GLOBALIZATION AND LABOR MARKET INTEGRATION IN LATE NINETEENTH AND EARLY TWENTIETH-CENTURY ASIA

Gregg Huff and Giovanni Caggiano

ABSTRACT

This chapter uses new data sets to analyze labor market integration between 1882 and 1936 in an area of Asia stretching from South India to Southeastern China and encompassing the three Southeast Asian countries of Burma, Malaya, and Thailand. We find that by the late nineteenth century, globalization, of which a principal feature was the mass migration of Indians and Chinese to Southeast Asia, gave rise to both an integrated Asian labor market and a period of real wage convergence. Integration did not, however, extend beyond Asia to include core industrial countries. Asian and core areas, in contrast to globally integrated commodity markets, showed divergent trends in unskilled real wages.

1. INTRODUCTION

Beginning in the late nineteenth century, globalization swept through Asia, transforming its product and labor markets. By the 1880s steamships had largely replaced sailing vessels for transport within Asia as well as to Western markets, and shipping fares had begun to fall sharply. Also already underway was the mass migration of Indian and Chinese workers, principally from the labor-abundant areas of Madras in India and the provinces of Kwangtung (Guangdong) and Fukien (Fujian) in Southeastern China, to land-abundant but labor-scarce parts of Asia. Chief among the immigrant-receiving countries were Burma, Malaya, and Thailand (Siam) in Southeast Asia. Indian and Chinese labor inflows to these countries constituted the bulk of two of the three main late nineteenth- and early twentieth-century global migration movements, the other being European immigration to the New World. Immigration to Southeast Asia was almost entirely in response to its growing demand for workers which, in turn, derived from rapidly expanding demand in core industrial countries for Southeast Asian exports.

Studies by Latham and Neal (1983) and by Brandt (1985, 1989) establish the development of an integrated Asian rice market beginning in the latter part of the nineteenth century (see also Myung, 2000). Furthermore, a series of articles and books by Williamson and his co-authors reveal internationally integrated commodity markets and relative factor price convergence in conjunction with pre-World War II globalization (Williamson, 2000, 2002; O'Rourke & Williamson, 1999; Hatton & Williamson, 2005). But in contrast to work on product market integration, the possible emergence of an integrated Asian labor market has attracted less attention. In part this reflects the lack of Asian wage data. As Harley (2000, p. 928) observes, "analysis of the low-wage periphery, which is most relevant to modern [globalization] debate, is restricted by data availability". This chapter makes available for the first time the data needed to test for labor market integration over a large part of Asia.

The chapter has two main aims. One is to analyze whether as part of pre-World War II globalization an integrated Asian market for unskilled labor existed to encompass Asia's chief emigrant-sending regions of South India and Southeastern China and the principal Southeast Asian receiving countries for Indian and Chinese immigrants. Our metric for integration, following both econometric work on GDP convergence and Robertson's recent analysis of integrated labor markets, comprises three complementary criteria: (i) that wages do not diverge from a

common trend; (ii) that over time wage dispersion does not increase; and (iii) that a correction mechanism pushes wages towards an equilibrium relationship after shocks. It can be misleading, as Robertson (2000, p. 728) warns, to rely on price as a criterion for integration. Markets are integrated if adjustment mechanisms operate to correct deviations from a wage differential or "gap".

Second, the chapter aims to compare wage trends in the area of Asia from South India to South China and including Burma, Malaya, and Thailand with an industrial core of the global economy, defined as United Kingdom, United States, Germany, and France. Were unskilled labor markets in Asia and the industrial core similarly affected by globalization such that in these two parts of the world wages followed a common trend? Or, in contrast to commodity markets, was globalization in Asia and the industrial core associated with a drifting apart of unskilled real wages?

We argue that by the late nineteenth century South India, Southeastern China, and the three Southeast Asian countries had become integrated and constituted a unified labor market. Furthermore, Asian evidence reveals a period of real wage convergence prior to the 1930s. But labor market integration that characterized Asia, and also obtained in the industrial core, stopped at the geographical frontiers of each of these two regions. Unlike Asia's export of primary commodities, flows of Asian labor hardly penetrated either the core industrial countries or the wider Atlantic economy. The pre-World War II labor market pattern was, instead, one of strong divergence between Asia and the world's rapidly developing and industrializing core economies.

2. SOUTHEAST ASIAN GROWTH AND INDIAN AND CHINESE IMMIGRATION

There was a fundamental difference between the Southeast Asian worlds of 1860 and of the 1880s. The earlier period pre-dated a global transport and communications revolution and the opening of the Suez Canal. Nor was there as yet the great demand for Southeast Asian primary commodities that soon materialized in the West as part of its rapid industrialization and urbanization (see Huff, 2007). In the 1870s, Malaya was still sparsely populated, largely unmapped and "land was so abundant and readily available that it had no value" (Gullick, 1985, p. 59). Although in Burma after the mid-nineteenth century a growing output of rice was evident, the

big increases in planted acreage and production began only in the 1870s (Cheng, 1968, pp. 237–241). The Thai rice frontier was reminiscent of the United States' wild west but lay geographically to the south where "in every direction the land was cleared of the heavy jungle grass which afforded shelter to wild elephants" (Johnston, 1981, p. 111). Clearance occurred mainly in the 1890s and 1900s when Thailand's rice industry first boomed.

The main export regions in Burma, Malaya, and Thailand were not initially resource-rich areas. They became so because for them the 1880s globalization had altered the definition of resource abundance. A relevant comparison is North America where, as Harley (1980, p. 218; see also Wright, 1990) points out, globalization transformed a previously "uneconomic 'desert'" of prairie into a region of rich natural resources. The same was true with the jungles and swamps of Southeast Asia, including almost all of Burma's best rice land originally regarded as uninhabitable because of the risk of disease or because it was under the sea at high tide.

For centuries there was at least some migration from India and China to Southeast Asia and during the eighteenth century migrants began to come in significant numbers (Trocki, 1999, pp. 105–106). It might be interesting to compare these migrations and the still small migrant flows of the 1860s with subsequent mass immigration to Southeast Asia. But the absence of data makes meaningful quantitative comparison impossible. Data are non-existent because prior to globalization in Southeast Asia the lack of incentives to migrate limited international immigration to a trickle which no one seems to have thought worth recording.

By the mid-1880s Burma and Malaya, including the Straits ports of Singapore and Penang, were effectively under British colonial rule. Thailand, nominally independent, had quasi-colonial arrangements and a British financial advisor. From the late nineteenth century onwards, growth in Burma, Malaya, and Thailand stemmed predominantly from an abundance of land. Rapid export expansion depended on the settlement of a moving frontier. For Southeast Asia, international trade provided a "vent" or outlet to utilize surplus land in the production of primary commodities which, unless exported, would not have been worth the effort of producing. Exports from Burma, Malaya, and Thailand, expressed in 1913 US dollars, increased from $104.0 million in 1880/82 to $639.6 million in 1936/38, equivalent to 3.4% annual average growth. Rice was Burma's and Thailand's staple export while Malaya's staple exports were tin and, by World War I, rubber.

Vent-for-surplus growth in the three countries required substantial inwards migration. A traditional, or non-export, sector provided part

of the labor to plant previously uncultivated acreage with export crops (Feeny, 1982, pp. 42–43; Adas, 1974, pp. 41–57). Insofar as labor from the traditional sectors of the region's dual economies was unavailable in sufficient quantities or unwilling to join in export production, immigration from India and China supplied workers. Colonial authorities in Malaya and Burma and the government in Thailand advocated mass immigration to assist trade expansion. Burma, Malaya, and Thailand, all of which, apart from a few brief periods, allowed unrestricted migration until the 1930s, were by no means the sole world outlets for emigration from India and China. But they attracted a large and increasing proportion of all emigrants from India and China and were the dominant outlet for both streams of emigration (Table 1). Burma received chiefly Indian immigrants and Thailand mainly Chinese. Malaya, about equidistant between China and India, was the destination for large numbers of both Chinese and Indians.

By the 1880s Madras and the Chinese provinces of Kwangtung and Fukien had long histories of hardship and periodic famine and were clearly excess labor areas (see, for example, India, 1902, pp. 27–32; India, 1923, p. 31; 1932a, p. 61; 1932b, p. 93; Kumar, 1965, pp. 104–105, 144, 161–167; Davis, 1951; Buck, 1937a, pp. 76–77, 125–128; Buck, 1937b). In 1881 comparative populations were 31 million in Madras, 37 million in Kwangtung and Fukien, and 14.3 million in the three Southeast Asian countries. At this time Madras and Kwangtung had population densities of 217 and 255 persons per square mile and Fukien a density of over 300 persons compared to a density of between 25 and 30 in the Southeast Asian countries.

From 1881 to 1939 Burma, Malaya, and Thailand received over 15 million Chinese and Indian immigrants, more than the three countries' 1881 population (Table 2). During this period, Malaya averaged immigrant inflows per decade of 826 persons per 1,000 resident population. Its immigration rate was easily the world's highest and almost five times the rate for Argentina, which itself exceeded any other New World country. Immigrant inflows to Burma and Thailand were on a par with, or above, New World rates. Typically, immigrants to Southeast Asia intended to stay for from three to five years, and over the six decades from the 1880s to World War II in Southeast Asia immigrant retention (net as a proportion of gross immigration) of under a fifth compares poorly with the United States' two-thirds (Table 2). But in Southeast Asia new arrivals more than replaced departures and, together with greater natural increase, continuously augmented labor supply. Appendix A and Appendix B provide the entire data sets for annual immigration to and emigration from Southeast Asian countries and the New World.

Table 1. Burma, Malaya, and Thailand Measures of Indian and Chinese Immigration, 1881–1937.

Panel A: Immigration of Indians to Burma and Malaya and as a percentage of total emigration from India

	Emigration from India ('000 Persons)	Immigration to Burma ('000 Persons)	Immigration to Burma as a % of Indian Emigration	Immigration to Malaya ('000 Persons)	Immigration to Malaya as a % of Indian Emigration
1880–1890	3,006	616.1	20.5	159.9	5.3
1891–1900	4,288	1,260.7	29.4	216.0	5.0
1901–1910	3,292	2,482.9	75.4	443.0	13.5
1911–1920	4,570	3,050.8	66.8	908.1	19.9
1921–1930	6,060	3,864.6	63.8	881.2	14.5
1931–1937	2,755	2,402.2	87.2	384.6	14.0

Panel B: Distribution of emigrants from China and India, 1930

	Chinese			Indians	
	'000 persons	%		'000 persons	%
Thailand	1,900	19.0	Burma	1,300	31.5
Malaya	1,800	18.0	Ceylon	1,133	27.5
Indonesia	1,240	12.4	Malaya	628	15.2
Indochina	700	7.0	Mauritius	281	6.8
All other countries	4,360	43.6	All other countries	783	19.0
Total	10,000	100.0	Total	4,125	100.0

Note: In Panel A for 1931–1937 immigration to Burma and Malaya adds to more than 100% of emigration from India because of different data sources for immigration and emigration.
Sources: Panel A: Appendix E and Davis, *Population of India*, p. 99 for emigration from India. Panel B: Mukerjee (1936, Appendix A).

Indentured labor was never important in any of the three Southeast Asian countries. Indian and Chinese immigrants reached Southeast Asia either through a variety of organized systems which financed immigration or through paying their own passage. This latter applied to an increasing, and by the twentieth century, large number of immigrants to Southeast Asia. The predominant picture is of a mobile immigrant workforce and competitive Southeast Asian labor markets. (For discussion of systems of immigration, see Huff & Caggiano, 2007; Madras, 1874, p. 75; India, Census of India, 1912, p. 26; India, Census of India, 1932b, p. 80; India, 1926–1939/40; India, Census of India, 1933, pp. 67–72; Sugihara, 2005; Look Lai, 2002; Mckeown, 2004.)

Table 2. Southeast Asia and New World Immigration, 1881–1939.

Panel A: Immigration to the United States, Burma, Malaya, and Thailand, 1881–1939 (millions of persons, total flow per decade)

	1881–1910		1911–1929		1930–1939	
	Gross	Net	Gross	Net	Gross	Net
United States	5.91	4.10	3.20	2.15	0.70	0.21
Burma	1.45	0.26	3.27	0.50	2.64	0.17
Malaya	1.87		2.75	0.78	1.62	−0.07
Thailand	0.34	0.12	0.81	0.27	0.50	0.12
Total Southeast Asia	3.66		6.83	1.55	4.76	0.22
Southeast Asia as % of United States	61.9		213.0	72.1	680.0	104.8

Panel B: Southeast Asia and New World immigration rates by decade 1881–1890 to 1931–1939 (per 1,000 mean population)

	1881–1890	1891–1900	1901–1910	1911–1920	1921–1930	1931–1939
Burma	85.3	138.4	219.7	240.9	277.2	167.8
Thailand	22.4	39.6	75.9	74.3	102.1	30.8
Malaya	921.9	994.5	993.5	838.9	859.7	346.0
United States	91.6	52.5	103.8	57.2	35.3	3.6
Canada	193.4	67.1	268.4	216.3	130.4	13.6
Argentina	267.4	163.8	292.9	150.1	133.2	39.7
Brazil	40.2	69.8	33.2	31.9	27.4	7.3

Source: See Appendix E.

3. EMPIRICAL ANALYSIS

In this section we ask two questions. First, as mass intra-Asian migration might suggest, was there in fact an integrated labor market in Asia? Integration requires that, in the absence of government intervention or other political disturbances, wages in Asia converged to some stable, long-term equilibrium relationship. Such a relationship implies the existence of a correction mechanism, not due to common external shocks, that quickly restored equilibrium whenever wages departed from it. Second, if Asia had an integrated labor market, did integration, perhaps as a consequence of trade links, extend to the industrial West? Specifically, did wages in Asia and in the industrial core of United Kingdom, United States, Germany, and France follow a common trend and significantly affect one another so as to form an integrated global labor market? Or did separate labor markets

persist despite an increasingly integrated late nineteenth- and early twentieth-century global economy?

3.1. Wage Data

To answer these questions we first collect real wage data for South India (Madras), Southeastern China (Kwangtung and Fukien), Southeast Asia, and the four core industrial countries. Asian wages comprise six series because these include, as well as Madras, Southeastern China, Burma, and Thailand, data for both Malayan Indian and Chinese wages. Data are for 1882–1936 – the period for which comparative wage series can be assembled.

Asian wage data are chiefly, but not exclusively, from government reports and are largely new. All wages are deflated by separate price indexes for Madras, Southeastern China, and each of the three Southeast Asian countries to obtain real wages. For Southeast Asia, price indexes go well beyond earlier work because, rather than using a single or at most two goods, they include rice, dried fish, sugar, tea, beer and ale, kerosene, tobacco, and white and grey shirting. Index weightings are based on contemporary budget surveys (Bennison, 1928, pp. 176–181; Andrew, 1933, pp. 226–250; Malaya, 1922–1938; Creutzberg, 1979, p. 78 (budget devised by Polak); Indonesia, 1958; van Niel, 1956; Runes, 1939, pp. 19, 21).

For Madras and Southeastern China we use unskilled male, and predominantly rural, wages, since emigrants from these areas of India and China to Southeast Asia were almost all unskilled, largely men, and mainly from agricultural areas. A substantial proportion of immigrants to Southeast Asia took rural jobs. Even if immigrants stayed in cities, in Southeast Asia's vent-for-surplus economies the importance of primary production and its labor-intensive character made employment in the staple industries typically the dominant influence in setting unskilled wages. Until 1910 Chinese wages in Malaya are for tin mining as the chief source of employment and thereafter for work on rubber estates. Indian wages in Malaya are for unskilled, chiefly plantation labor until 1910, and then for rubber estate employment. Burma wages for 1880–1901 are for agricultural labor and subsequently for coolie labor, predominantly in rice mills. Thailand is an exception both to the use of rural wages and to a new wage series. Wage data for anywhere in pre-World War II Asia must be treated with caution and information for Thailand is fragmentary, particularly before 1900. We rely on Thai wage data collected by Feeny (1982, pp. 29, 132–133) and Ingram (1964, p. 115).

Wages are for unskilled urban labor and this reflects the overwhelming preference of native Thais to remain cultivators and the tendency for Chinese to congregate in cities, mainly Bangkok, and engage in dock, railway, or other institutional work. No adequate basis exists to adjust wages for unemployment and none of the six wage series includes every year. Gaps in series are interpolated by applying the Kalman filter, which uses known values to give a statistically best prediction of missing observations (Harvey, 1992, pp. 143–147).

Core industrial country wages are, like the data for Asian wages, for unskilled, predominantly male, workers. For each of the four core countries nominal are converted to real wages using country-specific indexes of consumer prices or the cost of living. The ten wage series are presented in Appendix C and fully discussed in terms of sources, reliability, and construction in Appendix E.

3.2. Asian and Industrial Core Labor Market Integration

Since our purpose is to investigate whether wages in Asian countries moved together and how their dynamic is related to the industrial core rather than to try to account for migration patterns, we do not adjust real wages for exchange rate fluctuations. Nor is any adjustment for purchasing power parity desirable since we are not attempting to compare cross-country living standards. Two points should, however, be noted. One is that across the world in 1882 unskilled wages measured in current US dollars stood at quite different levels. Wages in Southeast Asia were about three times as high as in Madras and Southeastern China while, in turn, wages in United States and United Kingdom were three or more times those in Southeast Asia (Table 3). German and French wages were, however, only about a third more than in Thailand, the highest-wage Southeast Asian country. Wage gaps of the magnitudes between Southeast Asia on the one hand and Madras and Southeastern China on the other point to an important reason for the mass migration that occurred in Asia. The differentials also suggest that had industrial countries been willing, as were Southeast Asian governments, to allow unlimited entry to Indian and Chinese workers, there might have been very much greater migration from Asia to the global core than in fact occurred. Even in the United States, historically open to immigration, the only real question was whether to restrict European immigration, something America abruptly did in 1921 (Goldin, 1994; Hatton & Williamson, 2005, pp. 148–149).

Table 3. Southeast Asia, Southeastern China, Madras, and Global Core Monthly Unskilled Wages, 1882 (US$ Current Prices).

Southeast Asia		Southeastern China and Madras		Global Core	
Burma	5.79	Madras	1.80	United States	29.52
Malaya Indians	6.43	Southeastern China	2.07	United Kingdom	22.92
Malaya Chinese	7.07			Germany	11.80
Thailand	8.65			France	11.41

Source: See Appendix E.

The other point to bear in mind is the contrasting implications for wage gaps of different possible findings for Asian and core wage trends. Insofar as the Asian and industrial core groups displayed common trends between 1882 and 1936 within their respective groupings, and trends between the two groupings did not diverge, this would imply an approximate maintenance of 1882 wage differentials up to the World War II. Conversely, if the Asian or the industrial groupings, at the same time as sharing a common trend with others of their own group, trended more rapidly upwards than the other grouping, there would be either wage convergence or wage divergence between these Asian and industrial core components of the world economy.

Figs. 1 and 2 plot the log of unskilled real wages between 1882 and 1936 for the six Asian and four core wage series respectively. Visual inspection of the figures suggests possible convergence within Asia and among the global industrial core. For each of these two groupings, real wage variance, although readily apparent, remains clustered around the time trends drawn for all Asian and for all core wage series. There is, however, a marked divergence between Asian and core trends (Fig. 3). For Asia the trend in real wages remains almost flat with a slight downwards bias. None of the four Southeast Asia series show substantial and sustained wage advance. For both Indians and Chinese in Malaya the trend is near zero. In Burma and Thailand the trend in wages through 1932 is flat. Thereafter in both countries moderate upwards pressure on wage movements reflected the end of unconstrained immigration. In Thailand, new 1932 immigrant permit and residence fees together with scope for arbitrary official exclusion discouraged immigration from China. In Burma a series of anti-Indian riots similarly affected labor inflows from Madras.

Wages in the industrial core, unlike those in Asia, trend markedly upwards. In the twentieth century, Asian and core wage divergence gathered momentum. The unmistakable impression is of separate Asian and core labor market "clubs". But is this picture of a non-divergence of wages, and so

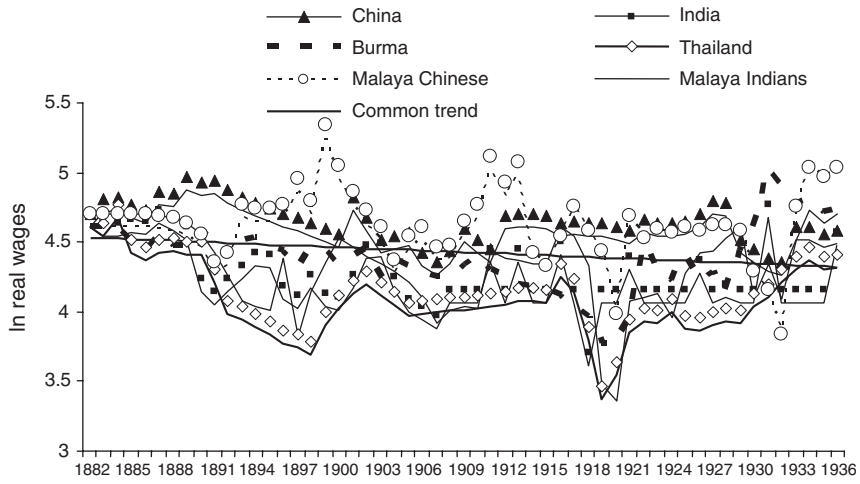

Fig. 1. Asia Unskilled Real Wages, 1882–1936.

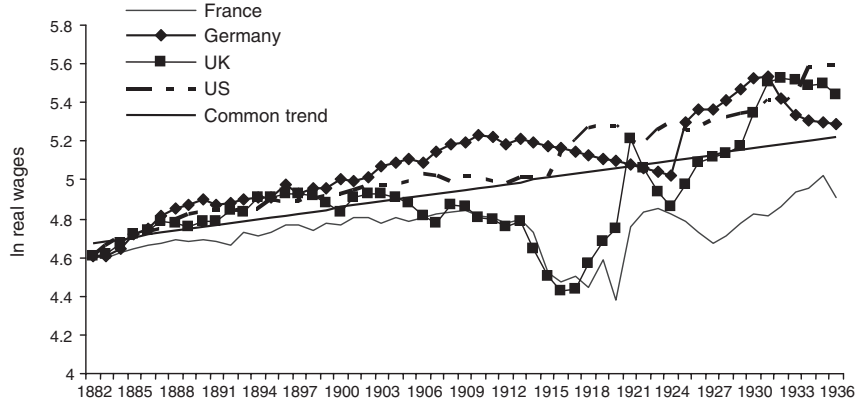

Fig. 2. Industrial Core Unskilled Real Wages, 1882–1936.

of potential market integration, within Asia and within core countries, borne out statistically? Was wage convergence between Asia and the industrial core in fact absent? To try to answer these questions, we now test econometrically.

We begin by testing whether the two conditions for labor market integration – non-divergence of wage pairs and non-increasing wage dispersion – are met within Asia and between it and the industrial core. These two conditions are not sufficient to establish labor market integration. But they are necessary for it.

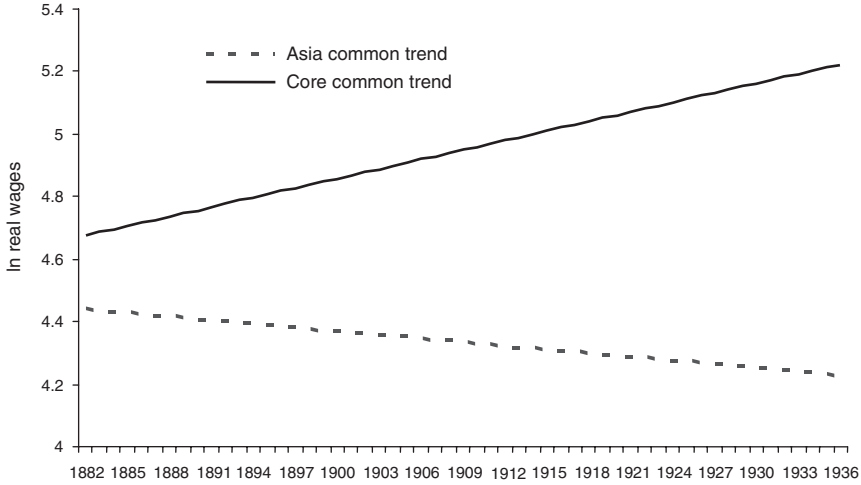

Fig. 3. Asia and Industrial Core Unskilled Real Wages, 1882–1936.

The first of the tests requires that over the observed time span for a given set of economies real wages should not drift apart. If n labor markets are integrated, the corresponding n real wage series must satisfy the convergence hypothesis: that wage differences behave as stationary series around a constant mean and that differences between real wages in the n countries do not systematically change.

To test for non-divergence in wages, we adopt a procedure recently developed by Pesaran (2007). His approach tests whether wage gap pairs are stationary and can be summarized as follows. For N economies, consider all possible $N(N-1)/2$ possible wage gap pairs, $d_{ij,t} \equiv w_{i,t} - w_{j,t}$, for $i = 1, \ldots, N-1$ and $j = 1, \ldots, N$. Countries i and j form an integrated labor market if $w_{i,t} - w_{j,t}$ is a stationary process and therefore contains neither a unit root nor time trend.

We first test for a unit root in all possible pairs $d_{ij,t}$ using augmented Dickey–Fuller regressions with an intercept and a linear trend:

$$\Delta d_{ij,t} = a_{ij} + \beta_{ij}(g_i - g_j)t + \rho_{ij} d_{ij,t-1} + \sum_{s=1}^{p_{ij}} \delta_{ij,s} \Delta d_{ij,t-s} + u_{ij,t} \qquad (1)$$

If the null hypothesis of a unit root is rejected, the next step is to test if $d_{ij,t}$ is not trended, that is, whether $g_i = g_j$. If real wages converge, or rather do not diverge, the expectation is that the fraction of wage pairs for which a unit

Table 4. Asia and Industrial Core Proportion of Wage Pairs that do not Satisfy the Null Hypothesis of Convergence.

Group	All	Asian	Core
Number of wage series	10	6	4
Number of pairs	45	15	6
% of no unit root	91%	93%	50%
% of significant time trend	44%	7%	0%

Source: See Appendix C.

root exists *and* the fraction of pairs for which there is a significant time trend are close to the nominal size of the test. In other words, if countries $i = 1, \ldots, N$ form an integrated labor market, and the non-divergence in wages hypothesis is tested at a 95% confidence level, both the unit root and the time trend hypotheses should not be rejected for approximately 5% of all possible pairs $w_{i,t} - w_{j,t}$.

We now apply this measure of convergence to real wages series for Madras, Southeastern China, Thailand, Burma, Malaya Chinese, Malaya Indians, United Kingdom, United States, Germany, and France between 1882 and 1936 (Table 4). Estimation of Eq. (1) does not reject the null hypothesis of a unit root for 9%, and of a time trend for 44%, of all possible 45 pairs. This time trend percentage falls far outside the size requirement of 5% for a 95% confidence interval. But when Eq. (1) is estimated for Asia only, the fractions are 7% and 7%, respectively, quite close to the required nominal size of 5%. These results support the claim that unskilled real wages in Asia did not drift apart and point to possible labor market integration, but indicate divergence between Asian and core country wages.[1]

Labor market integration requires not only comovements in real wages but also that variability between wages must not change systematically over time. Our first test, although revealing comovements in Asian wages, does not deal with the issue of wage dispersion. A second test, also due to Pesaran (2007), is for non-divergence in wages and based on an average measure of convergence, the cross-section mean difference of wages:

$$\begin{aligned} D_t^2 &= \frac{2}{N(N-1)} \sum_{i=1}^{N-1} \sum_{j=1}^{N} (w_{i,t} - w_{j,t})^2 \\ &= 2 \left\{ \frac{\sum_{i=1}^{N} \left(w_{i,t} - \bar{w}_t \right)^2}{N-1} \right\} \end{aligned} \tag{2}$$

where $\bar{w}_t = N^{-1}\sum_{j=1}^{N} w_{j,t}$. Since D_t^2 is a measure of real wage dispersion, under the convergence hypothesis it must not be trended but stationary around a constant mean. We test the null hypothesis that D_t^2 does not have a unit root and that it is not trended. The possibility of a unit root is rejected in all cases. Next, we examine the presence of a linear deterministic trend in D_t^2. For Asian and core wages treated as a single sample a trend is apparent: the t-ratio of 9.21 is much larger than the 95% critical value, 1.96. Treating Asia separately, however, gives a t-ratio of 1.63, a result well within the required confidence level. Accordingly, the null hypothesis of trended D_t^2, and therefore the possibility that real wages in the Asian economies diverged, can be safely rejected.

The two above findings on convergence of real wages in Asian labor markets are further confirmed by the third and last of our three preliminary tests, this one proposed by Evans (1996). It looks at the statistical properties of the cross-country variance of real wages.[2] Let $w_{i,t}$ be the logarithm of real wages for country $i = 1, \ldots, N$ observed for periods $t = 1, \ldots, T$. The cross-country variance at time t is given by

$$V_t = \frac{1}{N}\sum_{i=1}^{N}\left(w_{i,t} - \bar{w}_t\right)^2 \tag{3}$$

with $\bar{w}_t = N^{-1}\sum_{i=1}^{N} w_{i,t}$. If real wages of the observed N countries converge, then the cross-country variance must be a stationary series. In other words, it must neither contain a unit root nor a time trend.

To test this hypothesis, we estimate

$$\Delta V_t = \alpha + \eta t + \rho V_{t-1} + \sum_{i=1}^{p}\phi_i \Delta V_{t-i} + \varepsilon_t \tag{4}$$

and construct the t-ratios, $\tau(\hat{\rho})$ and $\tau(\hat{\eta})$ to test the null hypothesis that $\rho = 0$ and $\eta = 0$, respectively. Evidence in favor of convergence requires the rejection of $\rho = 0$ (unit root) but not of $\eta = 0$ (no time trend). With a finite sample such as the Asian and core wage series, critical values may differ substantially from the fractiles of the standard normal distribution. To address this possibility, we estimate the critical value, $\hat{c}_{0.05}$, for a test of size 0.05 using Monte Carlo simulations (Tables 5 and 6; for further details on these Monte Carlo techniques, see Evans, 1996, pp. 1033–1034). When Asian and core wage series are considered together, we can reject the null hypothesis of a unit root – $\tau(\hat{\rho}) = -3.11 < \hat{c}_{0.05} = -2.15$ – and also the hypothesis that there is no time trend – $\tau(\hat{\eta}) = 1.79 > \hat{c}_{0.05} = 1.68$. But we

Table 5. Asia and Industrial Core Unit Root Test for Cross-Country Variance.

Group	All	Asia	Core
$\hat{\rho}$	−0.29	−0.32	−0.23
$\tau(\hat{\rho})$	−3.11	−3.22	−2.59
$\hat{c}_{005}$	−2.15	−2.21	−2.12

Source: See Appendix C.

Table 6. Asia and Industrial Core Time Trend Significance for Cross-Country Variance.

Group	All	Asia	Core
$\hat{\eta}$	0.002	0.000085	0.0013
$\tau(\hat{\eta})$	1.79	0.14	1.97
$\hat{c}_{0.05}$	1.68	1.55	1.52

Source: See Appendix C.

find the reverse, and so in favor of convergence, when calculating Eq. (3) for wages in Asia only: evidence exists against a unit root in $V_t - \tau(\hat{\rho}) = -3.22 < \hat{c}_{0.05} = -2.21$ – and also against the presence of a time trend – $\tau(\hat{\eta}) = 0.14 < \hat{c}_{0.05} = 1.55$.

The findings for this last test confirm and strengthen the econometric results of the first two tests. To summarize, we find that Asian wage behavior was consistent with an integrated labor market; and that between the 1880s and World War II real wages in Asia diverged from those in the industrial core. Although late nineteenth- and early twentieth-century globalization gave rise to world commodity and capital markets, it did not have the same effect as between Asian and core real wages. Rather, market segmentation prevailed. Furthermore, within this framework of separation, Asia and the core each displayed characteristics of a club in which members significantly influenced one another and moved in like direction.

3.3. Asian Labor Market Integration, Terms of Trade Shocks, and Wage Gaps

The common trend followed by Asian labor markets suggests integration but does not establish it. Market integration requires the existence of a

correction mechanism. Furthermore, even if wages between regions or countries are continuously pushed towards an equilibrium relationship, this may not be due to labor market forces. Hatton and Williamson (2005, p. 145) raise a similar issue in assessing for the late nineteenth century whether to attribute wage–rent convergence in Asia mainly to migration or to trade. They acknowledge: "we simply do not know whether migration or the terms of trade mattered most in the convergence, but our best guess would be the terms of trade". In light of this and the highly globalized post-1880s world of which Madras, Southeastern China, and Southeast Asia became part, two questions arise. First, could the mechanism which made Asia seem an integrated labor market have been merely a response to common external shocks operating through the terms of trade? Second, if integration was effected through labor markets rather than shared shocks transmitted from the world's industrial core, did real wage convergence in Asia occur? The present section attempts to answer these questions.

To deal with the first question, we sketch a simple labor market model for the Asian periphery and explicitly include the terms of trade as an external shock. The required terms of trade series did not, however, exist for three of the Asian regions and were only partially available for the other two. As a first step, we therefore constructed new net barter terms of trade series for 1882 onwards for all five of the Asian regions or countries. The series are location specific to Madras and the Southeastern China provinces of Kwangtung and Fukien. Series all take account of the several major exports of each region or country and are weighted to reflect shifting export composition. All series use country-specific imports rather than, as often in previous work, making the same denominator serve for several countries (Blattman, Hwang, & Williamson, 2004, p. 31).

The model's labor market specification, adapted from Robertson (2000, pp. 744–747), focuses on an export-dependent Asian periphery unable to influence industrial core wages and where labor market equilibrium depends on wages at home, wages in a contiguous country, and external demand shocks. Labor demand in country i (Madras or Southeastern China) responds negatively to changes in the domestic wage level and positively to lagged wages in a contiguous Southeast Asian country j. To capture the effect of external demand shocks, labor demand is assumed to be positively correlated with the terms of trade. Improvement in the terms of trade at time t reflects an increase in industrial core demand for exports from country i. Labor demand in Madras and Southeastern China is thus given by:

$$L^d_{i,t} = \alpha_0 + \alpha_1 w_{j,t-1} - \alpha_2\left(w_{i,t} - \phi w_{i,t-1}\right) + \alpha_3 TOT_{i,t} \tag{5}$$

where ϕ measures demand responsiveness to changes in domestic wages, and so movements along the labor demand curve, and $TOT_{i,t}$ represents external demand shocks measured by the terms of trade, and hence shifts in the labor demand curve.

Since workers' decisions in Madras and Southeastern China (country *i*) include the possibility of migrating to some Southeast Asian country *j,* both the wage level and demand conditions in Southeast Asia enter labor supply:

$$L^s_{i,t} = \beta_0 - \beta_1 w_{j,t} + \beta_2\left(w_{i,t} - \varphi w_{i,t-1}\right) - \beta_3 TOT_{j,t} \tag{6}$$

where, as before, ϕ represents movements along the labor supply curve and $TOT_{j,t}$ shifts in it caused by external demand shocks. The coefficients α_1 and β_1 account for the expenses of transport and finance, compensation for the psychic costs of migration, and a higher recipient country wage to enable emigrants to remit home. These migration-related costs, discussed below and well known in the literature to create a wage gap, prevented wage equalization between Madras and Southeastern China on the one hand and Southeast Asia on the other (see Williamson, 1988, pp. 433–435 for an overview of the concept of wage gaps). Accordingly, international labor market equilibrium is defined as convergence in the marginal product of labor in country *i* towards the marginal product of labor in the Southeast Asian country *j* plus a wage differential.

Equating labor demand and supply gives the equilibrium condition:

$$\begin{aligned}&\alpha_0 + \alpha_1 w_{j,t-1} - \alpha_2\left(w_{i,t} - \phi w_{i,t-1}\right) + \alpha_3 TOT_{i,t}\\ &= \beta_0 - \beta_1 w_{j,t} + \beta_2\left(w_{i,t} - \varphi w_{i,t-1}\right) + \beta_3 TOT_{j,t}\end{aligned} \tag{7}$$

Solving for the Southeast Asian wage,$w_{j,t}$:

$$\begin{aligned}w_{j,t} = {} & \frac{\beta_0 - \alpha_0}{\beta_1} + \frac{\beta_2 + \alpha_2}{\beta_1} w_{i,t}\\ & - \frac{\beta_2\varphi + \alpha_2\phi}{\beta_1} w_{i,t-1} - \frac{\alpha_1}{\beta_1} w_{j,t-1}\\ & + \frac{\beta_3}{\beta_1} TOT_{j,t} - \frac{\alpha_3}{\beta_1} TOT_{i,t}\end{aligned} \tag{8}$$

Simplifying notation gives:

$$w_{j,t} = \delta_0 + \delta_1 w_{j,t-1} + \gamma_1 w_{i,t} + \gamma_2 w_{i,t-1} + \lambda_1 TOT_{i,t} - \lambda_2 TOT_{j,t} \tag{9}$$

Subtracting $w_{j,t-1}$ from both sides and assuming long-run homogeneity between $w_{i,t}$ and $w_{j,t}$ (which implies that $\delta_1 + \gamma_1 + \gamma_2 = 1$)[3] gives:

$$\Delta w_{j,t} = \delta_0 + \gamma_1 \Delta w_{i,t} + \sigma_1 \left(w_j - w_i\right)_{t-1} + \lambda_1 TOT_{j,t} - \lambda_2 TOT_{i,t} \qquad (10)$$

Eq. (10) provides an empirical model to test for labor market integration. We adopt a two-stage testing procedure. Initially, both countries are assumed to be unaffected by external shocks: $\lambda_1 = \lambda_2 = 0$. Labor market integration requires that wages in country i and in country j respond to the same shock, which implies that γ_1 must be positive and significant, and, furthermore, that an error correction mechanism operates such that wages revert to their long-run equilibrium, that is, $\sigma_1 < 0$.

We pool data for pairs of migrant sending and receiving regions: Madras and Burma, Southeastern China and Malaya Chinese, Madras and Malaya Indians, and Southeastern China and Thailand. Although data are differenced, the regression specification includes fixed effects. Their significance is confirmed by Lagrange multiplier tests for redundant fixed effects. Results are summarized in Table 7.[4] It shows that wages in receiving countries – Thailand, Burma, and Malaya – and wages in sending regions – Madras and Southeastern China – respond to the same shock. The estimated elasticity is 0.26 and significant at the 5% level (standard errors are robust to heteroskedasticity). There is a strong reversion to the equilibrium wage gap: the error correction coefficient is −0.32 and significant at any level. Following Boyer and Hatton (1994, p. 96), we estimate the speed of convergence as $(1 - \hat{\sigma}_1)/\hat{\sigma}_1$. From the results in Table 7, the predicted lag between an initial shock and return to equilibrium is about two and a half years. Tests of the hypothesis of different convergence speeds suggest a slightly positive difference and that Chinese migration pairs converge faster to equilibrium than Indian. But these results fall short of statistical significance.

Table 7. Wage Relationships between Southeast Asian Receiving Countries and Madras and Southeastern China Sending Regions, 1882–1936.

	Estimated Coefficient	Std. Error	*t*-Statistic	*p*-Value
Wage shock	0.264696	0.108203	2.446291	0.0153
Error correction	−0.300490	0.080588	−3.728727	0.0002

Source: See Appendix C.

The first stage of testing meets the criteria of our metric of labor market integration. But it does not rule out the possibility that like comovements in Asian labor markets arose from shared terms of trade shocks.[5] Recalling the Asian periphery's high dependence on industrial core demand, it is possible that correlation and reversion to the equilibrium wage gap resulted from exogenous demand shocks manifested through the terms of trade. If the terms of trade were the determining consideration, the existence of the error correction mechanism revealed by first-stage testing would be driven by an omitted variable bias attributable to unaccounted-for trade-related shocks. To investigate this possibly, we first construct for 1882–1936 terms of trade series for the receiving countries of Thailand, Burma, and Malaya and for the sending regions of Madras and Southeastern China (Appendix D).

The hypothesis that comovements in wages arose not because of genuine labor market integration but were due to common external terms of trade shocks implies that λ_1 and λ_2 are both significant and that $\lambda_1 = \lambda_2$. To test whether these conditions are satisfied, we relax the assumption that $\lambda_1 = \lambda_2 = 0$ and re-estimate Eq. (10) (Table 8). Inclusion of terms of trade shocks leaves the previous results virtually unchanged: wages respond symmetrically to terms of trade movements, since the hypothesis that $\lambda_1 = \lambda_2$ cannot be rejected. The terms of trade enter the estimation equation insignificantly at the 5% level. Moreover, $\hat{\gamma}_1$ and $\hat{\sigma}_1$ remain strongly significant and do not differ in magnitude after the second-stage inclusion of the terms of trade. There is no incorrect impression of integration because of shared terms of trade shocks. Asian labor markets were genuinely integrated.

The second question of real wage convergence is not the persistence of wage gaps between the sending areas of Madras and Southeastern China on the one hand and Southeast Asian receiving countries on the other. In most settings the norm is a continuance of (often substantially) higher

Table 8. Wage and Terms of Trade Relationships between Southeast Asian Receiving Countries and Madras and Southeastern China Sending Regions, 1882–1936.

	Estimated Coefficient	Std. Error	*t*-Statistic	*p*-Value
Wage shock	0.267342	0.105422	2.535923	0.0120
Error correction	−0.319264	0.076260	−4.186515	0.0000
ToT receiving	0.064928	0.059301	1.094874	0.2749
ToT sending	0.109927	0.063064	1.743120	0.0828

Source: See Appendix C and Appendix D.

Table 9. Madras, Southeastern China and Southeast Asia Comparative US$ Wages at 1913 Prices, 1880–1882 to 1931–1933.

	Madras	Southeastern China	Burma	Malaya Indians	Malaya Chinese	Thailand
1880–1882	3.68	3.77[a]	9.01	–	10.91	–
1900–1902	2.02	–	5.66	6.19	9.43	5.92
1911–1913	2.37	2.29	4.87[b]	5.81	9.88	7.10[c]
1925–1927	2.44[d]	3.15	5.79	5.66	6.12[d]	7.09
1931–1933	2.55	1.10	8.43	4.84	3.34	8.55

Source: See Appendix E.
[a]Refers to 1882/83.
[b]1911 and 1913 only.
[c]1912 only.
[d]1926 only.

real wages in receiving than sending areas. After all, the elimination of wage gaps would negate the main incentive to migrate. The issue is, rather, whether in Asia during the pre-World War II decades the forces of labor market integration were sufficiently strong to reduce real wage differentials.

To confront this question of whether Asia moved towards real wage convergence, we compare between the 1880s and 1930s the six series of Asian wages expressed in 1913 US$. Where possible, wages are averaged over three years (Table 9). Two patterns are evident in the table. One is a narrowing of the Asian real wage gap by the latter 1920s; the other, divergence in the 1930s. Real wages in Madras/Southeastern China remained at about a third of the level in Southeast Asia until World War I but by 1925–1927 rose to 45.3% of destination wages. Convergence in the 1920s is observable for all sending and destination pairs and occurred mainly through a reduction in Southeast Asian wages towards sending area levels. The initial wage ratio between receiving and sending areas of about three is closely comparable to that suggested as likely in 1873–1883 for Thailand and China (Williamson, 2000, Table 1.1; Hatton & Williamson, 2005, p. 137). Our finding of real wage convergence also shows some similarity to the identification of pre-World War II relative factor price convergence both for Asia and for Atlantic economies, although the timing differs in beginning after 1913 rather than ending there (O'Rourke & Williamson, 1999; Williamson, 2002; Hatton & Williamson, 2005).

The only real constraints on mass immigration within Asia since the onset of globalization probably explain the 1930s real wage divergence

apparent in Table 9. Impediments in Thailand and Burma to immigration have already been noted. In Malaya, the August 1930 imposition of quotas drastically limited immigration from China and helped to avoid even larger falls in Malayan wages. At the same time, the complete collapse of Kwangtung's silk industry decimated that province's economy and led to severe social dislocation. Silk production had been at the centre of economic life in Kwangtung and in 1925 80% of the banks in Canton (Guangzhou) were said to be financed by Shunde silk capital (Howard & Buswell, 1925, p. 16). During the early 1930s most Kwangtung mulberry plantations were abandoned; three quarters of silk filatures had closed by 1934 and some 200,000 silk-reelers lost their jobs. A two-thirds fall in silk output and low prices left the value of Kwangtung's silk exports below their level in 1875 (Lin, 1997, p. 86). Many of those who had worked in the silk industry tried to emigrate, including women who began to come to Malaya in large numbers for the first time (Blythe, 1947; Purcell, 1967). Other Kwangtung women formerly engaged in silk production and remaining in the province – both the *tzu-shu nü* (*zishu nü*) who had taken celibacy vows and the *pu lo-chi* (*bu luojia*) who were separated from their husband but were expected to support him, his concubine, and their children as well as her in-laws – now sought refuge in local spinsters' houses and vegetarian halls (Topley, 1975, pp. 82–86).

Pre-World War II ratios of Southeast Asia to Madras/Southeastern China wages of between about two to a little over three are comparable in size to gaps elsewhere. O'Rourke and Williamson (1999, p. 127) report, for example, that between the 1870s and 1910–1913 Italian real wages rose from 38% to 46% of wages in France, Germany, the United States, and Argentina. Even at the end of the Atlantic economy's transition to mass migration the ratio of wages in labor-scarce regions abroad to those in Europe ranged from 1.7 in Britain to 3.7 for Norway (Hatton & Williamson, 2005, p. 136).

Four main explanations account for the Southeast Asia and Madras/Southeastern China wage gap. Of these, shipping fares between sending and destination areas are almost certainly the least important. It is not far from Madras or Southeastern China to Southeast Asia and shipping passage was not expensive. Immigrant fares averaged, apart from the 1930s when shipping companies dramatically raised rates to try to make up for lost business due to immigration restrictions, between a half and three weeks' wages in Southeast Asia. Over a typical immigrant sojourn of four years in Southeast Asia return shipping fares worked out to about 0.5–3.0% of expected immigrant earnings (Huff & Caggiano, 2007, p. 46).

A second consideration, compensation for emigrants' psychic costs of re-locating in Southeast Asia, while probably significant, is not easily quantifiable. These costs are likely to have been greater for Indians than Chinese. Indians were, as often observed, not always easily prised away from home. But emigration was a way of life for many in Southeastern China. Some Chinese, like a Maritime Customs Report's assessment of the inhabitants of the area around Swatow in Kwangtung, could even be described as "of a roving disposition, not averse to leaving their homes for foreign parts in quest of fortune" (China, Imperial Maritime Customs, 1902–11, vol. II, Southern and Frontier Reports, p. 130).

Third, emigrants had to meet the relocation expenses additional to shipping fares of moving to Southeast Asia and allow for a margin to cover subsistence costs while looking for work. For Chinese a system of lodging houses developed to finance both these expenditures and shipping fares as well as serving as labor exchanges for newly arrived immigrants (Huff, 1994, pp. 155–157; Sugihara, 2005). Costs for Indians going to Burma were probably less than for Chinese emigrating to Malaya and Thailand because of Burma's comparative nearness and because of a *maistry* (experienced Indian worker acting as a labor recruiter) system such that Indians often traveled as work gangs with others from their home settlement or nearby villages.

The fourth, and by all accounts the most important single component of wage gaps, was the almost universal stipulation among immigrants of high-enough earnings in Southeast Asia to permit both substantial savings and remittances home. The share of immigrant earnings remitted can be no more than estimated but a likely figure is 30% (Huff & Caggiano, 2007, p. 44). Throughout the emigrant areas of Southeastern China, whole villages relied on remittances from abroad and otherwise were not economically viable. Often, the only future for young, aspiring Chinese and for their relations remaining in China appeared to be in Southeast Asia (Chen, 1939, pp. 60–72; Freedman, 1957, pp. 16–17). The demographic behavior of parents in China may not have included having "surplus" children to be able to "vent" them as emigrants. But it is not too much to say that emigrating children served as an important form of social insurance.

4. CONCLUDING REMARKS

In recent years Williamson has often emphasized the urgency of "W. A. Lewis's grand Third World research agenda". It encompasses an analysis of

big questions: the economic forces of globalization that fundamentally reshaped the world economic order between the 1870s and 1930s and, especially, how change affected the global periphery of Latin America, Africa, and Asia (Williamson, 2002, p. 82; 2000, pp. 14–15, 40–42; 2006, p. 37; Hadass & Williamson, 2003, p. 635). Despite this highlighting of large issues and desirability of truly global economic history, Lewis's agenda has attracted relatively few economic historians or economists and much remains to be done. This chapter has provided a significant chunk of the data needed to address the Lewisian agenda for that part of Asia extending from South India to Southeastern China and including much of Southeast Asia. We demonstrate that as between these parts of Asia and the world's leading industrial countries real wage divergence obtained between the 1880s and 1936. The finding confirms for these areas a conclusion that Williamson (2006, p. 61) reaches for the world as a whole over a similar historical period: that there was powerful absolute factor price divergence between core and periphery. The forces of industrialization and technical change that before World War II transformed the United States and European core reverberated in Asia principally through a demand for primary commodities and technology embodied in manufactured goods that Asian countries imported in return.

Between the 1880s and 1930s, India and China were, by any reckoning, areas with large labor surpluses. But labor from these parts of the economic periphery was effectively prevented from emigrating to the global industrial core. Workers in the core were, as Lewis (1978a, p. 192; 1978b, pp. 19–20) argued, fully aware that mass immigration from India or China would greatly drive down wages. Instead, Indians and Chinese migrated *en masse* to Southeast Asia. There is no reason to suppose that a single answer exists for whether, in the global periphery, labor markets were genuinely integrated or if apparent integration might be merely an artefact of like comovements in response to exogenously determined terms of trade. This chapter has shown that genuine labor market integration existed for South India, Southeastern China, and Southeast Asia.

Lewis's grand Third World research agenda is, as the phrase suggests, large. This chapter has addressed only part of the agenda and not the famous Lewisian hypothesis of immigrant-augmented elastic labor supplies. As shown elsewhere, however, long-term unskilled real wages in the Southeast Asian countries considered in this chapter bear out the elastic labor argument of Lewis (Huff & Caggiano, 2007). The implications for Southeast Asian economic development of both of an integrated Asian labor market and immigrant-augmented elastic labor are considerable.

As more economists and economic historians are drawn to the comparative analytical study of Asia, these findings will form central building blocks in helping to answer the questions that Lewis posed.

NOTES

1. Note that a result of 7% is in effect 5% because of the relatively small sample size. We test six series and so 15 pairs. If one pair is rejected the fraction is 1/15 which is approximately 7%.
2. Here we again test all ten series, in effect treating the Malaya Indian and Malaya Chinese series as two separate countries.
3. On this point, see Hendry and Ericsson (1991, p. 21).
4. The model specification in Eq. (10) may imply that wages in sending and receiving countries are cointegrated. However, cointegration implies that wages are integrated of order one. We test for a unit root in wages series by using the Im, Pesaran, and Shin (2003) test and reject the hypothesis at any significance level.
5. Suspicion of the likelihood of this possibility is, however, aroused by the finding that in the periphery between 1870 and 1913 the terms of trade rose everywhere except in land-scarce East Asia, that is to say areas like Madras, Kwangtung, and Fukien. For this analysis of the terms of trade, see Hadass and Williamson (2001, p. 18). The same observation is omitted from the published version (2003, p. 639) of this working paper.

ACKNOWLEDGMENTS

We owe a debt of gratitude to Campbell Leith, Ramon Myers, Ulrich Woitek, anonymous referees and the Editor all of whose many suggestions greatly improved the chapter. Thanks go to George Grantham, Debin Ma and Atchi Reddy who gave advice and provided data. Huff gratefully acknowledges grants from the Carnegie Trust, Scotland, the British Academy, the East Asia National Resource Center, Stanford University, and the Royal Economic Society which helped to finance data collection. A Leverhulme Research Fellowship provided the time and space which allowed the chapter to be written and Huff acknowledges with thanks this generous help.

REFERENCES

Adas, M. (1974). *The Burma delta*. Madison: University of Wisconsin Press.
Andrew, E. J. L. (1933). *Indian labour in Rangoon*. London: Oxford University Press.

Andrus, J. R. (1948). *Burmese economic life*. Stanford: Stanford University Press.
Baker, C. J. (1984). *An Indian rural economy 1880–1955*. Oxford: Clarendon Press.
Bauer, P. T. (1948). *The rubber industry*. London: Longmans, Green.
Baxter, J. (1941). *Report on Indian immigration*. Rangoon: Superintendent Government Printing and Stationary.
Becher, H. M. (1892–93). Mining in the Malay Peninsula. *Transactions of the Institution of Mining and Metallurgy*, *1*, 78–102.
Bennison, J. J. (1928). *Report of an enquiry into the standard and cost of living of the working classes in Rangoon*. Rangoon: Superintendent Government Printing and Stationary.
Bhatia, B. M. (1969). Terms of trade and economic development. *Indian Economic Journal*, *16*, 424–426.
Blattman, C., Hwang, J., & Williamson, J. G. (2004). *The impact of the terms of trade on economic development in the periphery, 1870–1939: Volatility and secular change*. NBER Working Paper 10600. National Bureau of Economic Research, Cambridge.
Blythe, W. L. (1938). *Methods and conditions of employment of Chinese labour in the Federated Malay States*. Kuala Lumpur: Government Printer.
Blythe, W. L. (1947). Historical sketch of Chinese labour in Malaya. *Journal of the Malayan Branch of the Royal Asiatic Society*, *20*(1), 64–114.
Boyer, G. R., & Hatton, T. J. (1994). Regional labour market integration in England and Wales, 1850–1913. In: G. Grantham & M. McKinnon (Eds), *Labour market evolution: The economic history of market integration, wage flexibility and the employment relation* (pp. 84–106). London: Routledge.
Brandt, L. (1985). Chinese agricultural and the international economy, 1870s–1930s: A reassessment. *Explorations in Economic History*, *22*(2), 168–193.
Brandt, L. (1989). *Commercialization and agricultural development: Central and Eastern China 1870–1937*. Cambridge: Cambridge University Press.
Brazil. (1960). *O Brasil em numeros apendice do anuario estatistico do Brasil – 1960*. Rio de Janeiro: IBGE-Conselho Nacional de Estatistica.
Bry, G. (1960). *Wages in Germany, 1871–1945*. Princeton: Princeton University Press.
Buck, J. L. (1937a). *Land utilization in China*. London: Humphrey Milford.
Buck, J. L. (1937b). *Land utilization in China, statistics*. London: Humphrey Milford.
Burma. (1868/69–1935/36). *Report on the administration of Burma, annual series, 1868–69-1935–36*. Rangoon: Office of the Superintendent, Government Printing and Stationery.
Burma. (1897–1939). *Report on the working of the Indian Factories Act in Burma, annual series, 1897–1939*. Rangoon: Office of the Superintendent, Government Printing and Stationery.
Burma. (1912–1913, 1922–1923). *Office of the Chief Collector of Customs, Annual statement of the sea-borne trade and navigation of Burma, annual series, 1912–1913, 1922–1923*. Rangoon: Office of the Superintendent, Government Printing and Stationery.
Burma. (1917). *Quinquennial wages census in urban and rural areas in Burma, 1916*. Rangoon: Superintendent, Government Printing and Stationery.
Carter, S. B., et al. (2006). *Historical statistics of the United States: Governance and international relations* (Vol. 5, Part E). New York: Cambridge University Press.
Chang, K.-N. (1958). *The inflationary spiral: The experience of China, 1939–1950*. London: MIT Press.
Chang, L. L. (1932). Farm prices in Wuchin, Kiangsu, China. *Chinese Economic Journal*, *10*, 449–512.

Chang, L. L. (1933). Farm prices in Wuchin, Kiangsu (in Chinese). *Nanking University College of Agriculture and Forestry Bulletin*, *8*(new series), 153–216.
Chen, T. (1923). *Chinese migrations, with special reference to labor conditions*. Washington, DC: US Department of Labor.
Chen, T. (1939). *Emigrant communities in South China*. London: Oxford University Press.
Cheng, S.-H. (1968). *The rice industry of Burma, 1852–1940*. Kuala Lumpur: University of Malaya Press.
Cheng, Y.-K. (1956). *Foreign trade and industrial development of China*. Washington, DC: University Press of Washington.
China, Imperial Maritime Customs. (1879–1939). *Returns of trade and trade reports* (variously titled – annual series). Shanghai.
China, Imperial Maritime Customs. (1882–91 to 1922–31). *Decennial reports on the trade, industries, etc of the ports open to foreign commerce* (variously titled – decennial series). Shanghai.
Chou, S.-H. (1963). *The Chinese inflation 1937–1949*. New York: Columbia University Press.
Commodity Research Bureau. (1939). *Commodity year book 1939*. New York: Commodity Research Bureau.
Creutzberg, P. (1979). *Changing economy of Indonesia: National income* (Vol. 5). The Hague: Martinus Nijhoff.
David, P. A., & Solar, P. (1977). A bicentenary contribution to the history of the cost of living in America. *Research in Economic History*, *2*, 1–80.
Davis, K. (1951). *The population of India and Pakistan*. Princeton: Princeton University Press.
Diaz Alejandro, C. F. (1970). *Essays on the economic history of the Argentine Republic*. New Haven: Yale University Press.
Dodge, N. N. (1980). Population estimates for the Malay Peninsula in the nineteenth century, with special reference to the East Coast States. *Population Studies*, *34*(3), 437–475.
Doyle, P. (1879). *Tin mining in Larut*. London: E. & F. N. Spon.
Drabble, J. H. (1973). *Rubber in Malaya, 1876–1922*. Kuala Lumpur: Oxford University Press.
Drabble, J. H. (1991). *Malayan rubber: The inter-war years*. London: Macmillan.
van der Eng, P. (1993). *The silver standard and Asia's integration into the world economy*. Working paper No.175. Department of Economic History, Australian National University, Canberra.
Evans, P. (1996). Using cross-country variances to evaluate growth rates. *Journal of Economic Dynamics and Control*, *20*, 1027–1049.
Federated Malay States. (1902). *Census of population, 1901 by George Thompson Hare*. Kuala Lumpur.
Feeny, D. (1982). *The political economy of productivity: Thai agricultural development 1880–1975*. Vancouver: University of British Columbia Press.
Feeny, D. (1983). Extensive versus intensive agricultural development: Induced public investment in Southeast Asia, 1900–1940. *Journal of Economic History*, *43*, 687–704.
Fenichel, A. H., & Huff, W. G. (1971). *The impact of colonialism on Burmese economic development*. Montreal: McGill University Centre for Developing Area Studies.
Figart, D. M. (1925). *The plantation rubber industry in the Middle East*. Washington, DC: U.S. Department of Commerce.
France. (1887). *Ministère de l'Agriculture, Statiistique agricole de la France: Résultats généraux de l'enquête décennale de 1882*. Nancy: Ministère de l'Agriculture.

Freedman, M. (1957). *Chinese family and marriage in Singapore*. London: HMSO.
Freedman, M. (1958). *Lineage organization in Southeastern China*. London School of Economics Monographs on Social Anthropology No. 18. London: Athlone Press.
Gamble, S. D. (1943). Daily wages of unskilled Chinese laborers, 1807–1902. *Far Eastern Quarterly*, *3*(1), 41–73.
Goldin, C. (1994). The political economy of immigration restriction in the United States, 1890–1921. In: C. Goldin & G. D. Libecap (Eds), *The regulated economy: A historical approach to political economy* (pp. 223–257). Chicago: University of Chicago Press.
Gullick, J. M. (1985). The entrepreneur in late 19th century Malay peasant society. *Journal of the Malaysian Branch of the Royal Asiatic Society*, *58*, 59–70.
Hadass, Y. S., & Williamson, J. G. (2001). *Terms of trade shocks and economic performance 1870–1940: Prebisch and Singer revisited*. NBER Working Paper 8188. National Bureau of Economic Research, Cambridge.
Hadass, Y. S., & Williamson, J. G. (2003). Terms of trade shocks and economic performance 1870–1940: Prebisch and Singer revisited. *Economic Development and Cultural Change*, *51*(3), 629–656.
Harley, C. K. (1980). Transportation, the world wheat trade, and the Kuznets cycle, 1850–1913. *Explorations in Economic History*, *17*, 218–250.
Harley, C. K. (2000). A review of O'Rourke and Williamson's Globalization and history: The evolution of a nineteenth century Atlantic economy. *Journal of Economic Literature*, *38*, 926–935.
Harvey, A. C. (1992). *Forecasting, structural time series models and the Kalman filter*. Cambridge: Cambridge University Press.
Hatton, T. J., & Williamson, J. G. (2005). *Global migration and the world economy: Two centuries of policy and performance*. Cambridge: MIT Press.
Hendry, D. F., & Ericsson, N. R. (1991). An econometric analysis of U.K. money demand in monetary trends in the United States and United Kingdom by Milton Friedman and Anna J. Schwartz. *American Economic Review*, *81*, 8–38.
Hlaing, U. A. (1964a). Trends of economic growth and income distribution in Burma, 1870–1940. *Journal of the Burma Research Society*, *47*, 89–148.
Hlaing, U. A. (1964b). *A study of the economic development of Burma, 1870–1940*. Rangoon: Department of Economics, University of Rangoon.
Howard, C. W., & Buswell, K. P. (1925). *A survey of the silk industry of South China*. Agricultural Bulletin No. 12, Ling Nan Agricultural College, Canton Christian College. Hong Kong: Commercial Press.
Hsiao Liang-lin. (1974). *China's foreign trade statistics, 1864–1949*. Cambridge: Harvard University Press.
Huff, G. (1989). Barter, money, credit and Singapore's international rice trade, 1870–1939. *Explorations in Economic History*, *26*, 161–189; *Editor's Note 27* (1990).
Huff, G. (1994). *The economic growth of Singapore: Trade and development in the twentieth century*. Cambridge: Cambridge University Press.
Huff, G. (2002). Boom-or-bust commodities and industrialization in pre-world war II Malaya. *Journal of Economic History*, *62*, 1074–1115.
Huff, G. (2007). Globalization, natural resources and foreign investment: A view from the resource rich tropics. *Oxford Economic Papers*, *59*, p. i127–i155.
Huff, G., & Caggiano, G. (2007). Globalization, immigration and Lewisian elastic labor in pre-world war II Southeast Asia. *Journal of Economic History*, *67*, 33–68.

Hunt, E. H. (1973). *Regional wage variations in Britain 1850–1914*. Oxford: Clarendon Press.
Im, K. M., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, *115*, 53–74.
India. (1926–1939/40). *Report of the Agent of the Government of India in Malaya*. Annual series. Calcutta: Government of India Central Publication Branch.
India, Census of India. (1902). Census of India, 1901, Vol. XV. Madras. Part I. Report by W. Francis and Part II. Madras: Superintendent, Government Press.
India, Census of India. (1912). Census of India, 1911, Vol. XII. Madras. Part I. Report by J. Chartres Molony. Madras: Superintendent, Government Press.
India, Census of India. (1922). Census of India, 1921, Vol. XIII. Madras. Part I. Report by G. T. Boag and Part II. Madras: Superintendent, Government Press.
India, Census of India. (1923). Census of India, 1921, Vol. X. Burma. Part I. Report by S. G. Grantham. Rangoon: Superintendent, Government Printing.
India, Census of India. (1932a). Census of India, 1931, Vol. XI. Burma. Part I. Report by J. J. Bennison. Rangoon: Superintendent, Government Printing and Stationary.
India, Census of India. (1932b). Census of India, 1931 Vol. XIV. Madras. Part I. Report by M. W. M. Yeatts and Part II. Madras: Superintendent, Government Press.
India, Census of India. (1933). Census of India, 1931, Vol. I. India. Part I. Report by J. H. Hutton. Delhi: Manager of Publications.
India, Department of Commercial Intelligence and Statistics. (1933). *Index numbers of Indian prices 1861–1931*. Delhi: Manager of Publications.
India, Director-General of Commercial Intelligence. (1902–1923). *Prices and wages in India*. Annual series. Calcutta: Superintendent of Government Printing.
Indonesia, Central Bureau of Statistics. (1958). The living conditions of municipally employed coolies in Batavia in 1937. In: Wertheim, W. F. (Ed. and translator), *The Indonesian Town: Studies in Urban Sociology* (pp. 85–224). The Hague: van Hoeve.
Ingram, J. C. (1964). Thailand's rice trade and the allocation of resources. In: C. D. Cowan (Ed.), *The economic development of South-East Asia* (pp. 102–126). London: George Allen & Unwin.
Ingram, J. C. (1971). *Economic change in Thailand 1850–1970*. Stanford: Stanford University Press.
International Tin Research and Development Council. (1939). *Statistical year book 1938*. The Hague: Statistical Office, International Tin Research and Development Council.
International Tin Study Group. (1953). *Statistical year book 1952*. London: International Tin Council.
Jackson, R. N. (1961). *Immigrant labour and the development of Malaya, 1786–1920*. Kuala Lumpur: Government Press, Federation of Malaya.
Johnston, D. B. (1981). Rice cultivation in Thailand: The development of an export economy by indigenous capital and labor. *Modern Asian Studies*, *15*, 107–126.
Kaur, A. (1980). The Impact of railroads on the Malayan Economy, 1874–1941. *Journal of Asian Studies*, *39*, 693–710.
Kumar, D. (1965). *Land and caste in south India*. Cambridge: Cambridge University Press.
Kumar, D. (1983). South India. In: D. Kumar (Ed.), *The Cambridge economic history of India: c. 1757-c. 1970* (Vol. 2, pp. 207–241). Cambridge: Cambridge University Press.
Kuznets, S., & Rubin, E. (1954). *Immigration and the foreign born*. New York: National Bureau of Economic Research.
Kwangtung Government, China. (1928). *Reports of statistics*: *Wage Indexes of labourers in Canton, China 1912–1927* (Vol. III). Canton: Che Wo Printing.

Latham, A. J. H., & Neal, L. (1983). The international market in rice and wheat, 1868–1914. *Economic History Review*, *36*, 260–280.
Lebergott, S. (1964). *Manpower in economic growth: The American record since 1800*. New York: McGraw-Hill.
Lewis, A. B., & Wang, L. (1936). Farm prices in Wuchin, Kiangsu. *Economic Facts*, *2*, 73–91.
Lewis, W. A. (1969). *Aspects of tropical trade, 1883–1965*. Stockholm: Almqvist and Wicksell.
Lewis, W. A. (1978a). *Growth and fluctuations 1870–1913*. London: George Allen & Unwin.
Lewis, W. A. (1978b). *The evolution of the international economic order*. Princeton: Princeton University Press.
Lieu, D. K. (1941). *The silk industry of China*. Shanghai: Kelly and Walsh.
Lin, A. H. Y. (1997). *The rural economy of Guangdong, 1870–1937*. London: Macmillan.
Look Lai, W. (2002). Asian contract and free migrations to the Americas. In: D. Eltis (Ed.), *Coerced and free migrations: Global perspectives* (pp. 229–258). Stanford: Stanford University Press.
van Luijk, E. W., & van Ours, J. C. (2001). The effects of government policy on drug use: Java, 1875–1904. *Journal of Economic History*, *61*, 1–18.
Lyons, T. P. (2003). *China maritime customs and China's trade statistics 1859–1948*. Trumamsburg, NY: Willow Creek Press.
Madras. (1874). *Report of the census of the Madras Presidency, 1871 by W. R. Cornish*. Madras: Government Gazette Press.
Madras. (1911–1941). *Wage censuses [variously published and known as the Quinquennial wage censuses]*. Madras: Government of Madras.
Madras. (1950). *Monthly digest of economics and statistics Madras State* (Vol. 1, No. 1 (April)). Madras: Economic Advisor to the Government of Madras.
Malaya. (1911). *Federated Malay States, Review of the census operations and results, 1911, by A. M. Poutney*. London: HMSO.
Malaya. (1921). *The census of British Malaya, 1921, by J. E. Nathan*. London: Waterlow and Sons.
Malaya. (1921–1928). *Return of foreign imports and exports* (Annual series). Singapore: Government Printing Office.
Malaya. (1922–1938). *Average prices, declared trade values, exchange, currency and cost of living* (Annual series). Singapore: Government Printing Office.
Malaya. (1930–1937). *Foreign imports and exports*. Annual series. Singapore: Government Printing Office.
Malaya. (1932). *British Malaya, A report on the 1931 census, by C. A. Vlieland*. London: Crown Agents.
Malaya. (1939/1940). *Annual report of the labour department, Malaya, 1938 and 1939*. Kuala Lumpur: Federated Malay States Government Press.
Malaya. (1949). *Malaya, A report on the 1947 census of population, by M. V. Del Tufo*. London: Crown Agents.
McAlpin, M. (1983). Price movements and economic activity (1860–1947). In: D. Kumar (Ed.), *The Cambridge economic history of India*: *c. 1757-c. 1970* (Vol. 2, pp. 878–904). Cambridge: Cambridge University Press.
McFadyean, A, Sir. (1944). *The history of rubber regulation 1934–43*. London: George Allen & Unwin.
McKeown, A. (2004). Global migration, 1846–1940. *Journal of World History*, *15*, 155–189.

Mitchell, B. R. (1988). *British historical statistics*. Cambridge: Cambridge University Press.
Mitchell, B. R., & Dean, P. (1962). *Abstract of British historical statistics*. Cambridge: Cambridge University Press.
Mukerjee, R. (1936). *Migrant Asia*. Rome: Tipografia I. Failli.
Myers, R. H., & Wang, Y. (2002). Economic developments, 1644–1800. In: W. J. Peterson (Ed.), *The Cambridge economic history of China*: *The Ch'ing Empire to 1800* (Vol. 9, Part 1, pp. 563–645). Cambridge: Cambridge University Press.
Myung, S. C. (2000). Integration and segmentation in international markets for rice and wheat, 1877–1994. *Korean Economic Review*, *16*, 107–123.
van Niel, R. (1956). *Living conditions of plantation workers in 1939–1940: Final report of the coolie budget commission*. Ithaca: Cornell Modern Indonesia Project.
O'Rourke, K. J., & Williamson, J. G. (1999). *Globalization and history: The evolution of a nineteenth-century Atlantic economy*. Cambridge: MIT Press.
Owen, F. (1897–98). Mining in Perak. *Transactions of the Institution of Mining and Metallurgy*, *6*, 51–84.
Page, A. J. (1931). *Report on wages in rice mills in Burma*. Rangoon: Superintendent, Government Printing and Stationary.
Parmer, J. N. (1960). *Colonial labor policy and administration*. Locust Valley, NY: J.J. Augustin.
Perkins, D. H. (1969). *Agricultural development in China, 1368–1968*. Chicago: Aldine.
Pesaran, M. H. (2007). A pair-wise approach to testing for output and growth convergence. *Journal of Econometrics*, *138*, 312–355.
Planters' Association of Malaya. (1922). *Report of the special committee on Chinese labour*. Kuala Lumpur: Planters' Association of Malaya.
Purcell, V. (1967). *The Chinese in Malaya*. London: Oxford University Press.
Rawski, T. G. (1989). *Economic growth in prewar China*. Berkeley: University of California Press.
Robertson, R. (2000). Wage shocks and North American labor-market integration. *American Economic Review*, *90*, 742–764.
Runes, I. T. (1939). *General standards of living and wages of workers in the Philippine sugar industry*. Manila: Philippine Council Institute of Pacific Relations.
Saito, T., & Lee, K. K. (1999). *Statistics on the Burmese economy*. Singapore: Institute of Southeast Asian Studies.
Sandhu, K. S. (1969). *Indians in Malaya: Some aspects of their immigration and settlement (1786–1957)*. London: Cambridge University Press.
Saw, S.-H. (1970). *Singapore population in transition*. Philadelphia: University of Pennsylvania Press.
Shein, M. (1964). *Burma's transport and foreign trade (1885–1914)*. Rangoon: Department of Economics, University of Rangoon.
Simiand, F. (1932). *Le Salaire: L'évolution sociale et la monnaie*. Paris: Librairie Felix Alcan.
Singer-Kérel, J. (1961). *Le coût de la vie à Paris de 1840 à 1954*. Paris: Librairie Armand Colin.
Skinner, G. W. (1957). *Chinese society in Thailand: An analytical history*. Ithaca: Cornell University Press.
Soliva, R. (1931). *An economic view of rubber planting*. Singapore: Kelly & Walsh.
Sompop, M. (1989). *Economic development of Thailand, 1850–1950: Response to the challenge of the world economy*. Groningen: University of Groningen.
Straits Settlements. (1881–1938). *Annual departmental reports of the Straits Settlements (SSAR)* (Annual series). Singapore: Government Printing Office.

Straits Settlements. (1891). *Report of the Commission appointed to enquire into the state of labour in the Straits Settlements and protected native states, 1890*. Singapore.

Straits Settlements. (1921). *Commission on profiteering in Straits Settlements Legislative Council Proceedings, 1920* (C202–C277). Singapore: Government Printing Office.

Sugihara, K. (2005). Patterns of Chinese immigration to Southeast Asia, 1869–1939. In: K. Sugihara (Ed.), *Japan, China, and the growth of the Asian international economy, 1850–1949* (pp. 244–274). Oxford: Oxford University Press.

Thailand, Department of Commerce and Statistics. (1920, 1939–40). *Statistical year book of Thailand*. Annual series. Bangkok: Department of Secretary General of the Council.

Thoburn, J. T. (1977). *Primary commodity exports and economic development*. London: Wiley.

T'ien-p'ei, M., & Gamble, S. D. (1926). *Prices, wages and the standard of living in Peking 1900–1924, Supplement to the Chinese Social and Political Science Review*. Peking: Peking Express Press.

Topley, M. (1975). Marriage resistance in rural Kwangtung. In: M. Wolfe & R. Witke (Eds), *Women in Chinese society* (pp. 67–88). Stanford: Stanford University Press.

Trocki, C. A. (1999). Political structures in the nineteenth and early twentieth centuries. In: N. Tarling (Ed.), *The Cambridge history of Southeast Asia*: *From c. 1800 to the 1930s* (Vol. 3, pp. 75–126). Cambridge: Cambridge University Press.

United Kingdom. (1928). *Royal Commission on agriculture in India* (Vol. 3): *Evidence taken in the Madras Presidency (1927)*; Vol. 4: *Appendix to the Report*. London: HMSO.

United Kingdom. (1931). *Royal Commission on labour in India. Evidence: Madras Presidency and Coorg* (Vol. 7, parts 1 and 2). London: HMSO.

United States, Department of Commerce. (1970). *Historical statistics of the United States (Part 1)*. Washington, DC: US Department of Commerce.

Urquhart, M. C., & Buckley, K. A. H. (1965). *Historical statistics of Canada*. Cambridge: Cambridge University Press.

Wang, Y.-C. (1972). The secular trend of prices during the Ch'ing period (1644–1911). *Journal of the Institute of Chinese Studies of the Chinese University of Hong Kong*, *5*, 347–371.

Whittlesey, C. R. (1931). *Government control of crude rubber*. Princeton: Princeton University Press.

Williamson, J. G. (1988). Migration and urbanization. In: H. Chenery & T. N. Srinivasan (Eds), *Handbook of development economics* (Vol. 1, pp. 426–465). Amsterdam: North Holland.

Williamson, J. G. (1995). The evolution of global labor markets since 1830: Background evidence and hypotheses. *Explorations in Economic History*, *32*, 141–196.

Williamson, J. G. (1998). *Real wages and relative factor prices in the third world 1820–1940: Asia*. Working Paper 1844, Harvard Institute of Economic Research, Cambridge.

Williamson, J. G. (2000). Globalization, factor prices and living standards in Asia before 1940. In: A. J. H. Latham & H. Kawakatsu (Eds), *Asian Pacific dynamism 1550–2000* (pp. 14–45). London: Routledge.

Williamson, J. G. (2002). Land, labor, and globalization in the third world, 1870–1940. *Journal of Economic History*, *62*, 55–85.

Williamson, J. G. (2006). *Globalization and the poor periphery before 1950*. Cambridge: MIT Press.

Wilson, C. M. (1983). *Thailand: A handbook of historical statistics*. Boston: G. K. Hall.

Wong, L. K. (1965). *The Malayan tin industry to 1914*. Tucson: University of Arizona Press.

Wright, G. (1990). The origins of American industrial success, 1879–1940. *American Economic Review*, *80*, 651–668.

APPENDIX A. SOUTHEAST ASIA AND NEW WORLD IMMIGRATION AND EMIGRATION, 1880–1939

	Malaya Chinese Immigrants Examined at Singapore	Malaya Chinese Departures	Malaya Net Chinese Immigration	Malaya Indian Immigrants	Malaya Indian Departures
1880				5,053	3,812
1881	89,801			6,807	5,269
1882	101,009			9,937	5,947
1883	109,136			10,605	9,041
1884	106,748			16,081	10,749
1885	111,456			21,510	13,417
1886	144,517			20,308	18,105
1887	167,906			17,202	12,596
1888	164,300			20,813	13,190
1889	150,809			18,206	14,099
1890	127,936			18,473	15,276
1891	126,088			30,182	23,912
1892	134,448			18,421	17,722
1893	213,717			18,220	14,044
1894	153,954			14,956	13,537
1895	190,901			16,005	12,360
1896	175,718			20,150	12,977
1897	114,978			20,599	14,280
1898	133,558			19,026	11,500
1899	149,697			19,920	19,766
1900	200,947			38,529	11,251
1901	178,778			28,259	16,204
1902	207,156			20,242	18,183
1903	220,321			22,030	17,832
1904	204,796			30,701	19,550
1905	173,131			39,539	19,754
1906	176,587			52,041	21,879
1907	227,342			62,130	30,522
1908	153,452			54,522	30,920
1909	151,752			49,817	31,374
1910	216,321			83,723	39,080
1911	269,854			108,471	48,103
1912	251,644			106,928	63,885
1913	240,979			118,583	70,090

APPENDIX A. (*Continued*)

	Malaya Chinese Immigrants Examined at Singapore	Malaya Chinese Departures	Malaya Net Chinese Immigration	Malaya Indian Immigrants	Malaya Indian Departures
1914	147,150			51,217	63,073
1915	95,735			75,323	50,320
1916	183,399	61,630	121,769	95,566	54,479
1917	155,167	41,282	113,885	90,077	57,583
1918	58,421	35,585	22,836	65,291	52,132
1919	70,912	37,590	33,322	101,433	46,767
1920	126,077	68,383	57,694	95,220	55,481
1921	191,043	98,986	92,057	45,673	61,551
1922	132,886	96,869	36,017	58,674	45,733
1923	159,019	78,121	80,898	49,502	42,778
1924	181,430	87,749	93,681	55,526	37,326
1925	214,692	77,920	136,772	90,708	43,144
1926	348,593	120,308	228,285	174,795	65,786
1927	359,262	155,198	204,064	157,626	93,269
1928	295,700	149,354	146,346	63,755	91,430
1929	293,167	139,967	153,200	114,597	76,854
1930	242,149	167,903	74,246	70,317	152,231
1931	79,025	213,992	−134,967	20,374	103,090
1932	33,534	282,779	−249,245	18,637	85,051
1933	27,796	86,555	−58,759	20,242	32,738
1934	98,864	68,129	30,735	89,584	28,407
1935	141,892	69,025	72,867	66,350	38,869
1936	149,517	80,578	68,939	45,706	40,557
1937	246,371	66,502	179,869	123,732	45,167
1938	98,863	54,603	44,260	44,839	76,199
1939				23,961	42,724

	Malaya Net Indian Immigration	Malaya Total Chinese and Indian Immigrants	Thailand Chinese Arrivals	Thailand Chinese Departures	Thailand Net Chinese Immigration
1880	1,241				
1881	1,538	96,608			
1882	3,990	110,946	17,300	9,300	8,000

APPENDIX A. (*Continued*)

	Malaya Net Indian Immigration	Malaya Total Chinese and Indian Immigrants	Thailand Chinese Arrivals	Thailand Chinese Departures	Thailand Net Chinese Immigration
1883	1,564	119,741	18,000	9,900	8,100
1884	5,332	122,829	13,100	8,400	4,700
1885	8,093	132,966	13,900	7,800	6,100
1886	2,203	164,825	14,200	7,900	6,300
1887	4,606	185,108	15,000	9,200	5,800
1888	7,623	185,113	15,700	7,900	7,800
1889	4,107	169,015	18,300	10,100	8,200
1890	3,197	146,409	18,900	10,400	8,500
1891	6,270	156,270	16,000	9,100	6,900
1892	699	152,869	17,100	9,400	7,700
1893	4,176	231,937	27,700	11,200	16,500
1894	1,419	168,910	33,800	16,100	17,700
1895	3,645	206,906	29,000	17,300	11,700
1896	7,173	195,868	27,800	18,200	9,600
1897	6,319	135,577	31,000	18,600	12,400
1898	7,526	152,584	33,600	19,100	14,500
1899	154	169,617	33,700	20,700	13,000
1900	27,278	239,476	27,300	19,000	8,300
1901	12,055	207,037	30,400	19,300	11,100
1902	2,059	227,398	36,500	18,800	17,700
1903	4,198	242,351	54,500	29,900	24,600
1904	11,151	235,497	44,000	23,700	20,300
1905	19,785	212,670	45,800	30,000	15,800
1906	30,162	228,628	68,000	38,900	29,100
1907	31,608	289,472	90,300	53,000	37,300
1908	23,602	207,974	61,600	49,200	12,400
1909	18,443	201,569	66,800	57,400	9,400
1910	44,643	300,044	80,800	73,000	7,800
1911	60,368	378,325	76,700	63,900	12,800
1912	43,043	358,572	72,800	60,500	12,300
1913	48,493	359,562	73,300	57,200	16,100
1914	−11,856	198,367	60,100	56,800	3,300
1915	25,003	171,058	69,200	47,100	22,100
1916	41,087	278,965	53,400	40,300	13,100
1917	32,494	245,244	39,400	36,700	2,700

APPENDIX A. (*Continued*)

	Malaya Net Indian Immigration	Malaya Total Chinese and Indian Immigrants	Thailand Chinese Arrivals	Thailand Chinese Departures	Thailand Net Chinese Immigration
1918	13,159	123,712	67,900	37,000	30,900
1919	54,666	172,345	65,700	43,400	22,300
1920	39,739	221,297	70,400	36,800	33,600
1921	−15,878	236,716	76,500	46,900	29,600
1922	12,941	191,560	95,400	65,200	30,200
1923	6,724	208,521	115,000	66,400	48,600
1924	18,200	236,956	92,700	66,100	26,600
1925	47,564	305,400	95,500	60,600	34,900
1926	109,009	523,388	106,400	73,700	32,700
1927	64,357	516,888	154,600	76,900	77,700
1928	−27,675	359,455	101,100	72,800	28,300
1929	37,743	407,764	134,100	68,200	65,900
1930	−81,914	312,466	86,400	62400	24,000
1931	−82,356	99,399	74,800	42,400	32,400
1932	−66,414	52,171	59,500	44,100	15,400
1933	−12,496	48,038	25,700	32,600	−6,900
1934	61,177	188,448	27,000	31,100	−4,100
1935	27,481	208,242	45,200	36,500	8,700
1936	5,149	195,223	48,900	28,000	20,900
1937	78,565	370,103	60,000	22,000	38,000
1938	−31,360	143,702	33,500	30,000	3,500
1939	−18,763	23,961	25,100	18,800	6,300

	Burma Immigrants	Burma Departures	Burma Net Immigration	United States Immigrants	United States Departures
1880					
1881				669,431	
1882				788,992	
1883				603,322	
1884				518,592	
1885	56,100	50,600	5,500	395,346	
1886	78,700	55,400	23,300	334,203	
1887	66,200	59,500	6,700	490,109	

APPENDIX A. (*Continued*)

	Burma Immigrants	Burma Departures	Burma Net Immigration	United States Immigrants	United States Departures
1888	86,700	69,500	17,200	546,889	
1889	194,900	163,000	31,900	444,427	
1890	133,500	98,400	35,100	455,302	
1891	151,200	112,900	38,300	560,319	
1892	123,400	116,600	6,800	579,663	
1893	129,100	58,300	70,800	439,730	
1894	119,500	129,900	9,600	285,631	
1895	–	–	–	258,536	
1896	134,600	86,900	47,700	343,267	
1897	123,400	91,600	31,800	230,832	
1898	149,200	106,700	42,500	229,299	
1899	167,000	105,700	61,300	311,715	
1900	163,300	120,500	42,800	448,572	
1901	154,600	114,200	40,400	487,918	
1902	142,800	135,000	7,800	648,743	
1903	180,200	139,700	40,500	857,046	
1904	182,700	125,200	57,500	812,870	
1905	238,500	175,700	62,800	1,026,499	
1906	360,500	319,800	40,700	1,100,735	
1907	271,100	267,600	3,500	1,285,349	
1908	319,200	301,000	18,200	782,870	395,000
1909	302,200	301,900	300	751,786	226,000
1910	331,100	298,600	32,500	1,041,570	202,000
1911	368,300	311,500	56,800	878,587	296,000
1912	327,500	331,500	−4,000	838,172	333,000
1913	380,200	355,300	24,900	1,197,892	308,000
1914	268,400	146,200	122,200	1,218,480	303,000
1915	338,800	249,000	89,800	326,700	204,000
1916	258,800	252,300	6,500	298,826	130,000
1917	223,100	237,100	14,000	295,403	66,000
1918	259,900	234,200	25,700	110,618	95,000
1919	284,700	219,000	65,700	141,132	124,000
1920	341,100	247,900	93,200	430,001	288,000
1921	331,900	303,800	28,100	805,228	248,000
1922	360,000	310,300	49,700	309,556	199,000
1923	382,700	295,300	87,400	522,919	81,000
1924	388,200	315,800	72,400	706,896	77,000

APPENDIX A. (*Continued*)

	Burma Immigrants	Burma Departures	Burma Net Immigration	United States Immigrants	United States Departures
1925	372,700	350,900	21,800	294,314	93,000
1926	408,400	342,500	65,900	304,488	77,000
1927	428,300	361,200	67,100	335,175	73,000
1928	418,600	333,000	85,600	307,255	78,000
1929	405,300	371,800	33,500	279,678	69,000
1930	368,500	399,200	−30,700	241,700	51,000
1931	319,600	367,100	−47,500	97,139	62,000
1932	334,200	288,400	45,800	35,576	103,000
1933	263,800	252,200	11,600	23,068	80,000
1934	279,100	226,600	52,500	29,470	40,000
1935	296,600	234,200	62,400	34,956	39,000
1936	269,200	221,600	47,600	36,329	36,000
1937	271,200	232,300	38,900	50,244	27,000
1938	240,500	253,400	−12,900	67,895	25,000
1939				82,998	27,000

	United States Net Immigration	Canada Immigrants	Brazil Immigrants
1880		38,505	30,355
1881		47,991	11,548
1882		112,458	29,589
1883		133,624	34,015
1884		103,824	23,574
1885		79,169	34,724
1886		69,152	32,650
1887		84,526	54,932
1888		88,766	132,070
1889		91,600	65,165
1890		75,067	106,819
1891		82,165	215,239
1892		30,996	85,906
1893		29,633	132,589
1894		20,829	60,182
1895		18,790	164,831
1896		16,835	157,423
1897		21,716	144,866

APPENDIX A. (*Continued*)

	United States Net Immigration	Canada Immigrants	Brazil Immigrants
1898		31,900	76,862
1899		44,543	53,610
1900		41,681	37,807
1901		55,747	83,116
1902		89,102	50,472
1903		138,660	32,941
1904		131,252	44,706
1905		141,465	68,488
1906		211,653	72,332
1907		272,409	57,919
1908	387,870	143,326	90,536
1909	525,786	173,694	84,090
1910	839,570	286,839	86,751
1911	582,587	331,288	133,575
1912	505,172	375,756	177,887
1913	889,892	400,870	190,343
1914	915,480	150,484	79,232
1915	122,700	36,665	30,333
1916	168,826	55,914	31,245
1917	229,403	72,910	30,277
1918	15,618	41,845	19,793
1919	17,132	107,698	36,027
1920	142,001	138,824	69,041
1921	557,228	91,728	58,476
1922	110,556	64,224	65,007
1923	441,919	133,729	84,549
1924	629,896	124,164	96,052
1925	201,314	84,907	82,547
1926	227,488	135,982	118,686
1927	262,175	158,886	97,974
1928	229,255	166,783	78,128
1929	210,678	164,993	96,186
1930	190,700	104,806	62,610
1931	35,139	27,530	27,465
1932	−67,424	20,591	31,494
1933	−56,932	14,382	46,081
1934	−10,530	12,476	46,027

APPENDIX A. (*Continued*)

	United States Net Immigration	Canada Immigrants	Brazil Immigrants
1935	−4,044	11,277	29,585
1936	329	11,643	12,773
1937	23,244	15,101	34,677
1938	42,895	17,244	19,388
1939	55,998	16,994	22,668

Argentina, 1881–90 to 1936–40 ('000 persons)

	Immigrants	Departures	Net Immigration
1881–1890	841	203	638
1891–1900	648	328	320
1901–1910	1,764	644	1,120
1911–1920	1,205	936	269
1921–1925	708	255	452
1926–1930	690	286	404
1931–1935	331	204	127
1936–1940	135	58	77

Sources: See Appendix E.

APPENDIX B. SOUTHEAST ASIA AND NEW WORLD IMMIGRATION PER 1000 MEAN POPULATION, 1880–1939

	Malaya Chinese Examined at Singapore	Malaya Indians Immigrants	Malaya Total Chinese and Indians	Thailand	Burma	United States	Canada	Brazil
1880		3.2					8.4	2.3
1881	57.7	4.4	62.1			11.7	10.5	0.9
1882	65.0	6.4	71.3	2.7		13.8	24.5	2.3
1883	70.2	6.8	77.0	2.8		10.5	29.2	2.6
1884	68.6	10.3	79.0	2.0		9.1	22.7	1.8
1885	71.7	13.8	85.5	2.2	7.8	6.9	17.3	2.7
1886	92.9	13.1	106.0	2.2	10.9	5.8	15.1	2.5
1887	108.0	11.1	119.0	2.3	9.2	8.6	18.4	4.2
1888	105.7	13.4	119.0	2.4	12.0	9.5	19.4	10.1
1889	97.0	11.7	108.7	2.8	27.0	7.8	20.0	5.0
1890	82.3	11.9	94.2	2.9	18.5	7.9	16.4	8.2
1891	69.3	16.6	85.9	2.3	16.6	8.0	16.3	13.3
1892	73.9	10.1	84.0	2.4	13.6	8.3	6.1	5.3
1893	117.4	10.0	127.4	4.0	14.2	6.3	5.9	8.2
1894	84.6	8.2	92.8	4.8	13.1	4.1	4.1	3.7
1895	104.9	8.8	113.7	4.1		3.7	3.7	10.2
1896	96.5	11.1	107.6	4.0	14.8	4.9	3.3	9.7
1897	63.2	11.3	74.5	4.4	13.6	3.3	4.3	8.9
1898	73.4	10.5	83.8	4.8	16.4	3.3	6.3	4.7
1899	82.3	10.9	93.2	4.8	18.3	4.4	8.8	3.3
1900	110.4	21.2	131.6	3.9	17.9	6.4	8.2	2.3

1901	75.5	11.9	87.4	3.9	13.7	5.8	9.1	4.1
1902	87.5	8.5	96.0	4.7	12.6	7.7	14.5	2.5
1903	93.0	9.3	102.3	7.0	15.9	10.1	22.6	1.6
1904	86.5	13.0	99.4	5.6	16.2	9.6	21.4	2.2
1905	73.1	16.7	89.8	5.9	21.1	12.1	23.1	3.4
1906	74.6	22.0	96.5	8.7	31.9	13.0	34.5	3.6
1907	96.0	26.2	122.2	11.6	24.0	15.2	44.5	2.9
1908	64.8	23.0	87.8	7.9	28.2	9.2	23.4	4.5
1909	64.1	21.0	85.1	8.6	26.7	8.9	28.4	4.2
1910	91.4	35.4	126.7	10.4	29.3	12.3	46.8	4.3
1911	90.3	36.3	126.6	8.8	29.1	0.9	41.9	5.3
1912	84.2	35.8	120.0	8.3	25.9	0.8	47.5	7.1
1913	80.6	39.7	120.3	8.4	30.0	1.2	50.6	7.6
1914	49.2	17.1	66.4	6.9	21.2	1.2	19.0	3.2
1915	32.0	25.2	57.2	7.9	26.8	0.3	4.6	1.2
1916	61.4	32.0	93.3	6.1	20.4	0.3	7.1	1.3
1917	51.9	30.1	82.0	4.5	17.6	0.3	9.2	1.2
1918	19.5	21.8	41.4	7.8	20.5	0.1	5.3	0.8
1919	23.7	33.9	57.7	7.5	22.5	0.1	13.6	1.4
1920	42.2	31.9	74.0	8.1	26.9	0.4	17.5	2.8
1921	49.8	11.9	61.7	7.4	23.8	6.9	9.7	1.9
1922	34.6	15.3	49.9	9.2	25.8	2.7	6.8	2.1
1923	41.4	12.9	54.3	11.1	27.5	4.5	14.2	2.8
1924	47.3	14.5	61.7	9.0	27.8	6.1	13.2	3.1
1925	55.9	23.6	79.6	9.2	26.7	2.5	9.0	2.7
1926	90.8	45.5	136.4	10.3	29.3	2.6	14.4	3.9
1927	93.6	41.1	134.7	14.9	30.7	2.9	16.8	3.2
1928	77.1	16.6	93.7	9.8	30.0	2.6	17.7	2.5
1929	76.4	29.9	106.3	12.9	29.1	2.4	17.5	3.1

APPENDIX B. (*Continued*)

	Malaya Chinese Examined at Singapore	Malaya Indians Immigrants	Malaya Total Chinese and Indians	Thailand	Burma	United States	Canada	Brazil
1930	63.1	18.3	81.4	8.3	26.4	2.1	11.1	2.0
1931	16.9	4.4	21.3	5.8	20.3	0.8	2.5	0.7
1932	7.2	4.0	11.2	4.6	21.2	0.3	1.9	0.8
1933	5.9	4.3	10.3	2.1	16.8	0.2	1.3	1.2
1934	21.1	19.2	40.3	2.1	17.7	0.2	1.2	1.2
1935	30.3	14.2	44.5	3.5	18.8	0.3	1.0	0.8
1936	32.0	9.8	41.8	3.8	17.1	0.3	1.1	0.3
1937	52.7	26.5	79.1	4.6	17.2	0.4	1.4	0.9
1938	21.1	9.6	30.7	2.6	15.3	0.5	1.6	0.5
1939				1.9		0.7	1.6	0.6

Source: See Appendix E.

APPENDIX C. ASIA AND GLOBAL CORE UNSKILLED REAL WAGES, 1882–1939 (1882 = 100)

	SE China	Madras	Burma	Thailand	Malaya Chinese	Malaya Indians	France	Germany	United Kingdom	United States
1882	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1883	111.1	94.3	100.3	94.5	100.5	100.5	99.5	100.0	101.4	105.8
1884	112.8	93.8	100.7	106.6	100.6	100.6	102.0	104.2	107.1	110.2
1885	107.2	96.3	91.2	83.5	100.6	100.6	104.3	112.4	111.9	110.3
1886	103.1	95.8	84.7	78.6	100.3	100.3	106.4	115.7	114.2	114.2
1887	117.0	102.8	94.6	83.2	99.5	99.5	106.9	123.7	119.7	115.8
1888	116.6	97.2	88.3	84.6	97.8	97.8	108.6	128.0	118.8	121.1
1889	130.1	91.5	87.9	82.5	94.2	94.2	108.0	130.3	116.7	124.3
1890	125.3	63.3	98.7	81.8	86.7	86.7	109.3	134.1	120.3	126.6
1891	127.2	57.3	88.2	67.4	70.9	75.5	107.8	130.7	120.3	126.6
1892	119.7	62.8	80.9	53.4	75.5	65.0	105.8	132.4	127.3	126.6
1893	113.6	69.1	91.4	51.4	106.8	53.4	113.3	134.1	126.1	127.8
1894	108.7	76.3	92.5	49.1	104.7	51.6	111.6	136.0	136.1	128.2
1895	104.5	74.6	89.3	46.6	104.7	50.6	113.6	135.3	135.5	133.7
1896	100.8	59.4	84.9	43.7	106.8	72.6	117.5	144.8	137.7	131.7
1897	97.4	55.8	74.9	42.2	129.9	41.6	117.2	138.4	138.3	133.0
1898	94.0	64.4	85.9	40.1	110.6	57.4	114.6	142.0	136.7	135.0
1899	90.5	57.0	85.0	49.7	189.3	70.8	118.4	142.0	131.2	137.0
1900	86.6	55.0	77.3	55.9	141.6	84.2	117.4	149.7	125.9	138.6
1901	113.3	64.9	80.7	62.1	117.7	78.7	122.4	147.7	136.1	141.2
1902	97.5	79.8	85.9	66.2	103.6	74.3	122.4	150.1	138.1	143.7
1903	83.2	81.1	70.1	61.5	90.9	70.5	118.7	159.5	138.1	145.3

APPENDIX C. (*Continued*)

	SE China	Madras	Burma	Thailand	Malaya Chinese	Malaya Indians	France	Germany	United Kingdom	United States
1904	85.1	64.1	79.1	57.1	72.3	66.5	121.7	162.1	136.1	144.9
1905	87.5	54.3	76.0	52.8	86.1	61.6	119.5	165.1	132.3	148.1
1906	75.5	51.6	73.3	53.5	91.1	55.1	122.3	161.9	123.7	152.8
1907	70.9	48.3	69.7	54.2	79.5	45.9	124.3	172.5	119.1	152.2
1908	77.1	58.4	71.3	54.8	80.6	50.6	125.9	178.8	130.5	147.7
1909	90.2	58.3	77.4	55.4	95.4	51.7	127.2	180.9	128.7	152.3
1910	83.7	58.1	81.6	56.0	107.0	50.8	122.9	186.9	122.1	150.9
1911	77.5	77.9	73.7	56.6	151.1	76.9	122.0	184.9	121.2	147.4
1912	98.9	57.9	70.3	57.2	126.6	72.6	118.9	179.3	116.1	146.2
1913	100.0	78.1	66.2	58.8	146.4	72.4	120.4	182.9	120.2	150.4
1914	100.4	58.1	65.5	58.9	75.8	70.4	112.9	180.1	104.3	150.0
1915	98.5	58.1	64.0	58.0	69.2	70.2	92.3	177.2	89.9	150.4
1916	94.6	82.3	61.5	69.9	85.6	91.0	88.1	174.4	83.6	172.3
1917	94.8	58.3	57.9	63.1	106.3	85.1	90.0	171.6	84.8	182.4
1918	93.5	37.1	53.2	44.5	89.3	69.6	85.3	168.8	96.1	195.0
1919	93.3	58.5	43.6	29.3	77.4	29.7	98.2	166.0	108.5	197.6
1920	91.6	58.2	43.4	34.7	48.9	26.2	79.7	163.3	115.4	195.4
1921	89.6	74.2	52.1	46.9	98.4	53.8	116.6	160.5	184.0	181.3
1922	96.0	58.2	88.5	50.9	84.9	55.0	125.7	157.7	158.5	178.5
1923	94.3	58.3	73.1	50.0	89.7	56.3	127.6	155.0	139.9	192.6
1924	94.2	58.3	68.5	54.2	87.9	47.8	124.9	152.2	129.9	199.0
1925	94.6	58.2	82.1	48.3	91.2	65.9	120.3	199.7	144.7	192.4
1926	99.9	71.9	68.0	47.7	88.7	75.8	113.3	213.8	161.9	193.8
1927	110.4	58.2	73.0	49.5	93.3	77.2	106.9	213.8	167.2	201.0

1928	108.0	60.9	62.8	50.7	93.3	84.0	110.9	225.0	170.0	204.9
1929	83.7	58.3	84.5	50.0	88.8	91.8	118.7	237.6	177.4	210.2
1930	78.3	57.8	98.6	56.4	66.3	55.5	124.5	250.9	210.3	212.0
1931	73.0	107.8	154.3	60.5	58.3	70.4	123.1	254.2	245.8	223.6
1932	71.1	57.8	135.3	67.6	42.2	54.3	129.7	225.3	250.5	217.8
1933	91.0	58.3	118.0	73.8	106.3	83.8	139.6	207.7	249.1	229.7
1934	91.3	58.3	122.6	79.5	140.5	103.3	141.8	202.6	242.2	265.0
1935	86.3	58.0	111.6	74.3	131.6	93.6	151.4	199.3	242.8	267.7
1936	88.6	88.4	115.3	74.5	140.6	100.3	135.2	197.7	231.2	268.1
1937			112.3	69.5	172.6	104.8	152.7	197.6	208.8	294.2
1938			114.8	71.0	101.9	96.9	138.6	196.0	246.7	307.7
1939			106.8	71.6		113.2	133.3	197.4		317.5

Source: See Appendix E.

APPENDIX D. TERMS OF TRADE SOUTHEAST ASIA, MADRAS, AND SOUTHEASTERN CHINA, 1882–1936 (1882 = 100)

	Burma	Malaya	Thailand	Madras	SE China
1882	100.0	100.0	100.0	100.0	100.0
1883	120.6	90.0	105.3	104.8	103.7
1884	121.3	93.5	94.7	107.8	94.0
1885	120.2	90.6	103.1	110.0	90.6
1886	144.6	99.7	121.3	104.7	84.3
1887	141.6	115.6	115.5	101.4	81.4
1888	140.3	122.8	110.9	94.9	80.7
1889	153.7	94.5	109.7	99.5	77.9
1890	143.2	92.9	122.5	101.1	86.1
1891	145.5	93.8	128.6	105.5	91.2
1892	160.3	95.7	145.6	106.3	93.9
1893	169.4	88.5	141.6	109.3	82.2
1894	158.0	74.0	153.6	110.0	58.4
1895	163.5	69.7	113.2	107.5	57.6
1896	164.6	54.0	113.7	104.8	56.3
1897	182.9	60.2	106.3	115.1	56.8
1898	193.6	61.8	129.7	118.0	60.1
1899	191.3	93.6	147.1	102.0	71.5
1900	186.9	103.3	143.1	104.5	57.5
1901	174.4	95.4	137.0	114.7	52.6
1902	174.0	98.1	142.0	112.9	63.9
1903	184.3	96.2	153.7	103.3	59.3
1904	195.8	94.9	146.6	107.8	55.5
1905	179.4	106.7	150.8	104.6	62.2
1906	188.4	131.6	145.1	105.3	65.5
1907	200.9	125.3	147.9	122.4	66.0
1908	217.0	105.1	139.1	125.2	49.1
1909	216.0	107.0	122.3	112.3	51.1
1910	202.8	120.6	128.7	119.1	48.5
1911	200.3	156.0	147.2	119.1	47.9
1912	216.3	153.1	163.7	115.2	43.9
1913	225.5	147.3	123.0	128.4	48.7
1914	198.5	121.8	116.0	98.5	45.5
1915	201.7	129.0	131.0	57.4	41.1
1916	159.6	109.8	140.1	58.9	46.0
1917	142.5	102.5	136.1	56.6	44.7
1918	133.8	77.9	205.2	68.8	39.4

APPENDIX D. (*Continued*)

	Burma	Malaya	Thailand	Madras	SE China
1919	144.2	49.9	350.8	81.2	39.8
1920	157.7	57.8	144.5	85.7	35.5
1921	186.1	43.3	146.4	60.4	39.3
1922	202.9	43.7	141.4	85.2	56.0
1923	192.4	61.3	159.4	94.4	58.5
1924	189.6	59.5	177.9	89.5	50.5
1925	210.6	102.8	188.7	86.9	50.2
1926	234.9	87.5	195.6	75.9	51.5
1927	224.9	79.5	182.0	72.5	45.4
1928	194.9	54.3	173.7	89.8	45.3
1929	212.8	50.7	175.5	93.3	44.3
1930	231.0	38.4	141.2	78.4	36.8
1931	234.0	36.9	88.7	69.0	29.6
1932	244.1	41.9	87.8	63.8	24.2
1933	208.1	61.3	92.2	68.2	23.9
1934	199.8	79.2	97.5	71.0	21.8
1935	216.3	71.2	108.4	77.6	25.6
1936	200.5	70.0	111.8	76.9	26.4

Source: See Appendix E.

APPENDIX E. DATA SOURCES AND METHODS

Immigration

Governments in each of the three Southeast Asian countries kept records for Asian arrivals and departures and these correspond closely to migration. Malayan data alone distinguish between Indians and Chinese. Statistics for Burma relate almost entirely to Indians and those for Thailand to Chinese. Sources for New World data are for population as well as immigration.

Burma: For Burma data relating to annual immigration and emigration were published from 1885 onwards. Information derives from the records of the Port Health Department. Figures for Rangoon, which normally handled two-thirds to three-quarters of those traveling by ship, represent an actual count and include infants and persons without a ticket. For other Burmese

ports, figures were obtained from the shipping companies and are for tickets sold. Immigration data appear to be approximately accurate but figures for emigration probably give no more than a broad indication of trends (Baxter, 1941, pp. 10–14, 121; India, 1932a, part I, pp. 19–20; Cheng, 1968, pp. 263–264).

Immigration statistics do not include ambulatory arrivals or departures. These were mainly Bengali immigrants from the area around Chittagong. Typically each year in the inter-war period some 40,000 Chittagongians walked across the East Bengal (now Bangladesh)–Burma border for work related to the rice harvest, principally in the Arakan district of the Burmese province of Akyab and most returned home after the end of the harvest (Baxter, 1941, p. 50). Data sources: Cheng (1968, pp. 262–263); Baxter (1941, p. 121); Fenichel and Huff (1971, pp. 41–42).

Malaya: Annual data for Indian immigration and emigration exist from 1880 onwards and are accurate because of the Malayan government's role in bringing Indian workers to Malaya. Unskilled laborers from the subcontinent constituted the great bulk of the Malayan traffic, but the published data also include an unknown number of other Indians such as merchants traveling between the two countries. Until the 1930s, when demand for labor on rubber estates declined sharply, non-laborers were a small proportion of the Indian totals (Sandhu, 1969, pp. 95–125). Data source: Saw (1970, p. 52).

Almost all Chinese immigrants to Malaya first landed at Singapore. Beginning in 1881, records of Chinese examined at the port by its officials, by health officers, or by the Chinese Protectorate (a government department set up to safeguard Chinese welfare) provide a reliable measure of annual immigrant inflows. But no statistics for Chinese emigration were kept before 1916, and until 1930 include only Chinese deck passengers departing from Singapore. Beginning in 1931 data are for deck passengers leaving all Malayan ports (in effect Penang as well as Singapore) and suggest understatement in the 1916–1930 departure figures. For 1911–1915 Chinese emigration from Malaya was estimated as 400,000 (Malaya, 1932, p. 113). Data for 1930–1939 refer to 1930–1938 only. Data sources: Straits Settlements (1881–1938); (from this source see years 1881–1911 immigration reports; Secretary for Chinese Affairs for 1930–1938; Progress of the People of the Straits Settlements for 1934–1938); Malaya (1921, p. 21, 1932, p. 113).

Thailand: Comprehensive immigration data for Thailand first become available in 1882, when the great majority of passengers from China began traveling on steamers under European flags. Utilizing statistics for Chinese

emigrants traveling in non-China ships for each of Southeastern China's emigrant ports, together with records at the port of Bangkok which date from the late 1880s, G. William Skinner compiled figures for immigration. For annual Chinese arrivals in Thailand, Skinner estimated the maximum probable error as 10% for 1882–1892, 7.5% for 1893–1905, and 5% for 1906–1917. For departures in each period, however, he specified nearly twice these margins of error. Data for 1881–1910 refer to 1882–1910 only. Data sources: Skinner (1957, pp. 61, 173); Sompop (1989, pp. 207–208).

United States: United States, Department of Commerce (1970, part 1, pp. 8, 105–106) and Kuznets and Rubin (1954, pp. 94–96). In Table 4 the 1881–1910 net immigration figure is for 1880–1910 as estimated by Kuznets and Rubin (1954, p. 94).

Canada: Urquhart and Buckley (1965, pp. 14, 23).

Argentina: Diaz Alejandro (1970, pp. 421, 424). In Table 4 the 1931–1939 figures are for 1931–1940.

Brazil: Brazil (1960, pp. 5, 12).

Wages and Prices

Wages: For the three Southeast Asian countries data in the sources used is typically for daily unskilled wages but for long periods for India and China wages are stated monthly or yearly. The usual caveats for unskilled wages in an underdeveloped area apply. These include the possibilities of: underemployment; greater variations in days employed than daily wages over periods of even four or five years; payment in kind; and that some figures give a range of wages without accompanying information on the distribution of wages within that range (here we use the mid-point). However, no suggestion of systematic bias exists. Nominal wages are not available for every year for any of the countries or areas we consider. At the beginning of the discussion of wage data for each country or area we state the years for which we have wage observations.

Burma: Data for 1873–1911 and 1918–1939. Wages for Burma derive from government reports. From the 1860s to 1901, Burma's government collected average daily wages for unskilled male workers in Lower Burma in regular employment. Government figures record a simple average of several locations in Lower Burma including Rangoon. Between 1871 and 1901, Lower Burma's population grew almost threefold from 2.0 million to 5.6 million (measured in terms of 1872 census boundaries). The government's reported average wage figure has been used because it reflects the overall

wage that potential immigrants might anticipate and because with such fluid demography and heavy immigration, labor was likely readily to respond to wage differentials between areas. Under these circumstances a population-weighted average might largely reflect ex post not ex ante wage opportunities. The 1880–1901 wage statistics relate mainly to immigrant Indian wages. Although some Burmese had always worked as agricultural laborers, no significant class of such individuals existed until the turn of the century. By 1902, and especially after 1910 with the clear emergence of a class of Burmese agricultural laborers, wage statistics reflect a unified labor market in Burma (Hlaing, 1964a, pp. 122–123; Adas, 1974, pp. 128–129; Baxter, 1941, pp. 36, 39, 42, 66–67, 90–92). For 1902–1911 wages are from statutory annual reports relating to the Indian Factories Acts and are the average of daily wages for rice mill coolies in the five locations of Akyab, Rangoon Town, Hanthawaddy, Basseim, and Amherst. For 1918–1939 wages are an average of minimum and maximum coolie wages in Burma's factories. These were predominantly rice mills.

The nominal wage for 1882 is for that year, from Burma (1868/69–1935/36 (report for 1882)), and is the unskilled (coolie) wage per month.

Data sources: Burma (1868/69–1935/36 (years 1868–1901)); Burma (1897–1939); Burma (1917); Page (1931, pp. 11–51).

Malaya: Indian workers data for 1890, 1893–1895, 1897, 1907, 1909–1938. Chinese workers data for 1875–1879, 1891–1893, 1896–1899, 1904, 1906–1908, 1910–1922, 1924, 1926, 1929–1934, 1937–1938. The Malayan labor market consisted very largely of Chinese and Indians. Comparatively few Malays worked for wages, preferring to concentrate either in the traditional activities of fishing and farming or to grow rubber on their own smallholdings. From the 1870s to about 1910, tin mining remained the largest single source of Chinese employment and a principal influence on immigration to Malaya. By the 1910s, however, tin mining was more than counterbalanced by the expansion of rubber cultivation, which drew large numbers of Chinese and, for the first time, Indians to Malaya. Job overlaps, including the many Chinese working on rubber estates, and considerable labor mobility allow one to speak, if not of a common Malayan wage, of wage movements fluctuating around the level obtaining for unskilled Indian rubber estate workers (Bauer, 1948, p. 21; see also Whittlesey, 1931, pp. 87–91, 117 on labor shortages and the mobility of labor in response to rising wages).

The wages of Indian rubber estate workers served as a benchmark for all workers in Malaya (Malaya, 1939/1940 from which see the report for 1939, p. 39). It was well known, however, that in boom years Chinese exacted high

wages, while in a bust Chinese wages fell appreciably more than Indian (Bauer, 1948, p. 219).

To reflect these differences we construct separate series for Indian and Chinese wages. Overlaps for wages paid to Chinese in the tin and rubber industries exist for 1912, 1913, and 1922. Comparison for these years shows that Chinese wages in the rubber industry were 0.78 of those in tin mining and tin and rubber wage series were linked on this basis. During the 1920s tin mining became an increasingly capital-intensive, European-dominated industry that employed relatively few Chinese. Insofar as wages for Chinese in mining exist for this later period, they cannot meaningfully be compared with earlier mining wages or rubber industry wages and have not been used. For 1882–1889 Indian wages are traced back using Malaya Chinese data and on the basis of the subsequent relationship between Indian and Chinese wages.

For Indians the nominal wage for 1882 is for 1890 and for Chinese an average of wages for tin mining workers for 1878 and 1879. The Indian wage is from Straits Settlements (1891, p. 46) and the Chinese from Jackson (1961, pp. 41, 154) and Doyle (1879, p. 29). Data sources: Indians – Straits Settlements (1891, p. 46); Kaur (1980, p. 698); Owen (1897–1898, p. 84); Thoburn (1977, pp. 285–286). Chinese – Jackson (1961, pp. 41, 154); Doyle (1879, p. 29); Becher (1892–1893, p. 101); Owen (1897–1898, p. 67); Wong (1965, pp. 100, 175, 206, 219); Chen (1923, pp. 89, 94); Planters' Association (1922, appx. IV); Figart (1925, p. 179); Soliva (1931, p. 28); Drabble (1991, p. 40); Bauer (1948, pp. 219, 232–243); Blythe (1938) indicates Chinese estate wages of $11.40 in 1936 (p. 27) and $16.80 in 1937 (pp. 33, 35). It is clear that Chinese estate wages were cut at the end of 1937 and, with the emergence of heavy Chinese unemployment, fell sharply in 1938 (Parmer, 1960, p. 245; Bauer, 1948, p. 241). The 1938 wage is based on that year's Labour Department Report, which put Chinese estate wages at about 20% above Indian (Malaya, 1939 and 1940, from which see the report for 1938, p. 40).

Thailand: Data for 1889–1890, 1896, 1898, 1901–1902, 1905, 1912–1939. Even in the 1950s good land was still available in Thailand's fertile Central Plain. The existence of surplus land and, until at least 1929, higher earnings for commercial farmers than coolie employment, encouraged the Thai to continue to concentrate on cultivation of the land (Sompop, 1989, pp. 167–68. From 1910 to 1929, however, small farmers with about two hectares of land did not earn more than coolie labor due to low rice prices). Chinese did not plant rice in competition with the Thai and performed almost all wage labor outside agriculture (Ingram, 1971, pp. 43, 56–57).

In Thailand rubber cultivation first assumed importance towards the end of World War I and exports from 1923 onwards. Chinese had a major role in the rubber industry as laborers, as the Thai were not responsive to high wages. During the inter-war period, rubber production engaged some 50,000–60,000 tappers, largely Chinese, and constituted a substantial part of Chinese employment. Chinese tappers were typically paid on a share basis of 50% of the selling price of finished sheets of rubber, an arrangement which involved the tapper processing the rubber collected (Ingram, 1971, pp. 103–104. For prices of rubber exports from Thailand, see Sompop, 1989, p. 217).

Wage data, assembled by Feeny and by Ingram from a variety of sources, are for unskilled labor. Improved communications, especially railway construction, increasingly facilitated the movement of labor in Thailand (Skinner, 1957, pp. 198–199; Sompop, 1989, pp. 17, 176–178). Feeny (1983, p. 697, 1982, p. 163) convincingly argues that an approximate equality of real urban and rural wages resulted from a combination of this transport availability, labor mobility, and the movement of workers from Bangkok to public works projects in the Central Plain and beyond. Until 1900 wage series, Feeny (1982, p. 29) stresses, are ''based on fragmentary evidence''. For 1882–1888 Thai wages are traced back using the Thailand wage series in Williamson. Data sources: Feeny (1982, pp. 132–133); Ingram (1964, p. 115); Williamson (1998, appendix).

The 1882 nominal wage is for 1889 and from Ingram (1964, p. 115). It is the Bangkok unskilled daily wage assuming 24 days employment per month.

Southeast Asia Prices: No consumer price index covering 1880–1939 exists for Burma, Malaya, or Thailand. Typically for these and other Southeast Asian countries rice, and sometimes also textile, prices have been used as a deflator (e.g. Hlaing, 1964a, p. 121; van Luijk & van Ours, 2001, pp. 8–9). We construct an eight-commodity price index to provide a more representative measure than hitherto available of the cost of living for unskilled workers in the three Southeast Asian countries. The index consists of: rice (.58), dried fish (.06), sugar (.05), tea (.03), beer and ale (.12), kerosene (.04), tobacco (.03), and white and grey shirting (.09). For 1880–1884 data are available only for rice, dried fish, sugar, and shirting. For these years we weight all commodities as above except rice. Its share is increased to stand for the unavailable data.

Until 1919 data for the index are from unit values derived from annual trade returns and beginning in the 1920s also include some wholesale prices. Reliance on trade prices is not ideal but for much of the period 1880–1939 affords the only consistent series possible. Trade prices are

almost certainly a good reflection of equivalent movements in wholesale and even retail prices, because internal and external markets in all three countries were exceptionally open and competitive. Trade restrictions were either non-existent or, in the few instances they did apply, minimal until the 1930s, when Malaya and Burma attempted to limit imports of Japanese manufactures, mainly textiles.

The rice market in Southeast Asia was, even by the 1880s, well integrated but never perfectly so. Deviations from long-run equilibrium rice prices had significance for real wages in Southeast Asia and so potentially also for immigration. To take the fullest possible account of fluctuations we use country-specific rice prices for the three Southeast Asian countries. For other items, price data from one Southeast Asian country represent prices in the other two. In the case of sugar and dried fish this is acceptable because Singapore, which served as an entrepot for much of Southeast Asia, traded extensively with Thailand and Burma. Both countries obtained sugar via Singapore. It was an outlet for Burma's rice and bought large quantities of rice and dried fish from Thailand. Both foods were consumed in Malaya while, in exchange for rice, fish was shipped to Burma and textiles to Thailand (Huff, 1994, pp. 54–55, 102–106). Almost all textiles were imported in the absence of significant manufacture in Southeast Asia. Other goods in the index were also internationally traded and obtained in Southeast Asia at world prices. For all three countries the United Kingdom was the main source of manufactured goods. Japan's growing role as a low-cost supplier of manufactures to Southeast Asia in the inter-war years, especially between 1930 and 1934, is reflected in the index's use of trade prices of white and grey shirting.

Weights in the index favor essential consumption and are based on a composite of contemporary budget surveys for unskilled urban and plantation workers (Bennison, 1928, pp. 176–181; Andrew, 1933, pp. 226–250; Malaya, 1922–1938; Creutzberg, 1979, p. 78 (budget devised by Polak); Indonesia, Central Bureau of Statistics, 1958; van Niel, 1956; Runes, 1939, pp. 19, 21). Food accounted for 73% of the spending of field and factory laborers living on plantations in Java in 1939 (van Niel, 1956, p. 78). Our index uses unchanged weights and in it food accounts for 72% and rice for 58% of total expenditure. A 1937 survey of municipally employed workers in Batavia found that food took 60% of expenditure of two-to-five-person households with a household gross daily wage of 30 cents (US$ 0.54 or 1s 8d.). Such a wage was effectively for unskilled work and the one received by half of all households surveyed. For these households food was, however, probably a smaller proportion of spending than for immigrant workers in

Burma, Malaya, and Thailand, since in Batavia 15% of spending was for rent and 3% for school fees. Uncooked and prepared rice accounted for 70% of food expenditure in Batavia (Indonesia, Central Bureau of Statistics, 1958, pp. 126–147, 220–223). In the three Southeast Asian countries, rice, although apparently often two-thirds or more of gross daily calorie intake of unskilled workers, generally made up (as in Batavia) no more than 35% or 45% of total expenditure (Bennison, 1928, pp. 28–29, 37; see also van Niel, 1956, p. 79). Accordingly, in our index rice must serve as a proxy for a number of other food purchases. It does so reasonably well. According to a 1920 commission, ''The position which rice occupies in the economies of this part of the world is not merely that of an article of food, it really represents the standard of value, the 'pecunia' of the East … shopkeepers considered any rise in the price of rice to be a good and sufficient reason for advancing the price of every commodity they sold'' (Straits Settlements, 1921, p. C273 and for discussion of the ''moneyness'' of rice, Huff, 1989). Contemporary budget information indicates limited expenditure on protein. Dried fish, consumed throughout the three Southeast Asian countries and weighted 6%, stands for such expenditure. Tea (3%) was a ubiquitous consumption item, while the 5% weight for sugar represents its use not just in cups of tea but in confectionery and cooking.

Among non-food items we weight beer and ale as 12% of total expenditure and in this are persuaded by Bennison's survey data and his observation that men living in bad housing, working long hours, and without home life naturally spend large amounts on alcoholic drink. Some of this was local production, for example toddy or Mandalay (Burma) or Tiger (Malaya) beer, but imports, both of beer and alcohol, made up a considerable amount of consumption (Bennison, 1928, pp. 32–33). The beer and ale component of our index may affect prices by including only imports and in this regard tilt the index too far in the direction of urban consumption. However, beer and ale in our index figure less prominently than in Bennison's where for Tamils, Telugus (from the Vizagapatam district of Madras) and Uriyas (from Madras's Ganjam district) alcohol is more than 25% of expenditure.

Textiles are the index's other main non-food component and represented by the equally weighted price of white and grey shirting imports to Thailand. Cotton was the predominant imported textile material used in Southeast Asia. Our index's 9% overall weighting is because clothing and bedding were made of similar materials and because cotton goods must be taken to represent all other textile materials (Bennison, 1928, p. 68). Kerosene (4%) was important as fuel and in cooking, including the cooked food bought

from hawkers. Tobacco (3%) is raw tobacco except for 1914–1919 when it is cigarettes. The weighting takes into account both imported cigarettes and locally manufactured smoking materials such as cheroots and the two-for-a penny cigarettes which in Malaya gained popularity in the inter-war period and especially so at times of economic downturn. We have no data for rent but that omission is not so serious as might be imagined, since immigrants tended to club together in barrack housing. It seems likely that for unskilled workers in the three countries drink to some extent substituted for rent in the sense of helping to make up for the poor living conditions associated with low rents.

Data sources: Rice – Burma 1880–1931, Rangoon export price of ngatsain rice, India, Department of Commercial Intelligence and Statistics (1933, p. 10). Ngatsain grain is a group of rice classified as bold, defined as a grain broad in proportion to its length. It constituted the bulk of rice exported from Rangoon and Bassein and was known everywhere as ''Burma Rice''. Cheng (1968, pp. 37–38), 1932–1939: Saito and Lee (1999, p. 98). Malaya: Huff (1994, pp. 373–381) and for 1928–1930: Malaya (1930–1937 (issue for 1930)). Thailand: Feeny (1982, pp. 127–128). Dried fish and sugar: Huff (1994, pp. 373–381) and for 1928–1932: Malaya (1930–1937 (issues for1930 and 1932)). Tea, beer and ale, kerosene, tobacco 1880–1919: Shein (1964, pp. 223–233), Burma (1912–1913, 1922–1923), Malaya (1922–1938 and specifically issues for 1926, pp. 24–25; 1930, pp. 23–24; 1935, pp. 35–36; 1939, pp. 35–36). White and grey shirting: Ingram (1964, pp. 123–124). Data are not available for white shirting for 1886–1888, and 1890–1894 and for grey shirting in these years and also 1889. Where data for Thailand are not available we use the price of grey shirting imports at Calcutta taken from India, Department of Commercial Intelligence and Statistics (1933, p. 9).

India Wages: Data for 1873–1907, 1911, 1916, 1918, 1921, 1926, 1928, 1931, 1936. Immigrants from India to Southeast Asia were very largely unskilled working age males previously engaged in agriculture, usually as laborers (Baxter, 1941, p. 47). Typically at least four-fifths and generally an even higher proportion of Indian immigrants to Malaya came from South India. Most were low caste Tamils from the Madras Presidency (Sandhu, 1969, pp. 159–162). Large numbers of immigrants to Burma were from Madras but Bengal was also a significant source of labor. However, since most Bengali immigrants traveled on foot to Burma and do not appear in Burma's immigration statistics, we use Madras wages only in analyzing immigration into Burma.

Data sources: For 1873–1907 the Government of India published as India, Director-General of Commercial Intelligence (1902–1923) (see 1902,

pp. 264–283, 1908, pp. 174–191) average monthly wage for agricultural laborers in seven districts in Madras (Ganjam, Vizagapatam, Bellary, Tanjore, Tirunelveli, Salem, and Coimbatore). Together these districts accounted for some two-fifths of the 1901 Madras population of 38.2 million.

The seven districts do not cover all parts of the Presidency from which immigrants left but were typical of emigrant areas. For a map of the districts from which South Indian immigrants to Malaya originated, see Sandhu (1969, p. 164). In all but one year the Madras statistics specify a single wage rather than the range of wages often given in wage data for districts elsewhere in India. We weight nominal Madras wages by the 1901 population share in each of the seven districts to measure average agricultural wages in the Presidency. For 1911 and 1916 wages are the population-weighted average of five districts (Coimbatore, Madurai, Tanjore, Salem, and Tiruchirapalli) which together accounted for 24.5% of the population of Madras. Data are from Madras (1911–1941, wage censuses for 1911 and 1916) and United Kingdom (1931, vol. 7, part 1, p. 301). The 1921 wage is calculated on the same basis as wages for 1882–1907 using data from the 1921 Wage Census for other agricultural laborers. Madras (1911–1941, census for 1921, pp. 16, 18). For 1918 and 1928 wages are from United Kingdom (1931, vol. 7, part 1, p. 296). For 1926, 1931, 1936, and 1941 wages are based on the wage censuses for those years and the average wage for field laborers. Madras (1911–1941, censuses for 1931, p. 2 and 1936, p. 2). The 1926 wage differs somewhat from, but is consistent with, the average wage of Madras agricultural laborers in United Kingdom (1931, vol. 7, part 1, p. 4; see also vol. 7, part 2, p. 2; 1928, vol. 3, p. 314).

The nominal wage for 1882 is for that year and from India, Director-General of Commercial Intelligence (1902–1923) from which see the report for1902. It is the average of monthly wages for agricultural laborers in seven districts in Madras

India Prices: The price index used to express nominal as real wages is a weighted average of the Madras retail price of the four main foodgrains. These are rice and three less expensive coarse grains, namely jawar (cholum), bajra (cambu), and ragi. Our index uses the four grains, weighted by the average acreage in Madras of each crop in 1898/99–1900/01, in preference to rice only because its consumption was by no means universal, especially among poor classes. Kumar (1983, p. 235) observes that around the turn of the century a sign of workers being better off in some parts of the Presidency was that they could afford to eat rice. In times of famine or

distress the price of coarse grains rose disproportionately to rice, and would cause real wages to move differently than suggested by rice prices alone. For discussion of prices in India, see also McAlpin (1983). Data source: Madras (1950, pp. 59–60).

China Wages and Prices: Data for 1875, 1877–1878, 1880–1892, 1900–1935. Chinese immigrants to Thailand and Malaya came overwhelmingly from Southeastern China. Almost all originated from the two coastal provinces of Kwangtung and that part of Fukien centered around the port of Amoy. Other emigrants were mainly from the island of Hainan south of Kwangtung and the province of Kwangsi bordering on Kwangtung to the east (Skinner, 1957, p. 35; Malaya, 1932; Chen, 1939, pp. 261–270). Emigrant areas of Kwangtung and Fukien correspond closely to J. L. Buck's double-rice cropping area in the two provinces. Also included in this zone are parts of the neighboring provinces of Kwangsi and Kiangsi. (Buck, 1937b, p. 10 and compare with the maps in Skinner, 1957, pp. 34–36. Rice was not, however, uniformly important throughout the double-cropping rice zone. Some rural areas around Canton and Swatow, two of the main Kwangtung emigrant ports, were deficient in rice. These two ports and the ports of Amoy and Foochow in Fukien were major inlets for rice imports from abroad and so helped to link China to the world rice market. Freedman, 1958, pp. 9–10; see also, Brandt, 1989, pp. 16–20.)

Wage data for Southeastern China are notoriously sparse. As well as Buck's well-known wage series, we utilize five further series to represent wage movements in Southeastern China. Where possible we average wage series to try to ensure as representative an index as possible. The exception to this averaging is the wage series for Peking unskilled labor. Buck compiled money wages for a year's farm labor for seven counties (*hsien*) in the three provinces of Fukien, Kwangtung, and Kwangsi. For five of the seven counties and for each of the three provinces, the data cover all but a few years during 1906–1933 and taken together extend to the entire period. The seven districts include some 273,900 households. We weight Buck's data by the number of households in each *hsien*.

As for wages, we average price indexes if possible. Evidence suggests, however, that at least for most of the period of our study, and even when price information is not abundant, differences in prices were probably not too great because strong regional links forged through a network of small markets allowed national price movements within China. (Rawski draws on the evidence of Brandt (1985) of strong interregional price links and cites an unpublished study by Schram as well as prices for a number of commodities and services including farm labor, draft animals, and rural land. Schram

found price changes passed along to numerous minor markets throughout China. As a result price movements parallel to national price averages occurred in most localities at most times. Rawski, 1989, pp. 295, 325; Myers & Wang, 2002, pp. 580–591, 612.) Buck's wages are deflated by an average of three alternative price indexes: (i) a price index from Chang (1932, 1933 and available in Buck, 1937b, p. 151) (ii) an index from Buck (1937b, p. 151) for retail prices paid by farmers for commodities used in living and production. It is the average of seven (but for 1907–1911 between three and six) localities in the double-cropping rice region; (iii) Brandt's price index for nonagricultural goods. For 1906–1912 his index is for handicraft cloth, yarn, coal, and sugar and for 1913–1936 includes cotton cloth, yarn, kerosene, coal, sugar, cigarettes, groundnut oil, iron, steel, and tin (Brandt, 1989, pp. 103–104). In index (i) for 1906–1909 data for retail prices paid by farmers are not available and figures are for prices received by farmers linked in 1910 to the index for prices paid. The other five wage series used are for the daily wages of Canton porters 1882–1891 (China, Imperial Maritime Customs, 1882–91 to 1922–31, report for 1882–1891, p. 562), which we convert to real wages by constructing a weighted price index for Canton prices of rice, tea, salt, oil, and firewood given on p. 561; two series for daily Peking unskilled real wages, for 1865–1900 from Gamble (1943, p. 72), and for 1900–1925 from T'ien-p'ei and Gamble (1926, p. 106); wage and price indexes for 1912–1927 for Canton laborers (Kwangtung Government, China, 1928); and a series for wages of farm year labor for 1910–1935 in Wuchin, Kiangsu (Lewis & Wang, 1936, p. 86).

These five series and Buck's wage data are used as follows. The average growth rate for 1882–1891 for Canton porters wages was calculated and this series extrapolated to 1881 and 1892 to obtain an overlap with Peking unskilled labor. We then calculated average growth for Peking unskilled labor between 1881 and 1892. Information on percentage wage changes from Canton porters was used to adjust growth factors of Peking unskilled labor such that the dynamics of the indexes matched, but the level in 1892 corresponded to the pre-1882 Peking series. This yielded an interpolated wage series for 1882–1906 that accounts both for the levels information from Peking unskilled labor and the dynamics of Canton porters wages. For 1906–1910 we used the index based on Buck, Chang, and Brandt. In addition to this index, we utilized for 1910–1912 the 1910–1935 series for farm wages. For 1912–1925 our index is an average of three series, namely the Buck, Chang, and Brandt index, Canton wages, and the 1910–1935 farm wages. For 1925–1927 our index includes Canton laborers, Buck, Chang,

and Brandt, and the farm wages, and for 1928–1933 the last two of these. Throughout we adjust the level of all the averages (possible because of overlaps) and splice them. Values for 1934 and 1935 are obtained by using the growth rates of the farm wages for these years. Price data are as cited above and see additionally Wang (1972, pp. 357–358), Chou (1963, p. 243), Chang (1958, p. 371).

The nominal wage for 1882 is for that year and from China, Imperial Maritime Customs (1882–91 to 1922–31, report for 1882–1891, p. 562). It is the daily wage of Canton porters assuming 24 days of employment per month.

United States: Wages are rates paid for common or unskilled labor deflated by an index of consumer prices, both from David and Solar (1977, pp. 16, 59). The nominal wage for 1882 is for 1880 and from Lebergott (1964, p. 541). The wage is the average daily earnings for a common laborer assuming 24 days employment per month.

United Kingdom: For 1880–1914 wages are agricultural wages for England, Wales, and Scotland and for 1920–1938 for England and Wales only. Data for 1915–1919 are estimated by applying growth rates in the Williamson wage series which is for adult males in manufacturing. Nominal wages are deflated using the Saurbeck-Statist price index. Sources are: Mitchell and Dean (1962, pp. 350–351, 474–475) and Williamson (1995, pp. 165–166). The nominal wage for 1882 is for 1886 and from Hunt (1973, p. 70). The wage is a laborer's wage for a nine-hour day in the Midlands assuming 24 days employment per month.

Germany: Wages are for unskilled building workers. For 1880–1913 these are an average of wages in the three cities of Berlin, Nuremberg, and Rostock and for 1924–1939 for all cities. Nominal wages are deflated by a cost of living index. Data are from Bry (1960, pp. 325–326, 335–337). The nominal wage for 1882 is for that year and from Bry (1960, p. 339). The wage is the average weekly wage for unskilled building workers in Berlin, Nuremberg, and Rostock assuming four weeks work per month.

France: Data are an index of real wages for workers (*ouvriers*) in Singer-Kérel (1961, pp. 540–541). For discussion of the 213-commodity price index used as a deflator and the choice of base year in the index, see pp. 84, 276–283. The 1882 nominal wage is for that year and taken from France (1887, pp. 382, 395) and Simiand (1932, p. 23). The wage is the daily wage for male agricultural laborers, assumes 24 days employment per month, and is the weighted average of the winter, or outside harvest, wage (eight months) and the summer wage (four months).

Terms of Trade

The terms of trade are an index of the price of exports divided by an import price index with both indexes weighted to reflect commodity shares in trade. Recorded figures for imports and exports of individual countries or regions are used where possible but it has been necessary also to use world prices. Checks showed that country-specific and world prices are nearly identical.

Burma: For 1886–1915 terms of trade are from Shein (1964, pp. 223, 232) and include 14 main exports and 53 imports weighted by the proportion of each item in a base year of 1890–1892. Re-weighting for 1911–1912 as a base yielded almost unchanged indexes for both exports and imports (pp. 211–213). Import prices for 1882–1885 are a weighted average of textile prices (0.80) from the Saurbeck-Statist index and Lewis's index of the price of manufactures (0.20), and for 1916–1936 a weighted average of the price of consumer goods imported to Burma, taken from Hlaing (1964a, pp. 147–148) and, to reflect imports of industrial goods, Lewis's index of manufactures linked to US industrial prices at the 1913 overlap for the missing years of 1914–1920. The consumer goods price index from Hlaing consists of foodstuffs, vegetable oil, sessamum, salt, soap, cotton yarns, grey, white and colored cotton piece goods, silk, and woolen piece goods. Sources are Hlaing (1964a, pp. 147–148); Textiles: Mitchell and Dean (1962, pp. 474–475); Industrial goods: Lewis (1969, pp. 49–50) and United States (1970, part 1, p. 199).

For exports in years when Shein's index does not exist, export prices are a weighted average of four commodities of which rice is the most important. The four commodities are rice: 1882–1885 (1.0); 1915–1921 (0.70); 1922–1929 (0.65);1930–1936 (0.60); teak: 1915–1921 (0.15); 1922–1929 (0.10);1930–1936 (0.05); tin: 1915–1921 (0.03);1922–1929 (0.04);1930–1936 (0.06); petroleum: 1915–1921 (0.12); 1922–1929 (0.21);1930–1936 (0.29). Sources for exports are, rice: Until 1931 data are for the Rangoon export price of ngatsain rice from India, Department of Commercial Intelligence and Statistics (1933, p. 10) and thereafter the price of all Burma's rice exports (in practice almost all via Rangoon) from Saito and Lee (1999, p. 98). Teak: Wilson (1983, pp. 212–217); Petroleum: Huff (1994, pp. 372–378). Tin: International Tin Research and Development Council (1939, p. 52); International Tin Study Group (1953, p. 256). Export and import index weighting are based on Shein (1964, pp. 212–217) and Hlaing (1964a, pp. 110, 112).

Malaya: Imports are a weighted average of rice (0.50), textiles (0.20), and industrial goods (0.30). Exports are a weighted average of tin 1882–1910 (1.0); 1911–13 (0.85); 1914–1936 (0.254) and rubber 1911–13 (0.15); 1914–1936 (0.746). For discussion of export weights see Huff (2002, pp. 1093–1094). Sources are tin: International Tin Research and Development Council (1939, p. 52), International Tin Study Group (1953, p. 256). Rubber: Drabble (1973, p. 213); 1896–1939: McFadyean (1944, p. 239). For 1907–1910 prices are for first grade plantation crepe and thereafter for London average standard quality. The two qualities are closely comparable. Rice: Singapore imported most of its rice from Thailand and data are the Thailand export price of rice from Feeny (1982, pp. 127–128). Textiles: the Saurbeck-Statist index for textile fibers was preferred because it offers better coverage given the wide variety of Malaya's textile imports. Mitchell and Dean (1962, pp. 474–475). Industrial goods: Lewis (1969, pp. 49–50), United States (1970, part 1, p. 199).

Thailand: Exports are a weighted average of rice, teak, tin, and rubber. Export weightings are, rice: 1882–1895 (1.0); 1896–1910: (0.80); 1911–1921 (0.79); 1922–1934 (0.75); 1935–1936 (0.66); teak: 1896–1910 (0.10); 1911–1921 (0.06); 1922–1934 (0.06); 1935–1936 (0.05); tin: 1896–1910 (0.10); 1911–1921 (0.15); 1922–1934 (0.14); 1935–1936 (0.17); rubber: 1922–1934 (0.05); 1935–1936 (0.12). Export weights are based on Ingram (1971, p. 94). Imports are a weighted average of the price of white and grey shirting (weighted equally) and industrial goods. Import weightings are 0.70 shirting and 0.30 industrials.

Sources are, rice: Feeny (1982, pp. 127–128. Teak, tin, and rubber: Wilson (1983, pp. 213–217). Imports: white and grey shirting, Ingram, 1964, pp. 123–24. Data are not available for white shirting for 1886–1888 and 1890–1894 and for grey shirting these years and also 1889. Where data are not available the index is linked to the Saurbeck-Statist price index for textile fibers from Mitchell and Dean (1962, pp. 474–475). Industrial goods: 1875–1912, Lewis manufactures from Lewis (1969, pp. 49–50) linked with 1913 overlap to US industrial commodities in US Department of Commerce (1970, part 1, p. 199).

Madras: Export prices are the weighted average of sugar (0.04), tea (0.09), hides (0.30), goat skins (0.07), sheep skins (0.04), castor oil (0.21), and raw cotton (0.25). Madras weights are based on discussion and data in Baker (1984, p. 110). Data are from India, Department of Commercial Intelligence and Statistics (1933, pp. 10–13). Import prices, and for 1932–1936 export prices, are for India as a whole and from Bhatia (1969, pp. 424–426).

Southeastern China: Silk and silk fabrics dominated exports from Kwangtung and tea those of Fukien. The export price index for Southeastern China includes these three goods and is weighted according to relative shares of the two provinces in total exports. Weights are, 1875–1888: raw silk 0.50; silk fabric 0.16; and tea 0.34; 1889–1900: raw silk 0.56; silk fabric 0.19; and tea 0.25; 1901–1925: raw silk 0.64; silk fabric 0.20; and tea 0.16; 1925–1936: raw silk 0.60; silk fabric 0.20; and tea 0.20. For discussion and data on export composition in the two provinces, see Lin (1997, pp. 63–88), Lyons (2003, pp. 121–152), and China, Imperial Maritime Customs (1879–1939). Sources are, China raw silk and silk fabric exports: Lieu (1941, p. 265). Tea: Lyons (2003), CD spreadsheet; 1890–1938 and the New York price of Formosa tea in Commodity Research Bureau (1939, p. 348).

Import prices are for China as a whole and from Hsiao (1974, pp. 273–275). These statistics are Nankai's index numbers originally published in 1937 but for 1870–1903 incorporate the corrections made by Hou Chi-ming to take account of the change in official statistics after 1903 from the use of market prices to c.i.f. for imports and f.o.b. for exports. From 1904 onwards they are identical to the statistics in Cheng (1956, pp. 258–259).

Population and Population Density

Burma: Figures for Lower Burma refer to the 1872 census area. The figure for 1938 refers to 1941 (Hlaing, 1964b, p. 13).

Malaya: The 1881 population is estimated by assuming that population grew from 1881–1891 at the same rate as in 1891–1901. For 1891 and 1901 figures are estimated for the Unfederated Malay States (UMS) only. Estimation is on the basis of the 1911 census figure of a UMS population of 899,968 and backwards extrapolation assuming that during both decades the population grew at 0.65% per annum. A basis for this assumed rate of UMS population growth is Dodge (1980, pp. 457–474). Data for 1891–1911 are from Federated Malay States (1902) and Malaya (1911, pp. 18, 95, 1921, p. 18). For 1921 onwards data are from Malaya (1949, p. 39). The 1938 population figure is an estimate and assumes proportional population growth between 1931 and the 1947 census figure of 5,848,910.

Thailand: For 1881–1901 figures refer to 1880, 1890, and 1900 (Skinner, 1957, p. 79). Subsequent figures are from Thailand (1920, 1939–1940) and refer to the Yearbook for 1937–1938 and 1939–1940, p. 46 which are the census returns for 1919, 1929, and 1937.

Madras: Kumar (1965, pp. 120–121) citing *Madras Census, 1881*; India, Census of India (1922, Part I Report, p. 9); India, Census of India (1932b, Part II Tables, p. 4).

Kwangtung and Fukien: Figures for 1881 refer to 1873; for 1891 to 1893; for 1911 to 1913; and for 1931 to 1933. For 1901 and 1921 figures are estimated by simple interpolation from published figures for 1893 and 1913 and 1913 and 1933. The 1938 figures are 1953 populations (Perkins, 1969, p. 212).

Area

Burma: Andrus (1948, pp. 24–25). Lower Burma consisted of the four southern administrative divisions of Arakan, Irrawaddy, Pegu, and Tenasserim.

Malaya: Malaya (1921, p. vi).

Thailand: Ingram (1971, p. 7).

Madras: India, Census of India (1922, Part II Tables, p. 2).

Kwangtung and Fukien: Perkins (1969, p. 219).

Exchange Rates

van der Eng (1993, p. 28); Carter et al. (2006, vol. 5, p. 5–565); Mitchell (1988, p. 702).