Technology and Long-run Economic Growth in Asia

The First East Asian Economic Miracle:

A comparison of nominal wages and welfare of urban workers in Southeast Asia, Japan and Europe, 1880-1938

Jean-Pascal Bassino

Pierre van der Eng

September 8th, 2005
Sano-Shoin, Hitotsubashi University,
Kunitachi, Tokyo

The First East Asian Economic Miracle:
A comparison of nominal wages and welfare of urban workers
in Southeast Asia, Japan and Europe, 1880-1938[*]

Jean-Pascal Bassino
Paul Valéry University, Route de Mende, 34000 Montpellier, France
and
IER, Hitotsubashi University, Naka 2-1 Kunitachi, 186-8603 Tokyo, Japan[#]

Pierre van der Eng
Faculty of Economics and Commerce, The Australian National University
Canberra ACT 0200, Australia

Running title:
The First East Asian Economic Miracle

This version: 24 June 2005
Preliminary. For discussion only. Please do not quote without the authors' agreement

Abstract

How poor was Asia before industrialization? The common perception, based on available per capita GDP estimates, is that Japanese living standards were below the Western European average before World War II, and even lower in other Asian countries. This study offers a comparison of nominal wages and welfare ratios for 1880-1938. It uses a methodology developed by Allen (2001) and Van Zanden (2003), and is based on price and wage data for six East and Southeast Asian cities (Bangkok, Hanoi, Penang, Saigon, Singapore, and Tokyo) and three European cities (Madrid, Milan, and Paris). Until the 1930s, the welfare ratios of urban workers were lower in Japan than in Thailand, Malaysia, and Southern Vietnam, although the gap tended to decrease. The Euro-Asian comparison suggests that, living standards in Bangkok were comparable to those in Paris on the eve of World War II, while those in Saigon and Singapore were even higher than in Milan. A reinterpretation of the failed attempts at industrialization in continental Southeast Asia is offered.

The First East Asian Economic Miracle

A comparison of wages and welfare of urban workers in Southeast Asia, Japan, and Europe, 1880-1938

1. Introduction

How poor was Asia between the 1880s and the 1930s, at a time when Japan was the only industrializing country in the region? The common perception, based on available per capita GDP estimates (Maddison 2001), is that Japanese living standards were below the Western European average and much lower in other Asian countries. The common explanation for this impression, shaped by decades of debate on the colonial exploitation, is that tax systems and other institutional arrangements introduced by colonial governments depressed the living standards of the native and immigrant populations.[1] After World War II, most East and Southeast Asian countries obtained independence and one after the other embarked on a process of industrialization that raised living standards, particularly since the 1960s. This process is widely known as the 'East Asian Economic Miracle' (World Bank 1993). The only exception of this process is Japan which, according to its historical national accounts[2] experienced another miracle earlier in the 20th century. As the only truly independent Asian country[3], it embarked on a process of industrialization at a much earlier stage than the rest of Asia.

Was industrialization worth it? In the case of mid-19th century Europe, the answer is mixed (Williamson, 1982, Komlos 1998). In the case of Asia, it will be largely up to the people of these countries to balance what has been lost and gained in the development process, and to evaluate whether they enjoy a better life now than their ancestors did. Measuring what has been the price to pay, in terms of destruction of natural environment, reduction of leisure time, and losses of cultural practices and other everyday life non-marketable amenities, would require a discussion of the change in people's preferences that is beyond the scope of this paper. The objective of this paper is more limited: it is to place

---

[1] However, Booth (2004) shows that per capita tax revenues were low in most Southeast Asian countries, particularly in Siam and in French Indochina.

[2] Japanese historical national accounts are currently, by far, the most dependable estimates for Asian countries. But it should be noted that agricultural output for the period 1870-1900 is probably underestimated (Bassino 2006) and it is likely that the remark also applies to cottage industry and traditional services.

[3] Thailand (then Siam) was in fact, at least until the 1930s, a European protectorate, mostly under British influence, and the central government of China had to accept until 1945 that his sovereignty over a number of major cities or regions remained limited or shared with foreign powers, and was even entirely lost in some areas.

the East Asian miracle in a historical perspective by assessing Southeast Asian living standards before industrialization, and compare them with Japan and Southern Europe.

Following Allen's (2001) path-breaking international comparison within Europe since the late Middle Ages and Van Zanden's (2003) intercontinental comparison of Java and the Netherlands in the mid-19th century, several attempts have been made to measure by the same yardstick welfare in various regions of Asia and Europe before World War II. Van Zanden's (2003) calculation of purchasing power parity in the mid-19th century for Java and the Netherlands suggests that per capita GDP in Java was about one third of that of the Netherlands.[4] Allen (2001) applied his measurement of welfare as a ratio of daily wages to the price of a basket of commodities[5] defined in terms of quantities of calories, protein, and alcohol content, also to an evaluation of welfare in China, India, Japan and Europe until World War I (Allen 2001, 2005). Bassino and Ma (2005) used the same methodology to compare living standards in Kyoto-Tokyo and different European cities but with a Japanese basket of commodities taking account of the low level of meat consumption and a plausible level of expenditure on alcoholic beverages. The calculation of real wage series for 1740-1850, relying on nominal wages and unit-price data for different benchmark periods of the mid-18th century and 19th century, indicates that the welfare of unskilled workers in Kyoto-Tokyo was at best at par with Milan, which had one of the lowest levels among all European cities. A rise in welfare was observed in Tokyo during the Meiji era (1868-1912), comparable to the trend observed in Milan and Madrid at the same time.

In the late-19th century, Japanese urban workers were poor by the European standards. But this may not imply that the situation was the same across Asia. Bassino and Van der Eng (2002) showed that PPP-adjusted wages for several benchmark years were broadly comparable across Asia between 1913 and 1940 (Bassino and Van der Eng, 2002). However, that study did not investigate the period prior to 1913. That period may be analyzed on the basis of trends in wage/rent ratios estimated by Williamson (2002) from around 1880. The ratios decreased in mainland Southeast Asia, suggesting that living standards may have been initially high but converged towards the levels of the poorest Asian countries during the first phase of globalization of the late 19th and early 20th century. Williamson (1998, 2000a) did compare absolute levels of real wages, but relied on a

---

The same remark applies to Iran and Afghanistan. The resulting impression is one of a linkage between colonization and stagnation, if not decline in living standards.

[4] However, available wage data suggest that skilled workers in rural Java earned about the same as in rural parts of The Netherlands.

[5] Allen (2001) calculated welfare ratios for European cities assuming, per worker, 250 days worked per year and 2 dependants (adult equivalent; implying that a household's members could be a male and a female adult and 3 children). Thus, the welfare ratio is 250 times the daily wage divided by 3 times the price of the basket of commodities required for one-year consumption by an adult.

questionable shortcut method to adjust nominal wages for differences in PPP. The only strong piece of evidence seems the decline in living standards, as measured by rice wages, in late-19th century Thailand, where land was initially extremely abundant and inward migration significant (Ingram 1964, 1971; Feeney 1982)[6].

This paper proposes an international comparison of living standards of skilled and unskilled urban workers in Southeast Asia, Japan, and Europe during 1880-1938. Annual time series of welfare ratios are constructed on the basis of price and wage data collected for six Asian cities (Bangkok, Hanoi, Penang, Saigon, Singapore, and Tokyo) and three European cities (Madrid, Milan, and Paris)[7]. Further information regarding price and wage data sources, and the weights used for the construction of CPIs for 1880-1938 will be available in a background paper.[8] For want of a complete and consistent set of regional rural and urban price and wage data, urban wages in the main cities are used as an indicator of living standards in a given city.[9] The pros and cons of using daily wages, even in comparable PPP-adjusted terms, for international comparison of living standards have been extensively discussed.[10] As far as Asian countries are concerned, the main attractive feature of real wages is that these are real incomes received by real workers. Maddison's estimates of per capita GDP are less reliable for several Asian countries than for European countries.[11] In addition, average estimates of total expenditure (GDE) include non-consumption items that were certainly not at the same level all over Asia, especially in the case of public expenditure (Booth 2005). An additional attractive feature of the Southeast Asian data is that urban wages data used in this paper are for skilled and unskilled workers (coolies and carpenters) who were mostly ethnic Chinese (or part Chinese in Saigon and Hanoi). This population group tended to be highly mobile and transient, migrating not just within Asia, but also to other regions, including Japan of North America, depending on the incentives generated by their perceptions of labor rewards.[12] Thus, it is not surprising to find, on the basis of our

---

[6] The comparison of grain wages in Bangkok and Lancaster in the 1880s suggests that living standards of unskilled workers were slightly higher in Thailand than in the Great Britain (Ingram 1964, 114).

[7] Due to unavailability of price and/or wage data before 1913 (at the present stage of the research) Burma, Indonesia, Korea, the Philippines, and Taiwan are not included in the comparison.

[8] Available upon request. The paper will be posted as downloadable PDF on the website of the Hi-Stat project, Hitotsubashi University, Tokyo, Japan.

[9] Japanese regional urban and rural data available for late 19th century indicates a rapid process of regional nominal convergence, but a stability of real wage differentials (Saito 2005). A similar convergence is observed in Korea (Cha 2000b), and in colonial Taiwan (price data reported in *Taiwan Sotokufu Tokei Nenpo*).

[10] See, for instance, Williamson (2000b, 47-48).

[11] Apart from problems related to backward extrapolation and deviation from PPP (Bassino and van der Eng 2002; Fukao, Ma and Yuan 2005), the underlying series are currently subject to reinvestigation revealing that, for the late 19th century, even the Japanese series which are by far the most reliable, are probably underestimated, as far as agriculture, the best documented sector, is concerned (Bassino 2006).

[12] China and India are not included in the comparison because both were countries of outward migration towards Southeast Asia. It seems likely that living standards were lower in Chinese and Indian cities than in Bangkok, Singapore, or Saigon. Besides, the magnitude of regional inequality in these two countries requires the

calculation of welfare ratios, that living standards differed, because migrant workers were motivated by potential saving and not only by the purchasing power of their earnings.

The main results of the international comparison in this paper are as follows. Until the 1930s, welfare ratios of urban workers were usually lower in Japan than in Thailand, Malaysia, and Southern Vietnam, although the gap gradually reduced. The Euro-Asian comparison suggests that, on the eve of World War II, living standards in Bangkok were higher than in Paris, and those in Saigon and Singapore were higher than in Milan and Tokyo. As far as mainland Southeast Asia is concerned, the postwar East Asian economic miracle appears less impressive than the postwar Southern European economic miracle, given that industrialization allowed wages in European laggards to catch up with those in leading industrialized countries.

The rest of the paper consists of four sections. Section 2 compares nominal and rice wages. Section 3 constructs Japanese and Southeast Asian consumption baskets suitable for international comparison of cost of living and real wage series. Section 4 compares welfare ratios in Southeast Asia, Japan and Southern Europe. The conclusion offers a reinterpretation of the process of Asia industrialization.[13]

2. Nominal wages, rice wages, and potential savings in Japan and Southeast Asia

When comparing Asian living standards in the late 19th and early 20th centuries on the basis of urban wages, we need adjust wages for differences in the purchasing power of Asian currencies. But we should also investigate the levels of nominal wages and rice wages, for at least two reasons. Firstly, we cannot expect the international flows of information to have been complete enough to allow potential migrants to move between different Asian cities open to migrants depending on the cost of transportation and differences in the cost of living. As rice accounted for a large share of a household's expenditures, rice wages provide a good proxy of the purchasing power of labor rewards, at a time when traders had increasingly ready access to rice price data but unskilled workers had not. Secondly, from the viewpoint of a migrant workers, the nominal wage is perhaps more important than the real, PPP-adjusted, wage. Many workers were temporary migrants without dependents, being either unmarried or leaving spouse and children behind, Hence, it seems likely that many were attracted by expected annual savings. These can be estimated as the nominal annual

---

construction of a database for a number of cities, with special attention to coastal cities corresponding to regions of migration towards Southeast Asia. This is may be relatively easy for India, but Chinese data are notoriously scarce before the 1910s.

income less the minimal expenditures corresponding to basic consumption for food and lodging, rather than by the purchasing power of local wages. Therefore, the number of days worked per year and the differential in nominal terms between nominal wages and current expenditures are likely to have been powerful signals of high living standards.

For the purpose of comparison across Asian countries, nominal wages are converted into grams of silver in Table 1 (see the background paper for description of nominal wages data sources, definitions, and for procedures used to estimate missing data). Considering that some Asian currencies remained on Silver Standard until the late 1920s and early 1930s, particularly China, Hong Kong and French Indochina, migration flows may have been influenced by the prospect of nominal wages and/or savings in silver rather than gold equivalents. It is likely that Chinese migrant workers tended to understand the value of the savings in silver rather than in foreign currency[14]. Furthermore, using silver wages ultimately allows inter-temporal and inter-continental comparisons going back to the early modern era.

Table 1 shows that nominal wages differed considerably among Asian cities, especially in the late 19th century, and persisted until the convergence of the 1930s. A quick comparison of these nominal wages in Asia with European cities suggests a wide income gap before World War I. The highest nominal Asian wages were lower than the lowest European wages. Allen's (2001) series of European nominal wages converted into grams of silver per day provide information on average daily wages of unskilled workers for the late-19th and early-20th centuries. For example in 1904-05, the wages were 65 grams of silver in London, 15 grams in Madrid, 23 grams in Milan, and 48 grams in Paris for unskilled workers.[15]

Table 1 indicates that the skill premium was much higher in Southeast Asia than in Japan; carpenters' wages were about twice as high as those for unskilled workers in Bangkok, Saigon, Hanoi, Penang, and Singapore, but only 1.5 times higher in Tokyo. During World War I, the skill premium increased markedly in Singapore and in Saigon (3.2 and 2.9 respectively in 1920), most likely due to the boom, during the war, of exports of food that

---

[13] A background paper describing the data sources used and an electronic file of nominal wages, price indices, absolute prices for benchmark years, and yearly time series of welfare ratios are available upon request.

[14] China remained a silver standard country until 1935, French Indochina until 1929. As the price of silver fluctuated widely relative to gold, wages could be converted into a gold-based currency for the purpose of evaluating gold value of savings. However, it is likely that unskilled migrant workers or even carpenters considered their savings in silver (Mexican pesos or equivalent) rather than in gold-based currencies. We have not found any substantiation for this. Hicks (1993, pp. 66-76, 171, 281-83) offers discussions of the organization of remittances from Southeast Asia to China. They suggest that (a) there were many ways in which remittances could be sent to China, and therefore that competition must have been significant and exchange rates competitive; (b) remittances fluctuated with the silver/gold rate, they increased by a greater proportion than a fall of silver, and *vice versa*; (c) remittances were often related to the need to pay of debt in China, which would have been denominated in silver.

[15] A spreadsheet with these data is downloadable from Robert Allen's personal website, Oxford University, Nuffield College. To be completed with information for carpenters and silver wages in Istanbul from Sevket Pamuk.

required processing before shipment, and therefore required additional investment (in rice mills, for instance). It declined during the economic depression of the 1930s to 1.6 and 2.2 respectively in 1935, probably due to the decrease of export volumes, while it remained stable in Tokyo and Bangkok.

Table 1: Nominal daily wages for day laborers (unskilled workers) and carpenters in grams of silver, and skill premium, 1885-1935

	1885	1895	1905	1915	1920	1925	1930	1935
UNSKILLED WORKERS								
Bangkok	11.6	8.7	13.6	24.0	12.1	20.1	15.9	9.2
Hanoi	na	na	4.1	6.7	7.5	9.0	6.3	4.3
Saigon	6.3	7.6	10.0	12.0	13.9	15.6	12.9	8.4
Singapore	6.7	6.7	8.2	9.6	4.5	11.3	11.6	7.7
Penang	6.5	6.3	6.7	14.8	12.9	14.3	12.8	9.5
Tokyo	3.7	5.4	11.0	14.2	25.4	42.2	29.7	9.9
CARPENTERS								
Bangkok	23.2	17.4	27.2	48.1	24.2	38.7	30.9	16.7
Hanoi	na	na	11.1	12.9	14.5	17.0	12.6	9.2
Saigon	12.2	15.0	19.0	25.0	39.9	36.7	24.6	18.6
Singapore	14.6	12.2	26.3	26.6	14.8	35.7	16.9	12.5
Penang	10.9	14.6	18.0	18.5	17.9	38.7	16.7	10.6
Tokyo	5.5	7.9	16.4	21.6	33.2	59.8	44.3	14.5
SKILL PREMIUM								
Bangkok	11.6	8.7	13.6	24.1	12.1	18.6	15	7.5
Hanoi	na	na	7.0	6.2	7.0	8.0	6.3	4.9
Saigon	5.9	7.4	9.0	13	26.0	21.1	11.7	10.2
Singapore	7.9	5.5	18.1	17	10.3	24.4	5.3	4.8
Penang	4.4	8.3	11.3	3.7	5.0	24.4	3.9	1.1
Tokyo	1.8	2.5	5.4	7.4	7.8	17.6	14.6	4.6

Notes: [Years to be changed to 5-year averages] Wages in national currency converted into grams of silver on the basis of exchange rates and the international price of silver. Where exchange rates were missing, the silver content of the standard coins of Silver Standard countries, and the international price of silver was used. The skill premium is the ratio of wages of carpenters over unskilled workers.

Rice generally occupied a high share in consumption expenditure. Hence, rice wages could be regarded as a shortcut approximation of real wages. Nominal wages and rice prices in local currency can be used directly to calculate rice wages but it is also illustrative to look at international differences in rice prices that explain to a large extent rice wage differentials. Table 2 provides information on local rice prices converted into grams of silver. Unsurprisingly, rice was extremely cheap in the two rice export hubs of Bangkok and Saigon, compared to local prices in rice importing Straits Settlements, Malaya and Japan.[16] Asian rice markets were very well integrated (Latham and Neal, 1983; Cha 2000a), but transportation

---

[16] Japan had no exportable surplus in normal years and became a significant importer from the end of World War I.

costs and export taxes in Siam and French Indochina explain the persistence of the absolute price differential until the 1930s.

Table 2: Urban retail prices of rice, 1885-1935 (grams of silver per kg)

	1885	1895	1905	1915	1920	1925	1930	1935
Bangkok	0.83	1.05	1.63	2.81	2.31	2.61	1.77	0.72
Hanoi	na	Na	1.57	1.54	2.71	2.69	1.80	0.67
Saigon	0.88	0.98	1.30	1.40	2.46	2.45	1.63	0.61
Singapore	1.38	1.49	2.01	2.89	3.41	3.24	2.10	1.01
Penang	1.38	1.56	2.32	3.52	4.34	3.88	2.75	1.15
Tokyo	1.45	1.86	3.25	3.07	4.79	6.05	3.71	1.78

Note: Rice prices generally refer to No.2, or medium quality rice.

As expected on the basis of silver wages and rice price differentials, rice wages were particularly high in Bangkok and, albeit to a lesser degree, in Saigon. Tokyo was almost consistently at the bottom, closer to Hanoi - the administrative capital of French Indochina (since 1898) but hardly an affluent city - than to Singapore (see Table 3 for rice wages in selected years and Figures 1 and 2 for time series).

Table 3: Rice wages of unskilled workers and carpenters, 1885-1935 (kg of rice per day)

	1885	1895	1905	1915	1920	1925	1930	1935
UNSKILLED WORKERS								
Bangkok	14.0	8.5	8.4	8.6	6.8	7.7	9.7	12.9
Hanoi	na	na	4.1	4.4	2.9	3.3	3.8	6.6
Saigon	8.4	7.9	7.6	8.6	5.9	6.4	8.7	14.2
Singapore	4.8	4.6	4.1	3.3	1.4	3.5	5.8	7.7
Penang	4.7	4.2	2.9	4.2	3.1	3.7	4.8	8.1
Tokyo	2.6	2.9	3.4	4.7	5.6	7.0	8.1	5.5
CARPENTERS								
Bangkok	28.0	17.1	16.7	17.1	13.6	14.8	18.5	23.5
Hanoi	na	na	7.9	8.4	5.5	6.3	7.7	14.2
Saigon	16.2	15.4	14.6	17.8	16.7	15.0	16.9	31.6
Singapore	10.6	8.4	8.2	9.2	4.4	11.1	8.4	12.4
Penang	8.8	9.8	6.5	5.2	4.3	10.0	6.2	9.1
Tokyo	3.8	4.2	5.1	7.1	7.3	9.9	12.1	8.2

Note: Wages exclude additional payments in kind.

Figure 1: Rice wages of unskilled workers, 1880-1940 (kg of rice per day)
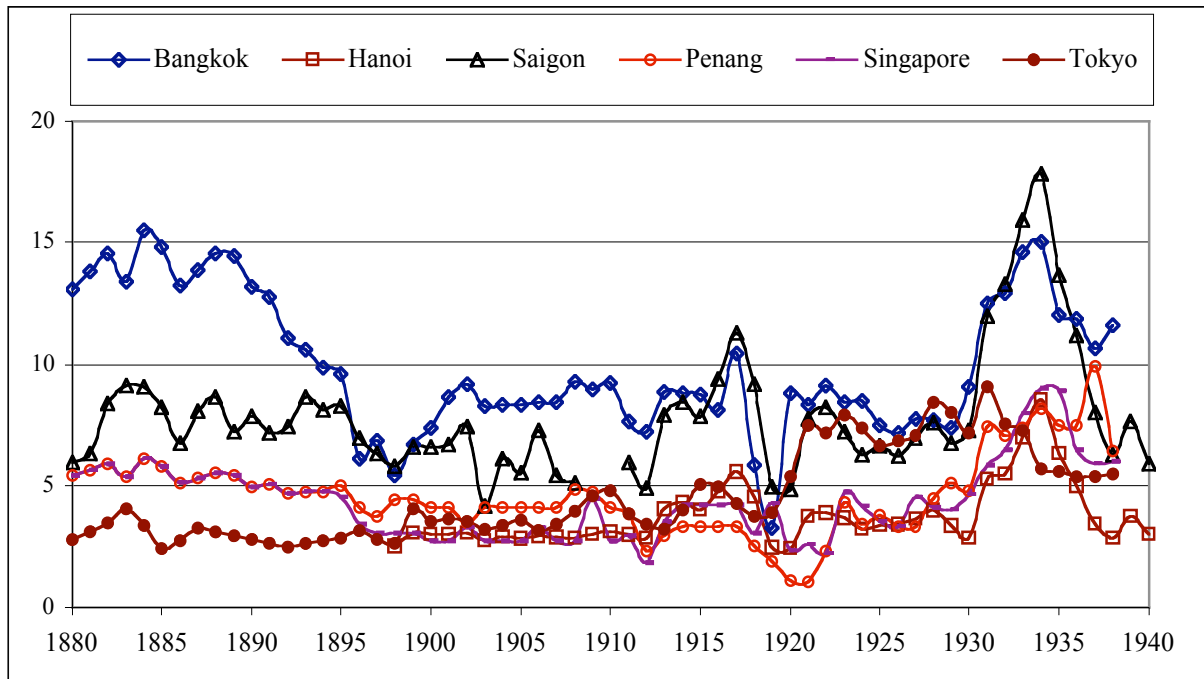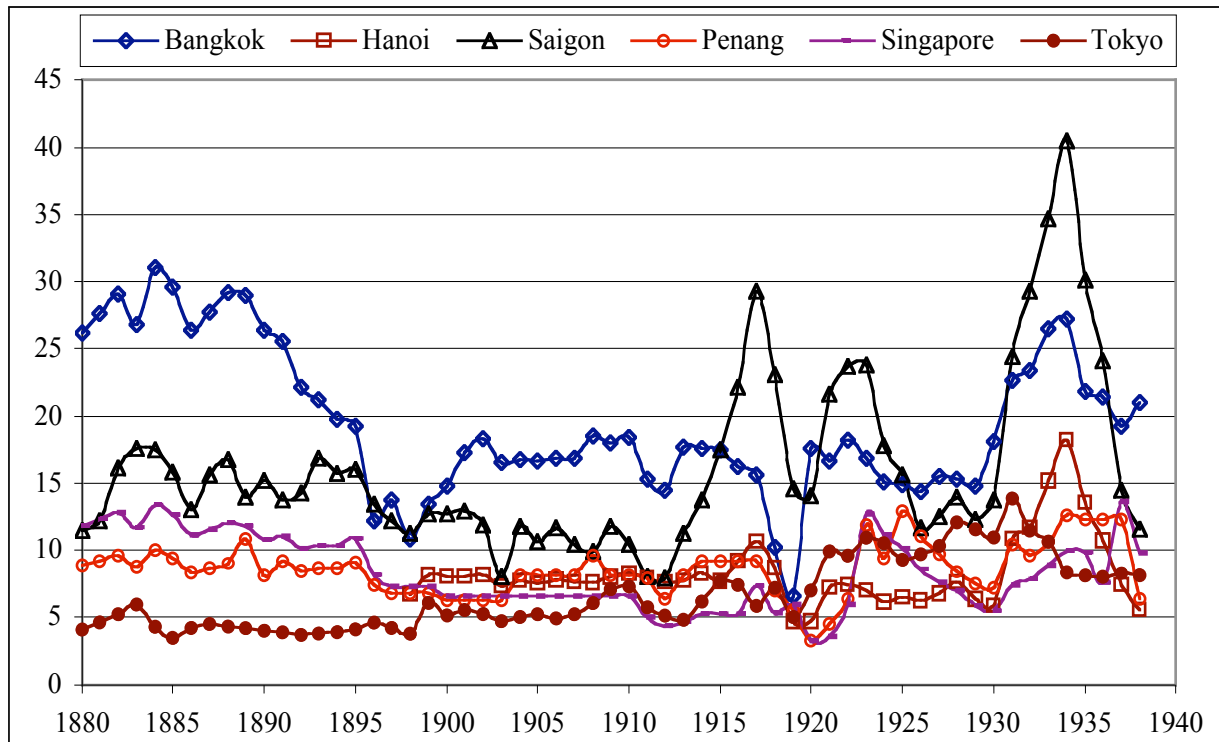

Figure 2: Rice wages of carpenters, 1885-1940 (kg of rice per day)

The income gap between Bangkok and Singapore or Penang is only slightly less impressive if we take into account the net annual labor reward, as we could expect that migrant workers were mostly concerned by the savings they could generate for remittance. Annual savings are estimated on the basis of nominal wages and rice prices assuming that the workers had no dependents living with them[17], that they worked 250 days per year, and that total daily consumption expenditures by unskilled workers was the equivalent of 1 kg of rice per day at local prices, or 365 kg per year, and 1.5 kg per day for carpenters in order to allow for the depreciation of tools and equipment. Table 4 shows the estimated savings for selected years [to be revised to averages for 5-year periods, possibly converted into US$].[18]

Table 4: Estimated savings of unskilled workers and carpenters, 1885-1935 (kg of silver per year)

	1885	1895	1905	1915	1920	1925	1930	1935
UNSKILLED WORKERS								
Bangkok	2.9	2.2	3.4	5.9	3.5	5.1	4.1	2.5
Hanoi			1.1	1.7	1.9	2.2	1.6	1.1
Saigon	1.7	1.9	2.1	3.0	3.5	3.9	3.2	2.3
Singapore	1.7	1.7	2.0	2.4	1.5	2.8	3.0	2.4
Penang	1.7	1.6	1.6	3.7	3.1	3.8	3.3	2.4
Tokyo	1.0	1.4	2.8	3.5	6.7	11.1	7.8	2.9
CARPENTERS								
Bangkok	5.8	4.4	6.8	11.8	6.8	9.9	7.9	4.6
Hanoi			3.0	3.2	3.6	4.2	3.2	2.5
Saigon	2.7	3.6	4.1	6.2	9.8	9.5	6.2	4.8
Singapore	2.7	3.0	3.9	6.6	4.6	8.5	4.6	3.4
Penang	3.6	3.6	3.8	4.6	5.4	9.4	4.6	3.3
Tokyo	1.4	2.0	4.1	5.4	9.4	15.8	11.6	4.2

Sources: Nominal wages and rice prices; same as Tables 1 and 2, respectively.

Part of the income gap between Bangkok and other Southeast Asian cities could be due to differences in the number of days actually workable. As single cropping of paddy remained the norm in continental Southeast Asia (with the exception the red river delta of northern Vietnam) well into the second half of the 20th century, work related to rice milling and loading of rice for export was a seasonal activity in Bangkok as well as in Saigon.[19] By contrast, processing and export of other commodities, such as tin and rubber, which were important to the economies of both Singapore and Penang, were year-round activities. In addition, in Singapore, the shipyards for repairs of ships of the British Navy offered additional

---

[17] Remittances sent to relatives, either in the countryside or abroad, are regarded as a particular form of savings.

[18] In the context of silver depreciating relative to gold during (roughly) 1875-1900 (stability of gold prices of most commodities but inflation in terms of silver; insert references etc), it might be preferable to measure savings in grams of gold. Alternatively, silver values should be used if we assume monetary illusion.

[19] In Saigon, however, the demand for labor by the arsenal of the French Navy probably reduced the slack of both skilled and unskilled labor in between paddy harvests.

employment opportunities. Therefore, the high daily nominal wages in Bangkok could be regarded as compensation for the lower number of days worked, thus equalizing savings if the rice wages are two to three time higher than in other cities, or possibly the cost of travel in case of seasonal migration from Singapore and Penang during the rice exporting period. Another possible cause of higher wages in Bangkok could be barriers to entry or, conversely, the impact of travel subsidies for Chinese migrant workers in the Straits Settlements. Yet, entry barriers also existed in Saigon, such as the poll tax that was only paid by Chinese migrants.

3. Construction of Asian consumption baskets for intercontinental comparisons

In order to compare living standards across Asian countries and with Southern European countries, it is necessary to calculate the welfare ratio in the form of time series. As a first step, this section proposes a measure of the price of a basket of basic commodities that can be used as a proxy for PPP-based comparison. The basket constructed by Allen (2001) for assessing living standards in early modern Europe presents a number of notable advantages. Firstly, it is relatively easy to find Asian equivalents of the different items included in this basket, and therefore to calculate hedonic prices, *i.e.* prices adjusted for quality differences. Secondly, it is possible to construct Asian equivalents of this European basket which are broadly consistent with available information on consumption patterns of low-income households in Asia in the late-19th and early-20th centuries. Thirdly, sensitivity can be assessed and it appears that the results, in terms of PPP coefficients, are quite robust to the exclusion of alcoholic beverages or the inclusion of sugar or rent. Fourthly, as the basket used by Allen (2001) is in many ways canonical, the results obtained in this Euro-Asia comparison could be extended in the future by investigating Southeast Asian living standards in the early modern period, or to by extending the study to other countries of East Asia, Southern Asia, or the Middle-East.

As rice wages appear to have been initially high relative to Japan in the cities of mainland Southeast Asia, it is desirable to construct Southeast Asian consumption baskets without presuming *a priori* a low per capita intake of meat, eggs, and fish. In the case of Tokyo, information regarding per capita consumption of a number of food items for different income-groups suggests that the income elasticity of demand for meat, eggs, and fish was low.[20] Thus, it seems acceptable to adopt average per capita intake of the early 1920s for the entire period 1880-1938. Estimates of Japanese food supply calculated by Shinohara

(1967) and converted in calories and protein per capita by Mosk and Pak (1978) suggest that the nutritional status improved significantly in the late-19th century. However, these estimates are based on food supply estimates and are not supported by historical evidence (Bassino 2006). In addition, the average trend for Japan as a whole does not necessarily reflect that for Tokyo. Per capita income was much higher in Tokyo than in other Japanese cities, with the sole exception of Osaka albeit that the difference was small.

Table 4 offers a comparison of the Southern European consumption basket devised by Allen (2001a) with a Japanese basket and three variants of Southeast Asian baskets (A, B and C) that are equivalent in terms of caloric value (about 1,900 Kcal per day). The Southeast Asian baskets also contain the same amount of animal protein as the Southern European basket. In the case of Japan, animal protein intake remained much lower than in Europe until the 1960s. The Japanese basket is consistent with information on food consumption patterns in the interwar years and contains only 6 grams of animal protein. Soybeans (consumed in fermented form as *natto*, or *miso* paste, *tofu* or soybean cheese, *shoyu* sauce, or bean sprouts) provided a rich source of non-animal protein.

In spite of the inclusion of a large amount of fish and meat in the Southeast Asian baskets, and the same number of eggs as in the Southern European basket, the total daily protein intake is only 65 grams for the Southeast Asian baskets against 78 grams for the southern European basket. Increasing consumption in excess of 5 kg meat, 52 eggs and 30 kg of fish per capita per year in the Southeast Asian baskets would imply a food provision that would differ too much from the actual diet of urban workers. This difference between Europe and Asia in terms of protein intake seems nevertheless acceptable for two reasons. Firstly, it is consistent with available information on protein intake in Vietnam in the 1920s (as implied by consumption baskets devised for the construction of living cost indices in Hanoi) and also with the upper range of protein intake in mainland Southeast Asia in the 1960s that is implied by estimates of food supply compiled by the FAO. Second, the Southeast Asian baskets imply a comparatively diversified protein intake: rice accounts for 41 to 49% of the total protein intake while bread makes up 63% of protein intake in Southern Europe (and animal protein is slightly higher than in Europe). Also, rice is a more diversified source of amino acids than wheat and other cereals. Hence, one could argue that the lower quantity of the Asian protein intake was compensated by a higher quality.

It should be noted that the basket is slightly biased in favor of Tokyo because soybeans are measured as grain instead of the soybean content of relatively expensive

---

[20] Rodo Undo Shiryo Inkai (1959). Need to check this, because evidence for other countries suggests the opposite, albeit that fish in those cases is just processed fish (dried or salted).

processed soybean-based foods (*tofu, natto, miso* paste, or *shoyu* sauce). However, soybeans were mainly consumed as *natto* and *tofu* that were in both largely processed at home [For background paper: beans and soybeans retail price data are unavailable for pre-WWII Southeast Asia, and are therefore estimated on the basis of import prices and relative price of beans in Japan).

For the sake of consistency in the Asian and international comparison, fuel is charcoal (or coal in Europe and Japan when cheaper than charcoal). It should be noted that fuel consumption tends to be biased against Southeast Asian standard of living by overestimating the cost of fuel. For example, in Bangkok, charcoal was 4 times more expensive than fire wood, which was the most important fuel in Southeast Asia (both charcoal and fire wood were also used in the cities).

A major difficulty in the construction of Southeast Asian baskets lies in the role assigned to alcoholic beverages. The Japanese basket includes 41 liters of *sake* (Japanese rice wine), equivalent to 68.25 liters of wine or 182 liters of beer in terms of alcohol content. This is slightly more than the average per capita consumption in Japan, but it is plausible that urban households consumed more *sake* than rural households. Rice wines comparable to Japanese *sake* were consumed before World War II in many parts of East and Southeast Asia, mainly for ceremonies and festivals.[21] Thus, it is unlikely that Southeast Asian households, even the urban ones, imbibed as much as 41 liters per capita per year. In addition, unit-price data of rice wine are not available for Thailand and Malaysia. The spirits mentioned in the price data are beer, brandy, sherry and wine, which were certainly not part of the standard consumption of Asian unskilled workers and carpenters. Implied per capita consumption in Hanoi around 1920, in a report calculating the cost of living index, is only 11 liters of rice wine at 40% (equivalent to about 24.5 liters of rice wine at the Japanese standard of 18%). Average per capita consumption was higher in Southern Vietnam than in the North. Thus, the equivalent of 41 liters at 18% alcohol may be plausible for Saigon. There is no information on rice wine consumption in Malaya and Thailand, neither volume nor value. For Southeast Asian basket A, it is assumed that the volume consumed was the same in Tokyo and in the other cities; unit-prices in Singapore, Penang, and Bangkok are estimated on the assumption that the price of rice wine is a multiple of the price of rice at the same ratio as in Tokyo and Saigon).

---

[21] Rice wine was called *sake* in Japan, *brem* in Bali, *tapuy* in Luzon, etc. Distilled concoctions from sugar cane and rice were consumed as *arak* (arrack) in island Southeast Asia. The technology to make rice wine was broadly the same in the region ranging from southern India to Japan (Limtong *et al.* 2002).

Table 5: Comparison of consumption baskets of households of urban workers in Southeast Asia, Northeast Asia, and Southern Europe (per capita per year)

	Unit	Southern European Basket	Japanese Basket (Tokyo)	Southeast Asian Basket A	Southeast Asian Basket B	Southeast Asian Basket C
Bread	Kg	182				
Beans (a)	Kg	52	6	5	5	5
Meat (b)	Kg	26	5	5	5	5
Cheese	Kg	5.2				
Eggs	Each	52	24	52	52	52
Wine (c)	Liter	68.25				
Soy beans	Kg		27	15	15	18
Rice	Kg		130	152	152	138
Barley (d)	Kg		10			
Buckwheat (e)	Kg		14			
Rice wine (f)	Liter		41			20.5
Fish (g)	Kg		15	30	30	30
Sugar	Kg				5	10
Edible oil (h)	Liter	5.2	0.5	2.6	2.6	2.6
Soap	Kg	2.6	2.6	2.6	2.6	2.6
Linen	Piece	5	5	5	5	5
Lamp oil (i)	Liter	5.2	5.2	5.2	5.2	5.2
Fuel	MBTU	3	2	2	2	2

Notes: (a) excluding soy beans and peanuts; (b) 1 kg beef, 2 kg pork, 2 kg poultry; (c) 182 liters of beer is equivalent to 68.25 liters of wine in terms of alcohol content (Allen 2001a); (d) and wheat or wheat pasta (*udon* and *somen*); (e) and cereals other than barley and wheat (millet, sorghum, and maize); (f) *sake* in Japan and other Asian rice wine; 41 liters of rice wine at 18% in Tokyo, or 22 liters at 40% of alcohol content in Hanoi or Saigon is equivalent to 182 liters of beer in terms of alcohol content; (g) fresh fish or equivalent; crustaceans, shellfish, fish paste, dried fish, and others converted in fresh fish equivalent on the basis of the protein content; (h) pork fat in Hanoi and Saigon; (i) 5.2 of lamp oil (kerosene) used as equivalent for 2.6 liters of lamp oil and 2.6 kg of candle; (j) fuel consumption is 5 MBTU in Northern Europe (including Paris) and 2 MBTU in Southern Europe in Allen (2001). As winter temperatures are almost as low in Madrid and Milan as in Paris or London, a fuel consumption of 5MBTU is used here. Winter temperatures in Tokyo are much higher than in Madrid, Milan, or Paris. (k) Although electric light was commonly used in Tokyo in the interwar years, kerosene is used continuously as lamp oil for the sake of consistency.

In order to check the sensitivity of the results to the assumptions regarding alcohol rice wine consumption, two alternative baskets B and C are constructed. Considering medical evidence suggesting that sugar addiction is comparable, in physiological terms, to addiction to alcoholic beverages (Colantuoni *et al.* 2002), we can consider the relatively high per capita consumption of sugar in Southeast Asia as a substitution between addictive food items. In basket B, we examine the implication of total substitution. Sugar is added in the diet with an intake of 5 kg per capita per year, which is equivalent to 41 liters of rice wine in terms of

caloric intake. In basket C, the substitution is only partial. The alcohol content is only half that of basket A (equivalent to 20.5 liters of rice wine at 18% of alcohol content), which is probably closer to the actual per capita consumption figure for Southeast Asian countries. In addition, the basket includes twice the amount of sugar as that of basket B (the level of 1900 Kcal and 65 grams of protein are obtained by adjusting the consumption of rice downward and of soybeans upward). As it included both spirits and sugar, this basket C appears strongly biased against Southeast Asian countries and therefore may indicate a more unfavorable way than basket B of comparing living standards in Bangkok, Singapore, Penang, Hanoi, and Saigon, with those in Tokyo and in European cities.[22]

4. Measuring differences in the cost of living and constructing real wage series for seven Asian cities

Differences in the cost of living in the six Asian cities are measured on the basis of the price of the baskets for benchmark years (see the background paper for detail on price data of the different items in consumption expenditures, and the procedures for deriving missing retail prices estimated from contracted prices or import and export prices). Series of nominal wages, CPI series for Japan and newly estimated CPI series for Malaysia, Thailand, and Vietnam for 1880-1938 (see the background paper) are then combined to generate real wage series adjusted for differences in the cost of living.

Considering the upward trend in rice wages in Tokyo, observed in Section 1, and changes in Japanese consumption patterns during period 1880-1938, it is preferable to assess the sensitivity of the result to the choice of the benchmark year. Accordingly, the calculation of the price of baskets is undertaken for three benchmark years: 1915, 1922 and 1938. These benchmark years were selected under the constraints of availability of retail price data (almost limited to rice price in the case of Bangkok before 1915, or before 1910 for Saigon or Hanoi).

Table 6 presents welfare ratios based on baskets A, B, and C for selected Asian cities for the benchmark years 1915, 1922 and 1938. Whatever the basket, the cost of living was much lower in Bangkok, Hanoi and Saigon than in Tokyo, with Singapore and Penang lying in between. It should be noted that, when information on quality would be available, the calculation of the cost of the basket is systematically biased against Bangkok and Saigon

---

[22] It should be noted that the results pointing towards high living standards in Southeast Asia are not sensitive to the inclusion of rent in the calculation. Expenditure for housing (rent and furniture) accounted to about 8 % of the total in Hanoi in the 1920, 10% in Singapore, and about the same in Tokyo. If anything, the inclusion of rent tends to reduce the relative level of real wages in Tokyo further.

through the use of the most expensive items, particularly the most expensive quality of rice. In order to reach the most robust results in the Euro-Asian comparison, basket A, which constantly yields the lower welfare ratio for the three benchmark years for all cities except Hanoi, is used for generating time series of welfare ratios.

Table 6: Comparison of welfare ratios based on baskets A, B, and C in Bangkok, Hanoi, Saigon, Singapore, Penang and Tokyo, 1915, 1922 and 1938

	1915			1922			1938		
	Basket A	Basket B	Basket C	Basket A	Basket B	Basket C	Basket A	Basket B	Basket C
UNSKILLED WORKERS									
Bangkok	1.16	1.35	1.24	1.52	1.69	1.56	2.17	2.44	2.22
Hanoi	0.71	0.75	0.66	0.62	0.67	0.61	0.43	0.49	0.44
Saigon	1.09	1.21	1.11	1.14	1.24	1.15	0.92	1.05	0.93
Singapore	0.66	0.82	0.72	0.77	0.93	0.83	1.05	1.34	1.17
Penang	0.56	0.68	0.60	0.63	0.77	0.68	1.05	1.34	1.17
Tokyo	0.88	1.32	1.06	1.38	2.05	1.69	0.98	1.58	1.24
CARPENTERS									
Bangkok	2.31	2.70	2.47	3.04	3.38	3.12	4.07	4.57	4.15
Hanoi	1.33	1.42	1.25	1.19	1.27	1.16	0.85	0.96	0.86
Saigon	2.57	2.85	2.62	3.28	3.57	3.30	1.71	1.95	1.72
Singapore	0.82	1.02	0.90	2.08	2.50	2.24	1.72	2.19	1.92
Penang	1.54	1.89	1.67	1.73	2.11	1.88	1.82	2.31	2.03
Tokyo	1.34	2.02	1.61	1.85	2.74	2.25	1.46	2.35	1.85

Notes: The welfare ratio is calculated as (daily wage x 250 days) / (price of basket x 3 adult equivalents). Prices of 1924 used as a proxy for 1922 for Singapore and Penang (stable official CPI between 1922 and 1924).

5. Rich and poor in Asia and Europe: Welfare ratios of urban workers

This section compares welfare ratios for unskilled workers (coolies in Southeast Asia; day laborers in Japan and Europe) and skilled workers (carpenters in Asia, masons in Europe) in the six selected Asian cities, and in three southern European cities (Madrid, Milan, and Paris) as a way to assess intercontinental differences in living standards. In terms of per capita GDP, average income was higher in France in the late-19th and early-20th centuries, but there were sizable income discrepancies between Paris and the rest of the country.[23] Thus, wages in Paris, although lower than in London in nominal terms and after adjustment for differences in prices, were in the upper range in Europe, providing a convenient yardstick for an intercontinental comparison. During the same period, living standards in Italy and Spain were among the lowest of Europe according to both per capita GDP estimates (Maddison

---

[23] Sicsic (1995). See also Simpson (1995) and Roses and Sanchez-Alonso (2004) on wage convergence in late 19th and early 20th century Spain.

2001) and estimates of real wages adjusted for differences in purchasing power in Madrid and Milan (Allen 2001). An additional attractive feature of a comparison of Asian living standards with those in Italy and Spain is that in both Madrid and Milan fish and rice were commonly consumed and probably accounted for a larger share of protein intake and staple consumption than in France or in most other European countries.

Annual time series of welfare ratios in the six Asian cities are constructed on the basis of estimates for benchmarks years presented in Table 6. Forward and backward extrapolation relies on real wage series generated on the basis of time series of nominal wages in local currency (the underlying data reported in Table 1 before conversion into silver) and local consumer price indices.

A Tokyo CPI is available for the entire period 1880-1938 (Ohkawa *et al.* 1967), but for the other cities, the CPI calculated by local statistical offices and reported in official sources starts only in the 1910s (1910 in Hanoi and Saigon, 1914 in Singapore and Penang, 1915 in Bangkok). On the basis of continuous unit-price series in local currency of a number of items for the entire period 1880-1938, new CPI series are constructed and compared with the official series. Overall, yearly variations and levels of these CPI estimates and official CPI series are comparable for the period 1910 (or 1915) to 1938, in spite of some discrepancies, particularly during sequences of sharp inflation during or immediately after World War I and deflation during the early 1930s.

The three benchmark years presented in Table 6 are used for a check of sensitivity. As the most reliable price data for the selected Southeast Asian cities are usually for 1922 (or 1924), this benchmark is used for the entire period 1918-1938. The values obtained for 1938 by using the 1924 benchmark and forward extrapolation are very close to those directly obtained on the basis of data for 1938. The discrepancy is larger for 1915, which could be due to the differences in the composition between the basket of goods in Table 5 and the CPI baskets. As most welfare ratios are lower with the 1915 benchmark than when extrapolating backwards from the 1922 (or 1924) benchmark year, the series are extrapolated backwards and forwards on the basis of the 1915 benchmark for 1880-1917.

For the three European cities we rely for the period before World War I on welfare ratios calculated by Allen (2001). In principle, these series can be extended by linking them to available real wage series. However, a comparison of welfare ratios in Japan based on different benchmark periods for the 18th and 19th centuries has shown that linking different real wages series can lead to significant deviations in overlapping years (Bassino and Ma 2005). As Allen's series are extrapolated on the basis of information on nominal wages and the price of a basket of commodities for benchmark year 1750 through forward extrapolation

on the basis of real wages indices, it appears preferable to calculate welfare ratios for another benchmark on the basis of price and wage data for the early 20th century. In the case of Madrid and Milan, the welfare ratios are almost identical when using the mid-18th century or the early-20th century benchmark. However, for Madrid, the early-20th century benchmark is about 25% higher than the number calculated by Allen (2001). The deviation is probably the result of the calculation of real wages using the CPI series estimated by Reher and Ballesteros (1993), which is largely based on grains for the early 19th century. For all three cities, the results are robust to variations in the composition of the basket that should in principle reduce expenditure but that actually have only a limited impact (edible oil instead of butter in Paris; maize, potatoes and rice as partial substitute for bread in Milan; fish and milk as partial substitute of meat in Madrid and Milan).

Table 7: Comparison of welfare ratios in Bangkok, Hanoi, Saigon, Singapore, Penang, Tokyo, Madrid, Milan and Paris, 1885-1935

	1885	1895	1905	1915	1920	1925	1930	1935
UNSKILLED WORKERS								
Bangkok	2.08	1.31	1.19	1.16	1.08	1.40	1.87	2.28
Hanoi	na	Na	0.64	0.71	0.53	0.65	0.55	0.71
Saigon	1.61	1.47	1.06	1.09	0.92	1.10	1.21	1.32
Singapore	0.85	0.71	0.63	0.56	0.26	0.69	0.85	1.34
Penang	0.68	0.52	0.38	0.66	0.65	0.70	0.91	1.64
Tokyo	0.46	0.59	0.69	0.88	1.15	1.33	1.28	1.09
Madrid	0.64	0.72	0.71	1.00	0.73	1.01	1.06	1.51
Milan	0.59	0.57	0.79	0.85	1.24	1.17	0.98	0.91
Paris	1.55	1.68	1.80	1.48	1.49	1.75	1.75	2.05
SKILLED WORKERS (carpenters in Asia, masons in Europe)								
Bangkok	4.15	2.62	2.37	2.31	2.17	2.81	3.74	4.13
Hanoi	na	Na	1.65	1.33	1.02	1.24	1.13	1.51
Saigon	2.79	2.99	2.25	2.57	2.66	2.60	2.30	2.92
Singapore	1.39	1.29	1.25	1.54	0.84	2.35	1.27	2.18
Penang	1.48	1.24	0.90	0.82	0.90	2.02	1.06	1.82
Tokyo	0.66	0.86	1.01	1.34	1.50	1.87	1.97	1.60
Madrid	1.10	1.22	1.21	1.70	1.24	1.72	1.80	2.57
Milan	0.90	0.86	1.19	1.28	1.89	1.77	1.48	1.37
Paris	2.66	2.87	3.07	2.53	2.54	2.99	3.00	3.51

Note: See Table 6 for the definition of welfare ratios.

The intercontinental comparison of welfare ratios is presented on Table 7 and in Figures 3-6. The major finding is that large differences in living standards existed across Asia in the late-19th century. They changed in different ways. Living standards increased in Tokyo, from a low level comparable to Madrid and Milan. The welfare ratios in Bangkok and Saigon decreased, but remained as high as in Paris until 1913. The presence, in the late 19th century, of French skilled workers in the Arsenal of Saigon receiving nominal wages in

French franc that were only marginally higher than those paid to Asian, presumably ethnic Chinese skilled workers, suggests that the comparison is indeed meaningful. The same declining trend is observed for Singapore and Penang but from lower initial levels in the 1880s. Wages in Hanoi were low but, unsurprisingly, comparable to those in Tokyo, Milan and Madrid until 1913.

A second interesting finding is that the convergence identified by Willamson (2002) on the basis of trends in the wage/rent ratio may in fact be caused by the decline in absolute terms for the cities where the welfare ratios were initially the highest, rather than a catch-up toward the highest levels. As the number of days worked may have changed over time, the decline in welfare ratios in Bangkok, Saigon, Singapore and Penang between the 1880s and the 1910s does not imply a reduction of per capita income of urban households. But in that case, the contraction of voluntary or involuntary leisure time should be taken into consideration as part of an assessment of the deterioration of living standards.

A third interesting result is the rise in the welfare ratios in Bangkok, Saigon, Singapore and Penang during the depression of the early-1930s.[24] The stagnation in Hanoi suggests that wages were not necessarily sticky, as prices remained almost at the same level and followed the same trends in both Hanoi and Saigon. The impact of the fall in prices is astonishing. Those who managed to avoid unemployment must have experienced a significant increase in in welfare. By the late-1930s, living standards, as measured by welfare ratios, were higher in Bangkok than in Paris, the capital of a major industrial power that had an established reputation for quality of life, especially among wealthy foreigners. They were also much higher in Saigon, Singapore, and Penang than in Milan or Tokyo, two key manufacturing centers of newly industrializing Italy and Japan.

---

[24] This issue is been discussed in some detail in Boomgaard and Brown eds. (2000).

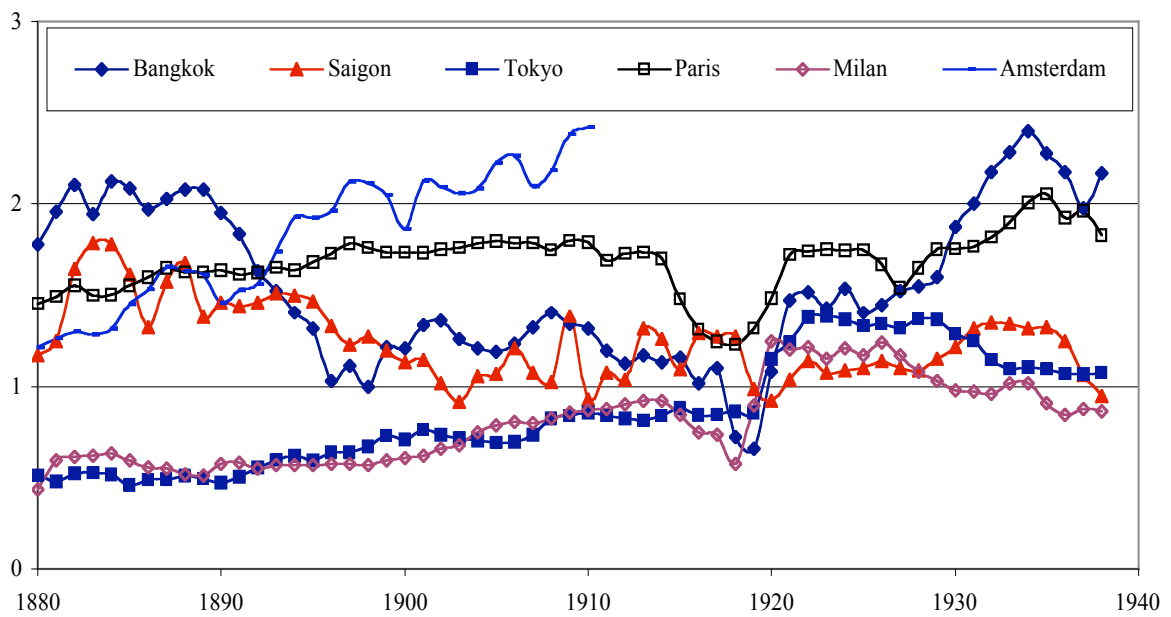*Figure 3: Welfare ratios of unskilled workers in Bangkok, Saigon, Tokyo, Paris, and Milan,1880-1938*

Figure 4: Welfare ratios of unskilled workers in Hanoi, Singapore, Penang, Tokyo and Madrid, 1880-1938
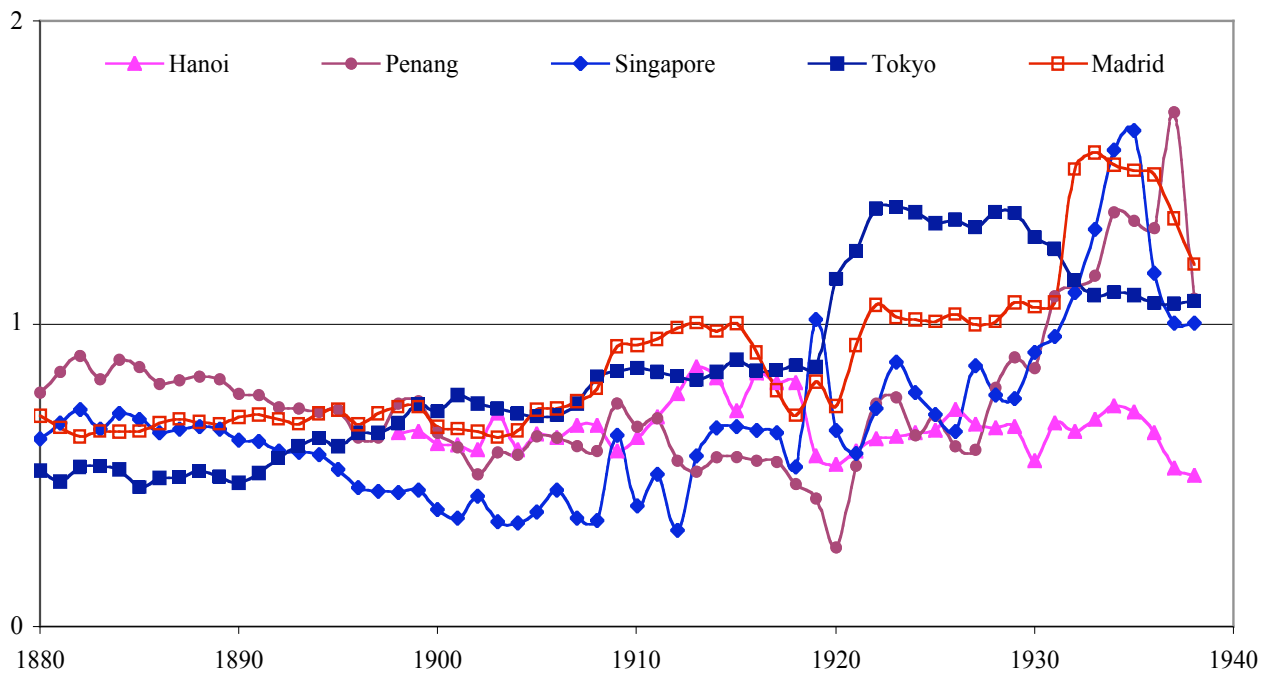
Figure 5: Welfare ratios of skilled workers in Bangkok, Saigon, Tokyo, Amsterdam, Milan and Paris,1880-1938
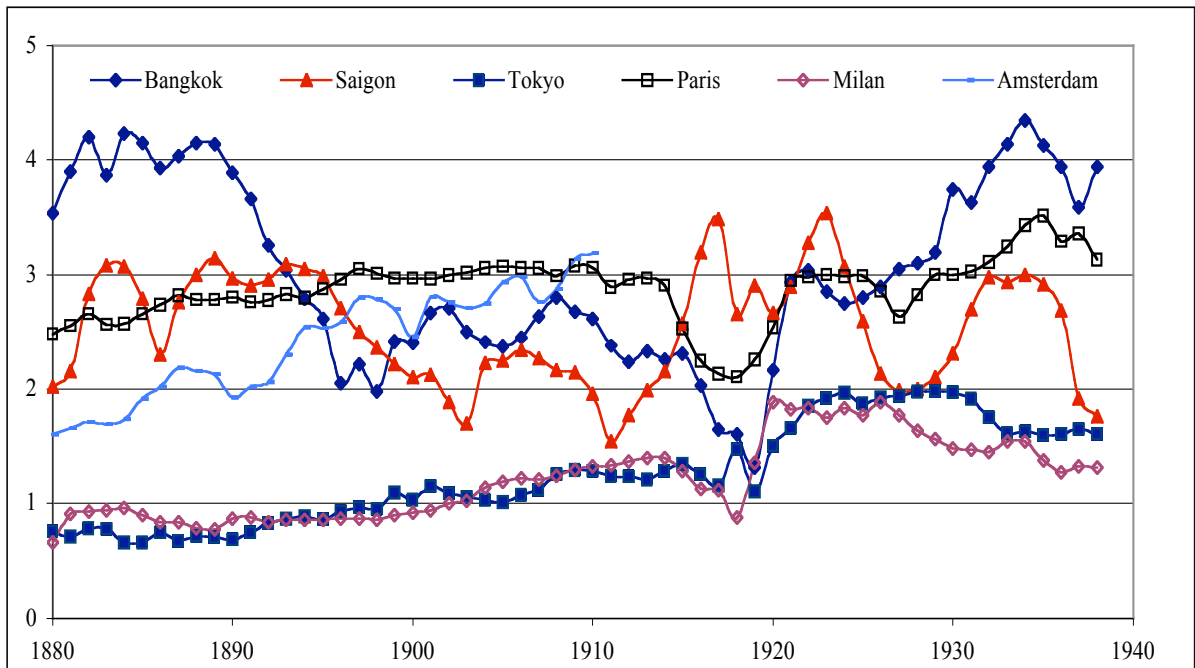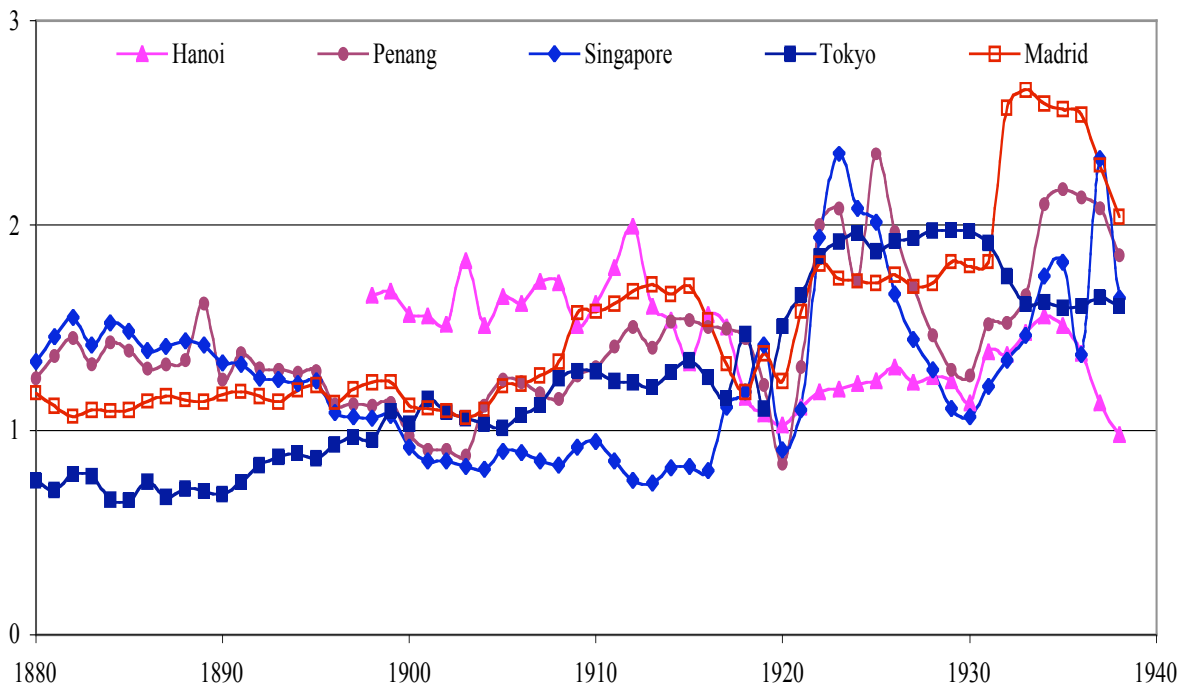

Figure 6: Welfare ratios of skilled workers in Hanoi, Singapore, Penang, Tokyo and Madrid, 1880-1938

6. Conclusion

The comparison of welfare ratios of urban workers suggests that living standards were high in mainland Southeast Asia compared to Southern Europe and Japan, particularly before 1914 and during the 1930s. In terms of daily wages adjusted for differences in purchasing power, Bangkok was probably one of the best places to stay for an unskilled worker and his family. Considering the large skill premium that existed in Thailand, it is likely that Bangkok would have been the city of choice for an Asian or possibly a non-Asian carpenter willing to adapt to a Thai diet.

However, if this worker was a would-be entrepreneur seeking an opportunity to accumulate wealth quickly by investing savings in new ventures, Singapore, Penang or even perhaps Saigon, might have been a better choice. If we take into account the seasonality of demand for labor on the Bangkok labor market, as well as the opportunity to learn skills in tin or rubber processing and other occupations that could be useful for launching a new business, it is possible to understand why Malaya and the Straits Settlements were so much more attractive for migrant workers. Yet, considering the comparatively high cost of living, Singapore and Penang were not very attractive places for migrants wishing to settle with a family. In fact, in Peninsular Malaysia, Chinese and Indian workers were overwhelmingly male temporary migrants, either single males or males with dependents in their home countries. By contrast, Bangkok and Saigon may have been better places for migrants seeking a family life.

The results of the Euro-Asian comparison are quite unexpected. Perhaps the results point to a first 'East Asian Miracle' that has hitherto escaped observation. They also call for an interpretation of the causes of the initial income gap, of the Asian convergence resulting from the absolute decline of real daily wages in continental Southeast Asia, and of the recovery of real wages in the late-1930s. In the late-19th century up to World War I, several parts of continental Southeast Asia were in many respects settler economies comparable to Argentina, Canada, California, or Australia. These regions had rich natural-endowments: large tracks of land that were relatively easily and cheaply reclaimable for paddy cultivation in Thailand and southern Vietnam (Mekong delta), or suitable for rubber plantations or tin mining in peninsular Malaysia. The economies of these parts of Asia expanded as a consequence of the drastic fall of transportation costs between Asia and Europe in the late-19th century and the rapid growth of demand for commodities in Europe, North America and the rest of Asia in the case of rice.

It is comparatively more difficult to explain the failed attempts at industrialization in continental Southeast Asia before World War II. As nominal wages at exchange rates were low and food items cheap by European or North American standards, local entrepreneurs would have enjoyed low labor costs. The estimated figures of potential saving suggest that many wage workers had financial resources to start new ventures, and also that a solvable local demand existed for non-food items. Qualitative evidence suggests that local entrepreneurs, ethnic Chinese or non-Chinese Asian, as well as Westerners and Japanese, invested in various modern manufacturing and service activities, especially during the 1920s.[25] But, as the land frontier was still open in the interwar years (actually until the 1960s) for rice cultivation or rubber plantation, the number of workers willing to engage in manufacturing activities probably remained small. Although Japanese nominal wages were comparatively high, the lower skill premium in Japan suggests that this country had a competitive edge over Southeast Asian in terms of labor productivity. The decline of nominal wages in Japan during the 1930s (in relative terms or in silver terms) provided Japanese producers in labor-intensive manufacturing industries a decisive advantage over their competitors in Southeast Asia.[26] Thus, rather than being related to the institutional arrangements imposed by colonial governments, the fact that industrialization was delayed in Southeast Asia until the 1960s could be seen as having broadly the same causes as in Brazil, or even Australia and Canada, where an abundance of natural resources conspired against efforts at industrialization, a process better known as the 'Dutch disease'.[27]

---

[25] Elaborate in footnote: also inward FDI in manufacturing, but mostly in northern Vietnam were low labor costs were particularly attractive.

[26] When the market was protected by tariffs (for instance in Indochina), local producers were exposed to the European competition.

[27] Huff (2002) recently offered a similar explanation for colonial Malaya, although he emphasised the real exchange rate volatility that prevented attempts at industrialisation.

References

Allen, Robert (2001) "The Great Divergence in European Wages and Prices from the Middle Age to the First World War" *Explorations in Economic History* 38, 411-447 (2001).

Allen, Robert (2005) "Real Wages in Europe and Asia: a First Look at the Long-term Patterns" forthcoming in Robert Allen, Tommy Bengtson, and Martin Dribe eds. *Living Standards in the Past: New Perspectives on Well-Being in Asia and Europe.* Oxford: Oxford University Press.

Bassino, Jean-Pascal (2006). "The growth of agricultural output and food supply in Meiji Japan, economic miracle or statistical artifact?" forthcoming *in Economic Development and Cultural Change*, 56-1.

Bassino, Jean-Pascal and Debin Ma (2005) "Real wages and living standards of unskilled workers in Japan 1720-1913: a comparison with Europe", forthcoming in *Research in Economic History*.

Bassino, Jean-Pascal and Pierre van der Eng (2002). "Economic divergence in East Asia: new benchmark estimates of levels of wages and GDP, 1913-1970", Paper presented at the *International Economic History World Congress*, Buenos Aires, 2002.

Boomgaard, Peter and Ian Brown eds (2000). *Weathering the Storm; The economies of Southeast Asian in the 1930s Depression*. KITLV Press: Leiden (and Singapore: ISEAS).

Booth, Anne (2004). Were colonial states predatory? Some evidence from Southeast Asia. Paper presented at the Convention of the East Asian Economic Association, 13-14 Nov., Hong Kong.

Becker, Gary S. and Kevin M. Murphy (1988). "A theory of rational addiction". *Journal of Political Economy*, 96-4, 675-700.

Cha, M.S. (2000a), Integration and segmentation in international markets for rice and wheat, 1877-1994. *Korean Economic Review*, 16, pp.107-123.

Cha, Myung Soo (2000b). "The Colonial Origins of Korea's Market Economy." In *Asia-Pacific Dynamism, 1550-2000*, A.J.H. Latham and H. Kawakatsu eds, 86-103. London: Routledge.

Chai, Hon-Chan (1967). *The Development of British Malaya*. Kuala Lumpur: Oxford University Press.

Chanut, Jean-Marie, Jean Heffer, Jacques Mairesse, and Gilles Postel-Vinay (1995). Les disp"arités de salaires en France au XIXe siècle (Wage disparities in nineteenth century France)".*Histoire & Mesure*, X-3/4.

Colantuoni, Carlo, Pedro Rada, Joseph McCarty, Caroline Patten, Nicole A. Avena, Andrew Chadeayne, and Bartley G. Hoebel (2002). "Evidence that intermittent, excessive sugar intake causes endogenous opioid dependence". *Obesity Research*, 10, 478-488.

Feeny, David (1982). *The Political Economy of Productivity: Thai Agricultural Development, 1880-1975*. Vancouver: University of British Columbia Press.

Fukao, Kyoji, Debin Ma, and Tangjun Yuan (2005a) "International Comparison in Historical Perspective: Reconstructing the 1934-36 Benchmark Purchasing Power Parity for Japan, Korea and Taiwan," forthcoming in *Explorations in Economic History*.

Hicks, G. (ed.) (1993) *Overseas Chinese Remittances from Southeast Asia 1910-1940*. Singapore: Select Books.

Huff, W.G. (2002) "Boom-or-Bust Commodities and Industrialization in Pre-World War II Malaya", *Journal of Economic History* 64, 2 (2002), pp 1074-1115.

Ingram, James C. (1964). "Thailand's rice trade and the allocation of resources". In C.D.Cowan ed. *The Economic Development of Southeast Asia*. London: George Allen and Unwin, 102-126.

Komlos, J. 1998. "Shrinking in a growing economy; the mystery of physical stature during the Industrial Revolution." *Journal of Economic History* 58, 3, 779-802.

Latham, A.J.H. and L. Neal (1983). "The International Market in rice and wheat." *Economic History Review*, 36, 260-275.

Limtong, Savitree, Somporn Sintara, Poonpilai Suwannarit and Papha Lotong (2002). Yeast diversity in Thai traditional fermentation starters (Loog-pang)', Kasetsart Journal (Natural Sciences), 36, pp.149-158.

Maddison A. (2001) *The World Economy: A Millennial Perspective.* Paris: OECD.

Ohkawa. K., M. Shinohara and M. Umemura (1967) *Estimates of Long-Term Economic Statistics of Japan since 1868: Vol.8 Prices.* Tokyo: Toyo Keizai Shinposha.

Ozmucur, Suleyman and Sevket Pamuk (2002). Real Wages and Standards of Living in the Ottoman Empire, 1489-1914. *The Journal of Economic History,* Vol. 62, No. 2, June 2002, 293-321.

Parmer, Norman J. (1964). Chinese Estate Workers' Strikes in Malaya in March 1937. in Cowen C.D. ed. *The Economic Development of South-East Asia*, London: George Allen and Unwin, pp. 154-173.

Reher, D.S. and Ballesteros E. (1993). Precios y salarios en Castilla la Nueva: la construcion de un indice de salarios reales 1501-1991, *Revista de Historia Economica*, 11 (10), 101-51.

Rodo Undo Shiryo Iinkai (Commission for Historical Documentation of the Labor Movement) (1959) *Nihon Rodo Undo Shiryo* [Historical Documents on the JapaneseLabor Movement], volume 10. Tokyo: Chuo Koron.

Roses, J. R., Sanchez-Alonso. B. 2004. Regional wage convergence in Spain 1850-1930. *Explorations in Economic History,* 41, 404-425.

Saito, Kentaro (2005)."Kindai Nihon ni okeru rodo shijo togo to seikatsu suijun ni kan suru ishiron (On the unification of the labor market and living standards in modern Japan)". *Mita Gakkai Zasshi*, 97-4, 55-78.

Scholliers, P. and V. Zamagni eds. (1995). Labour's rewards, real wages and economic change in 19th and 20th century Europe. Edward Elgar.

Sicsic, Pierre (1995). "Wage dispersion in France, 1850-1930". in P. Scholliers and V. Zamagni eds. Labour Rewards, *Real Wages and Economic Change in 19th century and 20th Century Europe*. Cheltenham: Edward Elgar, 169-181.

Simpson, Jaimes (1995). "Real wages and labour mobility in Spain, 1860-1936". in P. Scholliers and V. Zamagni eds. *Labour Rewards, Real Wages and Economic Change in 19th century and 20th Century Europe*. Cheltenham: Edward Elgar, 182-200.

Williamson J.G.(1982). Was the industrial revolution worth it? Disamenities and death in 19th century British towns. *Exploration in Economic History*. 19-3, 221-245.

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. (2000a), '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.

Willamson, J.G. (2000b). Real wages and relative factor prices around the Mediterranean, 1500-1940. in S. Pamuk and J.G. Williamson eds, The Mediterranean Response to Globalization before 1950. London: Routledge, 45-75.

Williamson J.G.(2002). Land, labor and globalization in the Third World, 1870-1940. *Journal of Economic History*. 62-1, 55-85.

Yasuba, Y. (1986) "Standards of Living in Japan Before Industrialization: From What Level Did Japan Begin? A Comment" *Journal of Economic History* Vol. XLVI, No. 1 (March 1986).

van Zanden, Jan Luiten (1998). Wages and the standard of living in Europe, 1500-1800. *European Review of Economic History*, 2, 175-197.

van Zanden, Jan Luiten (2003) "Rich and Poor before the Industrial Revolution, a Comparison between Java and the Netherlands at the Beginning of the 19th Century." *Explorations in Economic History* 40 (2003) 1-23.

World Bank. 1993. *The East Asian Economic Miracle: Economic Growth and Public Policy*. Oxford: Oxford University Press.