals irregular fluctuations in the individual nominal wage-rate series, which casts doubt upon their consistency as time-series data. In Section 2, I present a revised series of builders' real wages in Edo/Tokyo plus another comparable series of soy-sauce makers' in Choshi, a town in the same Kanto area. The two series, together with some additional sets of evidence for eastern Japan, suggest that the period should be divided into two, i.e. the phase of 1820-70 in which the general level of real wages was declining while wage differentials seems to have widened, and the phase after 1870 when the trends were clearly reversed.

Then in Section 3, attention will be turned to the relationship between trends in real wages and output growth over the longer-run. I shall argue that traditional Japan did not exhibit a drastic divergence between wage change and output growth as experienced in early modern western Europe. In the final section I

shall briefly explore the factors that would account for the differences between the two pre-modern growth processes.

2. Real wages and wage differentials

The Tokugawa economy was composed of two separate currency zones, i.e. Osaka and silver-using western provinces (where monme was the standard unit of currency) and Edo and the gold-using eastern half (where ryo was the standard unit).² It is convenient, therefore, to discuss the wage data in the east-west regional framework. Generally, agricultural productivity in the western provinces, particularly in the areas around Osaka and along the Inland Sea coasts, was high and commercialisation advanced. This, together with the financial power generated by Osaka's wholesale merchants who dominated Edo-Osaka trade and other transactions between the two currency zones, pushed Kinai's position well above the eastern regions including the Kanto, an area surrounding the capital city of Edo. It is no coincidence, therefore, that we have more data for the Kinai, especially in earlier periods. In the course of the latter half of the Tokugawa regime, however, the central government made their preference explicit that gold should become the standard of money in the national economy. The new policy was first exemplified by the issue in the 1770s of silver coins denominated in a gold unit. The following period witnessed an irreversible decline of the Osaka merchants' control over both credit and commodity markets and, hence, a decline of the economy in the silver zone (Shimbo and Saito forthcoming). The monetary crisis occasioned by the opening of the country and the influx of Mexican dollars that followed was a further

² More precisely, three different currencies were issued by the shogunate: gold coin, silver by weight, and copper coin or penny cash which was circulated in both gold and silver zones. Silver was never circulated as coin, only by weight. In Osaka, therefore, as transactions grew merchant-issued bills, expressed in silver as a unit of account, came to be used widely.

blow to the silver-using Kinai economy. The value of silver dropped dramatically against that of gold during the 1860s, and the Meiji government that replaced the old shogunate set the new yen on parity with the ryo, the basic unit of gold under the Tokugawa shogunate (Ohkura and Shimbo 1978). In order to link late Tokugawa to Meiji series accurately, therefore, price and wage data in Edo/Tokyo and other locations in the east should be chosen. For earlier periods, on the other hand, we have no choice but to use the Kinai series.

The Kinai

Here we review four series of real wage indices: for agricultural day labourers and carpenters, both of whom were employed by a wealthy farmer in Kami-Kawarabayashi, a village near Osaka, and for day labourers in Kyoto and carpenters in Osaka. As far as the Kami-Kawarabayashi and Kyoto indices for the 1727-1830 period are concerned, they are only slightly different from those I presented in the 1978 article. The difference is in the deflator. The previous ones were deflated by cost of living indices estimated by Mataji Umemura (1961), in which rice was given a weight of 46 per cent. This was probably a little too high as a weight in the Tokugawa consumption basket. There is another series of consumer price indices calculated by Hiroshi Shimbo based on much the same data but with a different rice weight of 30 per cent, which may have been a little too low (Shimbo 1978: 31-35). Given the fact that the rice price fluctuated more wildly than the prices of other consumer goods, it is expected that the use of the latter would produce a slightly less volatile series of real wages. For this reason, I decided to use the Shimbo series to deflate nominal wages in the Kinai. As for the period after 1830, I extend the Kyoto series of day labourers to 1867 and introduce a new real wage series for a skilled urban occupation that begins in 1830. For these post-1830 series too, the Shimbo estimates are used to deflate the nominal wage rates. The

results are shown in Appendix table 1.

To take a long view, Figure 1 charts movements of real wage indices for both rural and urban unskilled workers in the Kinai. A close look at the overlapping period 1791-1830 reveals that, although the city indices were more volatile than the rural ones, the direction of movement in the two series did not disagree. Indeed, actual wage data show that in the early eighteenth century the wage rate for day labourers in the city of Kyoto was substantially higher than that in Kami-Kawarabayashi, a village a little more than 40 km away from the city. However, during the 1750s and 60s Kyoto's market rate caught up to the village's (Saito 1978: 92). Thereafter, the wage rate for the city's unskilled workers was equilibrated with that for agricultural work. In the base period of 1802-4, for example, the wage rate for spring tasks performed by Kami-Kawarabayashi farm workers was 1.0 monme while the corresponding spring rate in Kyoto's casual labour market was on average 0.92 monme.

Turning to the long-run trend, it is evident that up to about 1820 the real wage level rose. After 1820 the trend was reversed. The next two decades saw extremely volatile movements caused by the shogunate's debasement of currencies between 1818 and 1829 and by the so-called Kyoho famine of 1833-38. From 1820 to 1870 real wages were on the decline, and the decline was particularly steep after 1840. This fall reflected a higher rate of price increase in the Kinai than in eastern Japan due chiefly to changes in the money market during the late Tokugawa period.

The corresponding graphs of occupational wage differentials are shown in Figure 2. The graph for earlier periods represents ratios of carpenters' to agricultural day labourers' wage rates in the village of Kami-Kawarabayashi while the latter shows urban differentials, i.e. the ratio of Osaka carpenters' wages to Kyoto day labourers'. In the base years of 1802-4, the village carpenters' wage rate was 2.6 times higher than the spring rate for agricultural labourers while the urban carpenters earned 4.7 times more than the unskilled could, suggesting that urban

craftsmen enjoyed a higher skill premium than their rural counterpart. However, such urban-rural differentials changed over time as Figure 2 demonstrates (in which the ratios in 1802-4 are set at 100). Clearly there is an inverse relationship between Figures 1 and 2, which not only confirms what was said about the period up to 1830 in my 1878 article, but can also be generalised: during the Tokugawa period, the wage level of poorer sections of the working population caught up with that for the better paid when real wages rose. In contrast, the wage gap between the two sections of the workforce widened when the wage level declined in real terms.

What remains uncertain, however, is to what extent the sharp decline in the real wage level of the Kinai was representative since the macro-economic weight of the silver, which was the standard medium of exchange in western Japan, was substantially undermined in the course of the late Tokugawa period. We should, therefore, turn to wage data in the gold-using east.

Eastern Japan

There is a set of Edo builders' real wage series covering the 1830-1894 period. These series, probably the most widely quoted wage series for Japan, were estimated by Yoko Sano more than forty years ago. The data source she utilised was a table of daily money wage rates for six occupations in Edo/Tokyo's building trades, i.e. carpenters, masons, tatami makers, joiners, thatchers and sawyers. The dataset was compiled in the Meiji period by the Chamber of Commerce who asked guild officers and old men in the trade to collect data retrospectively. Probably because of this method of data collection, there are sudden jumps and drops in the wage series of individual trades and the number of jumps exceeds that of drops, thus producing a possible upward bias. Sano, however, made no adjustments to the data. Some of the upward spikes in the carpenter series in the 1850s and the early 1870s were spotted by Williamson (1998: 39). He replaced them with figures derived by

interpolation but failed to purge other aberrations, so that the series still shows a slightly upward trend from 1830 to the early 1860s. In fact, more serious than single-year spikes are cases where the level jumped upward or downward abruptly. Furthermore, a check on the six nominal wage series reveals that there was no synchronisation of such abrupt changes from one occupation to another. In order to remove all these aberrations, therefore, I took the following steps: first, all the six rates of nominal wage change were calculated from year 1 to year 2; second, the highest and the lowest ones were removed; third, the remaining four were averaged; finally, the average was linked to the similarly calculated rate of change from year 2 to year 3, and so on, producing a series of average nominal wage rates for the building trade from 1830 to 1894. This nominal series with the base year of 1840-4 was deflated by new consumer price indices for Edo/Tokyo derived from Saito (1998: 189-192). The results are reported in Appendix table 2.

Figure 3 shows this graph. Note that it no longer exhibits an upward trend during the period up to the early 1860s, which was a feature of both Sano and Williamson series, and that the series trends upwards, though feebly, after the late 1860s. While an improvement over previous indices, errors may still remain. Fortunately, the pattern in Figure 3 can be verified with another new series for Choshi, a town some 90 km east of Edo, covering the period from 1818 to 1893. The town was famous for its soy sauce manufacturing and one Choshi manufacturer's wage books allow us to construct a composite series of annual wage payments weighted by the number of workers in various skill grades. The standard composition of the workforce was one master (*tōji*), two head workers (*kashira*), and 18 'lads' (*wakamono*). The weighted average of their wages, therefore, should be regarded as representing the wage level of those near the middle of the traditional work pyramid or, more generally, that of the semi-skilled. The nominal wages thus calculated are deflated by the same Edo/Tokyo consumer price series, set out in Appendix table 2 and shown, together with the graph for Edo/Tokyo builders' real

wages, in Figure 3. The trends in the Choshi series are even more pronounced than in the Edo/Tokyo series: real wages declined almost continuously in the period before 1870, then turned upwards more strongly.

The overall pattern

Table 1 summarises the foregoing observations in a different manner. Each entry in the table indicates an average annual rate of change in the real wage level calculated from the 'slope' of a regression line fitted for the period specified. According to figures for the Kinai (printed in italics), agricultural labourers' real wages increased faster than carpenters' during the first phase of 1727-1820, while the next phase, 1820-67, saw the opposite phenomena. The first observation refers to rural and the second to urban trends. Yet since the Kinai had developed well-integrated regional labour markets by the late eighteenth century, both can be linked together so as to represent longer-run trends over the entire 1727-1867 period.

However, it is worth noting that the speed with which real wages declined was slower in the Kanto town of Choshi than in the Kinai, and that the contrast becomes more pronounced if the inflationary period of 1840-67 is singled out. Since the pace of decline was also slower in Edo, this should be taken to imply that the Kinai rates overstated the extent to which real wages declined in the 1820-67 phase.

What is not obvious from Table 1 is whether real wages for the rural unskilled lagged behind the Choshi workers. Unfortunately, there are no records for villages around Choshi of the quality comparable to the Kami-Kawarabayashi wage data. It is documented that in a village near Edo 'rice wages' for farm servants decreased, but in a rather inconclusive manner since the Choshi series reflected the weighted average wages of both skilled and less skilled workers rather than the

skilled only (Saito 1998: 31).³ However, the Choshi case draws our attention to an important aspect of the question. According to evidence unearthed by Suzuki (1990) and summarised in Saito (1998: 38), allowances for food and bonus payments were on the increase over the period concerned. The amount of those extra payments fluctuated, but the trend was to increase more than compensating the losses caused by high prices. In the years before 1830 the standard yearly pay was on average 5.3 ryo and the total earnings with all extra payments included amounted to 12 ryo in 1840-4 prices, but by the 1845-71 period the average standard pay declined to 3.4 ryo in real terms whereas the total amount the soy-sauce makers received increased to 15.6 ryo. This particular instance may not have been typical. However, if such extra allowances were not uncommon for other skilled workers at the time of high prices but inaccessible to the unskilled who were employed on a day-to-day basis, then it follows that the actual occupational differentials measured by total wage earnings were somewhat greater than the recorded wage rates implied. Thus, it is likely that in the developing Kanto economy too, wage differentials did widen as the level of real wages slumped until about 1870. Since then, the trend was reversed and, as Table 1 shows, wage growth in the country town was much stronger than in the capital city of Tokyo.

It is possible to substantiate these points with more comprehensive evidence on wage changes in eastern Japan, though for a shorter period of 1860-80. Statistics compiled by the new Meiji government's agricultural bureau in 1881 show rural wage levels for the benchmark years of 1860, 1870 and 1880, by sex and occupation as well as by province. It seems that the ways in which past information was collected were much the same as for the Edo/Tokyo builders' wages and, probably for that reason, the number of provinces reporting evidence tended to be

³ Other rice wage series are summarised in Yasuba (1987: 299), based on which he suggested that the sharp reduction of real wages in the Kinai was a rather exceptional result of the 'socio-economic disruption' in the late Tokugawa period.

fewer for non-agricultural occupations in earlier years, especially in 1860. However, the information on agricultural day labourers, both male and female, craftsmen and female reelers is considered reasonably usable. The silk industry was, thanks to strong overseas demands for Japanese raw silk, booming in that period and reeling was a job requiring women's dexterity and hand skills. Thus, reeling wages may be regarded as those for the skilled in female occupations just as craftsmen's were in male occupations. By using the same Edo/Tokyo cost of living indices as for the Choshi series, therefore, annual rates of change in real wages are calculated for those four cases in rural eastern Japan.

The results are set out in Table 2. All the four columns confirm that the trend was reversed in the 1870s. More importantly, in the 1860s when the real wage level was in sharp decline, the real wage of unskilled farm workers declined even more sharply, whereas in the next decade when strong wage growth occurred it was their wages that grew faster. This relationship between trends in the level and in differentials holds for both male and female workers. This relationship was the usual pattern during the age of rural development in Japan.

3. Real wages and output growth

Having established that in pre-industrial Japan wage growth was not associated with widening wage differentials, we now ask how changes in output were related to trends in real wages.

Only two attempts have so far been made to estimate overall growth of output in Tokugawa Japan. One is for the farm sector only, and was derived from Tokugawa data of taxed land. Under the Tokugawa system every piece of taxable land was assessed in terms of its productive capacity and expressed in koku of rice equivalent (called kokudaka). Thus the kokudaka was a measure of farm output covering all agricultural products and the national aggregates exist for 1598, 1645,

1697, 1721, 1830 and 1872. But it is believed that from the 1697 compilation onwards the gap between the officially assessed and the actual production capacity tended to widen because of productivity growth that undoubtedly took place since the mid-seventeenth century. Satoru Nakamura compared the 1872 kokudaka figure with total farm output from early Meiji government statistics. By assuming that the productive capacity of the land was enhanced by land-improvement investments made by samurai administrations, he allocated the difference between these output measures over the entire period in question according to the period-by-period numbers of land-improvement projects recorded during the Tokugawa era (Nakamura 1968: 168-174).⁴ The estimates thus derived for two benchmarks of 1700 and 1872 are set out in the second column of Table 3. In view of a notion widely held in the Tokugawa period that one koku of rice was enough to feed one person for one year, it is worth noting that the availability of farm products in the benchmark year of 1700 was above the level of 150 kg (one koku) per person and increased over time. Judging from several case studies of agricultural land productivity in the Tokugawa period, it is not inconsistent with a similarly gradual rise in the level of rice yields (Yasuba 1987: 299; Yagi 1990).

On the basis of these Nakamura estimates, Angus Maddison (2001) recently put forward hypothetical GDP figures by topping up non-farm products which were simply assumed to have grown somewhat faster than farm output (column 3 of Table 3, expressed in 1990 international dollars: Maddison 2001: 254-258, 264). Given the fact that most of industrial crops, cocoons and even raw silk were covered by the early Meiji 'farm' statistics and hence included in Nakamura's calculation, it is debatable if growth of the non-farm sector was appreciably higher than that of the farm sector. It is true, however, that textiles

⁴ The koku is a measure of volume or capacity. As a rice equivalent, however, the kokudaka can be converted into a weight measure (with one koku being 150 kg of rice). Here I adopted Angus Maddison's conversion results (2001: 255).

expanded substantially. According to a recent survey of non-agricultural activities of Tokugawa times (Odaka 1996), for example, the output of cotton cloth in three rural districts exhibited a four-fold increase from the late eighteenth century to 1840, stagnated for three decades, then started growing again from the 1870s onwards. But in other sectors growth was far less spectacular. In the brewing of saké, miso paste and soy sauce, undoubtedly the largest single manufacturing sector of the day, output growth seems to have been modest. It is of course extremely difficult to quantify how modest it was, but judging from recent studies in other research areas such as works on consumption and the world of commodities (Hanley 1997; Koizumi 1999), the overall impression is that industrial output must have increased marginally faster than farm output. In that case, the degree of overestimation by Maddison was not significant.

It is not easy to give a comparable set of evidence concerning wage growth because there is no single real wage series running through the entire period. Given the nature of quantitative information set out in Table 1 above, my judgement is that the linked series of Kami-Kawarabayashi and Choshi real wages probably represent the general pattern of change better than other combinations. Since the Choshi series is a composite of skilled and less skilled workers' real wages, the Kami-Kawarabayashi series should also be a composite of carpenters' and agricultural day labourers'. Using the Choshi weights (0.86 for the skilled and 0.14 for the less skilled) implies that real wages in Kami-Kawarabayashi rose at the average annual rate of 0.6 per cent from the first benchmark of 1700 to 1820, then declined at 1.1 per cent in real terms until 1870—a decline like that experienced by Choshi's workers from 1818 to 1867. It is likely that rural wages in other regions rose slower than the Kami-Kawarabayashi wages in the eighteenth century and peaked much later in the early nineteenth century (Saito 1998: 31, 45-46). In this respect, the Kami-Kawarabayashi data probably overstated the degree of wage increase in the eighteenth century. However, the decline exhibited by the Choshi

series after 1818 may also have overstated the degree of decline. The errors offset each other, so it is probably safe to say that this calculation is not off the mark when the start is compared with the end point. The results of this exercise are shown in the first column of the table.

This table tells us that growth rate in real wages during Japan's age of rural development was between 0.1 and 0.15 per cent per annum. If the end point were set at 1890 or 1900, the growth rates would become slightly higher. Whatever the end point, growth of that magnitude was neither very impressive nor was it a miserable achievement. More important, however, is that real wages rose at the exactly the same pace as farm output grew. This cannot be a coincidence. As we have already seen, rice yields exhibited a tendency to increase. There were regional differences too. The rise in productivity of agriculture in the Kinai started early and tended to taper off, or even to dip, sometime in the early nineteenth century, whereas that in the eastern provinces started late but continued until about 1850, which is a pattern almost identical to the one for real wages as suggested above. That said, however, the secular trend was unmistakably upward, and it is demonstrated that the long-term movement of rents in kind per unit of land was very much similar to that of rice yields. In other words, the proportion of rents to the yields remained stable at the level of 60 to 70 per cent during the latter half of the Tokugawa period (Tomobe 1996). The samurai government's tax rate on land was high but remained static in relation to the official kokudaka assessment (Smith 1968), which meant that after-tax rent earnings of landlords increased slightly. The wage-rent ratio, by implication, would have gone up in the first phase and declined in the second, but it is probable that the ratio showed a marginally downward tendency over the long-run.

The tempo of wage increase was not so different from that of per capita

GDP growth, either.⁵ Clearly there took place no divergence between wage growth and output growth. As mentioned earlier, we may not be able to equate this evidence with that on the income gap between the peasantry near the bottom and the population group near the middle of the income distribution. But given the unambiguous evidence in Table 3, it is probably safe to suggest that income inequality did not widen during the period concerned. This is a conclusion which is consistent with what we have seen in Section 2.

4. Discussion

In Chapter 4 of this volume, Robert Allen suggests that Japan's history of real wages was characterised by 'both close integration of the [labour] markets and the absence of the dynamic urban economy' of the north-west European type, the latter of which echoes the point made by Thomas Smith in his classic essay on 'pre-modern economic growth' (Smith 1973). He contrasted Tokugawa Japan's rural-centred development with western Europe's urban-centred growth, noting that the lack of overseas trade and virtually static population in late Tokugawa Japan induced the decline of towns, especially of large towns, which meant that losses were imposed on the merchant class. With the Tokugawa shogunate's imposition of tight restrictions on foreign intercourse in the mid-1730s, the days of merchant-adventurers had gone. Instead, large-scale mercantile enterprises who concentrated on domestic, inter-regional trade emerged and merchant houses based in Osaka came to dominate the nation's economy. Organisationally they were big-businesses with a multi-unit, complex managerial structure. Their profit rates were no longer very high but they traded extensively and efficiently. It is this type of merchants who

⁵ One could make a fine tuning to the calculation of wage growth by distinguishing the last three years of upturn from the previous phase of decline. In that case, of course, the re-calculated rate of increase in real wages would get closer to that for GDP growth in Table 3.

became casualties of the growth of rural commerce and industry in the eighteenth and nineteenth centuries. The age of rural development saw the decline of large cities such as Edo and Osaka, on the one hand, and the rise of small country towns, on the other. Since the opening of trade with foreign countries in 1859 the large cities re-emerged as dynamic centres of growth. Yet, as the available evidence indicates with respect to wage differentials between agriculture and industry, those between large and small firms within the industry and trends in income distribution (Saito 1998; Minami 1998), and contrary to the remark made by Williamson (2000: 34-35), it was after the 1910s when earnings growth of the urban rich and middling classes started to outstrip that of the labouring public. Pre-World War I Japan did not yet break away from the traditional growth regime.

That said, however, another set of factors should also be commented on. Elsewhere, based on the observation that in 1840s Chōshū, a province in western Japan, the average wage rate for unskilled workers in salt farms was equal to marginal labour productivity in farming derived from production function estimates (Nishikawa 1978), I suggested that it was agricultural productivity that determined the supply price of unskilled labour from the peasant farm household and, hence, that wage differentials contracted in the phase up to 1820 since the productivity level rose in the farm sector (Saito 1978). As long as a peasant farm household was an independent decision-making unit of production, this is the mechanism which enabled the market wage rate for the non-farm unskilled to keep pace with output growth. Given the evidence we now have for the second and third phases, and given the regional pattern of change in real wages and rice yields we established for the entire period, this mechanism must have been working throughout the period in question. In other words, rising productivity in farming acted as one factor that prevented the real wage-GDP gap widening in eighteenth- and nineteenth-century Japan.

This consideration has an important implication for the discussion of

'pre-modern' growth. Agricultural progress of this type acted as a brake on the process of proletarianisation, which is believed to have taken place across early modern European countries. The proposition that peasants' asking price of labour was determined by marginal productivity of labour on their own farm implies that if the market wage rate was low in comparison with their farm's productive capacity, then labour would not be supplied. They would stay on the land. Hence, there would be no proletarianisation. Here, by 'productivity' I do not mean just rice and other food crops. Any items the farm household produced should be included in our consideration. Indeed, as I demonstrated elsewhere by using early Meiji household returns in the sericultural province of Kai and district statistics in the cotton-growing prefecture of Osaka, the introduction by peasant cultivators of cash crops such as cotton and mulberry trees had an effective countervailing effect opposing the oft-assumed tendency for rural commercialisation to create the landless (Saito 1986). Throughout the Tokugawa-Meiji years, and even in the period between the two World Wars, contemporaries were concerned with tenancy problems but never mentioned the emergence of a rural landless class as a social problem. To quote Ronald Dore writing on the post-war land reform, "Tenancy increased while the number of hired labourers was never, before the last war, higher than some 300,000 (out of a total of 14 million agricultural workers) and most of these were either young men and girls, half labourers and half family servants, living in and supplementing the labour of the family on a bigger-than-average peasant holding, or else casual labourers with no permanent employer" (Dore 1959: 17).

As noted earlier, the emergence of the well-integrated labour market between the peasant farm household and urban sectors was one feature of the economic history of late Tokugawa Japan. The situation prior to the onset of industrialisation, on the face of it, resembled what the Lewisian model of unlimited supply of labour postulated. In such a setting, the peasant sector would certainly

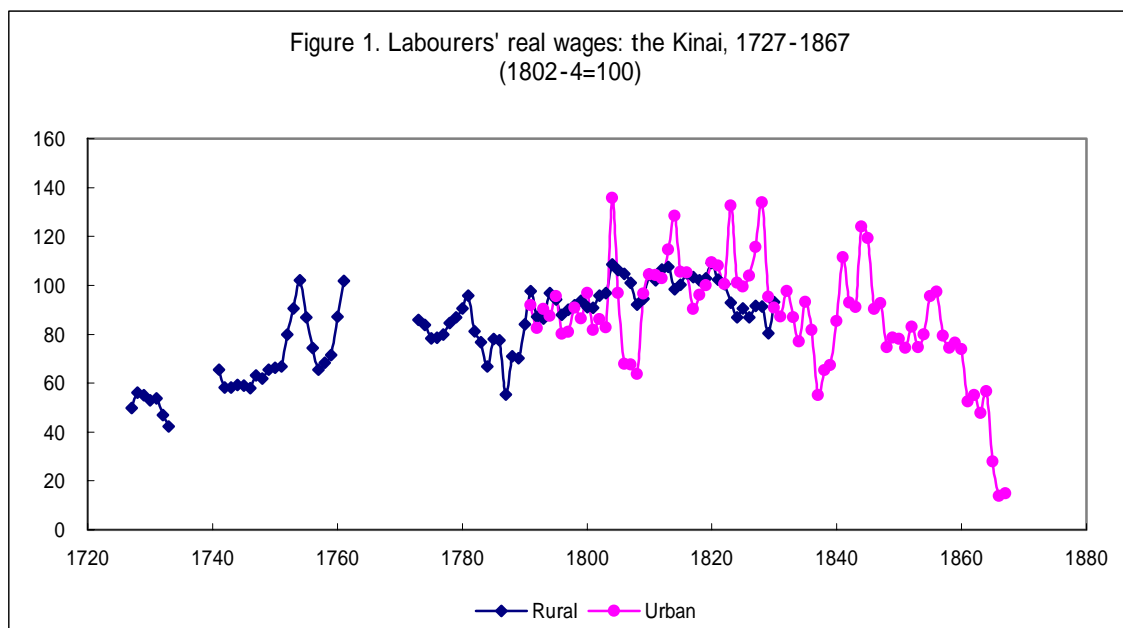
appear as a pool of cheap labour if marginal productivity in farming were low and static. With a slow but steady rise in productivity in a period of static population, however, the farm sector could determine the direction and pattern of 'pre-modern economic growth'. This too was a variant of 'Smithian' growth. It was this pattern that characterised eighteenth- and nineteenth-century Japan and distinguished it from early modern western Europe.

References

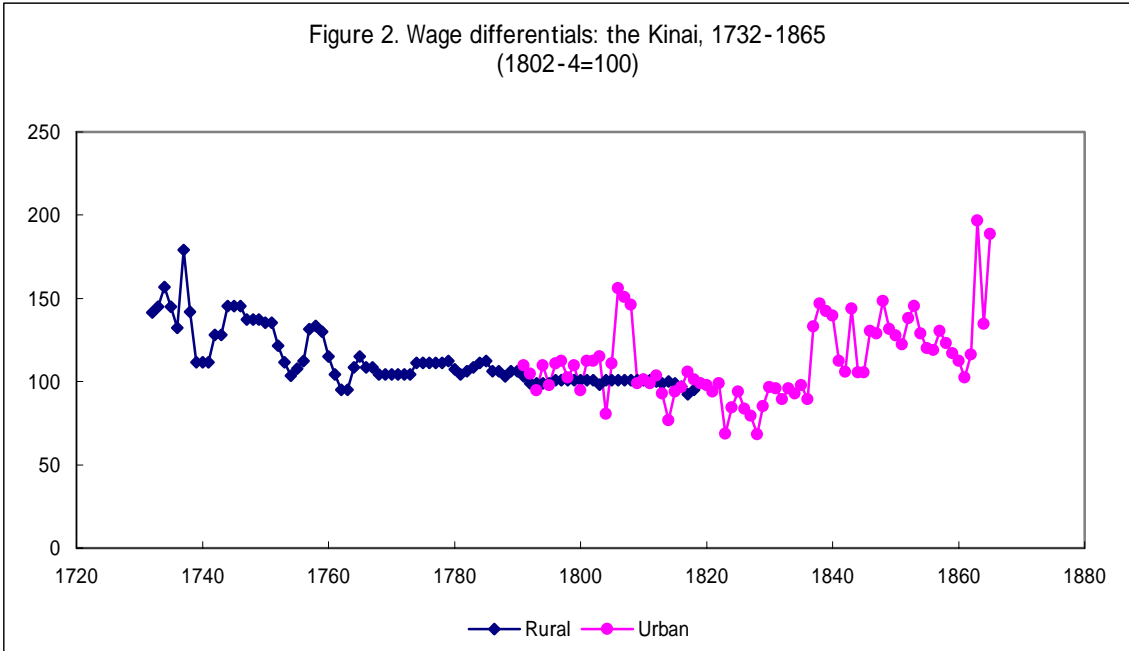
- Dore, R.P. (1959), Land Reform in Japan, London: Oxford University Press.
- Hanley, S.B. (1997), Everyday Things in Premodern Japan: The Hidden Legacy of Material Culture, Berkeley, Calif.: University of California Press.
- Hanley, S.B. and K. Yamamura (1977), Economic and Demographic Change in Preindustrial Japan, 1600-1868, Princeton, N.J.: Princeton University Press.
- Koizumi Kazuko (1999), Dōgu to kurashi no Edo jidai, Tokyo: Yoshikawa Kobunkan.
- Kusano Masahiro (1996), Kinsei no shijō keizai to chiikisa, Kyoto: Kyoto Daigaku Gakujutsu Shuppankai.
- Maddison, A. (2001), The World Economy: A Millennial Perspective, Paris: OECD Development Centre.
- Minami, R. (1998), 'Economic development and income distribution in Japan: an assessment of the Kuznets hypothesis', Cambridge Journal of Economics 22: 39-58.
- Nakamura Satoru (1968), Meiji ishin no kiso kōzō, Tokyo: Miraisha.
- Nishikawa, S. (1978), 'Productivity, subsistence, and by-employment in the mid-nineteenth century Chōshū', Explorations in Economic History 15: 69-83.
- Nishikawa Shunsaku, Odaka Konosuke and Saito Osamu, eds. (1996), Nihon keizai no 200-nen, Tokyo: Nihon Hyoronsha.
- Odaka Konosuke (1996), 'Hinō seisan to shihon keisei', in Nishikawa et al. (1996), 425-446.
- Ohkura, T. and H. Shimbo (1978), 'The Tokugawa monetary policy in the eighteenth and nineteenth centuries', Explorations in Economic History 15: 101-124.
- Saito, O. (1978), 'The labor market in Tokugawa Japan: wage differentials and the real wage level, 1727-1830', Explorations in Economic History 15: 84-100.
- Saito, O. (1983), 'Population and the peasant family economy in proto-industrial Japan', Journal of Family History 8: 30-45.

- Saito, O. (1986), 'The rural economy: commercial agriculture, by-employment, and wage work', in M.B. Jansen and G. Rozman, eds., Japan in Transition: From Tokugawa to Meiji, Princeton: Princeton University Press, 400-420.
- Saito Osamu (1998), Chingin to rōdō to seikatsu suiun: Nihon keizaishi ni okeru 18-20 seiki, Tokyo: Iwanami Shoten.
- Sano Yoko (1962), 'Kenchiku rōdōsha no jissitsu chingin: 1830-1894 nen', Mita gakkai zasshi 55: 1009-1036.
- Shimbo Hiroshi (1978), Kinsei no bukka to keizai hatten, Tokyo: Toyo Keizai Shimposha.
- Shimbo, H. and O. Saito (2004 forthcoming), 'The economy on the eve of industrialization', in A. Hayami, O. Saito and R.P. Toby, eds., Emergence of Economic Society in Japan 1600-1870, Oxford: Oxford University Press.
- Smith, T.C. (1968), 'The land tax in the Tokugawa period', in J. Hall and M.B. Jansen, eds., Studies in the Institutional History of early Modern Japan, Princeton: Princeton University Press, 263-283; reprinted in Smith (1988), 50-70.
- Smith, T.C. (1973), 'Pre-modern economic growth: Japan and the West', Past and Present 60: 127-160; reprinted in Smith (1988), 15-49.
- Smith, T.C. (1988), Native Sources of Japanese Industrialization, 1750-1920, Berkeley, Calif.: University of California Press.
- Suzuki Yuriko (1990), 'Shōyu seizōgyō ni okeru kōyō rōdō', in Hayashi Reiko, ed., Shōyu seizōgyō-shi no kenkyū, Tokyo: Yoshikawa Kobunkan, 131-196.
- Tomobe Ken'ichi (1996), 'Tochi seido', in Nishikawa et al. (1996), 135-151.
- Umemura Mataji (1961), 'Kenchiku rōdōsha no jissitsu chingin 1726-1958 nen', Keizai kenkyū 12: 172-176.
- Williamson, J.G. (1998), 'Real wages and relative factor prices in the Third World 1820-1940: Asia', Harvard Institute of Economic Research Discussion Paper no.1844.

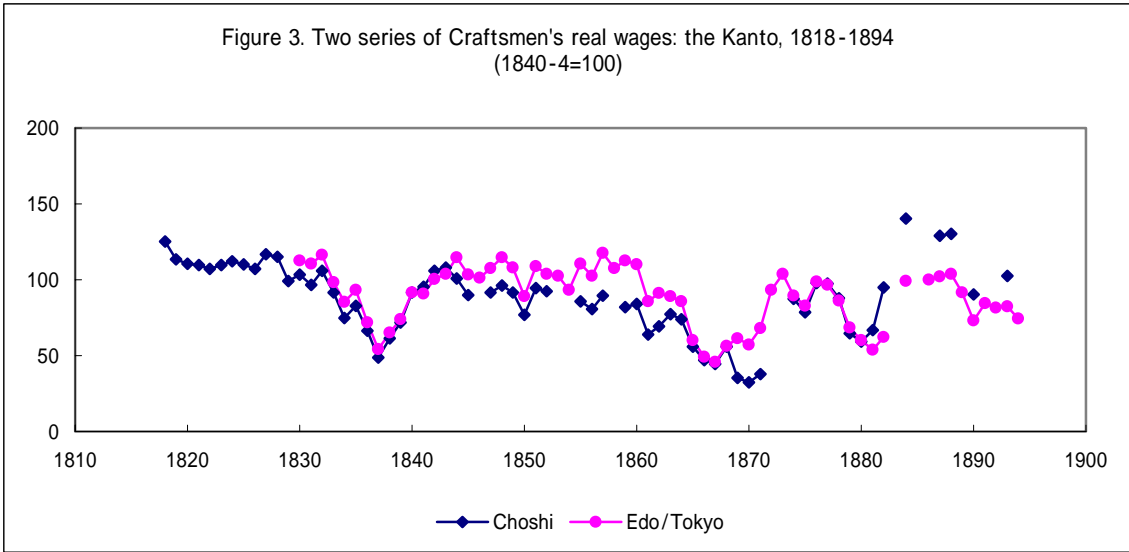
- Williamson, J.G. (2000), 'Globalization, factor prices and living standards in Asia before 1940', in A.J.H. Latham and H. Kawakatsu, eds., Asia Pacific Dynamism 1550-2000, London: Routledge, 13-45.
- Yagi Hironori (1990), 'Nōgyō', in Nishikawa Shunsaku and Abe Takeshi, eds., Sangyōka no jidai, jō, Tokyo: Iwanami Shoten, 113-162.
- Yasuba, Y. (1987), 'The Tokugawa legacy: a survey', Economic Studies Quarterly 38: 290-308.



Source: Appendix table 1.



Source: Appendix table 1.



Source: Appendix table 2.

Table 1. The rates of change in real wages for skilled and unskilled occupations, 1727-1894

	(% per annum)			
	Rural		Urban	
	Skilled/semi-skilled	Unskilled	Skilled	Unskilled
1727-1820	<i>0.2</i>	<i>0.7</i>	—	—
1820-1867	-1.1	—	<i>-0.2*</i>	<i>-2.1</i>
(1840-1867)	(-1.6)	—	(-2.5)	(-5.0)
1867-1894	4.5	—	1.1	—

Source: Appendix tables 1-2.

Notes: 1. The rates of change are ‘slopes’ of least-square regression lines calculated from the observations in the period specified. The ‘slopes’ are all statistically significant except the one with asterisk.

2. The figures in italic type are for Kinai rates. The rural skilled and unskilled are for carpenters and agricultural day labourers in Kami-Kawarabayashi while the urban skilled is for carpenters in Osaka and the urban unskilled for day labourers in Kyoto.

3. Those in upright type are for Kanto rates. The rural skilled is for soy-sauce makers in Choshi and the urban skilled for building craftsmen in Edo/Tokyo.

Table 2. The rates of change in real wages for agricultural and non-agricultural occupations in eastern Japan, 1860-80

	(% per annum)			
	Male		Female	
	Agricultural	Craft	Agricultural	Silk reeling
1860-70	-4.4	-3.5	-3.9	-3.4
1870-80	4.9	3.7	5.0	3.8

Source: Calculated from Saito (1998: 43, 190).

Note: 1. Deflated by the Edo/Tokyo cost of living index series (3-year averages).
 2. Calculation is based on the arithmetic means of reported wage rates. The number of provinces reporting rates varied from occupation to occupation as well as from benchmark year to year. Male: agricultural, 21, 21 and 28; craft, 14, 15 and 23. Female: agricultural, 21, 21 and 27; silk reeling, 12, 13 and 19.

Table 3. Comparisons between wage and output growth, 1700-1870

	Wage growth (1700=100)	Growth of per capita output	
		Farm sector (kg)	GDP (1990 dollars)
1700	100	169	570
1870	118	201*	737
1700-1870 (% per annum)	0.10	0.10	0.15

Sources: Table 1 and Maddison (2001: 255, 264).

Note: 1. Wage growth is calculated from Table 1 above, on the assumption that from 1700 to 1820 real wages increased at 0.6 per cent annually, the same pace as for the weighted average of Kami-Kawarabayashi's carpenters and agricultural labourers (weights are taken from the Choshi case, i.e. 0.14 for the skilled and 0.84 for the unskilled), then from 1820 onwards at the same pace as for the Choshi series of soy-sauce makers, i.e. at -1.1 per cent until 1870.

2. The figure with asterisk is for 1872.

Appendix table 1. The Kinai series: real wage and wage differential indices, 1727-1867

(1802-4=100)

Year	Day labourers' real wages		Skilled-unskilled differentials	
	Agricultural (1)	Kyoto (2)	Rural (3)	Urban (4)
1727	49.9	—	—	—
1728	56.1	—	—	—
1729	55.0	—	—	—
1730	53.0	—	—	—
1731	53.7	—	—	—
1732	46.9	—	141.5	—
1733	42.2	—	145.0	—
1734	—	—	156.8	—
1735	—	—	145.0	—
1736	—	—	132.1	—
1737	—	—	179.0	—
1738	—	—	141.9	—
1739	—	—	111.4	—
1740	—	—	111.4	—
1741	65.5	72.1	111.4	—
1742	58.2	83.7	127.9	—
1743	58.3	77.3	127.9	—
1744	59.4	84.1	145.5	—
1745	59.0	80.7	145.5	—
1746	57.9	94.5	145.5	—
1747	63.1	77.5	137.1	—
1748	61.9	91.3	137.1	—
1749	65.5	91.6	137.1	—
1750	66.4	125.0	135.2	—
1751	66.8	134.0	135.2	—
1752	79.9	88.0	121.5	—
1753	90.5	99.7	111.4	—
1754	102.2	106.1	103.4	—
1755	86.8	84.9	107.9	—
1756	74.4	72.7	112.4	—
1757	65.5	77.7	131.6	—
1758	68.3	81.1	133.3	—
1759	71.4	84.7	129.9	—
1760	87.2	87.2	114.9	—
1761	101.9	92.4	104.2	—
1762	—	—	95.2	—
1763	—	—	95.2	—

1764	—	—	108.7	—
1765	—	—	114.9	—
1766	—	—	108.7	—
1767	—	—	108.7	—
1768	—	—	104.2	—
1769	—	—	104.2	—
1770	—	—	104.2	—
1771	—	—	104.2	—
1772	—	—	104.2	—
1773	85.8	—	104.2	—
1774	83.7	—	111.1	—
1775	78.2	—	111.1	—
1776	78.6	—	111.1	—
1777	79.9	—	111.1	—
1778	84.6	—	111.1	—
1779	87.0	—	112.4	—
1780	90.5	—	107.5	—
1781	95.8	—	104.2	—
1782	81.2	—	106.4	—
1783	76.7	—	108.7	—
1784	66.8	—	111.1	—
1785	77.9	—	112.4	—
1786	77.5	—	106.4	—
1787	55.3	—	106.4	—
1788	71.0	—	103.1	—
1789	70.2	—	106.4	—
1790	84.2	—	106.4	—
1791	97.6	91.9	103.1	109.5
1792	87.1	82.5	99.0	104.5
1793	86.5	90.2	99.0	94.9
1794	96.8	87.5	99.0	109.5
1795	94.3	95.4	99.0	97.8
1796	88.1	80.2	101.0	110.9
1797	90.0	81.0	101.0	112.2
1798	91.9	90.8	101.0	102.2
1799	93.8	86.5	101.0	109.5
1800	91.0	96.9	101.0	94.9
1801	90.9	81.8	101.0	112.2
1802	95.7	86.2	101.0	112.2
1803	96.9	82.6	98.0	114.9
1804	108.6	135.9	101.0	80.7
1805	106.2	96.8	101.0	110.9
1806	104.7	67.8	101.0	156.0
1807	101.1	67.7	101.0	150.8
1808	92.2	63.8	101.0	146.0

1809	94.6	96.6	101.0	98.9
1810	104.4	104.3	101.0	101.1
1811	102.1	104.2	101.0	98.9
1812	106.4	102.9	100.0	103.4
1813	107.6	114.6	99.0	92.9
1814	98.5	128.5	100.0	76.7
1815	100.1	105.6	99.0	93.9
1816	104.9	105.2	97.1	96.8
1817	103.3	90.4	92.6	105.7
1818	102.0	96.1	95.2	101.1
1819	102.8	99.9	—	98.9
1820	109.2	109.4	—	97.8
1821	102.4	108.0	—	93.9
1822	100.4	100.5	—	98.9
1823	92.8	132.6	—	68.6
1824	87.0	101.0	—	84.4
1825	90.6	99.4	—	93.9
1826	87.0	104.0	—	83.6
1827	91.7	115.6	—	79.3
1828	91.3	134.0	—	68.2
1829	80.4	95.4	—	85.2
1830	93.2	90.9	—	96.8
1831	—	87.3	—	95.9
1832	—	97.7	—	89.3
1833	—	87.0	—	95.9
1834	—	77.0	—	92.9
1835	—	93.1	—	97.8
1836	—	81.8	—	89.3
1837	—	55.1	—	133.0
1838	—	65.3	—	146.8
1839	—	67.3	—	142.3
1840	—	85.3	—	139.4
1841	—	111.3	—	112.2
1842	—	93.0	—	106.0
1843	—	91.1	—	143.8
1844	—	124.0	—	105.3
1845	—	119.4	—	105.3
1846	—	90.4	—	130.2
1847	—	92.6	—	129.0
1848	—	74.7	—	148.4
1849	—	78.7	—	131.5
1850	—	78.0	—	127.8
1851	—	74.3	—	122.1
1852	—	83.1	—	138.0
1853	—	74.6	—	145.2

1854	—	79.9	—	129.0
1855	—	95.4	—	120.0
1856	—	97.3	—	119.0
1857	—	79.3	—	130.2
1858	—	74.5	—	123.3
1859	—	76.6	—	116.9
1860	—	73.7	—	112.2
1861	—	52.6	—	102.2
1862	—	55.1	—	116.0
1863	—	47.7	—	196.5
1864	—	56.6	—	134.5
1865	—	27.9	—	188.5
1866	—	13.7	—	—
1867	—	14.9	—	—

Source: Saito (1998: 181-188).

Notes: 1. Column (1) is for agricultural day labourers in Kami-Kawarabayashi and column (2) for day labourers in Kyoto. The former is a composite of wage rates for various farm tasks, whereas the latter is the spring rate. The deflator is for Kyoto (1802-4=100).

2. Column (3) is the ratio of carpenters' to day labourers' wage rate in Kami-Kawarabayashi while column (4) is the ratio of carpenters' wage rate in Osaka to labourers' wage rate in Kyoto (the average of 1802-4 is set at 100).

3. In the base period of 1802-4, the mean money wage rate for spring tasks that Kami-Kawarabayashi agricultural day labourers received was 1.0 monme and that for Kyoto day labourers 0.92 monme per person-day. The mean money wage rate for Kami-Kawarabayashi carpenters in the same period was 2.6 monme and that for Osaka carpenters 4.3 monme per person-day.

Appendix table 2A. The Kanto series: nominal wage indices for Choshi and Edo/Tokyo, 1818-1894

Year	Nominal wage indices		(1840-4=100)		
			(1)	(2)	
	Choshi (1)	Edo/Tokyo (2)			
1818	91.2	—	1855	101.4	130.9
1819	84.7	—	1856	102.9	130.9
1820	83.8	—	1857	99.7	130.9
1821	84.9	—	1858	—	130.9
1822	83.1	—	1859	95.3	130.9
1823	81.9	—	1860	100.2	130.9
1824	82.5	—	1861	99.3	133.5
1825	84.2	—	1862	101.4	133.5
1826	86.8	—	1863	115.9	133.5
1827	87.4	—	1864	119.3	138.8
1828	90.6	—	1865	128.9	138.8
1829	86.4	—	1866	151.0	158.2
1830	88.3	96.2	1867	154.2	158.2
1831	84.4	96.2	1868	156.9	158.2
1832	87.8	96.2	1869	160.2	276.9
1833	89.5	96.2	1870	169.1	299.1
1834	84.0	96.2	1871	165.3	299.1
1835	85.5	96.2	1872	—	299.1
1836	88.7	96.2	1873	—	338.0
1837	86.8	96.2	1874	329.7	338.0
1838	90.6	96.2	1875	327.7	344.7
1839	93.6	96.2	1876	341.8	344.7
1840	96.6	96.2	1877	351.6	348.2
1841	101.0	96.2	1878	354.7	348.2
1842	101.4	96.2	1879	347.3	369.0
1843	99.8	96.2	1880	384.1	387.5
1844	101.2	115.4	1881	484.7	391.4
1845	100.4	115.4	1882	599.5	391.4
1846	—	115.4	1883	—	—
1847	98.5	115.4	1884	544.2	383.5
1848	98.7	117.7	1885	—	—
1849	100.0	117.7	1886	—	383.5
1850	101.5	117.7	1887	484.9	383.5
1851	102.3	117.7	1888	483.0	383.5
1852	104.9	117.7	1889	—	383.5
1853	—	117.7	1890	473.4	383.5
1854	—	120.0	1891	—	383.5
			1892	—	383.5
			1893	477.9	383.5
			1894	—	383.5

Appendix table 2B. The Kanto series: real wage indices for Choshi and Edo/Tokyo, 1818-1894

Year	Real wage indices		(1840-4=100)	
	Choshi (1)	Edo/Tokyo (2)	(1)	(2)
			1855	1856
1818	125.1	—	85.7	110.7
1819	113.5	—	80.7	102.7
1820	110.4	—	89.6	117.6
1821	109.5	—	1858	107.6
1822	107.2	—	1859	112.7
1823	109.6	—	1860	109.9
1824	112.1	—	1861	85.9
1825	109.9	—	1862	91.3
1826	107.2	—	1863	89.2
1827	117.0	—	1864	85.9
1828	115.3	—	1865	60.1
1829	99.1	—	1866	49.2
1830	103.5	112.8	1867	45.8
1831	96.8	110.3	1868	56.1
1832	106.0	116.2	1869	61.3
1833	91.4	98.3	1870	57.2
1834	74.7	85.5	1871	68.2
1835	82.8	93.1	1872	93.3
1836	66.2	71.8	1873	103.9
1837	48.7	54.0	1874	89.4
1838	61.3	65.1	1875	82.6
1839	72.0	74.0	1876	98.7
1840	91.8	91.4	1877	96.6
1841	95.2	90.7	1878	86.3
1842	105.7	100.3	1879	68.6
1843	107.8	103.9	1880	60.0
1844	100.8	114.9	1881	53.9
1845	90.0	103.5	1882	62.0
1846	—	101.2	1883	—
1847	91.8	107.5	1884	99.0
1848	96.4	114.9	1885	—
1849	91.7	108.0	1886	99.8
1850	76.8	89.0	1887	102.0
1851	94.5	108.7	1888	103.6
1852	92.3	103.6	1889	91.8
1853	—	102.5	1890	73.2
1854	—	93.1	1891	84.3
			1892	81.7
			1893	82.2
			1894	74.5

Source: Saito (1998: 189-192).

Notes: 1. Column (1) is for soy-sauce makers' yearly pay in Choshi while Column (2) is for building craftsmen's wage rates in Edo/Tokyo.

2. The deflator for both columns is the Edo/Tokyo cost of living index series (1840-4=100).

3. In the base period of 1840-4, the mean money wage earnings in Choshi's soy-sauce making are 12.0 ryo for the master, 6.4 ryo for head workers and 4.8 ryo for lads per person-year, the weighted average being 5.32 ryo. In Edo, the mean money wage rate in the same period was 0.084 ryo for masons, 0.1174 ryo for tatami makers, 0.062 ryo for thatchers and 0.0948 ryo for sawyers. The average, both weighted and unweighted, happens to be 0.09 ryo per person-day.