

# Labour-intensive Industrialisation in Global History

Kaoru Sugihara

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Center for Southeast Asian Studies  
Kyoto University  
46 Shimoadachi-cho,  
Yoshida, Sakyo-ku,  
Kyoto 606-8501, JAPAN

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## 1 Introduction

This paper attempts to show a central role labour-intensive industries played in the global diffusion of industrialisation, and to discuss its significance for global history. It suggests a new interpretation of industrialisation by placing the improvement of the quality of labour as a vital element of global transformation.

The standard understanding of industrialisation places technological progress in the centre of discussion. Classical economists discussed the growth of the market, focussing upon the change in production rather than demand or consumption. They also set the framework of economics by identifying land, capital and labour as the three main factors of production. Thus, in the modern theory of economic growth, the role of labour in industrialisation has been mainly discussed in the context of how and in what proportions capital and labour were combined to produce industrial goods. There are at least two implicit but fundamental assumptions in these works, which have gone against recognising the importance of the quality of labour for industrialisation. One is the tendency to single out capital, or the establishment of saving-investment mechanism, as the most important element for the growth of industrial capitalism. When Simon Kuznets designed a theory of economic growth, he essentially understood the importance of labour in the same way as he understood the importance of capital. For him labour was substantially “human capital” (Kuznets 1955). There the old-fashioned labour theory of value, which was inclined to see capital as embodied labour, was rightly disregarded. Along the way, however, the unique attributes of labour among factors of production (labour is embodied in

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\*\* Professor, Center for Southeast Asian Studies, Kyoto University, Kyoto, Japan.  
E-mail:sugihara@cseas.kyoto-u.ac.jp

human being) have largely disappeared from the analysis of economic growth. As is well-known, the most conspicuous writer that promoted this process was W. W. Rostow. In his scheme the timing of “take off” was determined by the rise in the ratio of saving to GDP (Rostow 1960).

The second, equally important assumption, which has been shared in the discipline, is to regard labour as abundant, homogenous and disposable at the initial stage of economic development. Labour has been treated as analogous to other factors of production such as capital and land, but, while the law of diminishing returns was recognised with respect to land, the difference in quality among labour has not been thought as vital. Classical economists, Karl Marx and Arthur Lewis thus tended to disregard the question of the quality of labour as an essential part of their discussion (e.g. Adam Smith 1776; Marx 1867; Lewis 1954).

Of course, one of the main Kuznetsian conclusions was the significance of education and the advance in knowledge for technical progress (e.g. Denison 1967; Denison and Chung 1976). But it was emphasised in the analysis of total factor productivity, which tended to focus on the industrialised economies, and often within the closed economy framework. This seems to be the case with the new endogenous growth theory too, which more explicitly examines the impact of the increase in human capital on economic growth (for its relevance to development economics, see Meier 2001, pp.19-20). Even on a rare occasion when the impact of massive human migration from India and China during the nineteenth and the early twentieth centuries on the world economy was explicitly brought into focus, it was treated as abundant, homogenous and disposable labour “willing to travel to the ends of the earth to work on plantations for a shilling a day” (Lewis 1978: p.188). The role these workers were given to play in the growth of the world economy was to depress the real wage in the tropics, with the result that the gap in the standard of living between the temperate and tropical zones widened.

Thus the prevailing account of the global diffusion of industrialisation remains roughly as follows. During the first half of the nineteenth century, Britain became the workshop of the world, while the rest of the world came to be specialised in the export of primary products. Countries in Continental Europe and the regions of recent European settlement achieved industrialisation by learning new technology and/or by importing capital, labour and machinery with their export earnings. In the New World, the integration of vast natural resources into the international economy served as the engine of economic growth. Labour was scarce and land was abundant, and the difference in factor endowments between the old and the new worlds induced

a growth of trade, migration and investment. Thus in the nineteenth century, the growth of the Atlantic economy dominated long-distance trade. An implication of this development was that the regions of recent European settlement had a better incentive than Britain to raise labour productivity, using abundant natural resources and employing imported capital. The movement towards the development of labour-saving, capital-intensive and resource-intensive technology was most clearly observed in the United States. The need to save skilled labour led to standardisation of industrial production such as the usage of transferable parts, which in turn facilitated the transfer of technology across industries and mass production, as well as “deskilling” of labour. Industrialisation became associated with the exploitation of economies of scale.

The American frontier was exhausted around 1890, and by the early 1920s migration from Europe ceased to be encouraged. But American technology continued to lead the world, by raising labour productivity through automation, the introduction of more systematic labour management and mass marketing. Looking back from the twenty-first century, the British industrial revolution only began to show the explosive power of labour-saving technology through the use of coal and steam engines, and merely paved the way for a fuller replacement of skilled labour by capital and technology. Therefore, although the conditions for the industrial revolution may have been laid before 1800, the “Western path”, with emphasis on capital-intensive and resource-intensive technology, arguably only became fully established, as a result of the growth of the Atlantic economy.

In the meantime, the world saw an increasing dominance of the West, resulting in a widening gap between the rich West and the poor non-West. The growth of trade between the West, and Asia, Africa and Latin America was often accompanied by colonialism, which tended to reinforce inequality, particularly between temperate and tropical zones. By the time Arthur Lewis formulated his theory of “Economic Development with Unlimited Supplies of Labour” in 1954, he took the presence of the world's reservoir of “unlimited supplies of labour” for granted, and did not find it necessary to discuss how it had been created, particularly in Asia, in the first place (Lewis 1954). His theme was how these poor countries, most of which had become independent or were on the way to independence at that time, could utilise cheap labour for economic development. Along with the discussion of unfavourable factoral terms of trade disadvantaging the poor tropical countries, Lewis emphasised the need to raise agricultural (labour) productivity as a fundamental solution to economic development, beginning with Britain and spreading to Continental Western Europe and the United States.

Table 1 World Manufacturing Employment, 1997

(1,000 persons)

	population	employment	industrial employment	manufacturing employment
1 China	1,243,738 (24.5)	744,095 (29.8)	122,307 (21.9) [16.4]	87,803 (22.3) [11.8]
2 India	960,178 (18.9)	419,562 (16.8)	75,941 (13.6) [18.1]	62,515 (15.9) [14.9]
3 America	271,648 (5.9)	138,393 (5.5)	30,446 (5.5) [22.0]	19,513 (5.0) [14.1]
4 Russia	147,708 (2.9)	77,431 (3.1)	30,818 (5.5) [39.8]	18,351 (4.7) [23.7]
5 Japan	125,638 (2.5)	67,465 (2.7)	22,871 (4.1) [33.9]	16,192 (4.1) [24.0]
6 Bangladesh	122,013 (2.4)	62,201 (2.5)	13,560 (2.4) [21.8]	12,375 (3.2) [19.9]
7 Indonesia	203,480 (4.0)	95,894 (3.8)	13,905 (2.5) [14.5]	10,836 (2.8) [11.3]
8 Germany	82,190 (1.6)	41,053 (1.6)	13,014 (2.3) [31.7]	10,304 (2.6) [25.1]
9 Pakistan	143,831 (2.8)	52,830 (2.1)	11,358 (2.1) [21.5]	7,449 (1.9) [14.1]
10 Ukraine	51,424 (1.0)	25,773 (1.0)	10,361 (1.9) [40.2]	7,397 (1.9) [26.7]
high-income countries	817,346 (16.1)	404,362 (16.2)	105,498 (18.9) [18.0]	71,917 (18.3) [17.8]
others	4,263,025 (83.9)	2,096,326 (83.8)	453,103 (81.1) [21.6]	320,958 (81.4) [15.3]
six Asian countries	2,798,878 (55.1)	1,442,047 (60.3)	259,942 (46.5) [18.0]	197,173 (50.2) [13.1]
Asia total	3,426,832 (67.5)	1,721,601 (68.8)	308,628 (55.3) [17.9]	233,515 (59.4) [13.6]
world total	5,080,371 (100)	2,500,688 (100)	558,601 (100) [22.3]	392,875 (100) [15.7]

Source and Notes: ILO, *World Employment Report*. High-income countries refer to 25 countries with per capita income of 5,000 dollars or above (but excluding five oil-exporting countries). Figures in square brackets refer to shares of each country's industrial, and manufacturing, employment to total employment.

This paper suggests that there was another, in many ways much more dynamic route of the diffusion of industrialisation. This second route brought industrialisation, through Britain, and later Continental Western Europe and the United States to some extent, to the non-European world, particularly Asia. It took root in Japan first in the form of labour-intensive industrialisation, and was followed by a number of other Asian countries, particularly after 1945. Today, the majority of world manufacturing employment is located in developing countries of Asia, especially in China and India, which have their roots in this route (see Table 1). Although it escaped Lewis's attention, I argue that, if we examine the process of diffusion during the last two centuries as a whole, this "East Asian path" has been just as influential as the "Western path" described above. In other words, the first proposition of this paper is that labour-intensive industrialisation constitutes one of the two major routes to the global diffusion of industrialisation.

The paper also suggests that the improvement of the quality of labour occurred in the process of labour-intensive industrialisation, which continuously redefined and enlarged the scope of "labour-intensive" industries. Labour-intensive industrialisation first occurred where initial conditions were high and international circumstances were favourable, but, supported by the diffusion of the education system and easier relocation of industries as a result of globalisation, it expanded into countries with poorer developmental options, by incorporating the relatively skilled and educated components of the population into an industrial workforce at internationally competitive wages. It also deepened its technological and institutional edge, by promoting "developmentalism" under which "growth ideology" was widely shared and an internationally competitive wage level was tolerated, and by channeling best human resources into manufacturing. The second proposition, then,

is that this route of industrialisation has successfully generated its own logic of training labour, to pursue a distinctive path of economic development in the world economy.

## **2 Initial conditions and factors affecting the quality of labour**

### Labour absorption and proto-industrialisation

Why did labour-intensive industrialisation take root, first in Japan and other part of East Asia? Part of the answer to this question lies in the initial conditions that existed in the region, and part of it comes from the specific international circumstances in the second half of the nineteenth century that made it possible. This section discusses the former aspect of the question.

In his 1977 article Akira Hayami described the different paths which England and Tokugawa Japan (1603-1868) followed, calling them the industrial revolution and the industrious revolution respectively (Akira Hayami 1977; for English versions see Akira Hayami 1986 and 1992). With their different mix of factor endowments, in this case of capital and labour, and assuming that no transfer of factor inputs took place between England and Japan, Hayami explained that it was natural for societies as economically-minded as these two countries to pursue different paths, and for Japan to exploit the potential benefit of increasing labour absorption.

Emphasis on labour absorption in Tokugawa Japan began in the form of labour-intensive agriculture, centring on rice cultivation (for a brief discussion, see Sugihara 2003a). After the second half of the eighteenth century this strategy was fully extended to rural industries. Rural merchants engaged in regional commerce, while feudal domains actively pursued policies to promote agriculture, commerce and industry to earn "foreign" exchange. Both of these activities gave farmers a chance to exploit non-agricultural as well as agricultural economic opportunities. The rural household mobilised cheap labour, to produce more in response to the demand arising from the fragmental rise in rural income. By the end of the eighteenth century the daughter of a rich farmer was likely to include a silk kimono in her dowry.

From the point of view of the rural household, this proto-industrial work was merely an extension of their labour absorption strategy. For example, the rural merchant would bring a loom and yarn to the peasant household and collect the cloth a month later, thus providing a small amount of income for the housewife cum weaver. Or cottage industries would bring workers together in one place to manufacture sake, using simple tools and water power. For the rural household, the "main" agricultural



work referred to rice cultivation. Both non-rice cash crop production and proto-industrial work of all sorts were called “additional” work, whether performed by household members or hired labour.

Proto-industrialisation in rural Japan had a clear impact on demographic behaviour. The sex ratio was corrected to the more natural level, and population started to grow. Under the severe constraints of land, proto-industrialisation made it possible for the income of the rural household to rise. And all of this was typically happening within the context of the peasant household. Therefore, although the term “labour absorption” has been associated with agriculture (Booth and Sundrum 1984), it is possible to extend the idea to proto-industry, and discuss the implications of labour absorption at the peasant household level.

Did such a labour absorption path exist in Western Europe? When Mendels suggested that we should look at the “development of a labor-intensive industry by the peasants” as “the first phase of the industrialisation process” and called it proto-industrialisation, he clearly had this point in mind. “Cottage industry affected population trends. --- It made it possible for the peasants to multiply in their villages without corresponding increase in arable surface” (Mendels 1972: 170). Of course, industrial goods produced in the village were sold outside the local market, therefore contributing to the growth of the market, but the focus here was on the effects of the growth of labour-intensive industry on demographic behaviour.

Mendels also noted that during proto-industrialisation “the surplus labor from the slack season is used, so there is no such economic problem as that of ‘withdrawing’ labor from one sector to another. In this phase, therefore, the surplus labor model can be made realistic and useful” (Mendels 1972: 171). The absorption of off-peak labour into the cottage industry provided the peasant household a chance to increase the household income without permanent migration. Off-peak labour could also migrate to seek seasonal agricultural work or service or construction work in urban centres. Unlike population growth, further labour absorption of the existing population did not substantially increase the demand for food. It simply released the household from the constraints of land. It was the key device to help the rise of per capita income and the accumulation of capital (Lucassen 1987, ch.6).

### Tokugawa Japan

Beyond proto-industrialisation and migration, however, there are also differences. Land was much more scarce in Japan, and there was little room left for pasture. Plough and transport animals were used, but land was seldom available for the

production of meat, dairy products or wool. Thus Japanese agriculture concentrated on the improvement of annual crop output per unit of land, with the use of human labour, manure, seeds and agricultural tools. Concern for fixed capital, in the form of cattle, fences etc. or the sale of land played little part in the development of labour-intensive technology and labour-absorbing institutions (Sugihara 2004a, 2004d).

The household and the village community played a key role in the allocation of labour. The maintenance of the *ie*, the family line, was assumed to be important, and the maximisation of the welfare of family members was considered more important than individual search for better life, in spite of a high degree of awareness of “individuality” (Mill 1859, ch.3). Commercialised agriculture, temporary migration and by-employment within the household all developed, in such a way that the rural household could allocate family labour in a flexible way. Since the number of work days for the “main” agricultural work was large but its labour productivity remained at a comparatively low level, farmers were used to work hard for a relatively small reward. Thus in Japan it was easier than the Western European counterpart to exploit the “additional” work to the full. A village in a relatively commercialised district in Southwestern Japan was described around 1840 as follows:

Every able-bodied person works at salt making and other employments insofar as farming permits. The average amount of arable land per farm family is only 2.1 *tan* of paddy and 0.6 *tan* of upland, and cultivation is relatively easy since the terrain is level [1 *tan* was about a quarter of an acre (KS)]. In time free from farming, men make rope and rush mats and other articles by hand; and women work in the salt fields from the third to the eighth month and during the rest of the year devote themselves exclusively to weaving cotton cloth, not even taking time to cut firewood and gather grass for compost [traditional female farm work] (Thomas Smith 1988: 83).

The land tax system, land holding patterns within the village community and the ways in which monetisation of the economy progressed combined to reinforce the development of a complex division of labour within the household, possibly at the cost of the growth of a geographical division of labour and the benefit of migration. As a result, an effort to develop multiple and coordination skills, rather than specialised and individual skills, assumed priority. The improvement of the quality of labour took a specific direction to accommodate such institutions.

This can be contrasted with the Western European experience where long-distance trade, fiscal-military states, urban growth and rural-urban migration encouraged a

clearer tendency to depend for the improvement of the quality of labour upon geographical specialisation and monetisation. While the proto-industry in East Asia grew as a further development of the peasant family economy, in Western Europe the in-house combination of agriculture and industry was gradually replaced by the division of labour through the market. Specialised and individual skills were accumulated and diffused through urban craft guilds, while their main competitor, rural putting out, was a net consumer of technological innovation (Epstein 1998). De Vries (1994) suggested that the industrious revolution occurred in Europe too, but perhaps it occurred more clearly than its East Asian counterpart as a response to the greater availability of consumer goods. Pomeranz suggested that in the lower Yangzi too the response to the market and changes in consumption mattered (Pomeranz 2000: 94), in spite of the fact that the region he was concerned with consisted mainly of the peasant household of an East Asian type.

On the other hand, when Thomas Smith described the sense of time of Tokugawa peasants, he was clearly concerned with the ideology which underpinned production. "Time was regarded as fleeting and precious, and great moral value attached to its productive use. Farmers made elaborate efforts to coordinate work and to stretch nature's constraints by the skillful use of early and late varieties, between-row planting, straw-covered planting beds, fast-acting fertilisers, and other time-saving devices. None of this ingenuity, however, was for the benefit of individuals. Time was not a personal possession but belonged primarily to families and, through them, to kin, neighbors, and villages" (Thomas Smith 1988: 202). Indeed "industry" could be generated by a variety of motivations. The quality of labour could be improved either by the effort to produce more to maintain the status of the family or pursue common good, or through a search for material reward or individual satisfaction.

A major problem with the Lewis model is that it ignores the vital importance of proto-industry in economic development. Lewis was familiar with parts of Africa and the Caribbean, as well as the historical background against which the classical political economy emerged during the industrial revolution in Britain. In none of these cases has he encountered the massive presence of spinners and weavers, engrained in the peasant society, who were essential ingredients of East Asian economies. It is important that in Lewis's dual economy model employment in proto-industry was included in the traditional (subsistence or non-capitalist) sector, with the result that urban modern industry was highlighted as the engine of industrialisation, regardless of each country's factor endowments and position in the world economy. While Lewis did recognise the importance of raising labour productivity in traditional agriculture, he made a critical error by applying the

classical political economists' vision to developing countries with sophisticated proto-industry.

#### Factor endowments versus institutions

In the prevailing literature on economic development in Western Europe before industrialisation, two factors are thought to be important in promoting Smithian growth. The first concerns the balance between factors of production, especially between land and labour. The second factor is the institutional development which supported the growth of the market. It included measures to facilitate not only the growth of commodity markets but that of factor markets of land, capital and labour.

Thus North and Thomas (1970, 1973) argued that changes in factor prices in land and labour provided an essential background to the process of Smithian growth in which the geographical division of labour developed. In the Malthusian cycle, economic progress was usually made by the incorporation of new areas into the national and international markets through settlements and the opening up of land, resulting in the growth of inter-regional trade between resource-rich and labour-abundant areas. At the same time, there were moments, for instance in the fourteenth century and, again in the seventeenth century, during which population fell absolutely or relative to land, when significant institutional changes were made so as to channel resources into better use and reduce transaction costs. Financial resources could be enhanced and effectively channelled into productive use through the development of joint stock companies, credit, insurance, and bond and security markets. Maintaining the public confidence for the government was important for such a development. The reduction of transaction costs came from better information, lower risk and more secure property rights. Central to this process was the establishment of private property rights through the enclosure of commons by private landlords and the growth of the land market.

In this original North and Thomas perspective, the relationship between changes in factor prices and institutional response is only loosely defined. Changes in prices may or may not lead to Smithian growth, depending on both what kind of resources would be brought into the market (be it the New World silver, newly opened European land or the discovery of coal) and the degree to which stable and low transaction costs were maintained by the domestic and international political regimes. On the other hand, institutional changes may or may not occur, depending on the political circumstances themselves or the economic environment which conditioned them.

Recent literature on Asian economic history suggests that a similar degree of Smithian growth is observable in East Asia and Western Europe in the late eighteenth century, which implies that both regions had sufficiently high “initial conditions” for labour-intensive industrialisation. India probably had these conditions to some degree. These observations, especially regional comparisons of the standard of living, are now being debated among European and non-European economic historians. However, it seems that the main body of discussion has been based upon essentially the same points of reference, i.e. factor endowments and institutional development.

One of the virtues of Pomeranz’s perspective, set out in his *Great Divergence* (Pomeranz 2000), is that he has separated the two elements, and picked out relative factor price changes as the basic driving force behind the making of the capitalist world economy. One “trick” which released Pomeranz from the usual stumbling block is that he put aside conventional territorial boundaries for the purpose of picking out the evidence of Smithian growth and high living standards, and identified three or four “core regions” for comparison. Thus he was able to see that there is no fundamental difference between Western Europe and the core region of China for instance, in terms of the degree to which the division of labour developed. Once we establish the presence of powerful Smithian growth in Tokugawa Japan, the lower Yangzi of China and Northern India, as well as in Western Europe, we then are in a position to discuss just how these advanced “core” regions managed to channel vast resources into productive use and reduce transaction costs, without the accompanying institutional development of Western European variety, in particular without the establishment of private property rights.

What kind of institutions functioned in East Asia, in the same positive direction as the European regime of private property rights and states system? At the international level, the China-centred tributary trade system in the eighteenth century, for example, provided a relatively peaceful environment for trade, with a degree of mutual respect between China and other states (Sugihara 1996b). The Japanese response was a managed trade through a limited number of ports, but the importation of technological and managerial knowledge from China continued throughout the Tokugawa period. At the state level, China and Japan differed substantially. Fiscally, the Chinese empire was a relatively small state, and basically denied themselves the opportunity to create bond and capital markets. The market was much less regulated than Continental Europe and Tokugawa Japan. Tokugawa Japan, on the other hand, had a strong state, extracting a much larger share of agricultural surplus (at least 30 to 40 per cent) than the European counterparts, although it did not use it for

territorial acquisition or long-distance trade. The domestic market was highly regulated and inland transport was poorly developed, but, as a result of a long period of peace and stability, risk was low and transaction costs were small, without the enforcement of an elaborate code of law. In sum, although there is no common pattern of institutional development in East Asia, it is not difficult to find the institutions functionally equivalent to the European system. The establishment of private property rights is only one of several ways of providing the institutional foundations of Smithian growth.

#### Value regimes and welfare goals

In addition to factor endowments and institutions, the improvement of the quality of labour also depends on the perception of welfare goals of people, which may differ country by country. And different value regimes exist behind different perceptions of welfare goals. How they influenced Smithian growth is a relatively undeveloped area of investigation.

It is only recent that various types of human development index have been constructed and historians began to use them (e.g. Crafts 2001). If we take the simplest type of HDI, which is an arithmetic average of three indices of per capita income, infant mortality and literacy rate, as the welfare measure for the world of the second half of the eighteenth century, it is possible that each core region attached importance to these three measures differently. Susan Hanley suggested that in Tokugawa Japan great emphasis was put on hygiene and cleanliness (Hanley 1997), possibly at the cost of some other welfare goals. It is also possible that the East Asian core regions might have valued the literacy rate more than per capita income, while the South Asian core region rather less. Comparatively speaking, the basic human development goals were shared among different classes of people in Tokugawa Japan, in spite of the persistence of a rather strict caste division. In India, on the other hand, the caste division may well have resulted in a greater degree of diversity in welfare goals within the society. For example, by concentrating resources to certain sections of society, it may have given the brahmans a higher literacy rate and some merchants and moneylenders a chance for creating greater wealth than the respective Japanese counterparts could have imagined. Less egalitarian value regimes in Western Europe could well be more consistent with the division of labour and the growth of the market than egalitarian ones. In this way various types of Smithian growth could emerge as a result of different value regimes.

International factors could also affect the value regime. If a country wanted a military and naval power for territorial expansion or to discover the New World or

equivalent, while another country preferred peace, closed the country and denied entrepreneurial opportunities, these decisions may well have influenced the overall profile of each country's value regime. It would be a mistake to make a judgment of the particular value regime, using another value regime, especially if it was a later one. Elsewhere I have argued that East Asia achieved Smithian growth by developing labour-intensive technology and labour-absorbing institutions, as a result of which there was no chance of the development of a navigation and military technology which in Europe prepared a scientific revolution and an industrial revolution. This in itself does not suggest the incomplete nature of Smithian growth there. If the world had ceased to exist around 1820, it would have looked as if different value regimes helped produce different kinds of Smithian growth in various parts of the world.

Furthermore, value regimes do not necessarily converge as fast as technology or material culture. They remain relevant for our understanding of different ways in which the quality of labour has been improved over time.

In summary, Japan and other core regions of East Asia followed the specific developmental path, which prepared for labour-intensive industrialisation particularly well. By the middle of the nineteenth century Japan was probably better prepared for it than China. On the other hand, this path lacked the experience of institutional innovation for capital accumulation and was ill-suited to resource-intensive technology. The potential for the region's economic development cannot be measured by the degree of Smithian growth or the level of real wages alone. Initial conditions for the region's industrialisation was also path-dependent.

### **3 Labour-intensive industrialisation under Western domination, c.1850-1945**

#### The effects of the Great Divergence

The idea of the "great divergence", which made the Atlantic economy quite distinct from the rest of the world in terms of resource endowments and factor prices, adds a new dimension to our understanding of labour-intensive industrialisation in East Asia. First, it singles out two most important factors, the ready access of coal and the availability of vast resources in North America, which directed the real wage in Western Europe and North America to rise, especially since the second half of the nineteenth century (see Table 2). On the face of it, this has little to do with what the literature on modern Asian history has had in mind when referring to the "Western impact", colonialism or imperialism. Yet a swift move towards the high-wage economy acted as a major factor for the diffusion of industrialisation, by giving room

Table 2 Comparisons of Per capita GDP, 1820-1950: East and West  
(1990 international dollars)

	1820	1870	1890	1913	1933	1950
Western Europe	1,270	2,086		3,688	*3,851	5,013
United States	1,257	2,445	3,396	5,301	4,783	9,561
Japan	669	737	1,012	1,387	2,120	1,926
China	600	530	540	552	578	439
World	667	867		1,510		2,114

Sources and Notes: Maddison 2001: 264 and 206, supplemented by Maddison 1998: 158 and Maddison 1995: 196 and 212. Figures from different sources only roughly correspond to one another. \*1932.

Table 3 Proportion of Female Migrants to the United States, 1820-1928  
(per cent)

Asia		Northwestern Europe	
Indian	1	Belgian	36
Chinese	5	Dutch	37
Korean	17	Swiss	37
Japanese	33	Scandinavian	38
		Welsh	40
Southeastern Europe		English	42
Bulgarian	10	German	42
Rumanian	18	Scottish	42
Greek	23	Irish	48
Italian	25		
Russian	31	Americas	
Polish	34	Mexican	32
Portuguese	37	Spanish American	34
Jewish	46	Canadian	39

Source: Gabaccia 1996: 92.

for Japan, and later China, to capture the huge Asian mass consumer market with the use of cheap labour. Without the great divergence, the wage gap would not have widened as fast as it actually did, and the low-wage competition worldwide would have continued into the late nineteenth century, making it much more difficult to form the kind of regional specialisation which took place.

An underlying assumption for the East Asian strategy was that the opportunities for emigration from Asia to the West were quite limited. Since the nineteenth century Asian immigration to North America and Australasia was severely restricted (for general discussion on international migration, see Sugihara 1999). Table 3 suggests that the flow of Asian immigrants was discouraged by the restriction of entry of women. After the conclusion of a gentleman agreement with the U.S. government in 1907 the Japanese government insisted on allowing American Japanese to be able to



marry Japanese women and bring them to the United States, inviting a media attention to the practice of “picture bride”. Clearly, India as a British colony and China as a country with a government less able to negotiate with the United States, were unable to help immigrants in this respect. Looking back, the overall effects of the restrictive immigration policy might be interpreted to have been that resource-rich parts of the New Continents abandoned the entry to the international low-wage competition by opting for the intake of relatively high-wage workers only, thus paving the way to labour-intensive industrialisation in East Asia.

Second, it is important to note that the two “contingent” factors (coal and North America) have little to do with science and technology itself. The latter of course had a lot to do with making these windfalls possible, but, from the East Asian point of view, the crucial point was that the fruits of the industrial revolution, such as steam engines and the knowledge of mechanical engineering, were not culturally or ecologically tied to the West but were of a universally applicable nature. Indeed the British economy during the industrial revolution was not particularly a high-wage economy, and, in terms of factor endowments, arguably resembled East Asia than Western Europe at the end of the nineteenth century.

Of course, the windfalls themselves further generated technological advance, to make industrial technology more efficient and better suited to the resource-rich environment. By the time the Iwakura Mission of the Meiji government visited Europe and the United States in the early 1870s, it was easy to recognise that the machinery, the factory system and railways they saw operating in the West were too capital-intensive for the direct introduction to Japanese soil. But this was something that they could adjust (as was the case with the power loom partially going back to the wooden frame), since the mid-nineteenth century technological advance was essentially an additional development rather than fundamental change. Thus, by the second half of the nineteenth century, industrial technology and accompanying organisational innovations were made available to the East Asian economy, while at the same time there was a tendency for the more advanced Western economies to opt out of the international competition on labour-intensive goods.

Third, industrialisation diffused beyond the Western civilisation from the late nineteenth century onwards, not because it was a product of that civilisation but because it acquired the culture-neutral character which transcended political, cultural and social specificities of the West. Science-based technology, not resource allocation, was the vital link, which encompassed a variety of cultures and institutions. Together with the initiatives of financial and service sector interests

(Cain and Hopkins 2001; Sugihara 2002), it moved global transformation forward. Building a society with science-based technology involved urbanisation and the modernisation of social values and norms. It was not a simple matter of the transfer of technology, but the implications of that transfer had to be interpreted and endorsed by the culture-neutral language, in order to convince people in different civilisations the case for industrialisation.

The role of science-based technology in nineteenth century global history must therefore be assessed, not only in terms of productivity increase within the same civilisation, but also in the context of cross-cultural (cross-civilisational) diffusion. Having largely escaped Western colonial rule and endowed with high initial conditions, East Asia emerged as the only region that was capable of testing its culture-neutral quality to the full at the end of the nineteenth century. Although the region's size of industrial production was relatively small at that time, the success of culture-neutralisation of science-based technology in East Asia was to prove crucial to the global diffusion of industrialisation in the twentieth century (Sugihara 2004c).

#### Prewar Japan

In Asia industrialisation started during the 1850s when India began modern cotton spinning in Bombay, and this was followed by the Japanese efforts in the 1860s and the 1870s. In these cases the direct transfer of Western technology and institutions was the norm. By the 1880s, however, the Meiji government recognised that in comparative terms both land and capital were scarce in Japan, while labour was abundant and of relatively good quality, and had developed an industrialisation strategy which would exploit the comparative advantage. Japan also created a wide range of modern Asian industrial goods such as cheap cotton textiles and noodle making machines, to accommodate Asian cultural needs (Sugihara 1995). In doing so, she reactivated traditional Asian local institutions which eventually emerged as modern corporations committed to raising the quality of labour. In other words, this strategy encouraged active use of the tradition of labour-intensive technology, modernisation of traditional industry, and conscious adaptation of Western technology to different conditions of factor endowment. The path Japan developed can be termed as "labour-intensive industrialisation", as it absorbed and utilised labour more fully and depended less on the replacement of labour by machinery and capital than the Western path.

Traditional historiography maintained that Meiji Japan industrialised because it had cheap and docile labour. This argument has been used in the context of the Marxist literature which argued that it set the limit to the growth of the internal market,

leading to the country's dependence on exports and aggression. Some observers from Lancashire commented that the competitiveness of Japanese textile industry came from the use of cheap labour, including female night shifts and unacceptably poor working conditions, rather than from the "real" strength.

But cheap labour in the nominal sense does not explain why only Japan managed to industrialise in the nineteenth century more fully than any other country in the non-European world. In fact cheap and poor quality labour has usually been associated with the cases of failure to industrialise. If an African wage was a tenth of the English wage and the former's productivity was a twentieth of the latter, African labour would be internationally "expensive", in the sense that it would not make a competitive good in an international market, other things being equal.

The point about Meiji Japan is that it had an internationally competitive labour. That is, Japanese wages were not just nominally cheap, but cheap relative to its efficiency. The Japanese wage of a young female worker in a textile factory in the late nineteenth century might have been a sixth of the English wage, but it was likely that the productivity gap was smaller than that. Put another way, Japanese workers were not demanding an internationally demandable level of wages and working conditions. Because the international labour market was imperfect (as stated above, the Japanese emigration to the United States was highly controlled and later "voluntarily" restricted), the Japanese wage level was determined primarily by domestic demand and supply. And the quality of labour was mainly determined by what prevailed in the peasant household, the main source of supply. During the early twentieth century it gradually came to be reinforced by the industrial paternalism, which emerged in urban factories. Meanwhile, because land and capital were scarce relative to labour, labour remained cheap, until eventually capital became more plentiful shortly before the First World War, thanks partly to the inflow of foreign capital. Thus an overriding concern was to minimise the cost of capital. Unlike in Western high wage economies, the technology during this period aimed at the maximum and most effective use of labour wherever capital and labour were substitutable.

Rural orientation persisted in pre-Second World War Japan. The first Japanese census conducted in 1920 found that the proportion of people living in cities was 18 per cent. Although this figure had risen to 38 per cent by 1940, it was still very small compared to most countries in Western Europe at a similar stage of development. The rate of urbanisation in Britain exceeded 48 per cent by 1840 and 65 per cent by 1870, while the "European norm" was 31 per cent in 1840 and 45 per cent in 1870 (Crafts et al. 1991). In other words, the bulk of Japan's industry was a modernised

version of the cottage industries predominantly situated in rural areas. In its fully developed form in the early 1930s, the Japanese manufacturing industry had a relatively small, fast-growing modern urban sector and a large, slow-growing but steadily modernising, rural sector.

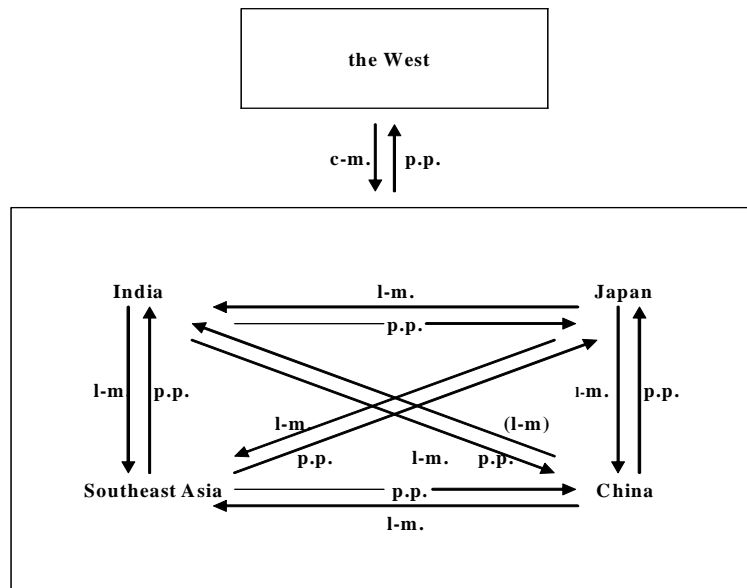
Why was the modernisation of rural industry so crucial? An obvious answer is that, given the technology gap, the relative abundance of cheap labour and the scarcity of capital, it was sensible for Japan to minimise the cost of building urban infrastructure, and specialise in the rural production of low-technology industrial goods. Thus, the bulk of industrial goods produced in Meiji Japan were hybrid in character. Low-count yarn was produced in modern cotton mills in cities, while rural female workers hand-wove this machine-made yarn on improved traditional looms (and later powerlooms). And the latter was also internationally competitive, offering labour as the “additional” work of the peasant household. In prewar Japan the peasant household continued to combine various types of agricultural and industrial work, releasing a relatively limited number of family members as casual workers, often for a limited period (Saito 1998, chs.2 to 4). It was the parallel and inter-related development of modern and traditional sectors that ensured the international competitiveness of Japan’s textile and other export industries.

#### Intra-Asian trade and imperialism

In order to realise the potential of internationally competitive labour, one needs to create an environment in which a competitive labour-intensive good is exported. If all labour-intensive goods were domestically consumed and no trade took place, the only result of having competitive labour is that the nation would enjoy a higher living standard than a country with less competitive labour. However, if a country like Japan specialises in labour-intensive industry in an international economy by exporting labour-intensive industrial goods and importing capital-intensive goods and primary products, then she would have even greater potential for growth, by exploiting the gains from international trade. This is by and large what happened between 1860 and 1938. Figure 1 shows Japan’s place in world trade between 1900 and 1930 in a schematic way (For the more detailed discussion, see Sugihara 1986a, 1996a, 1998, 2005a).

Several international conditions had to be satisfied for this to occur. Under Western domination the regime of “forced free trade” emerged in Asia in this period, and most Asian countries were incorporated into the international economy. The merchant networks capable of identifying both suppliers and consumers of Asian industrial goods were readily available, in the form of overseas Chinese networks

Figure 1 Japan, Intra-Asian Trade and World Trade, c.1900-1930



Note: c-m. refers to capital-intensive manufactured goods, l-m. refers to labour-intensive manufactured goods, and p.p. refers to primary products. Since the late nineteenth century India exported cotton yarn to China in large quantities, but from the end of the 1910s, it was replaced by the exports of raw cotton. China exported a small amount of silk textiles in turn.

centring around Hong Kong and Singapore (Kagotani 2000). The Japanese government's industrial policy was important in ensuring that Western technology was quickly employed to increase industrial production. Above all, labour-intensive industrialisation in Japan needed the presence of two types of trading partners. One was an advanced country which specialised in capital-intensive industry, and the other a developing country which specialised in primary production. The amount of exports of the countries which specialised in labour-intensive industry may increase, in accordance with the increase in the proportion of labour-intensive goods in world trade. Under the international environment of free trade, a certain number of countries would be assigned to specialise in labour-intensive industry, while others would specialise in capital-intensive industry and primary production. When a country is predominantly exporting labour-intensive good and proceeding with industrialisation under such circumstances, we see that labour-intensive industrialisation is reinforced by the international division of labour.

During the nineteenth century the international division of labour, involving the trade of a wide range of manufactured goods, developed in Western Europe, but there this three-tier division was not clear. The European international market was relatively homogeneous, and wages and labour conditions were similar. By contrast, the East

Asian market and pattern of consumption were fundamentally different. Wages were often much lower, and the type of mass consumer goods was quite different. Yet, unlike the rest of the non-European world, there was a very large and expanding international market of consumer goods with distinct tastes. This market had been supplied by traditional industries, and anyone that could replace them with the more efficient methods of production would be able to capture it. The list of Japanese exports to other Asian countries in the early twentieth century thus included cotton yarn, silk spun yarn, cotton cloth, silk cloth, undershirts and drawers of cotton knit, socks and stockings, European umbrellas and parasols of cotton knit, matches, paper and paper manufacture, pottery, glass bottles and flasks, lamps, ropes, bags, mats of straw, toilet soap, drugs and medicines (Sugihara 1986a: 716). Most of these industrial goods had to be made in accordance with local consumer taste, be it kimono cloth or cotton undershirts for Chinese children with buttons. Although distinct consumer taste generally favoured domestic manufacturers, it was easier for Japanese manufacturers, with similar factor endowments and culture, than Western ones to compete with local manufacturers. From the point of view of Japanese manufacturers, the Asian market was often just as important as the domestic market in volume terms. Since Asia was much more populous than Europe, and Japan was Asia's first industrial nation, there was much larger room for Japanese manufacturers to develop an international labour-intensive goods market in Asia than for German manufacturers, for example, to do likewise in Europe.

At the same time, seeking complementarity remained essential for Japan, because a very large section of heavy and chemical industries, as well as the cotton textile industry, the largest industrial sector, needed raw materials and energy from abroad. In order to appreciate the severe resource constraints industrialisation could generate, it is useful to imagine how much land England would have needed to industrialise in the early nineteenth century, if there had been no foreign trade and all the fuel and raw materials had to be domestically produced. This is the line of thinking that led Pomeranz to argue for the significance of the trade with the Caribbean and the "windfall" of North America (Pomeranz 2000).

A century later, Japan had exactly the same problem of needing a primary producer cum non-competing importer of labour-intensive goods or a "windfall" or both, to upgrade the industrial structure along the labour-intensive path. Thus Japan colonised Taiwan in 1895 and Korea in 1911. In both colonies she introduced the land reform and labour-intensive technology (better seeds, irrigation and double cropping) (Nakamura 1974), not only to impose the land tax but to make agricultural surplus available for home consumption. In turn she exported manufactured goods

and offered services to her colonies. It was substantially land-intensive imports, especially rice and sugar from Taiwan and Korea, that Japan secured as a result. Thus, at least in the initial period of Japan's industrialisation, she was able to use colonial trade to her advantage, without inviting the low-wage industrial competition from there. Even in the interwar period, both colonies were much more strongly tied to Japan through trade than Western colonies in Asia were to their respective rulers. 91 per cent of Korea's exports went to Japan and 71 per cent of her imports came from there in 1928, while 87 per cent of Taiwan's exports and 69 per cent of her imports were conducted with Japan in the same year. These figures remained roughly at the same level in 1938.

In the regional context of labour-intensive industrialisation, however, it is worth emphasising that there was a relatively free technological transfer from Japan to China. After 1912 East Asia saw the beginning of inter-state competition, with China pursuing import-substitution industrialisation. Japan, along with the United States and Europe, was a major source of inspiration of Chinese industrialists and entrepreneurs. Japanese industrial technology was transferred to Korea and Taiwan as well, in so far as it was of a non-competing nature and was broadly conceived as enhancing the economic strength of the Japanese empire. As Chinese manufacturers captured the domestic market of plain cotton cloth, Japanese exports shifted to the more processed range. Exports of textile machinery also increased (Abe 2005). In another words, there was room for further specialisation within labour-intensive industrialisation, so long as international circumstances allowed it to take place. It is in this interwar context against which the theory of "flying geese pattern of economic development" was formulated (Akamatsu 1962).

For much of the pre-Second World War period Britain was not antagonistic to the industrial development of Japan. She not only saw the benefit from trade itself (in the form of Britain's exports of textile machinery to Japan for example), but was interested in exporting capital to Japan and expanding financial, insurance, shipping businesses in Asian waters. In other words, both colonialism and the regime of free trade in Asia and the world were important conditions for Japan's economic development (Akita 1999). Japan took advantage of the West-dominated international order of imperialism to carry out trade and industrialisation from the late nineteenth century. By the 1920s Japanese imperialism became a significant part of that order, and in the 1930s it became a major force demanding an increasingly larger role, especially in Asia's regional order.

Expanding the sterling area (yen was pegged to sterling between 1932 and 1939, yuan between 1935 and 1938) and maintaining the reputation of sterling as the key currency was also Britain's central concern (Sugihara 2002; Cain and Hopkins 2002, esp. pp.16-17). In addition, the tradition of the classical political economy remained a major influence behind British policy. In spite of the keen competition between Lancashire and Japan in the Asian market of cotton textiles, the mainstream liberal thinking in Britain was inclined to argue for the benefit of free trade.

[Japan] is assailed as a nation which is undermining the standards of life of Western people; and odium is also cast upon her because, it is said, her success has been achieved at the cost of lowering the standard of life of her own workers. Those circles in which some vestige of the old liberal economic and political traditions is still preserved might have been expected to reply that, harmful as cheap Japanese exports may be to established British industries, Japan, nevertheless, confers a benefit on impoverished Asiatic consumers by supplying them with those goods, and that it is irrational and ungenerous to deny them that benefit (Allen 1938: 16-17).

It is worth noting that this view was expressed as late as the late 1930s, and was published after the outbreak of the Sino-Japanese War of 1937. While the need to secure the raw material and energy for rapid industrialisation was an important background to Japan's aggression and war, and the expansion of the yen bloc had a tendency to tie the colonies and the sphere of influence strongly to the Japanese economy, Japan nevertheless depended in some crucial respects on her trade and monetary links with Britain and British colonies, as well as with the United States. The disappearance of these links, with the outbreak of the Second World War in 1939, finally eliminated any hope of containing the Japanese military and others who pursued the political and economic autarky (Sugihara 2001a).

#### Defining labour-intensive industrialisation

We are now in need of as clear a definition, or at least a description, as possible of the term labour-intensive industrialisation. First, this paper uses the two key categories, capital-intensive and labour-intensive industries, in relative terms across time and space. Thus Japanese modern textile factories in the late nineteenth century were far more labour-intensive than heavy industries in Germany and the United States, even if the former were much more capital-intensive than traditional weaving. Also, cotton textile factories in England were relatively capital-intensive in the first half of the nineteenth century, but became progressively an "old industry",



eventually to become a rather typical labour-intensive industry by the early twentieth century.

The proposed categorisation is useful in identifying the general direction of technological and institutional innovation of each country or region. For example, heavy and chemical industries and large transport networks usually require the institutional development, such as banks and the stock and bond market, to finance large fixed investment, while the more labour-intensive industries pay more serious attention to the recruitment and training of labour, especially unskilled labour. The difference often reflects factor endowment conditions, so in principle it is likely that high wage economies would develop capital-intensive industries, while low-wage economies labour-intensive ones.

These conditions are often modified by institutional barriers and policy and ideological interventions, which will be discussed below. But even without such interventions a country on course of the development of labour-intensive industries would need the growth of some capital-intensive industries, to locally run transport or cater for repair works. Likewise, diverse consumer demand, population growth and local labour supply conditions would encourage high-wage economies to develop labour-intensive industries, though often with higher skill inputs. Nevertheless, it remains useful in identifying the specific logic of industrialisation of each country or region, in accordance of respective factor endowments, its degree of integration into the international economy, and its relative position in the world economy when integrated.

Second, the best general way of recognising different paths of industrialisation is to study the trade structure of a country or region. It is natural to think that the development of modern industry implies the deployment of modern machinery and a greater input of capital, hence usually a higher capital-labour ratio and a higher capital-output ratio. It also implies the replacement of labour with capital or machinery, and the disappearance of certain artisanal occupations as a result of competition from the modern sector. On the other hand, the resilience of traditional industry and the prevalence of small- and medium-scale industries have also been recognised in the literature on proto-industry or “traditional industry”. Some (like most of the spinning sector) were destroyed by a much more efficient modern industry, while others (like the weaving sector) experienced the more mixed results. If hand-weaving had survived for a long time by using machine-made yarn and cheap family labour in the peasant household, before the productivity gap with power looms became too great, this sector can be seen to have played a critical role at the

initial stage of industrialisation. The contribution of the traditional sector to overall industrialisation would become clearer still, if we found that it improved labour productivity within the framework of traditional weaving technology for example, thus creating a larger demand for traditional clothing and offering a greater purchasing power to the modern spinning sector. Indeed the parallel development of modern industry and traditional industry has been identified as a main feature of Meiji industrialisation (Takafusa Nakamura 1971). And local hand loom centres did not always die out; Power looms gradually replaced improved hand looms, and in many places traditional industry transformed itself to small-scale industry. Small- and medium-scale industries constitute a greater part of Japanese industry to this day.

While it seems obvious that smaller-scale industry had a lower capital-labour ratio and a lower capital-output ratio than large-scale industry, it is not always the case. The postwar experience suggests that policy bias towards heavy industry could easily force small-scale industry to purchase expensive and out-of-date machinery with a much higher interest rate, while the more powerful large companies could enjoy the importation of efficient foreign machines and better borrowing terms. With poor electricity supply resulting in the low capacity utilisation rate of this expensive machinery, and preferential taxation and subsidies saving the input of capital of the modern large-scale industry further, the capital-labour ratio of small-scale industry could well end up being higher than that of large-scale, in spite of the fact that the former clearly aimed at the greater use of labour whenever labour and capital were substitutable and developed labour-intensive technologies such as improved weaving machine of a traditional type. During the 1950s and the 1960s a number of Asian countries adopted such a policy to foster the large-scale modern industry. It seems likely that in prewar industrialisation too, very many traditional industries on the way to modernisation were inefficient and suffered from a rather high capital-labour ratio, especially if it was located where machinery and capital were not readily available. Nevertheless, some internationally competitive traditional industries did emerge on the strength of disciplined labour, and it is the impact of this successful segment that we are concerned here.

Thus the data on capital-labour ratio offer a useful but not a definitive guide for the understanding of the direction of technological and institutional innovation in each country or region. The most immediately obvious observation we can make in identifying such a direction is to study the long-term trend of the country's structure of foreign trade, although admittedly this is possible only when it was integrated into the international economy. If a country is heading for more exports of labour-intensive goods with imports of capital-intensive ones at the initial stage of

industrialisation, it is the best sign of labour-intensive industrialisation. That country could either remain the exporter of labour-intensive goods without the improvement of the quality of labour, or develop a labour-intensive path of development, progressively altering the character of export goods from the ones based purely on disciplined labour to those based on the more skilled and educated labour. If the latter takes place, that country's trade structure would look more like the one of a country with capital-intensive industrialisation, but that does not necessarily mean that its competitiveness would now lie in the use of capital. It could still be that its international competitiveness lies in the quality of labour.

#### The improvement of the quality of labour

This last comment has implications for our understanding of labour-intensive industrialisation before the majority of industrial workforce became educated. What were the determinants of the quality of labour, and how did it improve over time? Let us go back to the case of prewar Japan to review the process.

First, labour recruited from the countryside to modern factory was of a relatively good quality. As stated above, the Tokugawa peasant household had an incentive to improve their economic and social capabilities, and a high level of social stability was achieved over a long period of time. The accumulation of human capital, especially that of general, managerial and inter-personal skills relevant to the control of their immediate surroundings and the administration of the village community, became an engrained value in Japanese society, and contributed to a slow but steady economic progress (Nakamura 1981). The Japanese developmental path after the Meiji Restoration largely retained these characteristics. There was a capability enhancement channel within the society, and the development of ideologies and institutions was essentially directed towards creating an order which would promote this channel (Sugihara 2005b).

Second, labour management played an important role in the improvement of the quality of labour. In cotton mills, there were many kinds of prize or bonus available; if you worked for a full month without any absence you would get a small sum of money, if you worked for three continuous months, another bonus, if you worked for a full year, another bonus, and so on. The results were often publicised and workers were encouraged to compete with each other on a group basis. In the case of piece workers, the system simply operated on the basis of each worker's achievement.

These incentive devices were by no means original, but the fact is that an almost entire workforce was responding to them vigorously. For instance, most factories

reported that a huge number of workers (70 or 80 per cent in some factories) got these attendance prizes (see Table 4). There are a large number of complaints in the Report that the amount of prize money was smaller than previously promised, but hardly anybody questioned its existence. I quote a piece of oral evidence of a female worker, when she was asked why her co-workers did not stop and take a rest in the rest time, “Nobody takes a rest because it is not nice to be beaten by others” (Noshomusho 1971/1903: 550). This is not something you can easily find in any factory at this stage of economic development. Japanese workers by that time were already willing to express themselves, not by sticking to their manners in which they were brought up, but by accepting the new rules of the factory community as the most relevant values for them to adhere to.

Under the ideological banner of industrial paternalism, many schemes were tried and have been successfully carried out. There were classes in reading and writing, tea ceremony, flower arrangement, cooking and moral lectures by Buddhist monks. Some factories had a system where workers’ clothes were regularly checked to see if they were clean. Others asked workers to report to the management on their daily expenditure on a weekly or monthly basis, and those who did not spend too much on drinking and entertainment won some prizes. Workers were encouraged to write to journals which were published by the factories under the title of “Operatives Friends” or some such name, and one can see many devices here again. For instance, one of the essays which won a prize talked about how to save time in the preparation of classes in the morning and at night, and argued that time is money not only in the factory but all through your life (Sugihara 1986b).

The improvement of the quality of labour did not directly make a great impact on labour productivity. The more literate, the more hygiene-conscious and the more disciplined workforce were of course better able to attend to larger numbers of spindles and power-looms, but the skills required to carry out these tasks remained simple, at least for the majority of workers on the shop floor. In fact it often looked as if the management had been taking pains to offer workers incentives, better wages and welfare facilities in the hope of preventing the penetration of trade union movements, rather than for direct productivity gains. Along the way, however, their efforts resulted in a greater sense of dignity to unskilled work and a greater sense of respect to modern social values. This in turn raised the social profile of the cotton mills as a decent place to work, and the mills were successful in recruiting the daughters of the more respectable rural households. Essentially, this was the

Table 4 Incentive Schemes in 13 Cotton Spinning Mills in Kansai Area, Japan, 1900

		1			2			3			4			5		
number of operatives	male	517			262			180			718			260		
	female	1,372			988			620			1,741			720		
	total	1,889			1,250			800			2,459			980		
		male	female	total	male	female	total	male	female	total	male	female	total	male	female	total
full attendance prize	awards	674,410	1,739,860	2,414,270	627,780	1,464,800	2,092,580	?	?	2,960,000	1,025,470	1,303,925	2,379,395	?	?	2,170,000
	number of operatives	2,690	7,848	10,538	1,427	3,331	4,758	1,291	4,762	6,053	2,511	4,319	6,830	344	808	1,152
fulfillment of contract prize	awards	-	-	-	275,390	872,020	1,147,410	?	?	2,485,100	459,000	410,500	869,500	-	-	-
	number of operatives	-	-	-	28	1,501	1,529	38	210	240	63	124	187	-	-	-
good product prize	awards	-	-	-	-	-	-	?	?	1,143,750	587,695	776,650	1,364,345	-	-	-
	number of operatives	-	-	-	-	-	-	594	2,529	3,123	1,355	2,379	3,734	-	-	-
semi-annual prize	awards	-	-	-	-	-	-	-	-	-	-	-	-	?	?	831,000
	number of operatives	-	-	-	-	-	-	-	-	-	-	-	-	296	670	966
special prize	awards	2,006,970	2,014,230	4,021,200	-	-	-	-	-	-	-	-	-	-	-	-
	number of operatives	3,361	5,671	9,032	-	-	-	-	-	-	-	-	-	-	-	-

		6			7			8			9			10		
number of operatives	male	799			652			160			225			610		
	female	2,304			2,004			692			975			3,009		
	total	3,103			2,657			852			1,200			5,619		
		male	female	total	male	female	total	male	female	total	male	female	total	male	female	total
full attendance prize	awards	?	?	2,622,130	?	?	13,032,035	?	?	1,836,923	332,418	587,848	920,266	?	?	7,987,760
	number of operatives	?	?	12,834	3,009	14,691	17,700	660	3,438	4,098	-	-	-	1,133	6,124	7,257
fulfillment of contract prize	awards	?	?	5,097,700	?	?	3,400,552	-	-	-	-	-	-	-	-	-
	number of operatives	?	?	807	146	408	554	-	-	-	-	-	-	-	-	-
good product prize	awards	?	?	4,317,490	-	-	-	-	-	-	275,870	562,613	838,483	-	-	-
	number of operatives	?	?	10,484	-	-	-	-	-	-	1,212	2,865	4,077	-	-	-
semi-annual prize	awards	?	?	-	-	-	-	-	-	-	-	-	-	?	?	4,712,100
	number of operatives	?	?	-	-	-	-	-	-	-	-	-	-	1,919	8,676	10,595
special prize	awards	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	number of operatives	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

		11			12			13		
number of operatives	male	700			90			300		
	female	1,911			810			1,200		
	total	2,611			900			1,500		
		male	female	total	male	female	total	male	female	total
full attendance prize	awards	?	?	1,120,960	1,327,303	2,454,046	3,791,349	419,030	867,090	1,286,120
	number of operatives	384	512	896	244	682	926	757	2,547	3,304
fulfillment of contract prize	awards	?	?	3,139,000	-	-	-	37,850	109,700	147,550
	number of operatives	-	412	412	-	-	-	76	207	283
good product prize	awards	?	?	2,464,265	-	-	-	952,300	31,400	983,700
	number of operatives	455	356	811	-	-	-	386	152	538
semi-annual prize	awards	-	-	-	-	-	-	-	36,400	36,400
	number of operatives	-	-	-	-	-	-	-	72	72
special prize	awards	-	-	-	-	-	-	-	-	-
	number of operatives	-	-	-	-	-	-	-	-	-

Source and Notes: Noshomusho 1971/1903, 88-89. Awards are expressed in yen. All figures are total figures. Thus the same person can be entered any number of times.

Table 5 Level of Schooling of Japanese Industrial Workers, 1924-30 (per cent)

	1924	1927	1930
No Schooling	5.9	4.6	3.5
Primary school drop-outs	15.0	10.2	6.0
Primary school completed	55.5	58.2	57.8
Higher primary school and above	23.6	27.0	32.7
total	100.0	100.0	100.0

Source and Notes: Rodosho 1957, 9-9, 26. Primary school lasted six years for children of 6 to 12 years. Higher primary school offered further two years of primary education.

Japanese solution to the problem of reconciling the need for unskilled (and often manual) labour with human development during industrialisation (Sugihara 2005b).

Third, formal schooling was part of this development. In 1905 57 per cent of the working age population did not complete primary school, while 42 per cent completed primary school only. By 1935 these figures changed to 7 per cent and 82 per cent respectively (Hazama 1978: 194). By 1930 more than 90 per cent of

industrial workers completed primary school (Table 5). Although starting from a low base, the level of education of female textile workers also vastly improved by this time. Nevertheless, we need to look beyond the realm of formal schooling, if we are to understand the ideologies and institutions that supported the entire process of industrialisation. As far as Japan is concerned, a remarkable development of formal schooling in the twentieth century institutionalised the capability enhancement channel that had been set for centuries, rather than created it.

This evidence suggests that labour must be interpreted as a factor of production, the quality of which has constantly changed and often improved. Throughout the history of capitalism factor endowment conditions set the condition under which technological and institutional innovation took place. The argument here is that labour functioned, not like capital, but rather like land, the value of which has changed, depending on whether its quality was improved, maintained or depleted.

#### **4 The postwar diffusion of labour-intensive industrialisation**

##### The postwar debate on the industrialisation strategy

After 1945, in spite of the disruptions caused by the war, industrialisation efforts in Asia accelerated. The single most important factor was decolonisation. During the late 1940s and the 1950s most Asian countries achieved independence and began implementing their own programme of industrialisation. The efforts were invariably affected by the international framework of the Cold War, however. The prewar pattern of intra-Asian trade was replaced by a rather strict division between the United States-led regime of free trade, and the other countries either under the influence of the Soviet-led socialist regime or following the non-alliance movement led by Nehru and Sukarno. The latter groups substantially withdrew from world trade, and only a small number of countries along the Pacific Rim, Japan, South Korea, Taiwan, Hong Kong and Malaya remained fully integrated into the international economy.

During the 1950s and the 1960s, a number of South and Southeast Asian countries attempted import-substitution industrialisation, trying to shift their status from the primary producer to the industrial economy. But it was not easy to alter the pattern of international division of labour where developed countries exported manufactured goods and developing countries exported primary products. At UNCTAD in 1964, Prebisch stressed the need for import-substitution industrialisation, in order to respond to the worsening of the terms of trade for primary producers (Esho 1998). In most cases, import-substitution was thought to be possible through heavy protection, low

interest rates, overvalued currency and fiscal concessions. Emphasis was placed on the development of capital-intensive industries, which were expected to bring the benefit of technology and industrial linkages to the rest of the economy. In India and Indonesia, but also in China and South Korea and Taiwan under very different political settings, the idea of industrialisation led by the leading (capital-intensive, heavy industry) sector was influential at a certain stage of their development (Oshima 1987).

Other international organisations, such as the ILO, were unhappy about such a tendency. “This led to a marked bias in favour of capital-intensive large scale industries with the excessive use of scarce capital and inadequate participation of small scale industries. There was hence little expansion in the demand for labour and the strategy did little to solve the pressing problems of unemployment and underemployment” (Amjad 1981: 1). Together with the neglect of agriculture, underemployment, real wage stagnation and the unequal distribution of income resulted. In response to these criticisms, the “new orthodoxy” emerged emphasising rural development and labour-intensive industries, and “the creation of an economic environment which reflects factor scarcities and greater reliance on the medium and small firms as the production unit” (Amjad 1981: 2). And the issue of “human resource development” moved to the centre stage of development priorities (Amjad 1987: 1).

Both Taiwan and South Korea had a large labour-intensive industry sector at an early stage, and proceeded with export-led industrialisation, importing intermediate goods and capital goods from Japan, processing them with the use of competitive labour, and exporting them to the United States (Lee 1979, 1981: Hattori and Sato 1996). Around the middle of the 1960s Southeast Asian countries, later to be called ASEAN, began to change their industrialisation strategy. Broadly speaking, it was accompanied by the more open economic policy with emphasis on the exports of labour-intensive industrial goods. In the 1970s and the 1980s, a range of academic publications by ARTEP, a Bangkok-based wing of the ILO, advocated the strategy of labour-intensive industrialisation (Sugihara 2006). After the policy shift of 1979, China also became an important exporter of labour-intensive industrial goods. Looking back, it looks as if labour-intensive industrialisation in Asia as a whole had continued in the second half of the twentieth century, with a relatively short period of interruption in which capital-intensive industrialisation strategy was dominant. Judging by economic performance, a tendency was that a country like India, which had pursued capital-intensive industrialisation strategy for a long time, lagged behind,

while a country like Taiwan, which had quickly shifted to the labour-intensive industrialisation strategy, grew very fast.

#### The Japanese miracle and the “flying geese”

The Japanese “high-speed growth” during the 1950s and the 1960s was an important background to this regional policy shift. After its defeat in World War II, the Japanese government was determined to pursue a programme of full economic modernisation, primarily through expansion of the domestic market. But the problem of resource constraints (mentioned above as a background to Japan’s aggression in the 1930s) remained a critical bottleneck. It was the Cold War that changed the American attitude towards Japan's economic future. By the late 1940s Japan was regarded as a country whose economic strength should be deployed to protect and further the “free world” zone in East Asia, and was allowed to pursue the systematic introduction of capital-intensive heavy and chemical industries. Although heavy and chemical industrialisation was attempted in the 1930s and in some ways accelerated during the period of the wartime controlled economy, it was at this point that the character of Japanese growth shifted from labour-intensive industrialisation to the fusion of the two paths, East Asian labour-intensive path and Western capital-intensive one, and its experiment began to assume global significance.

On the face of it, when world resources came to be freely allocated through trade and the pressure on land eased, East Asia could have converged with the West, as a simple “convergence” theory would predict. In practice, however, the population of East Asia and the rest of the developing world was so large that it would have been impossible to raise their standard of living to the Western level, given the level of technology and available world resources. In any case, American technology was so heavily biased towards resource-intensive and capital-intensive technology that it was ill-suited to the needs of developing countries. But to lower Western standards of living for a more egalitarian world would have been politically unacceptable to the population of advanced Western countries. Thus, a much more likely scenario would have been the persistence of the North-South divide, and the continued struggle for a greater share of income and resources among nations, leading to military and political tension. The “miracle” only took place because of the presence of two highly contingent factors; the Cold War regime accidentally creating a vacuum which allowed Japanese industrial growth, and the Japanese determination to achieve full economic modernisation using the fewest possible additional resources, which was an instinctive reaction to the self-inflicted consequences of the Asia-Pacific War.



As it happened, technology was freely transferred from the United States under the Cold War environment, while Japan (and later NIEs) was allowed to import all the natural resources they needed from all over the world. While the United States specialised in resource- and capital-intensive military, space, aircraft and petrochemical industries, she was happy to help East Asia enlarge its industrial structure from light industries (such as cotton textiles) to the non-military and relatively labour-intensive segments of heavy and chemical industries. These included shipbuilding, cars and consumer electronics. A number of NIEs and ASEAN countries were under the politically repressive authoritarian regimes, which however were committed to economic growth, and they were able to get political and military support from the United States (Suehiro 2000, ch.5). The Cold War regime in turn was implicitly supported by East Asian growth, as it demonstrated the best side of capitalism. In this sense, the Cold War regime and East Asian growth were the two sides of the same coin.

As the Cold War turned to “long peace”, military demand flattened, while the mass consumer goods market in which East Asia specialised expanded, and the region’s industrial exports to the United States, as well as intra-Asian trade, rapidly increased. Both U.S.-Europe trade and intra-European trade grew steadily but slowly. Europe, gradually recovering from war, managed to create a politically-charged European Economic Community, with a rather protectionist stance against the rest of the world. With decolonisation, the sterling area gradually disintegrated, but those newly independent countries not directly connected to the Asia-Pacific were slow to feel intense competition, and failed to exploit the potential gains from international trade. The Soviet-centred communist-bloc trade also failed to generate the dynamics of technological advance in labour-intensive industries and new consumer demand. Thus, the growth of postwar trade was driven by the leadership of the United States and the high-speed growth of Japan and other Asian countries.

Within Asia the fusion between the traditional commercial skills of overseas Chinese and Japanese technology helped the diffusion of industrialisation. This diffusion has been captured in terms of the “flying geese pattern of economic development”. In this scheme, the relatively labour-intensive low-technology industry of a more advanced country (such as Japan) would be very rapidly transferred to the country next in line (such as Taiwan), which in turn, within the space of ten years or less, would transfer it to others (such as Malaysia). The more advanced county would be under constant pressure to restructure its industries by the competition from the low-wage countries. State intervention through the formulation of industrial policy was essential to this process. Yet East Asian countries, particularly Japan, were far more

committed to free trade than Europe and the United States, and were willing to let international competition rule the region's economics and politics. The income gaps that had been successively created, first between Japan and NIEs, then between NIEs and ASEAN, between ASEAN and China, and now between China and other parts of Asia, provided the major opportunities for technological transfer and cultural fusion. By the 1980s the centre of world trade had decisively shifted from the Atlantic to the Pacific.

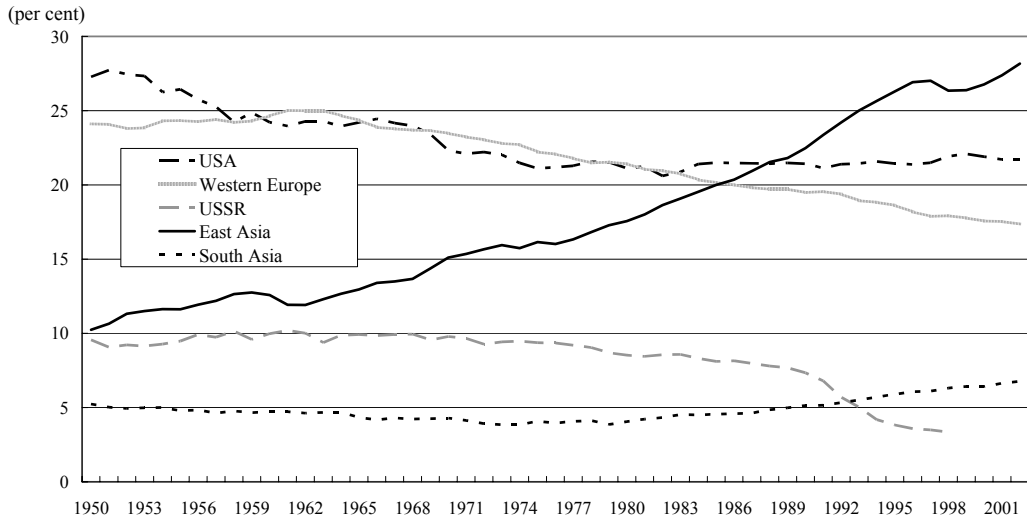
The economic success of Japan and NIEs prompted the change in Chinese policy in the late 1970s, which vastly enlarged the population and market of the Asia-Pacific region. In turn, economic forces based on East Asia's industrial strength, rather than the Cold War regime, began to dominate international relations. With the collapse of the Soviet Union in 1989, the United States began to reduce its commitment to military industry, and developed a strong will for financial supremacy (the Wall Street – Treasury Complex), which resembles the relationship that existed between the City of London and the Whitehall, which dominated international relations during the late nineteenth and early twentieth centuries. The new complementarity between the American financial interests and East Asia's industrialisation replaced the old (military/non-military) division of labour, and provided the basis for a continued growth of trade during the 1990s (Sugihara 2001c).

Figures 2 and 3 confirm the sweeping change in the structure of the world economy in the second half of the twentieth century. Figure 2 suggests that East Asia's share in world GDP rose from 10 per cent in 1950 to 27 per cent in 2002, while the share of the rest of the world, especially Western Europe and the former (non-Asian) socialist countries substantially declined. Figure 3 depicts the shift in the centre of world trade from the Atlantic to the Pacific. In this scheme, two large regional trade patterns are omitted; intra-EU trade and trade among the nine Asian countries including China. But they too conform to the general trend; the growth rate of the latter was much faster than the former.

#### Factor endowments and consumer tastes

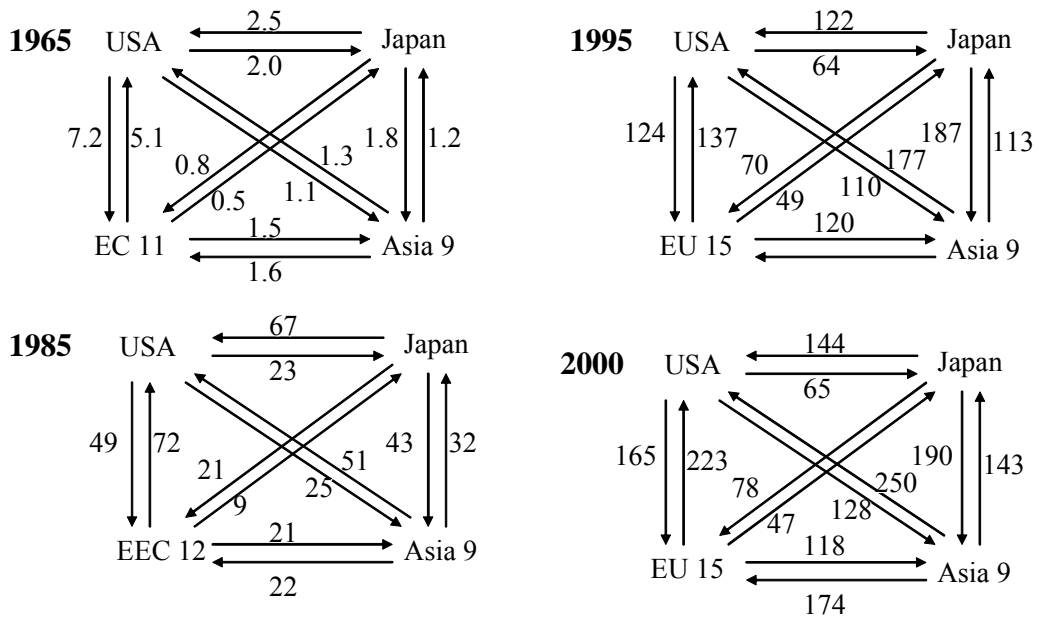
The most immediate international economic force that united the economies along the Pacific rim was the "second" transport revolution, involving the introduction of large tankers, the upgrading of port and related facilities, road and railway connections and the containerisation of key industrial goods transport. Suddenly, the biggest ocean on earth began to provide the biggest opportunities for trade, as the

Figure 2 Regional Composition of World GDP, 1950-2002



Source and Notes: Maddison 2003. Western Europe consists of Austria, Belgium, Denmark, Germany, Italy, Netherlands, Norway, Sweden, Switzerland and United Kingdom. East Asia refers to Japan, South Korea, Taiwan, Hong Kong, Singapore, Philippines, Thailand, Malaysia, Indonesia and China. South Asia refers to India, Pakistan, Bangladesh and Sri Lanka.

Figure 3 Patterns of World Trade (\$ billion)



Sources and Notes: IMF, *Directions of Trade Statistics*, *Taiwan Statistical Yearbook*. Figures for 1965 derive from *Kan-taiheiyō Chiiki Boeki Matorikkusu (Sangyo-betsu, 1965-1983)* (The Trade Matrix of the Pacific-Rim Region (by Industry, 1965-1983)), Ajia Keizai Kenkyusho, Tokyo, 1987. EU 11 refers to twelve EEC countries in 1985 minus Luxemburg. Asia 9 refers to South Korea, Taiwan, Hong Kong, Singapore, Philippines, Thailand, Malaysia, Indonesia and China.

reduction of transportation costs connected countries with great diversity in factor endowments and consumer tastes.

How should we explain the explosion of trade growth in the Pacific? Ricardo (and later Heckscher-Ohlin) argued for the “gains from international trade”, according to which, if two countries with different factor endowments or productivity begin trading, both would be better off than in the case of no trade. This was the basis on which to explain the rise of the Atlantic economy. But the diversity of factor endowments and productivity, reinforced by the international order mentioned above, which existed across the Pacific Ocean was much greater. On the one hand, it had densely populated and resource-poor East Asian countries with varying wage rates and technological capabilities. Resource- and capital-intensive industries could not have been easily competitive there. The United States, on the other hand, needed to exploit the advantage of its economies of scale in resource- and capital-intensive industries. At the same time, the United States, Canada and Australia were eagerly looking for customers of their primary products (such as raw cotton and iron ore), now that Europe lost its capacity for rapid import growth. Within East Asia, a “flying geese pattern of economic development” formed the basis of the rapid growth of intra-Asian trade of high technology industrial goods.

In all of these developments, a simple principle that the greater the diversity, the greater the trade opportunity, ruled. There was a good case for “open regionalism”, which advocated for lower tariff barriers within the region, but, unlike EU, without discriminating against countries outside the region. In spite of economic nationalism, Asian countries enjoyed the presence of Hong Kong, and to a lesser extent, Singapore, as free ports. Most growth economies of Japan, NIEs, ASEAN and China traded heavily via these ports, especially with the United States and intra-regionally. As long as it was likely that the region was the fastest-growing, it was believable that the region would have the most to gain from trade. Open regionalism was thus adopted as the guiding principle for APEC in the late 1980s (Garnout and Drysdale 1994).

Furthermore, there occurred a much more comprehensive technological and cultural fusion between different civilisations than the world had ever seen. Already in the 1960s, East Asia had made a significant contribution to the emergence of the mass consumer market in the United States. For example, the East Asian textile complex, made up of Japanese man-made fibre manufacturers, Taiwanese weavers, Hong Kong finishers and Japanese general trading companies, were competing well in the lower end of the American market of clothing and apparel (Arpen et al. 1984).

During the 1980s and 1990s technological fusion became a two-way process. Not only did Japan absorb a wide range of American technology and culture and produce internationally competitive cars and consumer electronics, but also the American manufacturers in turn responded to the Japanese challenge by adopting some Japanese production methods. In other words, convergence, as well as specialisation through trade, occurred. Under such circumstances, international competition for finding the best input mix became fierce, and the Asia-Pacific economies became used to constant change and rapid growth.

The Asian market of mass consumer goods has also seen an unprecedented degree of fusion of consumer tastes. Part of the dynamism of the American mass consumer market during the 1950s and the 1960s came from the fact that a variety of European cultures and tastes were freely blended to form a new mass consumer culture. In East and Southeast Asia in the 1980s and the 1990s, a much wider range of cultures and tastes came to be actively blended, to create diverse patterns of food, clothing and housing. And, with the rapid rise of per capita income, the routine household expenditure began to include a variety of consumer electronics, cars and computers. While this meant a greater demand for relatively culture-neutral goods (including intermediate goods), much of it coming from the machinery industry, it by no means pointed to the “universalisation” of consumer tastes. For example, a piece of simple computer software in a local language (but the size of the Chinese population could make it a potentially huge market) may need a design which would match the “feel” of Chinese characters and culture. And it is usually those East Asian entrepreneurs who have inherited the skills of translating local cultural codes to economic values that could respond to these needs. Meanwhile, technology could flow from the United States, and Western merchants could secure a fair share from the long-distance trade relating to it. The point is that if two or more different civilisations develop slightly different types of mass consumer markets based on different languages and cultures while at the same time a strong tendency for technological and cultural convergence is at work, business opportunities are greater than in the mono-cultural situation. Here too the principle that the greater the diversity, the greater the trade opportunity, ruled (Sugihara 2001c).

How did this affect the recruitment and management of Asian labour? The first observation is again its growing diversity of the market, cutting across territorial boundaries, from low wage to high wage, and from unskilled to highly skilled, but an increasing number of workers directly exposed to international competition.

By the early 1950s Japan regained the position of the world's largest exporter of cotton textiles, and was replaced in this position by China in the early 1970s (Sugihara 2004b). The chain of development of labour-intensive industries across other Asian countries has been impressive, starting from Hong Kong and spreading on to Pakistan, Taiwan, South Korea, Thailand and Indonesia, and has by now reached many other countries, including those with the lowest levels of per capita income. Much of this was rural-based.

The evidence indicates that rural non-farm activities carried out mainly in small-scale enterprises (including farm household enterprises) are a very important source of employment and income in developing countries. As much as 30 to 50 per cent of the rural labour force is either primarily or secondarily engaged in a wide range of non-farm activities, which generate 20 to 40 per cent of rural household income. Particularly significant is rural manufacturing. Employment in this sector often exceeds that in urban manufacturing establishments; rural-based, small-scale industries are generally not only more labour-intensive, but also more productive per unit of scarce capital than their large-scale counterparts (Yujiro Hayami 1998: 2).

At the same time, the labour market was gradually enlarged to include higher-skilled, better paid jobs. The flying geese pattern of economic development suggests the growth of such a hierarchical structure of the regional labour market where high-wage economies possessed labour force of a high quality with high level of education, while low-wage economies depended on cheap labour without education and training. The point about the Asian labour market was that, while the amount of migration was small relative to the total population (national boundaries were relatively strictly observed and large countries such as India and China heavily regulated internal migration), people were extremely keen to be educated and trained because there was a rapid rise in wages accompanied by the growth of demand for highly skilled jobs. Heavy investment in education is partly a result of the relative lack of investment opportunities at home, but it also reflects the awareness of the need to improve the quality of labour, by both government and society at large. In some important respects technology and commercial and managerial skills crossed national borders rather freely. American and Japanese direct investment and the overseas Chinese networks played an important part in these transmissions. As the wage rose and labour shortage intensified in Japan and NIEs in the late 1980s, there was an increasing pressure for imports of labour (Godfrey 1992: 39). In the 1990s unskilled labour was imported to some high-wage economies in the region.

These developments provided East and Southeast Asian economies with a route from labour-intensive industrialisation to the more comprehensive industrialisation. Relatively simple segments of labour-intensive industries were progressively assigned to low wage economies, while relatively labour-intensive segments of capital-intensive industries (part of machinery, automobile and computer industries) were progressively transferred from the United States and Western Europe to East and Southeast Asian countries. The exploitation of diverse consumer culture also gave local and regional suppliers, of usually labour-intensive goods and services, an additional advantage. As long as the quality of labour improved to respond to this rapid upgrading of the industrial structure, labour-intensive industrialisation naturally led to the more comprehensive industrialisation, incorporating larger and larger segments of capital-intensive industries into its structure, while remaining relatively capital- and land-scarce, hence with a tendency towards resource-saving technology. Meanwhile, the liberal trade regime continued, with a much greater level of international contacts of trade and capital flows.

An important revision proposed here is that it was the three-tier division of labour between capital-intensive manufactured goods, labour-intensive manufactured goods and primary products, rather than the two-tier one between manufactured goods and primary products, that promoted the postwar growth of world trade. The utility of this view is the identification of the trade of labour-intensive manufactured goods as the driving force of world trade. The precise reorganisation of trade statistics to prove this would require a considerable amount of work, but, if this turns out to be the case, it could be argued that the three-tier structure, described in the previous section with respect to prewar Asian regional trade, had set the postwar pattern of trade expansion.

#### The impact of microelectronics revolution

Meanwhile, there was a significant change in industrial structure in developed countries since the 1970s. Table 6 shows the difference in growth rates in various industrial sectors during the 1970s and the first half of the 1980s. It is clear that industries directly linked to the introduction of microelectronics technology (computers, consumer electronics, telecommunications, machine tools etc.) showed the rapid growth, while the “old” industries, including both textiles and other light industries and capital-intensive, heavy industries, struggled. The same table also makes it clear that Japan, rather than the United States, led this change, which meant that the impact of this change was felt in the developing economies of East and Southeast Asia more keenly than almost anywhere else in the world.

Table 6 Trends of Domestic Demand in Volume Terms by Branch of Industry  
in the European Community, the United States and Japan  
(average annual growth rate, 1972-85)

	(per cent)		
	EC	U.S.A.	Japan
Strong-demand sectors	5.0	5.2	14.3
Office machines, data-processing equipment	9.0	6.5	7.2
Electrical and electronic equipment and supplies	3.5	7.2	20.7
Chemicals and pharmaceuticals	5.3	2.3	9.9
Moderate-demand sectors	1.2	2.8	3.1
Rubber, plastics	2.8	5.4	2.0
Transport equipment	1.7	2.7	5.2
Foodstuffs, beverages, tobacco	1.2	0.4	0.0
Paper, printing	1.6	2.9	2.7
Industrial and agricultural machinery	-0.1	5.6	5.6
Weak-demand sectors	-0.3	0.5	2.4
Metal products	-0.5	-0.4	3.4
Miscellaneous industrial products	-0.6	2.1	1.9
Ores and ferrous and non-ferrous metals	0.6	-1.8	2.0
Textiles, leather, clothing	-0.2	2.0	2.2
Non-metallic minerals (construction materials)	0.1	1.7	1.1

Source and Note: van Liemt 1992, 12. Data derive from Commission of the European Communities, *International Trade of the European Community: A View of Certain Aspects of the External Trade of the Community*, Directorate-General for Economic and Financial Affairs, European Economy, No.39, Brussels, 1989.

The new technology rapidly fused with the conventional skills of mechanical engineering, and a wide range of electronics-related industries emerged, creating a large number of relatively simple jobs (such as assembling) in addition to the employment of highly skilled workers. It also became a technological linchpin of some “old” industries (such as textiles and apparel) and many service industries (such as education, medical care and leisure) (Zhou 1997). More important, the “new” industries did not necessarily require industrial concentration and the kind of infrastructure, which heavy industries needed (such as an access to ports and other transport to carry heavy material). They did not necessarily need the supply of a large amount of capital either. As long as competitive labour, access to information and commercial and financial networks were available, they would move to any location where the best combination of factor endowments and policy packages was on offer. Conversely, if conditions in a particular location changed, due to higher wages or change in government incentive schemes, for example, the industry could move to another location within a short space of time. Yet the potential linkages these new industries could make with domestic labour-intensive industries in employment terms were quite large.



Besides political stability and incentive packages, therefore, what was required in developing countries hosting these new industries was the flexible supply of various types of labour, ranging from unskilled to skilled, all of a good quality. Even if the host country had a pool of highly skilled workers, the quality of unskilled workers engaged in photocopying or simple repair work was unsatisfactory, due to the lack of discipline or literacy, competitiveness of that location would be affected. In other words, the availability of the whole range of workforce of a good quality became a key determinant of the country's competitive advantage. By the 1980s even rural industries engaged in conventional lines of business often required educated labour (van Liemt 1992: 12-13).

Reflecting such a change, many countries implemented various human resource development policies. The issue of "human resource development" moved to the centre stage of development priorities (Amjad 1987: 1).

From the perspective of employment (manpower) policy, the conventional forecasting of the number of engineers, teachers, doctors and nurses in accordance with population growth and urbanisation was joined by the need to predict the requirement of the type of workforce in accordance with future changes in industrial structure. Some argued that labour absorption to the industrial sector would not be large enough, in view of rapid population growth, and suggested the promotion of skill-intensive service sector employment. Others discussed human capital investment from the perspective of the cost-benefit analysis. One study suggested that primary education had higher returns on investment than tertiary education. Although such studies had limited influences on policy decisions, the realisation that the nature of future skilled work is extremely unpredictable tended to result in the tendency to avoid specialisation, and favour the investment in the more general education, which would produce workers with multiple and the more flexible skills.

The manpower policy had to be matched by the education policy. Table 7 suggests that by 1985 primary schooling of ASEAN countries became more or less a norm, and secondary school enrollment rates vastly improved between 1965 and 1985, matching or exceeding the level of China and India. In higher education too, the rates of the Philippines and Thailand exceeded that of India. Although the ASEAN figures were clearly behind those of Japan and NIEs, the rapid progress is impressive, when one is reminded of the fact that the level of education of this region was similar to or lower than that of South Asia, immediately after World War II (Sugihara 2006).

Thus, with time-lags and at a different pace, Japan, NIEs and ASEAN countries went

Table 7 School Enrollment Rates in Selected Asian Countries, 1985

	(per cent)				
	Primary 1985 (1965)		Secondary 1985 (1965)		Tertiary 1985
	Total	Female	Total	Female	Total
Bangladesh	60 ( 49)	50 ( 31)	18 ( 13)	10 ( 3)	5
India	92 ( 74)	76 ( 57)	35 ( 27)	24 ( 13)	9*
Pakistan	47 ( 40)	32 ( 20)	17 ( 12)	9 ( 5)	5
Philippines	106 (113)	106 (111)	65 ( 41)	66 ( 40)	38
Indonesia	118 ( 72)	116 ( 65)	39 ( 12)	34 ( 7)	7
Thailand	97 ( 78)	n.a. ( 74)	30 ( 14)	n.a. ( 11)	20
Malaysia	99 ( 90)	99 ( 84)	53 ( 28)	53 ( 22)	6
Singapore	115 (105)	113 (100)	71 ( 45)	73 ( 41)	12
China	124 ( 89)	114 ( n.a.)	39 ( 24)	32 (n.a.)	2
Korea	96 (101)	96 ( 99)	94 ( 35)	91 ( 25)	32
Hong Kong	105 (103)	104 ( 99)	69 ( 29)	72 ( 25)	n.a.
Japan	102 (100)	102 (100)	96 ( 82)	97 ( 81)	30

Sources and Notes: World Bank, 1988, 280-81. The data on primary school enrollment are expressed as of pupils to the population of school-age children (6 to 11 years). Since some pupils are younger or older country's standard primary school age, the gross enrollment ratios may exceed 100 per cent. The data secondary school enrollments are calculated in the same manner, taking the school ages as 12 to 17. The enrollment ratios are calculated by dividing the number of pupils enrolled in all postsecondary schools universities by the population, aged 20 to 24. Ibid., 303.

\*Tan and Mingat 1992, 15.

through the phase of labour-intensive industrialisation, and gradually moved to the human-resource-oriented path of economic development. The improvement in primary and secondary education played an important role there. It is suggestive that the “human development index” (a mix of per capita income, education and life expectancy) of these countries rose steadily as well (Sugihara 2003b).

### Policy convergence

Different developmental strategies of Asian countries affected the progress of labour-intensive industrialisation, and the speed and timing of the transition from labour-intensive industrialisation to the human resource path of economic development. Taking the case of independent India, it was the import-substitution industrialisation strategy that made it very difficult to pursue labour-intensive industrialisation, which, as Roy has recently demonstrated, had taken place during the colonial period (Roy 2005). First, there was a heritage of the nationalist movement, which advocated the protection and development of traditional cottage industries, including economically inefficient sectors like khadi and handloom segments. Partly inheriting the Gandhian tradition and partly in the more explicit effort of creating employment, these sectors had been isolated from international competition. Meanwhile, the government protected the large-scale modern cotton textile industry, which in turn provided the traditional weaving industries with cheap machine-made yarn. Labour in the organised sector was legally protected, which made it very difficult for any factory to

lay off its workforce. Furthermore, because of the virtual prohibition of the imports of textile machinery and the installation of new machinery in the factory, there was very little chance of the rise in productivity or improvement of the quality of yarn. As a result, the Indian cotton textile industry went through a long period of isolation from rapid technological advance in Asian countries, led by Japan (Itoh ed. 1988; Leadbeater 1993).

The ideology for the political and economic autonomy remains powerful in India (for a typical reaction to export-led labour-intensive industrialisation strategy, see Singh 1979). After 1965 several attempts were made to liberalise the economy without much success. The policy shift of 1991 realised a degree of liberalisation of trade and capital flows, and was a step towards deregulation, but it did not represent a major ideological change in economic policy among the Indian elites. In particular, the rate of increase in the expenditure on education and welfare for the ordinary people, relative to that for elites, has been slow (Lindert 2003, 2004). Yet a high level of capability based on primary and secondary education (the literacy rate remains a major issue) and hygiene (especially low infant mortality) is clearly a necessary, though not sufficient, condition for economic development. In this respect the Chinese achievement during the pre-reform period (1949 to 1979) was far more impressive (Dreze and Sen 1995 and 1997).

Nevertheless, the economic reforms of 1991 sharply corrected India's bias towards strong economic ties with the Middle East and the former socialist countries. Export growth in the 1990s mainly came from labour-intensive industrial goods, including woven cloth, knitwear, garments, leather, machine components and software. Primarily through exports of textiles and apparel, India became progressively integrated into the international economy during the 1990s (Sugihara 2001b).

By the end of the twentieth century, therefore, most of Asian labour employed in the industrial sector came to be in touch with, if not fully became integrated into, a competitive international economy. It is worth recording that in 1994-95 over 14 million people were employed in the textile sector in India alone (Roy 1998). And, there was a route which each country could follow, from the low-wage economy based on unskilled labour to the high wage economy with skilled labour. Slowly but steadily, this route expanded, as the old-fashioned idea of capital-intensive industrialisation faded. The labour-intensive route proved to be the main route to industrialisation in Asia during the second half of the twentieth century.

### Developmentalism and education

There remain three issues that need to be discussed with regard to the nature of labour-intensive industrialisation in postwar Asia. First, there is the question of voice and growth. During industrialisation a number of NIEs and ASEAN countries were under politically repressive authoritarian regime. Under the Cold War regime the American strategy, conceived by Millikan and Rostow, embraced the idea of state-promoted development programme, to counter the Soviet challenge (Milikan and Rostow 1957). It supported the authoritarian-government-led economic and social development, so long as it respected the international rule of free trade and investment, and did not involve nationalisation or the abolition of property rights. The government was expected to form a national consensus, across different income groups and ethnic divisions, on the basis of anti-communist ideology and nationalism. As nationalism was injected “from above” with the support of technocrats, such a regime was sometimes termed “bureaucratic authoritarianism”.

At the same time, the regime had a distinctive character of “developmentalism” where the government was committed to development and industrialisation. Successful growth in turn legitimatised their authoritarian rule. This required the national consensus on growth, so “growth ideology” was not only injected upon the people, but attempts have been made to show them some fruits of growth along the way. While the government was generally repressive in its handling of the labour movement, it was often keen on mobilising farmers for political support. An important result of such a political effort was the improvement of roads and other infrastructure, education and social welfare in rural areas. It was crucial for the leadership to win mass support for focusing on growth, rather than on freedom.

With the end of the Cold War regime, the need for the government to mobilise the anti-communist sentiment lessened somewhat, but developmentalism continued to play a central role in Asian politics. Because growth ideology had been nationally shared during the period of authoritarian regime, it was relatively easy for countries like South Korea and Taiwan to transform their political structure from the authoritarian to the more democratic one. Developmentalism appears to be capable of accommodating democracy in these countries, and remains a dominant force in East Asia to this day (Suehiro 1998, 2000).

Amartya Sen criticised these regimes from the perspective of “development as freedom”, arguing that individual freedom was fundamental to economic and social development (Sen 1999). While accepting this statement as fundamentally correct,

the legitimacy of these regimes critically depended on the national consensus for growth, which was another mechanism to promote education and human development. In Asia, it was not just the voice but the national pursuit for the competitive advantage that moved the society forward.

Second, development economics had to adjust itself to a new age of high technology and globalisation. As late as the mid-1960s, Arthur Lewis commented that the arguments on human capital put forward by Gary Becker (Becker 1993: originally published in 1962) and George Schultz (Schultz 1961) had fundamental problems of measuring the value of education in terms of returns on investment. In his view, the rate of primary education in developing countries should be raised gradually in accordance with the changes in industrial structure. When a country had no choice but to depend on agriculture for most of labour absorption, a sudden increase of primary school enrollment would encourage young people to migrate to cities, which could check the rise of agricultural productivity and lead to the growth of the urban informal sector. As for higher education, most developing countries were already unable to offer employment to those who were highly qualified, resulting in the brain drain (Lewis 1966: 104-10).

But the issue for NIEs and ASEAN was to make a transition from labour-intensive industrialisation to the more human-resource-oriented path, not by creating an autonomous path of economic development, as Lewis envisaged, but by responding to external stimuli. It concerned both the flexible response to rapidly changing demand and the long-term human resource development that would enable such a response. It needed a different macro-economic approach from the conventional framework of development economics.

In particular, the balance between fostering specialised skills and general skills has become important for the overall improvement of the quality of labour, as the technological change, especially after the microelectronics revolution, required both of these skills. In this context, Claudia Goldin's understanding of the American "template" is interesting. She suggests that the American system of education, established in the early twentieth century, led the world to become rapidly accustomed to postelementary education during that century. The newly emerged American template was shaped by New World endowments, republican ideology, the frame of mind that was open and forgiving, academic yet practical, secular and gender neutral, and was funded and controlled by small districts rather than by centralised administration. As such, general schooling in the United States produced more flexible and transferable skills across place, occupations and industries than

European counterparts, which tended to offer more specific skills in terms of class, occupations and industries (Goldin 2001: 263, 275-78). Goldin's vision of the twentieth century being the "human-capital century", makes a point that it is the degree of human capital accumulation that distinguishes that century from all the previous centuries.

This vision clearly encompasses the rapid diffusion of postelementary education in the non-European world, especially in East Asia during the second half of the century, although no discussion is offered there as to how important the American template was to that diffusion. In fact Asian skills were inclined to be initially quite general, and, during the period of rapid technological change tended to retain flexible and multiple skills. We have sketched above the responses of ASEAN countries, while the Japanese system emphatically fostered general, multiple skills rather than technical, specialised ones from the very beginning, although they were characteristically firm-specific. In other words, the East Asian tradition of skill formation was responsive to the age of high technology and globalisation, either because of the nature of the tradition itself or because of the relative lack of penetration of western ideologies of artisanal skills and technical specialisation, or both.

Third, the need for the long-term human resource development suggested the significance of balanced educational spending between primary, secondary and tertiary sectors. According to Lindert, the "private property rights channel", which Western Europe followed in the earlier period and has been inherited in many parts of the world, tended to produce an "elite bias", i.e. overspending on higher education at the cost of the more basic ones (Lindert 2003: 333-39; World Bank 1992). By contrast, the public expenditure on education in Japan, NIEs and ASEAN countries was more favourable to primary education by this time (Tan and Mingat 1992: 27). Table 8 suggests that there was a clear difference between South Asia and Southeast Asia, regardless of the nature of political regimes.

These observations support the notion that, while Asian growth economies had experience diverse political regimes, including repressive ones, there were common threads in terms of sharing of developmentalism and emphasis on primary and secondary education. A probable result was that, irrespective of their ideological expressions, these growth economies observed international economic signals of where their comparative advantage lay and how to train labour to enhance it.

Table 8 Level and Distribution of Public Spending on Education  
in Selected Asian Countries, 1985

	Overall Government Spending (percentage of GNP)	Distribution of Public Spending <sup>(a)</sup> (per cent)			
		Primary	Secondary	Higher	Other
Bangladesh	1.5	49	34	15 <sup>(b)</sup>	2
India <sup>(c)</sup>	3.0	27	47	19	6
Philippines	1.8	64	16	20	0
Indonesia	3.7	62	27	9	2
Thailand	3.6	58	24	12	6
Malaysia	6.0	36	34	26	4
China	3.3	41	42	18	0
Korea	3.4	57	34	9	0

Source and Notes: Tan and Mingat 1992, 27.

a. Figures may not add up to 100 percent because of rounding errors.

b. Figure includes expenditure on universities, polytechnics, and technical institutes.

c. For India, the data on the distribution of spending refer to 1980.

## 5 Concluding remarks

The central proposition of this paper has been that labour-intensive industrialisation constitutes one of the two major routes to the global diffusion of industrialisation. This position has some further implications. First, it not only implies that the “Western path” of economic development is not the only route to industrialisation, but, it is not an independent route either. The pattern of global division of labour since the second half of the nineteenth century suggests that the capital-intensive and resource-intensive technology developed, by the use of a disproportionate amount of global resources available to mankind at each stage of development. There was no prospect towards a global equalisation of income through the direct diffusion of such a technology to the rest of the world. The global diffusion of industrialisation was made possible by the development of labour-intensive and resource-saving technology, which provided the majority of world’s industrial employment. This labour-intensive route combined cheap labour and Western technology to produce a capitalism aimed at a fuller exploitation of human potential as labour. If we are interested in understanding the potential, reality and consequences of capitalism, we need to capture this aspect of industrialisation by placing the improvement of the quality of labour in the centre of our discussion. Only by so doing will we be able to assess the achievements and limits of the “Western path”, which, by the efficient use of large amounts of capital and resources, brought about several technological breakthroughs, accompanied by the managerial revolution and the scientific management of labour.

Second, the connection between labour-intensive industrialisation and demographic patterns, which had been taken up in the proto-industry literature but not fully developed with regard to the diffusion of industrialisation, must be explored further. An implication of this paper is that we need to discuss the possibility that the employment opportunities created by labour-intensive industrialisation encouraged population growth in a major way. Not only did this stimulus release severe resource constraints arising from the shortage of land, but it supported a slow but steady rise of labour productivity in agriculture by offering additional work opportunities in the countryside and beyond. Improved agriculture in turn fed more people. This familiar linkage must be applied not only to the country-level analysis but to the understanding of economic development at regional and global levels, since international trade, migration and the flows of capital increasingly helped the more efficient global resource utilisation during the last two centuries. In so far as labour-intensive industrialisation embraced the gradual improvement of the quality of labour, this was the main route by which mankind escaped the Malthusian trap of overpopulation and the Ricardian trap of rising food prices. In the end, it was this virtuous circle, not the sudden availability of vast resources in the New World, that sustained the global diffusion of industrialisation.



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