

## **Globalization, Natural Resources and Foreign Investment: A View from the Resource-Rich Tropics**

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This article uses data drawn from Southeast Asia and West Africa to help explain the geographical distribution of foreign investment. Why during late nineteenth- and early twentieth-century globalization did the attributes of abundant natural resources, mass migration and export expansion that attracted large foreign investment to the New World not similarly draw capital to the tropics? I argue that in a number of tropical countries, rich natural resources and cheap labour available through mass migration effectively substituted for foreign borrowing. At the same time, the dominant institution of colonialism throughout Southeast Asia and West Africa limited borrowing from abroad and helped to ensure that even for these resource-rich countries capital flows remained slight.

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# **Globalization, Natural Resources, Foreign Investment: A View from the Resource-Rich Tropics**

## **1. Introduction**

The geographical distribution of foreign investment associated with late nineteenth and early twentieth century globalization was strikingly uneven. Between 1865 and 1914 three fifths of British, and two thirds of trans-European, foreign investment went to regions of recent European settlement, or the New World, with only a tenth of global population; just over a quarter of capital went to Asia and Africa where two thirds of people lived (Edelstein, 1982, p. 40; Stone, 1999, pp. 23, 414). A long tradition beginning with Alfred Marshall (1920, p. 668) and encompassing Nurkse (1959, p.17-18) stresses natural resources and large inward migration as key explanatory factors in disproportionate foreign investment in the New World. Clemens and Williamson (2004, pp. 304, 333), widening the geographical range of this tradition, contrast the New World with 'labour-abundant Asia and Africa'. Capital did not, they explain, go to these 'poor, labour abundant economies. We call this the wealth bias'. Wealth in New World countries took a number of forms but, in particular, capital was 'chasing natural resources, educated populations, migrants, and young, urban populations'.

Why then between the 1870s and Second World War did rapidly expanding tropical areas in Asia and Africa receive little foreign investment despite having the rich natural resources and heavy inward migration identified as fundamental to explaining capital inflows to the New World? The main aim of this article is to try to answer that question by analyzing the economic development of eight swiftly growing, natural resource rich countries. Six are in Southeast Asia, namely Burma, Indochina, Thailand (Siam), Malaya, Indonesia, and the Philippines. The other two, Ghana (the Gold Coast) and Nigeria, are situated in coastal West Africa. A lack of data prevented Clemens and Williamson (2004) from including two of the Southeast Asia countries considered here, Malaya and Indochina, or any country in Africa, and

from continuing their study beyond 1914. The present article fills some of these gaps. It extends analysis into the interwar years and contributes to an understanding of globalization and post-1870 foreign investment by studying in comparative historical depth eight tropical countries of a particular type.

These countries provide the basis for a vent-for-surplus growth model developed by Myint (1958) and Findlay (1970, 1995) and recently elaborated by Kelly (1997). The model is appropriate to countries which, as part of globalization from the 1870s onwards, experienced rapid export expansion based on rich natural resources without alternative domestic use. Natural resources, in combination with cheap labour, could be transformed into exports with only minimal foreign investment (Drake, 1972; Findlay and Lundahl, 1994, 2001). Vent-for-surplus areas in the eight Southeast Asian and West African countries, although typically labour-scarce, could call on a large supply of labour willing to work for not much above a subsistence wage. Labour supply was through international immigration and internal migration. In the New World, capital and natural resources combined as complements to fuel rapid export growth. I argue that in the eight Asian and African countries export expansion was similarly rapid, but relied on natural resources and nearby cheap labour. Capital flowed to the New World because it 'went where it was most profitable' (Clemens and Williamson, 2004, p. 333). By contrast, a similar profitability did not obtain in the eight resource-rich Asia and Africa because in the production of export commodities, natural resources and labour were efficient substitutes for foreign capital. As part of the openness associated with late nineteenth and early twentieth century globalization, colonial governments did not, contrary to Lucas' (1990, p. 95) hypothesis, try to restrict investment to maximize rents. Metropolitan capital could have flowed to colonial Southeast Asia and West Africa in response to rich resources had this been profitable.

The article argues that there were two further, complementary reasons for restricted foreign investment in these resource-rich Asian and African countries, one geographical the

other institutional. Both have as a starting point the importance of social overhead projects, notably railways, and government borrowing in international capital flows before the Second World War. First, unlike in much of the New World, a geography which facilitated water transport, especially in the Asian countries here considered, reduced pressure on governments to make a financial commitment to railways in the late nineteenth century, at a time when railways constituted the most important component of international investment. Second, the institution of colonialism and its associated preferences for light taxation and if possible small surpluses, or at least balanced budgets, severely circumscribed fiscal capacity. As a consequence, government borrowing for investment in social overhead projects was limited.

## **2. Geography, export expansion and government**

### 2.1 Geographical realities

In the 1860s large parts of the tropics, notably in Southeast Asia and West Africa, were sparsely populated or even uninhabited.<sup>1</sup> Often the most natural resource rich areas within the eight countries were also the least settled because they were unattractive for settlement prior to a demand for the products that could be produced there. Globalization, since this new demand was an integral part of it, helped to define resource abundance. Tropical populations had no reason to migrate from traditional subsistence agriculture to pioneer frontier areas and engage in what quickly became monoculture until late nineteenth-century transport and communication developments linked the tropics to a world market. But once this linkage allowed international trade to provide an outlet, or 'vent', for the products in which resource abundant tropical regions had a comparative advantage, large-scale inward migration swiftly followed.

### 2.2 Migration and moving frontiers

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<sup>1</sup> Principal Southeast Asian exceptions to this in the eight countries considered were dense populations in Java (but not Indonesia's Outer Islands), north Vietnam in Indochina, and central Luzon in the Philippines. Close settlement also existed in a few districts of eastern Nigeria and in the north around Kano.

Along with resource abundance, two striking aspects of rapid tropical development between 1870 and the Second World War were mass migration, both within and across national boundaries, and the nearly identical technologies shared by small farmers, or 'peasants', and plantations. Both relied on traditional agricultural tools. In all of the tropics, only sugar, tea and oil palm were predominately plantation crops. Other tropical exports depended substantially, or even exclusively, on the enterprise of small farmers. Nor did mining necessarily require a departure from small-scale traditional techniques if mineral deposits were sufficiently rich and alluvial.

Dual economies developed in the tropics in conjunction with the new vent-for-surplus trade opportunities, and often a country's traditional sector largely supplied the migrants to work in the export sector. One of the 'great events' in recent African economic history began in 1892 in Ghana when migrants moved west from the Akwapim scarp to north-western Akwapim, and after 1900 to the practically uninhabited dense forests and swamps of southern Akim Abuakwa, to create, by 1911, the world's principal cocoa industry. Ghanaian migrants cleared the land themselves and built their own roads and bridges, relying on European merchants in Accra and other port cities only as a link to world markets (Hill, 1963, pp. 163-88). During the inter-war years Ghana's cocoa industry, now drawing migrants from other West African countries, more than doubled in size (Szereszewski, 1965, pp. 57-58). It accounted for 44% of world cocoa exports in 1926-30 (United Kingdom, 1938, p. 186). In Nigeria rapid growth in agricultural exports, including cocoa, groundnuts and palm oil, came from small farms. Apart from offering these farmers 'a vent for their potential surplus production the foreigner [merchants and government] did next to nothing to alter the technological backwardness of the economy' (Helleiner, 1966, p. 12).

In Southeast Asia, like Ghana and Nigeria, export expansion was characterized by settlement of a moving frontier (Findlay, 1995). During the late nineteenth century Vietnam,

Burma and Thailand emerged as the world's three great rice exporters. In Vietnam production centred in the six southern provinces of Cochinchina, or Nam Bo, and especially the Mein Tay region. Its resemblance to 'all the world's great deltas in that the boundaries between water and land are often indistinct' had previously discouraged settlement and rice cultivation depended on an incessant flow of migrants from Nam Bo's central and eastern provinces (Brocheux, 1995, pp. 2-58). Export-led growth in the Philippines, which became the world's largest sugar exporter after Cuba, relied substantially on migration from densely populated coastal areas and Luzon's crowded centre. Until the 1920s, development in the Philippines' western Negros wilderness 'shared much in common with the global frontier phenomenon' (Larkin, 1993, p.60). Similarly, Javanese migrants were important to the post-1870 transformation of the Outer Islands into the dynamic part of Indonesia's economy.

Export expansion combined with Southeast Asia's particular geography near India and China to give rise to mass immigration. Between 1881 and 1939 over 15 million Chinese and Indian immigrants came to Burma, Malaya and Thailand, more than these three countries' total 1881 population (Huff and Caggiano, 2007). In the process of Asian globalization, China and India became 'hinterlands' of surplus labour sending workers to a 'centre' of land-surplus Southeast Asia where, in turn, economies were driven by new opportunities for international trade.

Internal migration was also important in the growth of both the Burmese and Thai rice economies. The rise of rice production in Lower (or southern) Burma crisscrossed by the Irrawaddy and its tributaries was particularly dramatic. After 1850 the availability of global markets led to the migration, at its height a 'rice rush', to the Irrawaddy Delta of peasants from Upper Burma. By 1930 10 million acres of swamp had been cleared and planted with rice through 'the sustained effort of millions of peasants working only with bullocks or buffaloes and the simple, locally-made ploughs and implements they had evolved in their own way over the

centuries' (Dobby, 1966, p. 173). Thailand's rice frontier, which boomed in the 1890s and 1900s, was reminiscent of the United States' wild west but lay geographically to the south where 'in every direction the land was cleared of the heavy jungle grass which afforded shelter to wild elephants' (Johnston, 1981, p. 111). In the 1870s Malaya was sparsely populated, largely unmapped and 'land was so abundant and readily available that it had no value' (Gullick, 1985, p.59). Chinese and Indian immigration furnished most of the labour that made Malaya the world's main supplier of both tin and rubber.

### 2.3 Production functions, self-financing development and development paths

None of the eight Southeast Asian and West African countries had much manufacturing; all depended on exporting just one or two primary commodities. Export staples included rubber, tin, rice, sugar and cocoa. Of these, the production functions of only sugar, plantation rubber and tin involved sizeable amounts of capital and more than a few, if any, skilled workers.

Moreover, until at least the early part of the twentieth century in the vent-for-surplus sectors of all eight tropical economies small, highly labour intensive production units were the rule. The Philippines moved more slowly to centralized, capital-intensive processing of sugar than any of the world's other main producers. Consequently, until after the end of the Spanish period (effectively 1900) in the Philippines sugar 'still was a matter of small landholdings, small mills, primitive methods, and fairly widespread participation in the fruits of production and export' (Spencer, 1954, p. 203). In 1903 in Malaya, the exploitation of rich alluvial tin deposits yielded 51,000 tons of the metal, over half of world output. Production depended on some 224,000 miners, virtually all Chinese and equipped with little more than shovels and simple pumps. Substantial capital expenditure in Malayan tin mining awaited the exhaustion of easily won tin deposits and this, and the consequent growing importance of European mines, began only after 1910. The Malayan and Indonesian rubber industries were still in their infancy before

World War I. During the interwar period, rubber acreage in both Malaya and Indonesia divided about equally between plantations and smallholders.

Apart from interwar Philippines sugar and Malayan tin, in the eight countries' staple industries neither economies of scale nor capital were significant issues. The dominant, and until after about 1910 almost the sole, production function for export staples in the eight tropical economies utilized abundant land and more or less unlimited cheap, unskilled labour. Technical change was minimal; expansion was almost entirely through increased land and labour inputs. Small parcels of land were freely available to those willing to settle them. In the eight countries, colonial land policy, as opposed to economic or technical advantages, could have made large-scale production the mode. As a rule, however, governments favoured small production units, encapsulated in a colonial rhetoric of the nobility of peasant cultivators or, in the Philippines, the ideal of the yeoman farmer (Hailey, 1938, pp. 768-80, 868, 1649; Larkin, 1993, p. 68).

Labour to produce vent-for-surplus exports came from the traditional sector of dual economies or through international immigration at no more than the marginal product of subsistence agriculture (the opportunity cost of labour) plus some mark up to cover migration costs. Between the opening of large-scale international trade and the Second World War, in both Southeast Asia and West Africa long-term unskilled wages (real income) in the export sector remained more or less constant at about a shilling a day (Szereszewski, 1965, pp. 57-58, 138; Birmingham, 1960, p. 2; Helleiner, 1964, p. 231; Austin, 2005, p. 320; Runes, 1939, pp. 10-11, 31; Hlaing, 1964b, pp. 120-21; Feeny, 1982, pp. 18, 21, 132-33; Huff and Caggiano, 2007). By contrast, the New World took its wage level not from subsistence agriculture but from the opportunity cost of much higher real incomes in the cities and industrial areas of Europe.

The production functions of vent-for-surplus economies like the eight in Southeast Asia and West Africa have typically been modeled with no separate capital constraint, since only



simple tools and seeds are needed (Myint, 1958 and see the formal models of Helleiner, 1966, pp. 10-12 and Findlay, 1970, pp. 70-76). Over a large range of production and for a considerable time, the ready availability of good quality land avoids diminishing returns as migrants push outwards the country's frontier. Furthermore, even when frontier land is no longer of the best quality it remains abundant and surplus to purely domestic economy requirements. Although in Burma good land was gone by 1900, it existed in Thailand and Malaya in the interwar years. Most of Sumatra and Borneo had, Bauer observed in 1948 (p. 69), 'almost unlimited land available'. The opportunity that foreign markets afforded to exploit underutilized resources set in train a process that, as Myint (1987, p. 121) stressed, stretched over 'many decades'.

In the Myint/Helleiner/Findlay models, the traditional (pre-vent-for-surplus trade) level of consumption is achieved with less than possible labour inputs. Potential output is 'lost' in preference to leisure. But the new, improved the new, improved terms of trade at which, with globalization and the opening of trade, Asian and African primary producers can now exchange their output for consumer goods (the newly available imports or 'inducement goods') raises the opportunity cost of leisure and so creates an incentive for greater labour inputs. In the eight tropical economies, that incentive proved catalytic because, as was remarked of Nigeria, 'the price of cocoa affords the only stimulus necessary to cultivation' (Stamp, 1938, p. 40). Expansion onto new land combined with mobilizable man hours of labour and more workers, added largely through domestic or international migration, led to rapid rises in output and transformed the Southeast Asian and West African countries into export economies.

Because the eight tropical countries could draw on a highly elastic supply of frontier land and large amounts of cheap labour, export expansion was largely self-financing. Much of initial investment by small farmers and miners consisted of their own and family labour time. Necessary finance to buy seeds and simple tools to clear land came from personal savings or

borrowing from traders, local shopkeepers and others. Once production was underway, the main need was for circulating capital or produced inputs (as opposed to fixed or durable inputs) which are used up in one period of production and include 'wage fund' advances paid to workers at the outset of the production cycle. The cycle was typically short — under a year for crops like rice and cocoa and even less for tin mining in Malaya. Finance was self-sustaining. Principal recouped and profits from one cycle provided finance for the next and, moreover, new capital to extend the export production frontier, so long as the rent created by clearing new land at least equaled the interest cost of the wage fund (Drake, 1972, 2004; Findlay and Lundahl, 2001). Investment was likely to be productive since, as Bauer (2000, pp. 12-13) emphasizes, it was made by people with a direct interest in the returns and who, furthermore, supervised their own work effort.

Plantation agriculture, by contrast, required large amounts of capital to produce an identical crop to that of small farmers. Finance was necessary, not because of any difference in agricultural tools, but to feed and supervise a labour force while clearing land, planting crops, waiting several years (five for cocoa and seven for rubber) for them to bear, and then maintaining an estate and marketing its output. In Ghana, Ashanti family farms could establish an acre of cocoa for about a third of the cost of plantations (Ingham, 1981, p. 41). Smallholders in Malaya and Indonesia with less than 15 acres brought rubber into bearing for as little as a twelfth of the capital outlay required to open a European estate (Figart, 1925; Bauer, 1948, pp. 67-68).

A developmental problem for all vent-for-surplus economies is to move from production functions heavily dependent on more inputs of land and unskilled labour to self-sustaining economic growth. In the absence of substantial technological change but continued population growth and the end of surplus land, Lewis-Fei-Ranis surplus labour becomes evident. Unless

the economy implements land-saving technical progress in the production of food, it must somehow produce manufactures locally to absorb productively the increase in population.

In the eight tropical economies the dominant development path, insofar as it was determined by production functions, was one of small, often family, economic units, and so more like America's nineteenth-century Midwest than the cotton and sugar-producing southern United States. Major developmental differences from the Midwest existed, however. These included an effectively limitless supply of cheap labour in the eight countries, the institution of colonial government, restricted infrastructure, minimal financial development, and no strong educational tradition.

#### 2.4 Foreign investment patterns and investor requirements

There were two main reasons why in the late nineteenth and early twentieth centuries substantial international investment might have gone to the tropics. One was the exploitation of natural resources to produce commodities demanded by world markets. The other was lending for social overhead projects such as plant and equipment for railways, tramways, docks, telecommunications, and gas, electric and water works. In the years 1865 to 1914, social overhead investment, of which railways made up three fifths of the total, accounted for 61.8% of new issues raised on British stock exchanges. Investment flows from other major nineteenth-century capital exporters followed the same pattern as Britain (Edelstein, 1982, pp. 37-38).

Social overhead projects tend to be lumpy and before the Second World War their size relative to the saving pool of local capital markets outside of London, other European centres and after 1914 the United States often necessitated finance from long distance and foreign savers. They, in turn, usually demanded the involvement of government in the borrowing countries: 'the organizing and taxing power of governments, backed by [a] monopoly of violence, was necessary to impress the required mass of overseas investors' (Edelstein, 1982, p. 38). Between 1865 and 1914 government and mixed government-private enterprise took 65%

of British social overhead capital issues. And from 1918 to 1931 lending to public authorities accounted for 69% of British overseas investment (Atkin, 1977, pp. 130-31).

In Argentina, the region of recent settlement most comparable to the eight tropical countries in its level of financial development, the embryonic nature and thinness of domestic financial markets necessitated foreign investment and left government chiefly to organize this (Davis and Gallman, 2001, pp. 721-22). Likewise, in Southeast Asia and West Africa local capital markets lacked organization and depth. Railway construction and social overhead projects largely devolved to governments. Insofar as foreign investors, typically through joint stock companies, came forward, they almost invariably dealt through Southeast Asian and West African governments and required, as for example with railway construction in Burma, heavy government finance and/or interest guarantees on investment (Shein, 1964, pp. 44-53).

## 2.5 Geography and railways

During the seven decades before the Second World War, however, governments in the eight Southeast Asian and West African countries, although assuming the responsibility for social overhead projects, borrowed sparingly for this purpose. Above all, attitudes towards borrowing reflected the fiscal and monetary policies of colonial government. However, especially in the early stages of development until around 1905, a combination of geography and cheap labour also made low government borrowing compatible with a level of economic development judged to be satisfactory.

Between 1865 and 1914 railway expansion absorbed 42% of British capital exports (Stone, 1999, p.10). Geographical considerations significantly influenced the distribution of this investment. Where water routes were difficult or infeasible and labour costs high railways soon became essential as the only serious alternative to human or wagon transport. Diaz Alejandro (1970, p. 45) emphasizes this point for Argentina's large pampean zone, as does Harley (2000, pp. 930-3) for the Canadian prairies and Summerhill (2005) for Brazil.

Conversely, in Southeast Asia and West Africa a more favourable geography than usual in regions of recent settlement made it possible for late nineteenth and early twentieth century governments to resist a large commitment to railway investment and yet for these eight countries still to achieve rapid export expansion. 'It is a mistake', Hopkins (1973, p. 198) reminds us of West Africa, 'to think of modern transport as creating an export economy out of nothing'. In both Southeast Asia and West Africa successful export economies could precede the spread of railways. Fundamental features in Southeast Asia were its maritime character, together with the region's many rivers and high rainfall. The spread of cultivation in some areas required initial lumpy investment in infrastructure, as in the construction of a network of canals in Cochinchina to drain the land, and in Thailand, where canals helped to distribute floodwater. But these new waterways also afforded a cheap means of internal transport. Coastal, riverine or island shipping fulfilled a similar role elsewhere in Southeast Asia. The Irrawaddy is navigable 900 miles into Burma, and another of Asia's great rivers, the Mekong, facilitated water transport in Indochina. In the Philippines the seas of Sibuyan, Visayan and Mindanao provided sheltered domestic waterways. Malaya's peninsular shape allowed the use of short, feeder railway lines as a complement to coastal shipping.

West Africa was less well favoured with opportunities for water transport than Southeast Asia and this made labour costs more critical. After observing that 'a developed infrastructure was not a precondition for the emergence of the major cash crops of Southeast Asia and West Africa', Bauer (1984, p. 30) explains that human and animal transport and long chains of commercial intermediaries were 'partial but effective substitutes' for expensive communication systems. Ghana's cocoa industry could at first develop without too much social overhead investment because the initial exporting region was near the coast and cheap labour made head portage economical for up to fifty miles (Holmes, 1970, pp. 164-65; Ingham, 1981, pp. 34, 95). As late as 1905 just 12% of Ghana's cocoa exports were taken to sea by railway (Kay,

1972, p. 20). Railways were, however, needed for the inter-war spread of Ghana's cocoa industry (Austin, 2005, pp. 68, 78) and for the development of a northern Nigerian export economy (Helleiner, 1966, p. 14). In inter-war Southeast Asia, governments hitherto able to avoid railway construction could then limit it due to the growth of motorized transport.

## 2.6 Colonial financial orthodoxy

By the early twentieth century, export expansion in the eight Southeast Asian and West African countries had created resources large enough to permit substantial overseas borrowing to further economic development. Nevertheless, foreign investment remained limited. A principal argument of this article is that institutions matter. Colonial government preferences for minimal borrowing and strict fiscal orthodoxy emerged as an important explanation for slight capital flows to the eight resource-rich Southeast Asian and West African countries. Of the eight, Thailand was the exception in having formal political independence. But its government relied on a British financial advisor and closely followed the colonial pattern of low taxation, balanced budgets, a desire to pay for development spending from current revenues, and an avoidance of foreign debt if possible. As late as 1904 Thailand had never borrowed internationally but between 1905 and 1909 contracted three relatively small sterling loans (Ingram, 1971, pp. 181-87). Subsequent borrowing was slight, sporadic and much of it further added to an already strong foreign reserve position; 'London bankers would have been only too glad to give new loans [and] offers were made, but not accepted' (Callis, 1942, p. 60). Malaya, with the highest per capita exports in the world, could easily have borrowed substantial sums in Britain but, in fact, made little recourse to the London market. The Federated Malay States government paid largely from current revenue and treasury surpluses for a 1,719 kilometer railway completed in 1931 for all of the Peninsula and Singapore at a cost of £33 million (Callis, 1942, p. 50).

Before the Second World War the norm was, as in Nigeria, to conduct government finance according to the 'orthodox and prudent tenets of British Colonial fiscal policy'

(Helleiner, 1966, p. 232; see also Hopkins, 1973, pp. 198, 260). To be sure, not all of the eight tropical countries strictly conformed to this colonial ideal and some, mainly non-British possessions, did not always wish to do so. Indochina had periods of significant government borrowing in the decade after 1900 and again in the 1930s. In Southeast Asia, Indonesia was exceptional in governmental willingness to contract debt. But Indonesian surpluses accumulated between 1921 and 1939 far outweighed a pre-1921 deficit. Government spending in the Dutch colony never strayed too far or for too long from a balanced budget (Dick, et al., 2002, p. 123).

### **3. Empirical analysis**

For a significant component of the tropics represented by the eight Southeast Asian and West African countries, globalization between 1870 and the Second World War had three prominent features. First, export expansion was as swift as anywhere, including the regions of recent European settlement. In the New World and tropics alike, rapid agricultural growth depended mainly on the natural resource of empty wet land; growth was fastest, Lewis (1970, p. 28) explained, 'in areas with new land and immigrant labour' or 'areas with access to new land plus surplus labour time'. Second, in the eight tropical countries, unlike the regions of recent settlement, expansion typically took place with at best limited foreign investment. Third, colonial rule in the tropics tightly constrained government borrowing.

Time series foreign investment data, which Clemens and Williamson (2004) use, exist only for capital flows from the United Kingdom and only until 1914. But African expansion had hardly started in 1900 and, like growth in Southeast Asia, continued through the 1920s. The present section therefore extends analysis through the inter-war years and uses a variety of quantitative material to support empirically two of this article's main points. To summarise, these are: that in a particular group of tropical countries abundant natural resources allowed rapid export expansion with only small amounts of foreign capital; and that although in these

countries successful export economies would have permitted bigger capital inflows, colonial government precluded any such development.

### 3.1 Per capita exports and foreign investment

Table 1 compares per capita exports and foreign investment in tropical and temperate, or New World, regions and has two main features. One is rapid export growth in both groups of countries. The other is a sharp divergence between capital inflows: they were large to the New World and minimal in the tropics. Per capita exports from the tropics were, however, substantially less than from the New World when averaged to include the subsistence sectors of dual economies. Yet if Southeast Asian and West African export sectors could be isolated to correspond to national boundaries, tropical per capita exports would be as great as or greater than from the New World. Malaya, still little populated in 1870, is the country most susceptible to this isolation, since migration from Southeastern China and Madras largely substituted for the traditional, labour-providing sectors present in the other seven tropical economies.

In Malaya, some European capital was invested to develop rubber estates (in 1932 European estate acreage was four fifths that of Asian small farmers) and after about 1910 to mine tin, but even so, unlike in the New World, per capita exports dwarfed foreign investment. As late as 1913 in Malaya, as throughout Southeast Asia and West Africa, rapid export expansion had occurred with minimal foreign investment. Taking the ratio of per capita exports to per capita foreign investment as a measure, in 1911/13 this export- investment ratio averaged 3.2 in the New World compared to 10.7 in the tropics. By 1925/27 the difference in ratios, 3.5 for the New World and 12.8 in the tropics, had appreciably increased. In the inter-war period, though per capita exports continued to expand as more land was brought under cultivation, foreign investment in Southeast Asia and West Africa remained far down world league tables.<sup>2</sup>

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<sup>2</sup> The argument that in a particular group of tropical countries foreign investment was not a precondition for export growth might normally be tested by using Granger causality to help establish precedence. A Granger test is, however, precluded by the nature of the data. Between 1865 and 1914 for the four of eight tropical countries for



### 3.2 Cheap labour and economic efficiency

The international trade literature on the Leontief Paradox shows that natural resources and capital may be either complements or substitutes (Naya, 1967, pp. 567, 570). If, as for exports in Southeast Asia and West Africa, the elasticity of substitution between labour and natural resources on the one hand and foreign capital on the other is quite high and the implicit wage of peasants at best low, labour-intensive production is likely to offer the economically least cost solution as well as a technically efficient one. So it proved in Southeast Asia and West Africa before the Second World War. When capital- and managerial-intensive European undertakings competed with small Asian or African enterprise the latter almost always proved the more economically viable. Such tropical efficiency rendered foreign investment to finance capital intensive raw material production (if not necessarily complementary infrastructure) largely redundant. There was no reason for capital to flow to export industries in Southeast Asia and West Africa if it could not profitably be employed there.

When in the late nineteenth century world demand for tin increased sharply (due mainly to the innovation of tinned food), European companies responded by raising capital in Britain and repeatedly tried to establish Malayan mining ventures. They were, however, unable to compete with Chinese miners until after 1910, when a depletion of rich alluvial deposits gave scope for costly mining equipment. Before then, according to the tin industry's historian, Europeans failed to appreciate that 'technological efficiency was not synonymous with economy, and that the conditions of the tin deposits favoured small scale mining by simple labour-intensive technique' (Wong, 1965, p. 153). The great deltaic rice-growing regions of Southeast Asia had the natural resource of soil so fertile that it 'has long been marveled at' (Coclanis, 1993,

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which annual foreign investment data are available the Clemens and Williamson (2004) data set show just 63 instances of positive (non zero) investment out of a total of 200 observations. Among the sporadic and occasional appearance of capital inflows, the 137 observations of zero foreign investment blanket the tropical data for long periods. Such an investment distribution violates the Granger requirements that data be made stationary by log differences or other means and that series have only one variance.

p. 1065). Combined with cheap labour, this gave the region's farmers a clear edge over United States' rice production. Coclanis and Komlos (1987) show that in Burma's late nineteenth century rice industry, efficiency, measured as total factor productivity, equalled that in the American south. In the interwar United States, large-scale rice production, labour saving devices and efficient milling were insufficient to overcome high American wages and create the competitive strength to challenge Southeast Asian producers in world export markets (Cole, 1927). Similarly, apart from Africa's oil palm industry where expensive centralised processing gave an edge to plantations, for 'the other West African staples the comparative efficiency of peasant [small farmer] methods has not been seriously challenged' (Hancock, 1940, p. 200; see also Austin, 1996). The main theme of Peter Bauer's (1948) famous study of the rubber industry is the greater efficiency of Southeast Asian smallholders than European plantations.

### 3.3 Composition of colonial borrowing

For the eight tropical countries to have received per capita foreign investment not too obviously at odds with their per capita exports, colonial governments would have had to borrow for social overhead projects including railways. Fully 75% of pre-1914 British foreign investment was in public utilities, government securities and railways, and this same proportion of lending took the form of debentures and preference shares (Stone, 1999, p. 23-24, 31). The lumpiness of social overhead capital dictated portfolio investment (Edelstein, 1994a, pp. 177-82). By contrast, foreign investment in Southeast Asia was, in the paucity of portfolio and government borrowing, the polar opposite of the New World pattern. In 1930 direct (as opposed to portfolio) investment, mainly in trading and finance, accounted between 78% and 96% of foreign capital in Southeast Asia with the exception of Thailand where the proportion was 57% (Callis, 1942, p. 108). Comparable figures are lacking for Ghana and Nigeria but in West Africa as a whole portfolio lending had more of a role than in Southeast Asia (Hopkins, 1973, pp. 191-92).

### 3.4 Tax ratios and fiscal policy

In a pre-Second World War world where governments organized the bulk of overseas borrowing, foreign investment was restricted by low tax ratios in most of Southeast Asia and West Africa and by the determination of colonial governments to avoid deficits. Table 2 shows tropical economy tax ratios in support of this argument. In 1913 tropical ratios of typically around 5% to 7%, although low, were not entirely out of line with the about 10% in Western countries. The big difference came in the interwar years when developed country tax ratios rose to 20% or more but ratios in tropical economies lagged behind. Burma, where taxes reached 16% of GDP, showed that the tropics could tax. However, as much as half of Burmese revenue was transferred to the Imperial government in Delhi with little or no return benefit (Hlaing, 1973). Comparatively high Thailand tax ratios are also misleading in that a substantial share of government revenues went into the near obsessive accumulation of foreign reserves. Tax ratios in Indonesia, roughly the same as Thailand's by the interwar years, are a better guide to government spending. The colonial exception was Malaya. Tax ratios there were already 12.1% by 1913 and, if with the help of a 1930s fall in GDP, stood at over 15% in 1937. Revenue came disproportionately from the Federated Malay States (FMS) where the export sector of Peninsular Malaya's economy centred but in 1931 with just 1.7 million of Malaya's 4.3 million inhabitants. The combination of extremely low population and abundant resources also made the FMS, as Schwulst (1931, pp.43, 53, 58) observed, a 'special case' of quite high per capita government spending, although for Malaya as a whole this peculiarity moderated.

Lewis' (1978, p. 218) observation that before the First World War tropical governments could do all they wanted for around 5% of GDP does not hold for all countries in Table 2. But it applies to the majority before the war. Even afterwards colonial government horizons remained low. Although an alternative source of tax revenue might have been tariffs, colonial governments, at least until the 1930s, tended to keep these to a minimum. For the Philippines Hooley (2005, p. 472) emphasizes the absence of tariffs and that 'Government revenues during

the entire American period approximated 7% of GDP, which was little more than already achieved under the [pre-1898] Spanish regime'.

Four main considerations influenced the restrictive fiscal approach of colonial governments and with this limited capital imports from metropolitan countries. First, a fundamental tenet of colonial policy was that government revenue from taxes and other sources had to cover recurrent expenditures (Edelstein, 1994b, p. 210). These expenditures including administration, police, defence and pensions, and in which wages and salaries loomed large, took the bulk of available revenues (Schwulst, 1931, p. 53; Helleiner, 1966, pp.23, 233; Hopkins, 1973, p. 191). Low taxation, often in deference to European merchant lobbies (Kay, 1972, pp. 17-18, 26-28; Hlaing, 1973, pp. 4-5; Booth, 1998, p. 147), and high standing expenditure commitments left little room for additional spending and circumscribed debt service capacity.

The second and third reasons were closely linked and seem to have had much greater importance than any rate of return analysis in determining whether to undertake capital projects. One was that such capital spending as occurred had to be consistent with the usual aim of colonial governments to balance budgets over a short period of time and, if possible, run an overall surplus. Over the period 1900 - 1939 all six Southeast Asian (but not the two West African) countries registered cumulative budget surpluses. The other reason was that government revenue moved with the value of international trade — also its largest single source — and wide fluctuations in commodity prices, not just over a few months but years, encouraged caution. With few exceptions orthodoxy prevailed. In the inter-war depressions of 1920-22 and 1930-32, only Malaya, Indonesia and Ghana (in 1920-22) found themselves with large fiscal deficits. During 1930-32 three of the eight countries had healthy surpluses of revenue over expenditure and none ran a deficit bigger than 14% of revenue for the three years. But narrowly

commodity-based export economies and an aim of limiting borrowing gave little scope for error to be sure of balancing budgets.

Fourth, after the turn of the century each of the eight tropical economies except Indochina operated a strict, or colonial, currency board system. Under it the balance of payments almost entirely determined local money supply and this increased the risk for tropical governments of contracting fixed interest external debt if unwilling to countenance the counter measure of borrowing abroad. At times of commodity price falls, without capital inflows to offset lower export revenue and a resulting balance-of-payments deficit, interest repayments on debt would have magnified the currency board system's already considerable effect in forcing monetary-led deflation on tropical economies (Huff, 2003).

### 3.5 Railways, infrastructure and colonial development

Did colonial rule really contribute to limiting investment in social overhead projects and so also foreign capital inflows to Southeast Asia and West Africa? To help answer this question, a counterfactual exists in those independent nations of Latin America which are directly comparable to Southeast Asia and West Africa in having strong links to the global market from the late nineteenth century onwards but different in having independent governments. Capital exports for infrastructure meant, above all, finance for railway expansion. Admittedly, differences in geography and ownership patterns make inexact any comparison of capital inflows to finance railways in the eight tropical countries and Latin America. But a major divergence in rail density between the colonial and politically independent areas would suggest a significant difference in government's role in infrastructure provision.

To test for such a difference Table 3 measures rail density as kilometers of track per 100,000 population for the eight colonies and eight export-oriented Latin American countries. The latter include the mining region of the Andes (Chile, Bolivia and Peru), the tropical plantation economies of Central America (Costa Rica, Guatemala, Honduras and Nicaragua) and

the sugar economy of Cuba. Data for four years between 1901 and 1938 for 16 countries (eight colonial and eight independent) yield 64 observations. In all but one instance (Malaya and Honduras in 1913) the achievement of denser (and often substantially so) rail networks in Latin America than the eight colonies lends support to the argument that colonial governments may have fallen short in providing infrastructure.

### 3.6 Education, human capital and colonial development

In many New World countries, above all the United States, increased human capital through mass primary education, physical investment, including social overhead projects, and foreign capital inflows complemented one another. Comparison with the United States as the leading New World economy and Japan as the leader in Asia shows just how badly the eight tropical economies lagged in the spread of primary education (table 4). A Japanese government-directed 'catch-up', and full enforcement by 1900 of four years of compulsory schooling, created in 1910 a base of mass primary education similar to that in the United States and other rich countries (Japan, Ministry of Education, 1963, pp. 23-26, 160-61). By contrast, in 1930 education in the eight tropical economies, the Philippines apart, had still to reach the Japanese level of 1882 and was a fraction of 1880s United States' schooling. Comparison with the New World countries of Argentina and Brazil, both recipients of large inflows of unskilled, uneducated international migrants (Leff, 1982, vol. 1, pp. 19-20, 61; Bunge and Mata, 1931, pp. 152-59), narrows the Southeast Asian and African divergence in primary education but does not eliminate it.

In the tropical economies, the Philippines excepted, the most important reason for the absence of mass education was the failure of governments to make this a priority. Educational provision was especially weak in colonial Africa where 'budgetary penury and the requirement of financial self-sufficiency' limited the expansion of education (Young, 1994, p. 168). In Ghana in the 1930s, if numbers attending school increased at the same rate as between 1911 and 1936, some 600 years would have had to elapse before schooling became available for all

children enumerated in the 1931 census. Booth (1998) shows that throughout Indonesia the Dutch government spent far too little on education.

Lack of supply was not, however, the sole explanation for what appears to be education's small contribution to enhancing productivity in the eight tropical economies. In the Philippines, America's transplantation of its nineteenth-century educational experience and associated republican ideology resulted in primary schooling on a par with Argentina and a 1940 literacy rate of 84%. And yet, as Hooley (2005, p. 471) puzzles, educational advances 'seem to have had little impact on productivity. The improvement in total factor productivity (TFP) during the colonial period was marginal at best'. In the tropical economies the mutually reinforcing relationship between greater educational inputs and productivity gains awaited a shift in attitudes towards economic development to include industrialization and the role of government as an institution to promote it. These changes came either only during the post-World War II twilight of colonial rule or awaited political independence.

### 3.7 Investment opportunities and capital market failure

This section poses two further questions. Were colonial governments really too conservative? And did the governments of Southeast Asia and West Africa in fact have to take the lead in social overhead investment for it to be undertaken? These issues are considered in turn.

It could be that little foreign investment went to the resource-rich tropics because few additional opportunities existed for the productive use of capital, foreign or domestic. Was it perhaps a good thing that the fiscal conservatism of colonial governments limited capital projects? Or, recalling that creditworthy governments could borrow at interest rates of only about 5%, might more development-oriented governments have identified social overhead projects that generated sufficient revenue to require, at most, no more than a small increase in the tax burden (Lewis, 1970, p. 36; Atkin, 1977, p. 145)? A full answer awaits detailed research

but available evidence strongly indicates that had significantly more foreign capital flowed to the eight countries it could have been used productively.

Tellingly, the evidence on colonial investment potential extends well beyond the test of railways. Hooley (2005, pp. 472-73) summarizes this for the Philippines:

fiscal revenues remained small and government expenditures for capital formation were severely constrained ... It is truly remarkable how much the American administration was able to achieve with such limited resources. Nevertheless, the fiscal constraint effectively prevented it from undertaking a more extensive program of capital formation that would have paid handsome economic returns, and would have vastly improved the prospects for Philippine economic development during the independence period that followed World War II.

Areas identified as needing more spending included ports, irrigation, roads and public buildings.

For West Africa, Hopkins (1973, pp. 190-91) observes that the influence of Gladstonian public finance was felt well into the twentieth century. Before the Second World War public investment was 'very limited compared with what was required, what was to come in the future and what was already being invested in other parts of the world'. It seems clear that in Ghana until at least the later 1920s 'the economy was constrained by lack of infrastructure facilities: a deep-sea harbour, urban water supplies and social overheads (particularly schools)' (Szereszewski, 1965, p. 110). Few analysts of any of the eight countries would entirely disagree with the thrust of these remarks as applied to their particular colony before the Second World War, although variations occurred. In British colonies (four of the eight countries) the pattern was, as Helleiner (1966, p. 300) describes for Nigeria, of governments 'content simply to maintain order while providing a minimum of infrastructure and research facilities'. In its financial and developmental conservatism, Thailand was as British colonial as any of the four British colonies. Ingram (1971, p. 212) concludes that the Thai government failed to furnish essential public works of railways, power, electricity and irrigation; educational provision was 'seriously inadequate'. In all these regards the government's 'conservative monetary and fiscal policies became significant'. Feeny (1982, pp. 105-7) and Sompop (1989, pp. 176-78)



demonstrate, for irrigation and railways respectively, that more Thai government investment would have easily paid for itself.

By contrast with British colonial regimes, in Indochina the French willingly committed to a number of major infrastructure projects, especially when such spending could be expected to benefit interests in France (Callis, 1942, pp. 71-74). So, too, was the Dutch administration in Indonesia more geared than British colonialism to infrastructure development, but only in Java and not the Outer Provinces. There were many Outer Provinces areas that could have opened to export production if railways had been built (Booth, 1998, pp. 5, 151-54).

The second question stems from the argument that because neither Southeast Asia nor West Africa had well organized, deep capital markets, market failure must, by definition, have existed. Governments would have to take the lead if the eight countries were to receive greater amounts of foreign capital for social overhead projects. But is this true? The example of Meiji Japan, which began the 1870s with a similar per capita income to most of the eight tropical economies, a currency system described as 'chaotic' (Bank of Japan, n. d., pp. 91-95) and no modern banks, shows how government could encourage financial development and effectively counter market failure. But nothing similar was possible in colonial Southeast Asia or West Africa.

Governments were strongly *laissez faire* in the area of finance and this effectively ruled out Japanese style state intervention to build national financial institutions. In 1939 Southeast Asian and West African stock markets were still, at best, rudimentary (Huff, 2007). For lumpy social overhead projects, all of the eight countries had to look to government investment or overseas investors and the latter, Edelstein (1982) shows, demanded the seal of government involvement.

#### **4. Conclusion**

Institutional arrangements and geography have become central to recent thinking on development and historical economics, and analysis of foreign investment in the tropics shows why this should be so (see, for example, Engerman and Sokoloff, 1997; Sokoloff and Engerman,

2000; Acemoglu, et al., 2002; Rodrik, et al., 2004). Rapid export expansion in regions of recent European settlement and in important parts of the eight tropical countries had in common the geography of a moving frontier. In the New World migrant labour and foreign capital were drawn to this frontier as complements (Harley, 2000, p. 930; Clemens and Williamson, 2004, p. 333). But in the tropics migrants could be attracted to frontier areas for no more than a subsistence wage plus some mark up rather than a European standard of living as required in the New World. An important reason why foreign capital did not flow to the eight tropical areas to seek cheap migrant labour was that this labour was so cheap as effectively to substitute for capital so long as natural resources were highly abundant and used in large quantities.

Governments in the tropics could have done more to mobilize natural resource rents through taxation and make use of the revenue to borrow abroad for infrastructure and to invest in education. Where capital outlays like the Malayan railway were financed from current revenue, governments could instead have borrowed abroad. A larger share of current revenue could then have gone towards education or other capital spending for which foreign loans were difficult, or impossible, to obtain. Greater attention to education might, through more educated populations and increased human capital, have attracted higher foreign investment, as probably occurred in the New World. But colonial rule generally proved incompatible with mass education. In the eight tropical countries the prevailing institution of colonialism, aided by a favourable geography, worked against government borrowing. More foreign capital would almost certainly have flowed to these tropical countries to develop infrastructure and lay developmental foundations, just as it did in the New World, if the attitude of their governments been different.

Between 1870 and 1939 the tropics received a gnat's share of global foreign investment. Contrary to New World experience, however, in the group of tropical countries analyzed in this article slight foreign investment reflected the very fact of an abundance of natural resources. For social overhead projects local capital market failure left it up to colonial governments in the

eight countries to organize investment and foreign capital inflows. But governments, too, largely failed colonial economic development in being overly bound by restrictive fiscal and monetary policies and by a determination to run Empires on the cheap.

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Table 1  
New World, Asia and Africa exports and foreign investment per capita 1871-1938  
(1990 US\$)

(a) Exports per capita (annual averages)					
	1871/3	1900/2	1911/3	1925/7	1936/8
Canada	230	641	605	1,116	831
Argentina	260	621	851	666	431
Australia	891	1,098	1,249	1,005	1,084
South Africa		377	699	449	554
Indochina	—	37	46	51	41
Outer Provinces (Indonesia)	35	79	146	176	118
Malaya	471	1,071	1,064	1,319	868
Philippines	27	61	79	101	87
Thailand	12	50	61	88	54
Burma	44	107	144	157	120
Ghana	13	79	142	164	179
Nigeria	3	12	26	31	24
(b) Foreign investment per capita					
	1900	1913	1930	1938	
Canada	226	385	377	359	
Argentina	290	266	140	104	
Australia	308	275	300	229	
South Africa	157	202		145	
Indochina		9	8	11	
Indonesia (Java and Outer Provinces)	7	12	16	18	
Malaya		58	61	50	
Philippines		10	14	13	
Thailand		6	5	5	
Ghana		29		15	
Nigeria		3		8	

*Sources:* Appendix.

*Notes: Panel (b).* Canada: 1938 figure refers to 1939; Argentina: 1930 figure refers to 1929; Australia: 1913 figure refers to 1914, and 1930 figure refers to 1929; South Africa: 1938 figure refers to 1935; Indochina: 1913 figure refers to 1914; Outer Provinces (Indonesia): foreign investment data refers to all of Indonesia. Investment in the Outer Provinces was a small proportion of these totals; 1913 figure refers to 1914, and 1938 figure refers to 1937; Malaya: 1913 figure refers to 1914, 1930 figure refers to 1929, and 1938 figure refers to 1937; Philippines: 1913 figure refers to 1914, and 1938 figure refers to 1935; Thailand: 1913 figure refers to 1914, and 1930 figure refers to 1929; Ghana: 1913 figure refers to 1911; Nigeria: Statistics are for the colony only to 1892 and Southern Nigeria only for 1892-1899. The 1938 figure refers to 1935.

Table 2  
Southeast Asia and West Africa tax ratios, 1913-1938  
(government revenue as a % of GDP)

	1913	1929	1937
Indochina	1.6	1.6	1.4
Indonesia	6.1	11.1	9.8
Malaya	12.1	10.9	15.5
Philippines	7.0	7.0	7.0
Thailand	9.6	9.1	12.2
Burma	15.7	11.6	14.2
Ghana	4.2	7.0	-

*Sources:* Appendix.

*Notes:* (1) Indochina refers to Vietnam only and figures include central government revenues and revenues of local budgets. The figures omit an estimate of corvée labour, which was not insignificant. (2) For 1913 Malaya includes the Straits Settlements (SS), Federated Malay States (FMS) only and for later dates also the Unfederated Malay States (UMS). For this last, revenue was mainly from Johore and not large in 1913 since that state was still little developed before the First World War. In 1929 UMS revenue was 24.6% of SS and FMS revenue and a similar proportion is assumed to estimate revenue Malayan revenue for 1937. (3) Ghana: 1913 refers to 1911 and 1929 to 1930.

Table 3  
Southeast Asia, West Africa and Latin America: kilometers of railways per 100,000 population,  
1901-1938

	1901	1913	1929	1938
Burma	14.4	20.6	21.2	19.7
Indochina	1.6	11.8	11.2	14.7
Thailand	2.5	11.6	24.6	21.4
Malaya	20.9	46.6	38.4	34.4
Indonesia	10.1	12.8	12.1	10.3
Philippines	2.6	12.4	9.6	8.5
Ghana	3.4	16.7	25.5	21.4
Nigeria	1.5	9.6	14.4	13.4
Chile	145.4	232.9	196.6	178.5
Bolivia	54.5	64.0	89.1	86.3
Peru	58.3	76.8	61.4	45.5
Costa Rica	121.1	162.5	136.0	112.7
Guatemala	70.3	84.7	67.9	56.1
Honduras	22.0	41.6	157.2	119.6
Nicaragua	51.8	56.3	48.2	46.8
Cuba	116.7	157.6	138.3	117.2

*Sources and Notes:* Mitchell, 2003b; Saito and Lee, 1999, p. 167. For Malaya statistics exclude Johore and Singapore until 1911. The 1911 figure of 1,127 km includes Johore and Singapore. For 1940 2,115 km is the length of track and 1,719 the length of open line.

Table 4  
Southeast Asia, West Africa and comparative primary school enrollment rates, 1870-1939  
(per 10,000 population)

	1870	1882	1890	1900	1910	1920	1930	1939
Burma							206	316
Indochina							190	260
Thailand					9	179	552	939
Malaya								548
Indonesia			57	62	96	161	267	338
Philippines				188	970	1038	936	1267
Ghana				47	71	166	169	217
Nigeria					27	72	246	501
Brazil		207	218	258	271	455	618	854
Argentina		511	709	808	944	1356	1172	1417
Japan		722	772	984	1240	1508	1550	1695
United States	1702	1908	1985	1969	1828			

*Notes and Sources:* Easterlin, 1981, pp. 18-19; Indochina, 1943-46, p. 274; Furnivall, 1943, p. 111; Kay, 1972, pp. 310, 407; Foster, 1965, pp. 113, 115. Malaya refers to the Straits Settlements and Federated Malay States only.

## Appendix

### Data sources for the tables

*Exports:* **Burma:** Shein, 1964, pp. 263-64; Burma, 1912-13 - 1920-21; Andrus, 1948, p. 183. **Indochina:** Frézouls, 1908, p. 274; Indochina, 1908, pp. 407, 448-9; Arnaud, 1920, p. 267; Leurence, 1925, p. 143; Indochina, 1927-1948, issue for 1942-44, p. 290; Stover, 1970, p. 48. **Thailand:** Ingram, 1971, pp. 333-34. **Malaya:** Chiang, 1978, pp. 174-75; Malaya, 1921-1928; Malaya, 1930-1937; Malaya, 1941. **Indonesia:** Korthals Altes, 1991, pp. 50-56, 69-75. **Philippines:** Philippines, 1905, vol. 4, pp. 564-5; Philippines, 1918-1938, issues 1918, p. 32, 1920, p. 125; Philippines, 1938, p. 324; Philippines, 1940, 1946, issue 1940, p. 415; **Ghana:** Mitchell, 2003a, p. 519 (until 1899); Kay, 1972, p. 325 (from 1900). For 1871/73 figure refers to exports for 1872 and 1873 only. Population is estimated from an 1891 figure assuming a growth rate of 0.65% per annum. **Nigeria:** Mitchell, 2003a, p. 520 (until 1899); Helleiner, 1966, pp. 492-93 (from 1900). The 1871/73 figure is estimated using recorded export figures and assuming 1872-1904 population growth of 0.65% per annum. Statistics are for the colony only to 1892 and Southern Nigeria only for 1892-1899. **Argentina:** Ferns, 1960, pp. 492-93 for trade 1870-1910; Diaz-Alejandro, 1970, pp. 2, 461, 475-76, 484; **Australia:** Butlin, 1962, pp. 410-11, 436-37, 441, 443, 470. Exports include gold until 1938 and exclude gold thereafter. In the three years 1936-1938 gold exports averaged £12.9m. Beginning in 1914/15 data are for fiscal years. **Canada:** Urquhart and Buckley, 1965, pp. 173, 183. Data are for calendar years after 1919, fiscal years ending 31 March of the year given from 1908-1919 and for fiscal years ending 30 June of the year given for 1868-1906. The total for 1907 is for the 9 months ending 31 March 1907. Exports include gold. **South Africa:** Mitchell, 2003a, p. 521 (1902-1907) and includes Cape of Good Hope, Natal, Orange Free State and Transvaal; Katzen, 1964, pp. 46, 60-61, 71 (from 1908). For 1900/02 export figures are for 1902 and 1903 and population for 1904. Exports from South Africa include gold.

*Population:* **Burma:** Figures for Lower Burma refer to the 1872 census area. The figure for 1938 refers to 1941. Burma (1933), p. 8; Hlaing, 1964a, p. 13. **Indochina:** Figures for 1880 and 1911 are from Brocheux and Hémery, who point out that they are orders of magnitude. The figure for 1911 refers to 1913 and that for 1938 refers to 1936. Brocheux and Hémery, 1995, p. 248; Indochina, 1927-1948, issue 1943-1946, p. 271. Population figures for Cochinchina refer for 1881 to 1880, for 1901 to 1900 and for 1938 to 1936. Figures for 1880 and 1900 are from Sansom, 1970, pp. 259, 261; 1910: Coquerel, 1911, p. 225; 1921 and 1931: Indochina, 1927-1948, issues 1923-

1929, p. 61; 1931-32, p. 53, 1943-1946, p. 271. **Thailand:** For 1881-1901 figures are from Skinner and refer to 1880, 1890 and 1900. Skinner, 1957, p. 79. Subsequent figures are from Kingdom of Siam, 1920-1939-40, issues 1937-38 and 1939-40, p. 46 and refer to the census returns for 1919, 1929 and 1937. **Malaya:** The 1881 population is estimated by assuming that population grew at the same rate as in 1891-1901. For 1891 and 1901 figures are estimated for the Unfederated Malay States (UMS) only. Estimation is on the basis of 1911 census figure of a UMS population of 899,968 persons and backward extrapolation assuming that during both decades the population grew at 0.65 per cent per annum. A basis for this assumed rate of UMS population growth is Dodge, 1980, pp. 457-74. Data for 1891-1911 is from Federated Malay States, 1911, pp.18, 95; Malaya, 1921, p. 18. For 1921 onwards data is from Malaya, 1949, p. 39. The 1938 population figure is an estimate and assumes proportional population growth between 1931 and the 1947 census figure of 5,848,910 persons. **Indonesia:** The figure for 1881 refers to 1880. Indonesia, 1947, p. 5. Figures for 1901, 1921 and 1931 refer to 1905, 1920 and 1930. Boomgaard and Gooszen, 1991, pp. 117-21, 133-37, 224-30. **Philippines:** For 1881 the figure refers to 1877. It is the census figure for that year for civilized people (5.567m) plus the 1903 census figure for 'wild people' transformed into an estimate for 1877 under the assumption of population growth of 0.60% per annum. Philippines, 1905, vol. 2, pp.19, 123. The 1901 figure is for 1903 and from the census for that year. Philippines, 1905, p. 123. The 1921 figure refers to 1918 and is the census figure. Philippines, 1921, vol. 2, p. 19. The figure for 1931 is an estimate from Philippines, 1940, 1946, issue 1940, p. 24. For 1931 the figure refers to 1930. The figure for 1938 is for the census taken of 1 January 1939 and is from Philippines, 1939, p. 3. **Ghana:** Mitchell, 2003a, p. 3; Kay, 1972 p. 310. **Nigeria:** Helleiner, 1966, p. 429. **Argentina:** Diaz-Alejandro, 1970, p. 421; **Australia:** Mitchell, 2003a, pp. 64-65. **Canada:** Urquhart and Buckley, 1965, pp. 14-16. **South Africa:** Mitchell, 2003a, pp. 5, 49.

*Foreign Investment:* Twomey (2000).

*Revenue and expenditure:* **Burma:** Shein, Thant and Sein, 1969, pp. 25-26; Shein, 1964, pp. 273-74; Hlaing, 1973, p. 5 (for 1937-38 only). **Thailand:** Birnberg and Resnick, 1975, p. 316; Wilson, 1983, pp.242-49. **Malaya:** Straits Settlements, 1903-1938, issues 1903, p. 589, 1904, p. 189, 1909, p. 439, 1911, pp. 459-60, 1937, I pp. 1017, 1019, 1938, II, pp. 248-49; Straits Settlements, 1934, p. 20; Federated Malay States, 1929, p. 223; Fermor, 1939, p. 88; Emerson, 1937, pp. 187, 196, 300; FMS, 1939, p. 1. **Indochina:** Bassino, 2000, pp. 287-88. **Indonesia:** Creutzberg, 1976, pp. 59, 64-67. Figures are estimated actual revenue and expenditure in Indonesia as opposed to revenue and expenditure relating to Indonesia but in the Netherlands. **Philippines:** All figures are taken for the general estimate by Hooley, 2005, p. 472. For revenue figures see Birnberg and Resnick, 1975, p. 307. **Ghana:** Kay, 1972, pp. 344-45.

*Gross Domestic Product:* **Burma:** Hlaing, 1964b, p. 143. Figures are for Net National Product. For 1913 the figure is for 1911/12 and for 1929 it is for 1926/27. **Thailand:** van der Eng, private communication, recalculation and extension of GDP figures in Sompop, 1989, p. 251. **Malaya:** Nazrin, 2002, p. 41. These estimates are in current prices but are for Peninsular Malaya and exclude Singapore. GDP to include Singapore is estimated by assuming that Singapore's GDP was 39.6% of Peninsular Malaya's (the proportion in 1956). GDP for Singapore in 1956 is from Oshima, 1967, p. 49, and for Peninsular Malaya from Lim, 1967, p. 317. **Indochina:** Jean-Pascal Bassino, private communication, 1 October 2004. **Indonesia:** van der Eng, 2002, pp. 171-72 and using the reflator provided by van der Eng. **Philippines:** For GDP figures in 1985 prices, see Hooley, 2005, pp. 480-81. **Ghana:** Szereszewski, 1965, p. 65; Omaboe, 1960, p. 10.

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