South-South Divergence

How Southeast Asia and Tropical Africa Grew Apart before the Green Revolution

Ewout Frankema & Tom Westland

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1 Introduction

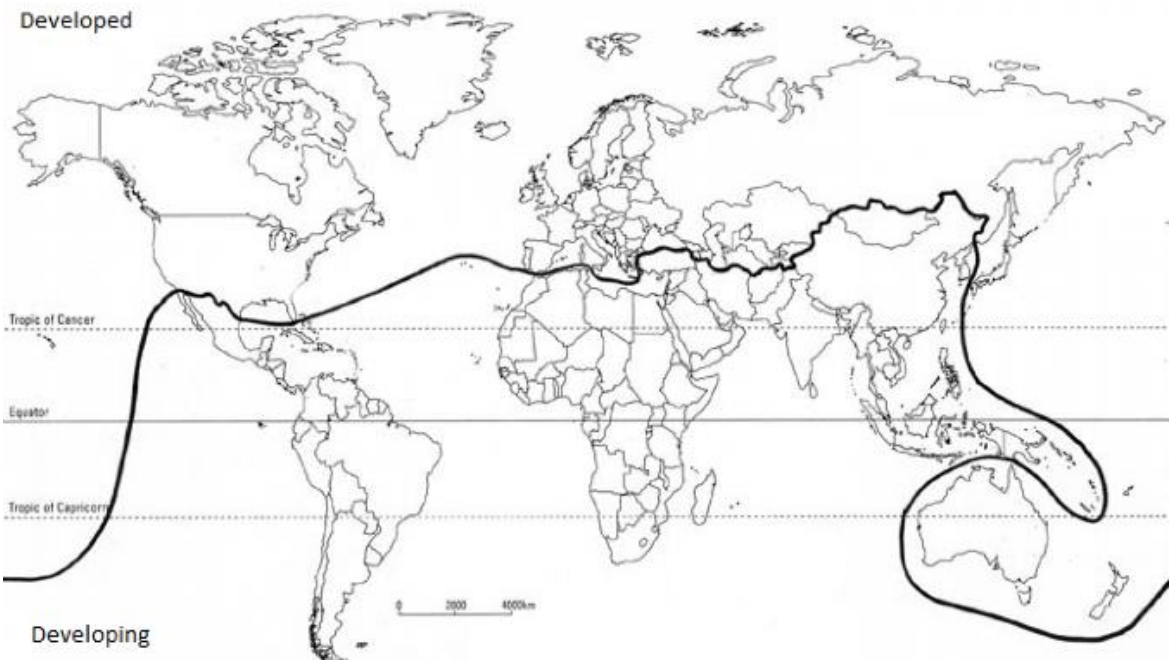
From the Great Divergence to South-South Divergence

In the wake of the Great Divergence debate, the field of economic history has made a distinctively global turn in the past quarter century. Rather than studying the Industrial Revolution in its own right, the debate placed it in a broader comparative context, centring on the question why Europe, and Britain in particular, pioneered modern economic growth, while at the same time China, the world's longstanding technological leader, saw its economy descend into a prolonged period of crisis and stagnation (Pomeranz 2000, Greif, Mokyr and Tabellini 2025). Older questions, rooted in a long tradition of scholarship juxtaposing the rise of the West against the lagged development of the proverbial 'Rest', were dusted off, and reformulated answers were informed by new data, new (quantitative) estimation methods and novel conceptualisations of colonial institutional legacies (Acemoglu, Johnson and Robinson 2001). Big questions about the historical origins of world economic inequality have thus been mainly analysed along two axes of divergence: one across the outer edges of the Eurasian continent, the other pitting the West versus the Rest, or in slightly less parochial terms, the global North versus the global South.

This Element in economic history makes the case for a third axis by focussing on the problem of South-South divergence. Whereas the 'global South' has never been defined with great precision, the boundaries of this heterogeneous group of underdeveloped economies – nearly all confronted with some form of imperial encroachment – were clearly delineated on the famous 1980 Brandt map (Figure 1.1). However, considerable parts of the global South have become advanced industrial nations since then, achieving growth rates far exceeding those of former colonial metropoles. The countries achieving strong catch-up growth also appeared to be spatially clustered. As a result, the per capita income gap between Africa and Asia has now reached levels comparable to those of the North–South divergence in 1970 (Figure 1.2). Considering that Africa and Asia together account for more than 75% of the world population, a share that will only further rise during the 21st century, the topic of South-South divergence naturally presents itself as a new frontier in global economic history (Frankema 2025a).

By shifting attention from the Great Divergence to questions of South-South divergence, this short book seeks to open a new research agenda in economic history and to provide a deeper historical dimension to social science studies in comparative development. Moreover, zooming in on the Africa-Asia divide provides an excellent opportunity to shift the lens in two other ways. First, we allow Europe to enter the stage from the wings. Though we do not deny the enormous impact of colonial rule, Europe in our story is neither a pantomime hero nor villain. Nor is it the measure by which we seek to judge Asian or African economic development. Europe and its empires influenced the course of African and Asian long-run development, but have not determined their *relative* present-day economic standing. A South-South perspective helps to 'provincialize' Europe in theories regarding the global diffusion of capitalism and the making of world inequality (Chakrabarty 2000). The economic history of the world's majority cannot be reduced to a mere variation on a European theme.

Figure 1.1 The Brandt line demarcating the global North and South



Source: Brandt (1980, front cover).

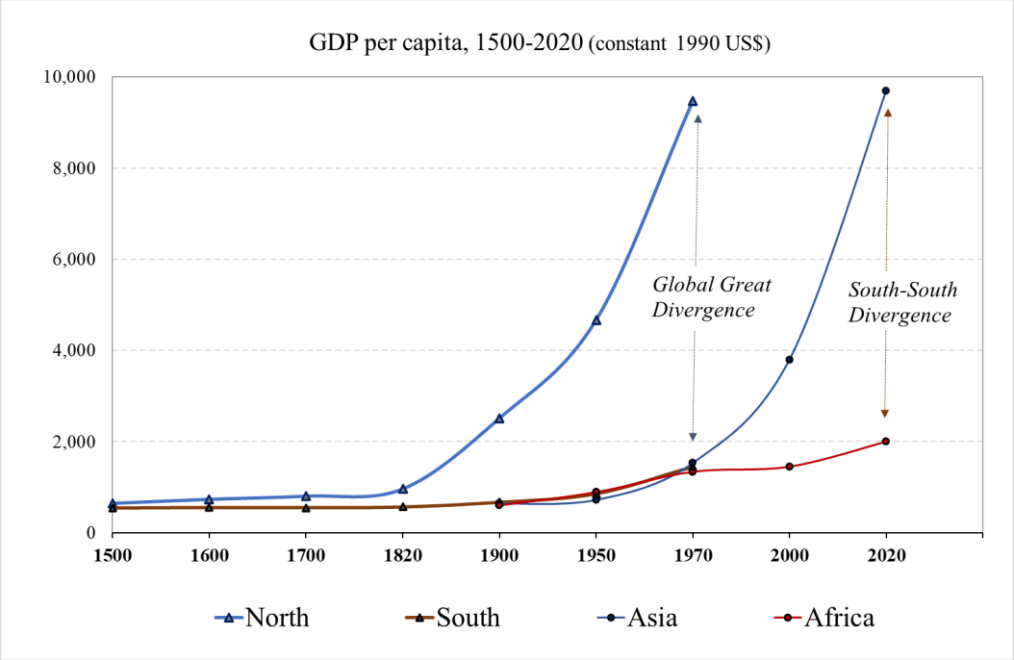
Second, a South-South perspective obliges us to ask again: what constitutes a region? Why does growth tend to cluster in time and space, and why are the wealth and poverty of nations not more randomly distributed across the globe? Broadly speaking, there are two possible answers to this question, which represent fundamentally different views of the inner workings of modern economic growth. The first view holds that development is clustered because neighbouring countries tend to share an important set of structural conditions which are either more or less conducive to economic development. The alternative view is that clustered development is the result of economies connecting with one another: the evolution, weight and nature of trans-boundary networks of exchange promote growth in some regions, and much less so in others. In comparing Africa and Asia, this book will stress the importance of this second mechanism.

More precisely, we argue that structural geographic differences such as Asia's large maritime space and rice ecologies, along with the vast labour and consumer markets of India and China, created different conditions for 'connectivity' than were present on the African continent. These conditions, in turn, shaped the nature of a process of agricultural commercialisation which, in both regions, was spurred by the joint forces of globalisation and colonisation since the early 19th century. Given the critical importance of the interaction between external influences and internal (e.g. regional) market dynamics, framing the post-1970 development divergence as the outcome of disparate 'colonial' legacies would seriously overestimate the role of Europe in the making of 21st century world inequality. This study highlights how indigenous, trans-imperial trade and credit networks steered the process of agricultural commercialisation in directions with a clear 'Asian' and 'African' signature.

To develop this thesis we focus on the tropical, land-abundant regions of Asia and Africa, which we henceforth refer to as Southeast Asia and Tropical Africa. We show that the Southeast Asian pattern of agricultural commercialisation was *food-inclusive*, involving a crucial role for rice trades that were financed, in large part, by indigenous – including Asian expatriate – capital. In Tropical Africa, the exchange networks that emerged after the demise of first the external, and, somewhat later, the internal slave trades, were not only shallower and more fragmented, they were also largely *food-exclusive*. In

As a result, the market foundations necessary for widespread agricultural productivity growth and structural change remained comparatively weak. The different gravity of regional markets and intensity of intra-regional flows of commodities, labour and capital that emerged between the 1820s and early 1970s thus led to structurally different conditions for a successful, regionally encompassing agricultural revolution that pulled the majority of Southeast Asians out of poverty after 1970, while its absence left many Africans on the brink of subsistence.

Figure 1.2 Per capita GDP in the global North vs South and Asia vs Africa, 1500-2020



Sources: Online Appendix Chapter 1. Note: Following the Brandt line, Japan, Australia and New Zealand are included in the global North (Brandt 1980, pp. 31-32)[1]

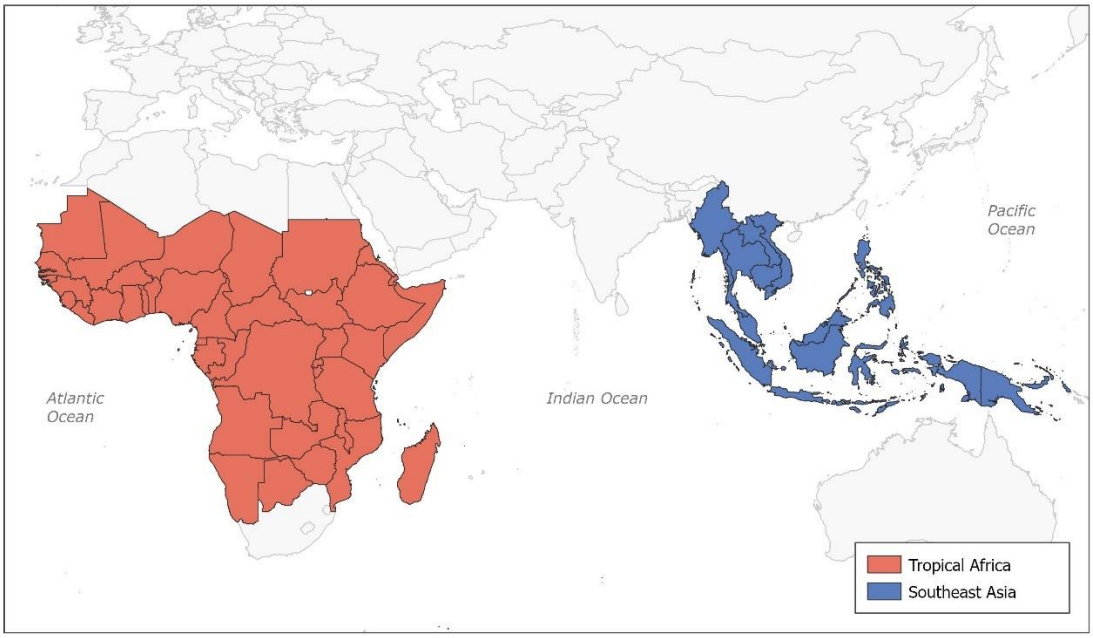
The Seven Similarities of the Asian and African Tropics

The comparison of the tropical, land-abundant areas of Africa and Asia (Figure 1.3) is motivated by an unusually broad set of seven similarities. First, both regions were incorporated into expanding European empires during the long 19th century wave of globalisation. Although some parts were invaded earlier than others, and a few escaped sustained occupation (e.g. Thailand, Ethiopia), colonisation mostly ended relatively abruptly between the outbreak of the Second World War and the early 1960s. Second, tropical climates allowed for the cultivation of a specific portfolio of edible and industrial export crops that could not be produced in the temperate climate zones of the North Atlantic, the southern tip of Africa or the northern parts of East Asia.[2] Hence, after the waning of the trans-Atlantic slave trades (c. 1807-1860), the economies of Tropical Africa and Southeast Asia developed remarkably similar, albeit not entirely identical, patterns of economic specialisation. Exports consisted of a range of tropical agricultural commodities and a handful of minerals, mostly exchanged for manufactured products from

[1] Due to space constraints we list the extensive sources and notes attached to tables and figures in online appendices, which can be found at: https://ewoutfrankema.com/ and https://tomwestland.com/.
[2] We excluded South Africa from the comparison for this reason, and also because it was the only African economy south of the Sahara that experienced a genuine mineral revolution before 1900. This, combined with its substantial white settler population, set the country on a different development track (Feinstein 2005).

imperial metropoles. These narrow specialisation patterns were deepened by varying degrees of de-industrialisation (Williamson 2011, Frederick 2020).

Figure 1.3 Tropical Africa and Southeast Asia



Source: Authors' own with thanks to Leonora Lesi. *Note*: for the countries included in both regions see Online Appendix Chapter 1.

A third similarity is that, unlike other parts of Asia (e.g. India, China, Korea, Taiwan and Japan) or Africa (e.g. Egypt), Southeast Asia and Tropical Africa were characterised by high ratios of land to labour in the early 19th century. Hence, labour was the scarce resource that colonial states and companies, settler farmers, as well as indigenous farmers and entrepreneurs were competing for. Low population densities set Southeast Asia apart from other tropical parts of Asia, and the Indian subcontinent in particular. Fourth, as a response to endemic labour scarcity, large-scale labour coercion prevailed in both regions before, during and after the abolition of slavery. Fifth, and relatedly, in response to local labour shortages both regions witnessed mass migrations. Millions of circular and permanent labour migrants were moved by poverty, indebtedness, or colonial repression, as well as by the attraction of new opportunities to improve their livelihoods and those of their families. While it is true that population densities varied considerably within and between both regions, and on the whole the densities were higher in Southeast Asia, these differences were still much less pronounced in the 1820s than they were around 1900, or the 1960s when several scholars voiced deep concerns about unsustainable rates of Asian population growth (Geertz 1963, Myrdal 1968). Both regions were thus integrated into the global economy with open land frontiers that were only gradually closed under pressure of agricultural and demographic expansion.

A sixth similarity is that decolonisation ushered in a period of considerable political instability and widespread violence. Even though the scale of unrest varied, the economic backlash was felt in both regions. Especially in Southeast Asia the economic crisis was aggravated by the preceding Great Depression of the 1930s and the ensuing Japanese occupation of 1941-45. Finally, seventh, by the time that Western empires in both regions were formally dismantled, Tropical Africa and Southeast Asia were both home to around 200-225 million inhabitants with largely comparable per capita income levels. The African and Asian tropics were poor, their economies depended on a narrow range of

agricultural export commodities, and their populations were far less educated, well-fed, and healthy than those of the industrialised countries in the global North.

And yet, in the half-century between 1970 and 2020, per capita incomes in Southeast Asia rose to four times the level in Tropical Africa (Figure 1.4a). Extreme poverty rates dropped to ca. 2-3% of the Southeast Asian population, while in Tropical Africa they remained over 40% by 2020 (Figure 1.4b). Life expectancy at birth soared in Southeast Asia from about 50 years in 1960 to 72 in 2020, while in Tropical Africa it improved from 41 to 61 (UN 2024). After 1970, Africa became the world's largest net food importer, while Southeast Asia saw its agricultural output outpace population growth by a considerable margin (Figure 1.4c). While we do not have space to discuss these distinct features of the post-1970 divergence at length, we contend that we cannot understand these radically different development trajectories without taking a deeper look at historical patterns of agricultural commercialisation.

Figure 1.4a Per capita income in Southeast Asia and Tropical Africa, 1950-2020

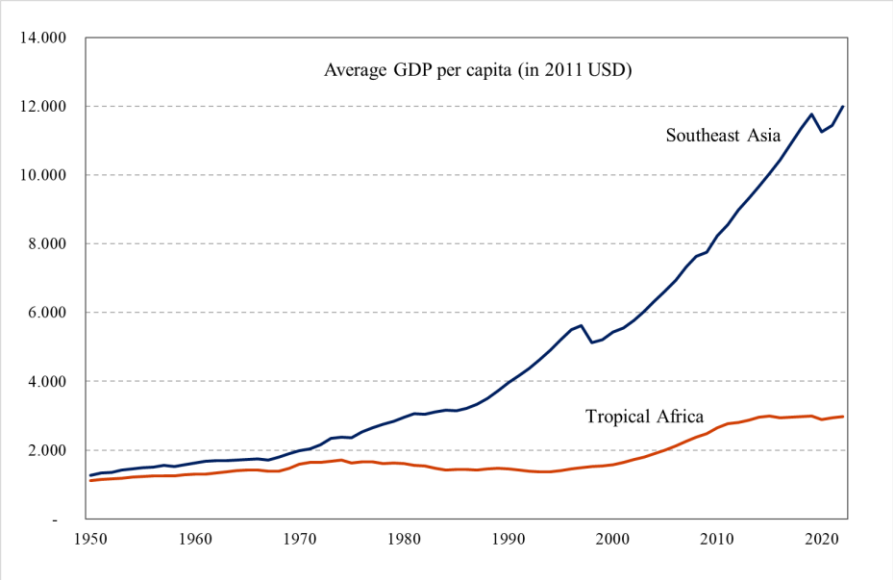


Figure 1.4b Poverty headcount in Southeast Asia and Tropical Africa, 1950-2020

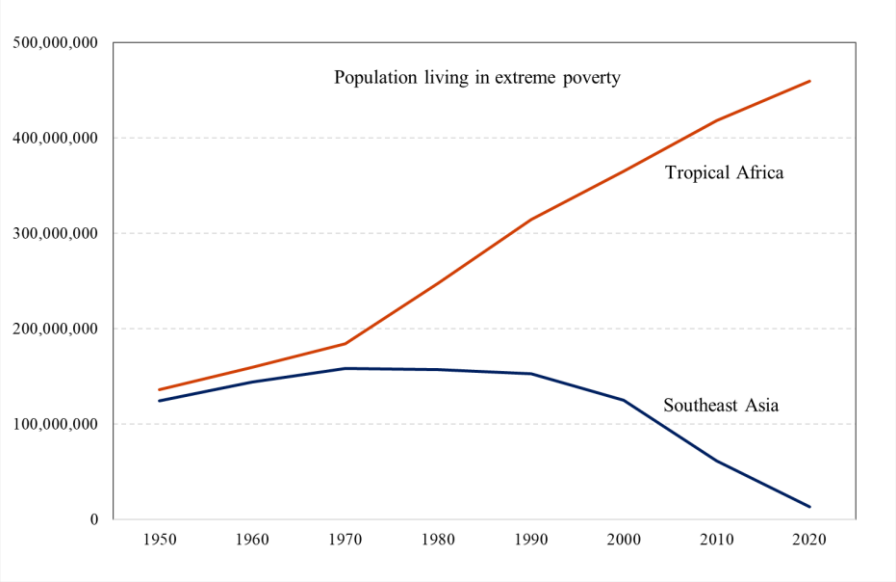
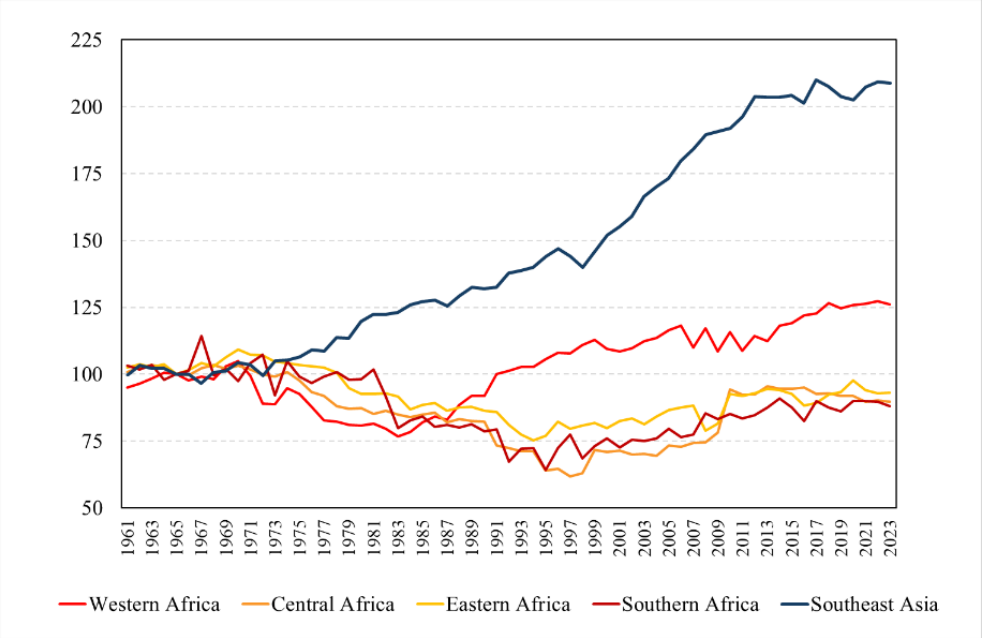


Figure 1.4c Index of per capita agricultural output, 1961-2023 (1965 = 100)



Sources and notes: Online Appendix Chapter 1

Accounting for Agricultural Change

In 1968, a leading development economist described Indonesia, Southeast Asia's most populous country, as 'the number one economic failure among the major underdeveloped countries' (Higgins 1968, p. 679). Notwithstanding Ester Boserup's (1965) groundbreaking *Conditions of Agricultural Growth*, in which she argued that demographic pressures were likely to induce agricultural productivity growth rather than Malthusian crisis, Higgins was not alone. Very few scholars at that time foresaw the divergence that was about to set in. By the early 1990s, when the World Bank's (1993) influential *East Asian Miracle* report came out, the Asia-Africa divergence could no longer be ignored. Since the World Bank's influential discussions of Southeast Asia's economic take-off, there has been a strong tendency to explain the region's growth primarily through the lenses of industrialisation, foreign investment, and macroeconomic policy, following earlier studies on industrial policy in Northeast Asia (cf. Johnson 1982, Amsden 1989). This perspective, however, lost much of its appeal after the Asian financial crisis of 1997-98.

More recent scholarship agrees that Southeast Asia's industrialisation was both preceded and facilitated by radical changes in agriculture: impressive yield growth driven by the invention and diffusion of new hybrid rice varieties that spread across Asia with unprecedented velocity. Higher yields tackled problems of food insecurity with remarkable effectiveness, leading to rapid gains in human nutrition, declining poverty, and falling child mortality and fertility rates (Thirtle, Lin and Piesse 2003, von der Goltz et al. 2020, Gollin et al. 2021). As Figure 1.4c shows, no region in Africa even remotely kept pace. Asia's *Green Revolution* also entailed active state intervention in agriculture to resolve coordination problems and market failures. The effective implementation of high-yield rice varieties (HYVs) required increasing supplies of inorganic fertiliser, expanded irrigation infrastructures, modern pest control, extension services, and continued private investments in land improvement (Hazell 2009).

The Green Revolution facilitated structural economic change. In the words of Platteau and Hayami it provided 'more or less regular employment to a growing rural population before urban industrialisation was advanced enough to absorb large numbers of workers' (1998, p. 357). By preventing structural food import dependency, the Green Revolution also allowed critical foreign exchange reserves to be

allocated to the import of agricultural and industrial capital goods. Higher rural incomes generated more effective demand for domestic manufactures and services, and further strengthened backward and forward economic linkages with rural and urban industries. Gollin et al. (2021, p. 2344) have estimated that a 10-year delay of the Green Revolution would have cost the developing world 17% of per capita GDP by 2010, and would have left an added 223 million people in poverty.

Explanations for the Asia-Africa divergence in agricultural development offered by development economists, political scientists and development studies scholars highlight the role of varying bio-geographical conditions as well as differences in state capacity, institutions and policy choices. To see what economic history has to contribute to these perspectives, we must first discuss this literature in more detail.

Varying bio-geographies

Bio-geographic conditions can be split into the effect they may have on production, and the effect they may have on distribution. Considerable parts of the African tropics consist of arid areas that are only suitable for pastoral activities, while other parts are too wet for the cultivation of most crops. African soils are also, on average, of lower quality. A high proportion consists of sand with a lower capacity to hold water compared to Asian soils (Platteau and Hayami 1998, p. 396). On top of this, Africa is home to a number of exceptionally lethal human and animal diseases such as malaria and trypanosomiasis, which have negatively impacted the deployment of human and animal labour in agriculture. Rainfall regimes in the African tropics are also more erratic, with greater spatial as well as intertemporal variation than in Monsoon Asia.

As a result of greater ecological heterogeneity, Africa harbours a greater variety of staple crops than Asia. Of course, in Southeast Asia rice is not the only item on the menu. Rice comes in hundreds of different varieties and production 'assemblages' (Bray et al. 2015), but its cultivation and processing is still arguably more generic than that of plantains, cassava, yams, beans, teff, pearl millet, maize or African rice combined. The key distinction in rice cultivation techniques is between the dry land and wetland zones. The prominence of rice in the Asian diet facilitated a revolution in scale: IR8 – and successor HYVs such as IR36 and IR64 – were hailed as a silver bullet against the haunting spectre of food insecurity. In Africa such bio-technological inventions were much harder to upscale. An African Green Revolution will have to be tailored to a broader range of crops with smaller markets to reach the same effect (Conway 1998, Larson and Otsuka 2013, Frankema 2014).

That said, the yield gap – i.e. the difference between the maximum potential and realised yields – remains much higher in Africa than elsewhere. With more nutrients and improved cultivation methods, African staple crop harvests could easily be made more abundant than they have been to date (van Ittersum et al. 2016). Rather than ecological constraints to production, geographic impediments to market development may thus hold the better part of the argument. Continental Africa is a landmass with relatively few navigable rivers and natural coastal inlets, and overland transportation costs are higher than water transportation costs – especially in a context of dispersed settlement patterns and high levels of human mobility (e.g. pastoral nomadism). Hence, markets were to develop more slowly in Tropical Africa than in Southeast Asia, where people settled in larger numbers in river valleys and delta areas once new means of water control offered the opportunity to cultivate rice. We will argue that Southeast Asia's maritime space as opposed to Africa's landmass, and the prominence of rice as a staple food versus the greater variation in staple foods are two key distinctions without which South-South divergence cannot be explained, but a historical perspective is essential to study the dynamics of a development process which can never be fully captured by largely static geographic conditions.

Moreover, the argument of Platteau and Hayami (1998, p. 364) that the divergence was mainly due to the failed shift from a land-extensive to a land-intensive agricultural development path in Sub-Saharan Africa during the 1960s-90s in the wake of accelerated population growth is difficult to match with the

large differences in land-labour ratios across the African continent. After all, the Ethiopian highlands, the Great Lakes region and parts of Northern and Southern Nigeria were much more densely populated than Tanzania, the Congo, Angola or Mozambique, to mention just a few examples. The same goes for Southeast Asia. We insist on taking a regional perspective because it allows us to see how 'underpopulated' and 'overpopulated' areas became connected through trade, migration and investment flows. Adopting this lens suggests that the Africa-Asia divergence can be traced back to the first half of the 19th century, when intra-Asian markets for rice began to integrate. From the mid-19th century onward, the rice trade soared, and by 1900 rice had become Southeast Asia's leading export commodity.

State capacity, institutions and policy

Uneasy with the 'environmental determinism' inherent to bio-geographic accounts, another strand of literature has turned to the role of state capacity, institutions and government policy. Policy presupposes agency: a belief in the capacity of societies to shape the course of development. Yet the degree to which structural institutional legacies have shaped the political economic arenas in which policy is made remains debated. While Otsuka and Sugihara (2019) and Frankema and Booth (2020) have taken a structural approach by looking into different paths of state formation and fiscal development, many others have insisted that history barely mattered. In their much-cited comparison of Nigeria and Indonesia, Bevan, Collier and Gunning concluded that 'the initial differences between Nigeria and Indonesia were scarcely remarkable', and that 'although by the late 1990s Nigerian and Indonesian policy and performance had diverged, in many respects the circumstances that triggered Indonesian policy change had also occurred by then in Nigeria' (1999, p. 425). Summarising the key findings of a large comparative project, David Booth stated that

> All, or nearly all, of the differences in development outcomes between the African cases and their Asian counterparts may be explained by the timing and sequencing of the adoption of three policy features: macroeconomic stability; pro-poor, pro-rural public spending; and economic freedom for peasants and small entrepreneurs (2013, p. 499).

In advocating the role of agency over structure, the policy explanation credits Southeast Asian governments with taking the right decisions at the right moment in time, suggesting that if only their African counterparts had done the same, Africans today would have been much better off. Some protagonists of the policy explanation have even argued that the divergence ultimately was 'a question of intent' (Henley 2015). The idea that African policy-makers had no intention of promoting the common good aligns with a larger strand of literature pointing to corruption, fiscal mismanagement, ethnic favouritism, choking (socialist) state experiments and 'urban bias' (Lipton 1977, Bates 1981, Krueger, Schiff and Valdés 1991). Whereas African governments systematically over-taxed the agricultural sector, Asian governments did the opposite: they channelled public investments into rural infrastructure, extension services, credit facilities and subsidised supplies of farming inputs.

One of the key instruments of agricultural taxation in Africa was the agricultural price policies adopted by monopsonistic marketing boards, many of which were established in the late colonial period (Meredith 1986, van der Laan, Dijkstra and van Tilburg 1999). By offering purchase prices far below the world market level, and in local currencies, the marketing boards captured the margins of higher sales prices in US dollars. Exchange rate overvaluations undermined the competitive advantage of export-crop farmers, and made imports of food crops particularly cheap, which was again in favour of urban (and rural) food consumers, but against the interest of food producers. But whereas the evidence of over-taxation of export-crop producers is quite clear (cf. Bates 1981, Hesp 1985), it remains inconclusive for food-crop producers. The role of marketing boards in food crop agriculture was limited, and whenever they did intervene, there is little evidence of unfavourable price setting (Bryceson 1992, Frankema et al. 2025).

More fundamentally, why would Asian governments have been so much more benign? And why do we see rapid growth in Southeast Asian economies even after the most horrendous proxy wars (Vietnam) or absolutist regimes (Cambodia's Khmer Rouge)? One popular trope pertains to the ethnic composition of post-colonial societies. Southeast Asian societies tended to be ruled by a relatively homogeneous dominant ethnic group. In Tropical Africa, structural tensions between competing ethnic groups of comparable weight steered the process more towards a 'politics of the belly' (Bayart 2009, Easterly and Levine 1997). The problem with this argument, however, is that while these differences may have applied to a majority of Asian and African cases, there are sufficient outliers in both regions to question the existence of a rule.

We will argue that regardless of policy intentions, at the time of independence, the possibilities for effective pro-rural policies in Southeast Asia were so much better than in Tropical Africa, that we must seriously interrogate the delicate relationship between political will and policy opportunity. Given the enduring intra-regional competition in Asian rice markets, a pressure that hardly existed in Africa, Southeast Asian governments not only had larger policy windows, but also less ability to neglect rice farmers. A historical and regional perspective tempers the idea that the divergence is primarily the outcome of the adoption of effective economic policies by Asian governments and counterproductive policies by their African counterparts.

Our thesis

This book traces the roots of South-South divergence back to the early 19th century, at the onset of European colonial expansion, and long before it surfaced in per capita income levels. Instead of comparing African and Asian country-pairs, the dominant approach (cf. Bevan, Collier and Gunning 1999, Berendsen et al. 2013, Frankema and Buelens 2013, Lewis 2007, Andoh, deGannes Scott and Ofori-Abebrese 2020), we contend that none of these economies operated in a vacuum, and take the region as the point of departure. Our central argument is that, from the early 19th century onward, Southeast Asia and Tropical Africa embarked upon two distinctively different long-term paths of agricultural commercialisation. Around 1940, the *food-inclusive* path of Southeast Asia had established the pre-conditions of a sufficiently developed and integrated regional rice market to accommodate the innovations of the Green Revolution. In Tropical Africa these conditions were not met.

In Southeast Asia rice was not only produced for imperial markets, it was also traded in significant quantities within Southeast Asia as well as exported to India, China, Japan and, albeit in much smaller volumes, to Africa. Moreover, as Sugihara has argued in several studies, these intra-Asian rice trades were mediated, in large part, by Asian merchants and investors (Sugihara 1996, 2005, 2015). We will show that the volumes of maize and millets produced for long-distance trade in Tropical Africa paled in comparison with the extra- as well as intra-Asian rice trades. However well-conceived were rural policies, and however powerful were new bio-technologies, the African markets for maize, millet, cassava or rice were insufficiently developed to emulate Southeast Asia's take-off.

The 1820s saw the start of the great acceleration of globalisation as well as a European imperial reorientation away from the Americas, and towards Asia and Africa (O'Rourke and Williamson 1999). Both regions specialised in tropical agricultural commodities, but under three different conditions, as summarised in Figure 1.5. First, Southeast Asia benefitted from its large maritime space in an era in which water transportation costs declined dramatically. The transport costs were not only higher in the vast interior of Africa, they were also harder to bring down. Second, at the fringes of Southeast Asia the two giant economies of China and India generated a large and growing demand for rice, while both countries also supplied considerable quantities of labour, capital and skills to various rice-growing regions in Southeast Asia (Cheng 1968, Coclanis 1993). In Africa, the growth of agricultural exports was first held back by the external slave trades, and after their suppression, European market demand

and intermediation dominated the course of African agricultural commercialisation. Third, Africa's more heterogeneous food landscape remained tightly linked to varying agro-ecologies. Importantly, these three conditions are regional characteristics, and do not pertain only to a subset of countries. All three intertwined conditions are required to explain why patterns of agricultural commercialisation diverged.

Precisely because of their different transport geographies, agricultural export growth was initially more vigorous in Southeast Asia than in Tropical Africa. Only in the 1830s did agricultural commodities in Tropical Africa overtake the trans-Atlantic slave trade in total export revenue (Frankema, Williamson and Woltjer 2018, p. 234). This continuous drain had long diverted African labour resources away from agriculture. Endemic violence and investments into military capacity maintained this vicious cycle. After the suppression of the overseas slave trades, African (slave) labour was redirected towards the domestic production of tropical export-crops such as palm-oil, cloves, groundnuts, sugar and, later, also rubber, cocoa and cotton. Would African conditions for an agricultural revolution have been more favourable if maize or millet had, by the 1960s, been a key product of intra-African trade? We think so. Five arguments buttress this view.

First is market discipline. As we will show in Chapter 2 and 3, during the 19th and early 20th centuries, millions of Southeast Asian peasants became smallholder rice farmers operating under the discipline of an increasingly regionally integrated rice market. To experience the impact of the market, peasants did not necessarily have to produce for export, as they could also be exposed to import competition. Progressive agricultural capitalism produced winners and losers. The social costs of pervasive market discipline were large: unfortunate and less efficient farmers ended up in permanent debt and often lost their land to become landless rural or urban workers, especially in periods of crisis such as the 1930s depression (Scott 1976). In Tropical Africa, such competitive forces permeated far less deeply into the countryside. African farmers were shielded by high transportation costs, which at the same time limited their opportunities to market their surpluses for higher prices beyond local markets.

Second is the double division of labour: the omnipresence of rice enhanced the division of labour in Southeast Asia in two ways. First, it created a regional division of labour between the rice bowls of Burma, Thailand and Indochina, and the (at varying times) net importing economies of Indonesia, Malaysia and the Philippines. Second, the availability of rice at relatively predictable prices allowed for a more rapid expansion of agricultural and non-agricultural contract labour. The massive inflow of Indian and Chinese coolie workers was made possible by the availability of a storable cereal grain and one that was relatively easy to prepare for human consumption. In Tropical Africa, export crops often had to be cultivated alongside the food crops to safeguard food security. Hence, the possible number of harvests per year, usually a function of rainfall regimes, mattered greatly in farmers' cultivation choices (Tosh 1980, de Haas 2021). Smallholders growing coffee or cotton always did so with an eye to food security, and plantation workers often had to grow their own subsistence crops on the side, or migrate back home during harvest season. Food security considerations thus constrained the division of rural labour as well as the growth of cities in Tropical Africa to a greater degree than in Southeast Asia.

Third is rural industrialisation. We show in Chapter 4 that, although crop processing factories emerged in both regions, rural industry expanded faster in Southeast Asia. In addition to sugar and cotton mills and palm-oil and rubber factories, the commodification of rice provided yet another, and often even the single biggest, boost to off-farm labour. After all, the global market for rice was enormous and was also continuously propelled by population growth. Rice mills de-husked the paddy, milled brown rice into white rice (by removing the bran layer), polished white rice, and graded, sorted, weighed and packaged rice. Grain mills spread in Tropical Africa too, but barring a few exceptions, large industrial mills emerged almost a century later and spread with much less vigour. More important though is that rice mills became pivotal in the supply of inputs (seeds, fertiliser, credit, market information) to farmers. Taking in and putting through their harvests, often at pre-agreed prices, they also served as nodes in

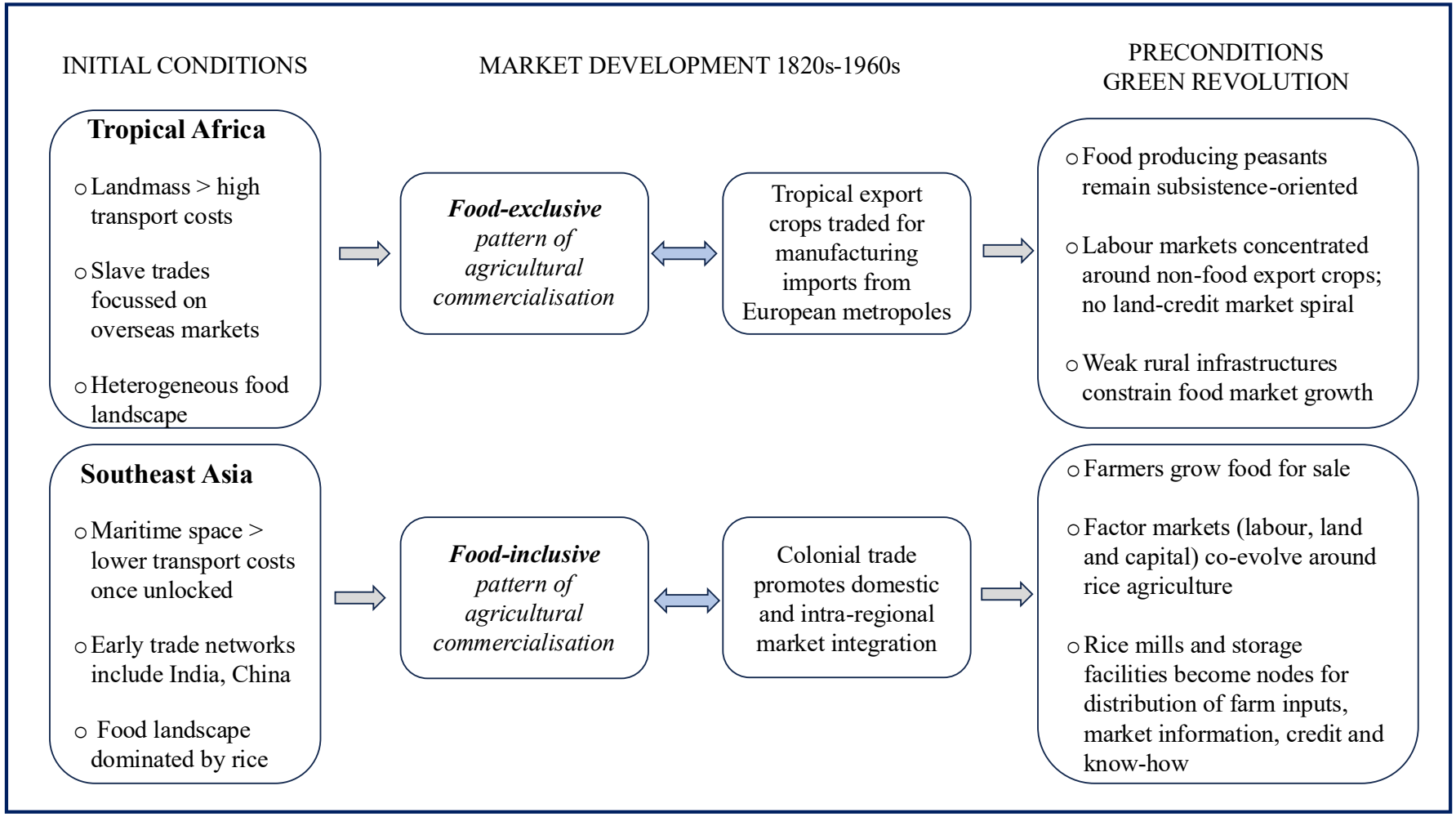
emerging transport and energy networks. Finally, by spurring the demand for skilled labour in the countryside with many potential technological spillovers, rice mills were also at the tip of the spear in creating a fine-grained industrial ecosystem in Southeast Asia (Bray 1986).

Fourth is that the food-inclusive pathway of agricultural commercialisation of Southeast Asia had notable implications for the development of land and credit markets. In Chapter 5 we argue that the marriage between credit and land reflected a deepening of agricultural capitalism. Land became increasingly used as collateral, which went hand in hand with the development of a mortgage market. Credit services invited greater degrees of administrative control and information flows to manage risk. In Tropical Africa, agricultural land remained either under communal control, or property rights were established by European colonists at the expense of Africans (Herbst 2000). In places where an indigenous rural capitalist class emerged, and especially in the so-called peasant export colonies such as Ghana, Uganda and Nigeria, these were predominantly centred around export crops such as cocoa, cotton and oil-palm, and not around food crops. Credit markets emerged in Tropical Africa too, but these were more focused on 'big business' such as colonial ventures in mines or plantations, or solely on high-cost, short-term loans of marginal economic significance. This had serious implications for the development of rural industry, since land-backed loans were one important source of early industrial finance. The process of commercialisation and the growth of a broader rural capitalist class in Southeast Asia thus created an environment in which a transition to a modern financial system, one capable of generating capital for agricultural intensification and industrialisation, was feasible. These conditions were not absent in Africa, but overall too thinly spread.

Fifth is commercial institutions. As rice went from hand to hand, involving various agents at different parts of the value chain, the growth of rice trading also induced the development of local commercial institutions. By 'local' we mean institutions rooted in domestic legal custom and trust networks, rather than laws imposed by colonial governments. Rice production was an indigenous activity and the processing and trade involved significant amounts of Asian expatriate capital. Export sectors were often dominated by Indian or Chinese investors who used their mercantile networks and knowledge of local languages and customs to outbid European merchants. In contrast, in the East and Southern African 'maize belt', European settlers were dominant. European farms benefitted from protection (e.g. through licensing, price differentiation and indirect subsidies) against African smallholder competition. Whereas rice thus promoted the development of regional markets and related mercantile institutions in Southeast Asia, in Tropical Africa, the smaller trade in grains occurred in a more dualistic market structure.

We consider the integration of rice markets across Southeast Asia a *sine qua non* for the divergence. Only in Southeast Asia could Green Revolution technologies and associated pro-rural policies have had this transformative impact. But a necessary condition is not a sufficient condition. We agree with Berendsen et al. (2013) that for farmers to invest in new and more expensive seeds, fertiliser, and land improvement, government policies promoting economic freedom of farmers, macro-economic stability and public investments in rural infrastructure were key. We believe, however, that the Asia-Africa divergence does not offer the most suitable comparative frame for assessing the role of 'good' or 'bad' economic policies. Development disparities *within* Southeast Asia, such as between Burma and Thailand, or between Malaysia and the Philippines, are more informative to explore policy effects. After all, in these countries the necessary market conditions were fulfilled by 1940. African economies were held back by underdeveloped staple food markets to the extent that even Kenya and Côte d'Ivoire, two African countries that stood out for their pro-rural policies (Widner 1994), were not able to really forge ahead of their neighbours after 1970, lacking the regional conduits to flourish.

Figure 1.5 Causal scheme underpinning our central thesis



Source: authors' own

2 Globalisation, Colonisation, and Migration

The Long 19th Century

In the century between the end of the Napoleonic Wars in 1815 and the onset of World War One in 1914, world trade expanded roughly 30-fold. With annual growth rates around 3 to 4%, world trade outpaced the growth of GDP by a factor of 2. As a result, trade as a share of global income surged from below 10% to close to 30% (Federico and Tena-Junguito 2017, p. 608; Klasing and Milionis 2014, p. 192). Four factors contributed to what O'Rourke and Williamson (1999) aptly called the first globalisation wave: revolutionary innovations in transportation and communication technology initiating dramatic declines in transport costs, the liberalisation of trade after several centuries of mercantilist policies, the surge in demand for raw materials and luxury consumer goods driven by the Industrial Revolution in the North Atlantic basin and finally, despite devastating civil wars in amongst others the US and China, relatively peaceful conditions in the European countries that acted as engines of industrial and commercial growth, while some major Asian economies were forced to give up their isolationist policies (e.g. Japan, China, Thailand).

This wave of globalisation washed over the African and Asian tropics at different points in time. From the 1820s onward the British expanded control over Burma, the Dutch over what became Indonesia, and the Spanish over the Philippine archipelago. With the Bowring treaty of 1855, Thailand kept its formal independence, but lost tariff autonomy until trade treaties were revised in the 1920s. The French encroached on what became Indochina in the late 1850s. The scramble for Africa began in earnest in the early 1880s, about half a century later. Tropical diseases (especially malaria), military resistance and the complicated logistics of occupying the vast African interior all played a role in the later timing of colonisation. Once it started, however, the scramble was completed in no more than three decades, much faster than the long-drawn military campaigns that extended European control over Southeast Asia.

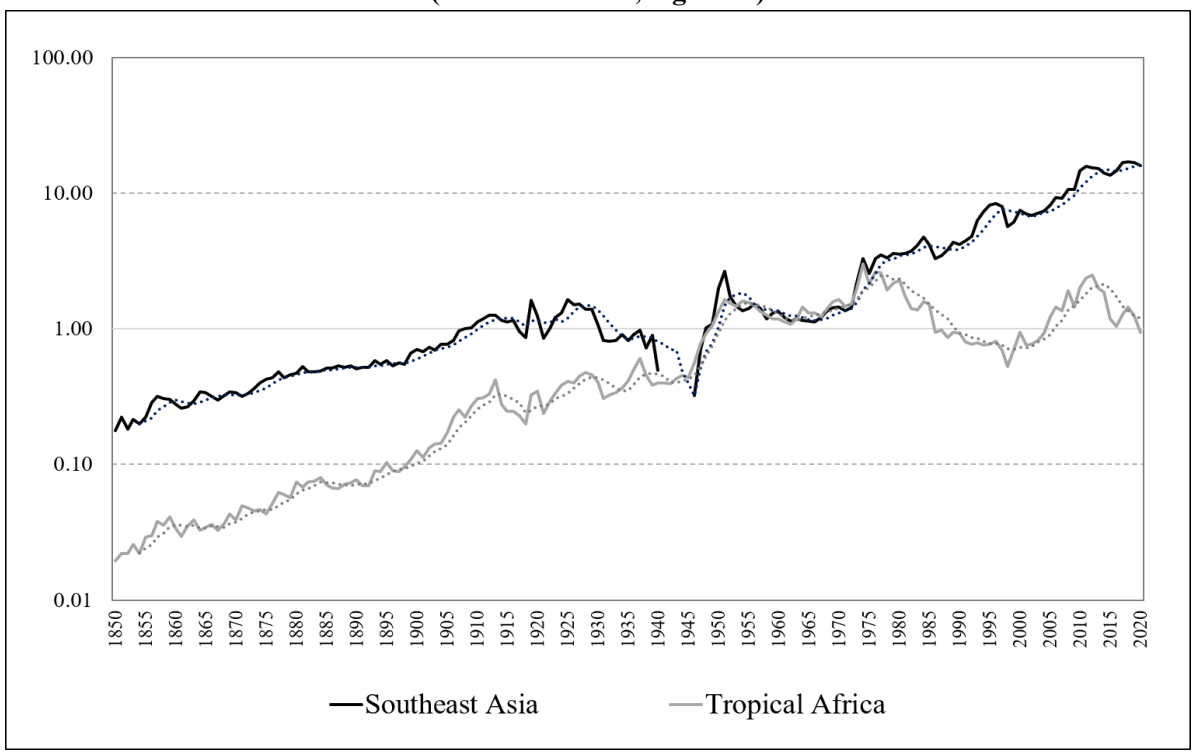
Another critical distinction in the way both regions were embedded in the processes of globalisation and imperialism was the prominence of trade in enslaved people. Around 1800, slave exports across the Atlantic and Indian Oceans, the Red Sea and the Sahara desert constituted the single biggest source of trade revenue in Tropical Africa. While the value of commodity exports such as palm oil and groundnuts overtook that of the ocean-bound slave exports in West Africa by the 1830s (Frankema, Williamson and Woltjer 2018), these external slave trades only ended during the second half of the 19th century. The internal trade in, and employment of, enslaved people only faded long after 1900 (Lovejoy and Hogendorn 1993, Wright 2007). In Southeast Asia slavery had also been very common, but the trade never reached industrial proportions. Intra-Asian slave trades declined during the 19th century, as enslaved labour was replaced by much larger numbers of indentured labour migrants, the majority originating from densely populated rural areas in Southern China and the eastern parts of the Indian subcontinent (Kaur 2004).

The long 19th century also saw different transitions in the orientation of trade in Southeast Asia and Tropical Africa. In Africa, the so-called 'commercial transition' refers to the gradual replacement of the trade in human captives mainly directed at the Americas, by the increasing cultivation of tropical export crops destined for European (metropolitan) markets (Law 1995). In Southeast Asia, the transition primarily involved a partial shift from trade with China, and a related expansion of Chinese mercantile networks, towards the production of tropical export crops for European markets. If the 18th century was the heyday of Chinese informal empire in Southeast Asia, the 19th century was the era of European formal empire (Blussé 1999, Reid 2004). Yet, this shift was also again partially reversed in the closing

decades of the 19th century, when increasing volumes of rice from the Southeast Asian mainland found new destinations across Southeast Asia, India, China and Japan (Coclanis 1993, Sugihara 1996).

Figure 2.1 presents the long-run development of real per capita seaborne export revenues from 1850 to 2020 in Southeast Asia and Tropical Africa. Around 1850, when historical trade records allow us to make a first relatively reliable comparison of commodity exports, Southeast Asia was clearly ahead of Tropical Africa. To be clear, the African series exclude trade in enslaved people as well as the long-distance trade *within* Africa – including slaves. Moreover, rapid improvements in statistical coverage from the 1850s to 1900s also create some statistical growth in the African revenue series before 1900. These series are not adjusted for these biases. Apart from the fact that the magnitude of intra-African trade flows can only be guesstimated, such a correction will also have to deal with the conceptual problem that most of the international borders of 20th century Africa were non-existent in the 19th century. That said, any upward correction for 1850-1900 would never bring African levels in line with Southeast Asian levels; it would simply flatten the pre-1900 slope.

Figure 2.1 Real per capita export values of Southeast Asia and Tropical Africa, 1850-2020 (constant 1913 £, log-scale)



Sources: Online Appendix Chapter 2

African trade certainly caught up rapidly during its so-called 'cash-crop revolution' after 1890 (Munro 1976, Tosh 1980). Some of the key agricultural exports such as palm oil from Southern Nigeria and sugar from Mauritius had already surged since the late 18th century (Lynn 1997, Allen 2003), but by 1914, the range had broadened to include groundnuts, cocoa, cloves, gum Arabic, rubber, cotton, coffee, tobacco, copra, and timber, amongst others (Frankema and Meier zu Selhausen 2026). This cash-crop revolution gave impetus to large-scale labour migration, as long-distance mobility had become much safer after the suppression of inland slave raiding (Austin 2022). Moreover, and contrary to Southeast Asia, African exports continued to grow during the interwar years, as the stagnation in West African export revenues was compensated by newly emerging enclaves of commercial agriculture and mining (e.g. copper) in East and Central Africa. After World War One, Southeast Asian exports first stagnated

in the 1920s to be followed by a precipitous decline during the 1930s Great Depression. The depression was felt in Africa too, but it did not lead to a similar collapse of trade sectors (Brown 1989). Hence, even though the trajectories differed considerably, the per capita export revenues of both regions were virtually on a par on the eve of the Second World War and this parity persisted until the early 1970s. After 1970, Southeast Asia resumed its long-run secular growth trend, while Tropical Africa got off its long-run growth path, to which it has never returned since.

Patterns of Specialisation

At the turn of the 20th century the export packages of Southeast Asia and Tropical Africa consisted nearly exclusively of primary commodities with some striking resemblances: both regions exported sugar, coffee, rubber, palm-oil, tea, sisal/hemp and timber/teak. With some exceptions, the leading export products also tended to persist for many decades. The key difference in the specialisation patterns of the tropical economies in Africa and Asia is therefore not hard to spot. Table 2.1 reveals that in three of the six Southeast Asian countries rice was the single largest export item. If we split French Indochina into what became Vietnam, Cambodia and Laos, the ratio is four out of eight.[3] Indeed, the increasing demand for rice from North Atlantic markets, as well as from the large and growing populations of China, India and Japan was at the heart of the 19th century globalisation wave in Asia (Sugihara 2015, Kobayashi 2026). Singapore became the region's pivotal rice trade entrepôt, helping it overtake the more prominent 18th century ports of Malacca (VOC-ruled) and Penang (EIC-ruled) (Huff 1987, Kobayashi 2022).

Figure 2.2 presents the estimated share of rice in Southeast Asian exports. The period 1850-1913 saw a virtually continuous expansion of the share of rice in total regional export revenues from under 10% in the 1850s to ca. 35% in 1900-13. Note that the share of rice soared in an era in which trade overall was booming. Rice exports plunged during World War One, but revived quickly thereafter to around one quarter of total exports in the interwar years. The surge of commercial rice production was almost exclusively driven by extensive agricultural growth: additional acreages of uncultivated land combined with the influx of new (immigrant) farmers and thousands of bullocks to help clear and prepare the fields. By 1940, the once sparsely populated delta areas of the Irrawaddy, the Chao Phraya and the Mekong were seamlessly connected to international shipping routes through fine-grained networks of subsidiary rivers and canals. Commercial rice cultivation had transformed the economies of Burma, Thailand and Cochinchina (Vietnam) and shifted their economic gravity centres decidedly southwards.

Lower Burma led the way. Brought under British-Indian rule in the aftermath of three Anglo-Burmese wars (1824-26; 1852; 1885), the country replaced Java as the region's leading rice exporter in the 1840s. Catering to a growing demand for rice in Europe, North America and nearby British India, Burma exported c. 875,000 tons of rice per year by the early 1880s, which translated into 145kg per head of the population (Cheng 1968, p. 237). After the British-enforced signing of the Bowring treaty (1855) rice exports from Thailand also soared, quickly overtaking its sugar exports (Chutipongpisit 2024). By the 1880s, Thai rice exports had reached 215,000 tons per year, about 35kg per head (Ingram 1971, p. 38). In 1872-1881 Cochinchina exported an average of 315,000 tons per year, about 180kg per inhabitant of Southern Vietnam (Owen 1971, p. 98). By 1913 rice export volumes had grown to 2.7 million tons in Burma, 1.3 million in Cochinchina and 0.9 million in Thailand, together almost 5 million metric tons, translating into c. 200kg per inhabitant. By then, about two-thirds of these rice exports went to Asian destinations (Barker, Herdt and Rose 1985, p. 187). For comparison, wheat exports from the US in 1913 were around 7 million metric tons, c. 70kg per head.

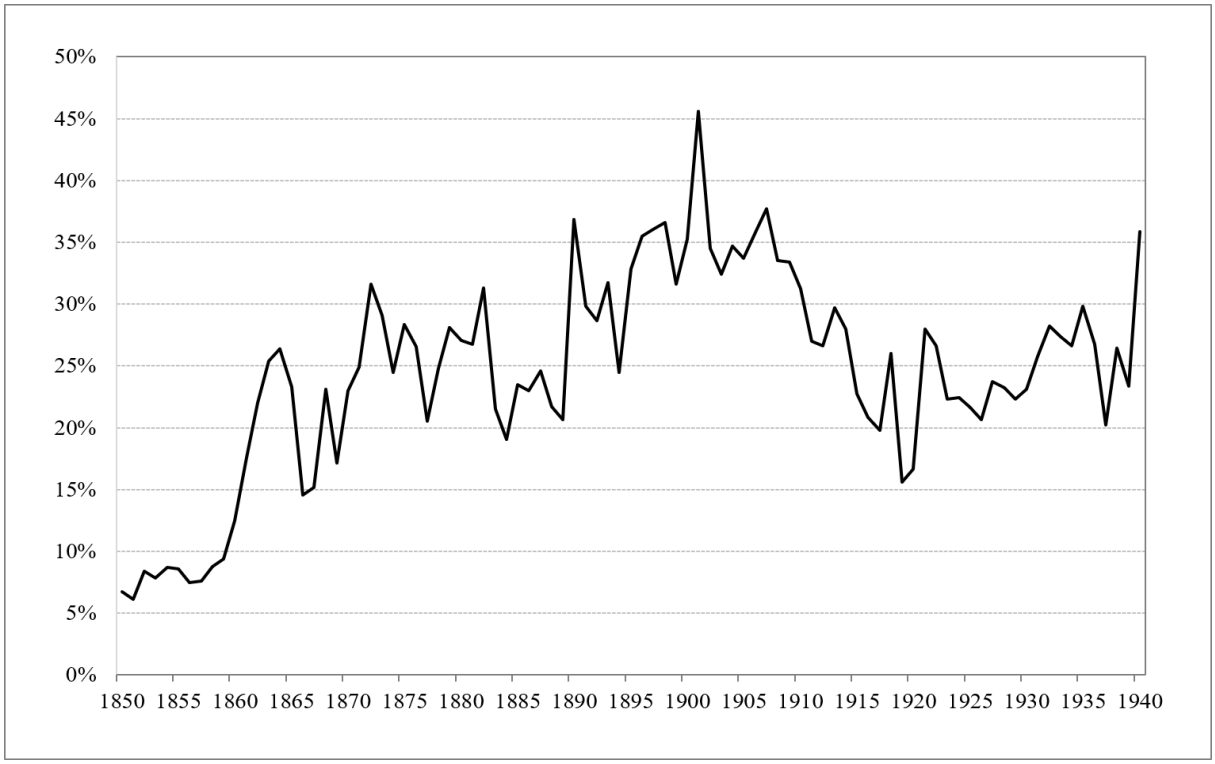
[3] While Laos was barely self-sufficient in rice, Cambodia contributed to Indochina's rice exports before 1940 (Cramb 2020, p. 17).

Table 2.1 Leading export products of Southeast Asia and Tropical Africa, 1870-1940

	1870-1913		1914-1940	
Tropical Africa				
British West Africa	palm-oil & kernels	cocoa	cocoa	palm-oil & kernels
French West Africa	groundnuts	gum & resins	groundnuts	cocoa
French Equatorial Africa	timber			
German/British East Africa	sisal	coffee	cotton	coffee
British Southern Africa	gold	cattle	copper	tobacco
Portuguese Africa	rubber	sugar	diamonds	coffee
Belgian Congo	rubber	ivory	copper	diamonds
Ethiopia	coffee	hides & skins	coffee	hides & skins
Southeast Asia				
Burma	*rice*	teak	*rice*	teak
Malaya	tin	rubber	rubber	tin
Thailand	*rice*	tin	*rice*	tin
Indochina	*rice*	fish	*rice*	rubber
Netherlands Indies	sugar	coffee	sugar	rubber
The Philippines	hemp	sugar	sugar	hemp

Sources: Online Appendix Chapter 2

Figure 2.2 The share of rice in total export revenues of Southeast Asia, 1850-1940



Source and notes: Online Appendix Chapter 2

Hence, from mid-century a clear division in regional trade specialisation emerged, where the Southeast Asian mainland produced rice in predominantly smallholder farming systems, while in the archipelagos and the Malayan peninsula, trade growth was based on plantation crops. Malaysia, which became the largest net-importer of rice in the region, benefitted most from this pattern of regional labour division. In the Federated Malay States, formed in 1895, tin mining began to attract large British and Chinese investments from the 1850s onward. Tin exports were complemented by a big rubber boom in the early 20th century in which foreign-controlled plantations as well as Malay smallholders participated (Drabble 2000, pp. 53-62). By 1940, the peninsula had become the most affluent region in Southeast Asia, combining a string of vibrant port-cities with a highly commercialised hinterland. The peninsula and its central entrepôt, Singapore, became a magnet for Chinese and Indian workers, merchants, moneylenders, gamblers and investors (Huff 1987). Without the rice trades this regional division of labour was inconceivable.

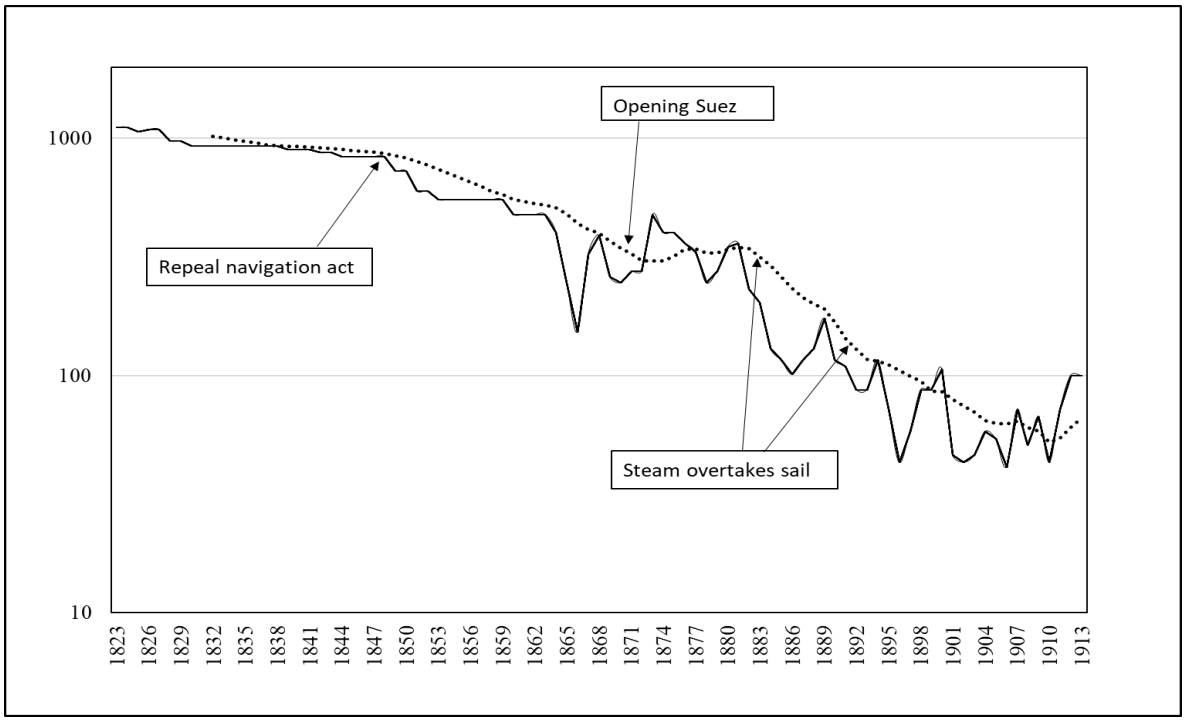
Geographies of Globalisation

The shift towards free trade during the 19th century partly reflected a 'Smithian' transition in economic ideology centred around concepts of *laissez-faire* and the *invisible hand*, but it also reflected the rise of Britain as the global hegemon. The Navigation Laws, in place since the mid-17th century, had restricted operations of foreign shipping companies within the British Empire for about two centuries. Their repeal in 1849 created a watershed in British trade and shipping policy. Similar steps were taken in tariff reductions. Other European countries followed suit. Trade liberalisation allowed companies to build up new positions and enhanced competition. The abolition of trade monopolies and the relaxation of shipping restrictions initiated significant declines in ocean-freight rates which were compounded by new transportation technologies.

Figure 2.3 shows how nominal freight rates from Java to the Netherlands dropped by a factor of 10 between 1823 and 1913. Also in real terms the decline was dramatic. Up to 1849, shipping to and from Java had been a quasi-government monopoly of the *Nederlandsche Handel-Maatschappij* (NHM). Following the British repeal of the Navigation Acts, the Dutch opened the market for new entrants, leading to a 50% drop in freight rates in the next 15 years (Korthals Altes 1994). After 1870, sail began to give way to steam. Early steamships devoured coal and Sub-Saharan Africa as well as Southeast Asia lacked major coal deposits, so that the fuel for outbound journeys to Europe first had to be imported from Europe (Harley 1989). As a result, sail freight rates remained substantially below those of steam.[4] As growing volumes of coal were exported to a widening string of transfer stations in places as far apart as Dakar, Cape Town, Mauritius, Zanzibar, Aden, Bombay, Calcutta, Colombo, and Singapore, steamships became cost-effective and further drove ocean-transportation costs down, only interrupted by a dramatic but short-lived spike in freight prices during World War One (Jacks and Stuermer 2021).

[4] High fuel costs also explain why the opening of the Suez Canal in 1869, a route specifically suited to steamers – and notoriously difficult for sailing ships due to fierce desert sidewinds – did not lead to an instant decline in global freight rates (cf. Figure 2.3).

Figure 2.3 Nominal freight prices Java to the Netherlands, 1823-1913 (log scale; 1913 = 100)



Source and notes: Online Appendix Chapter 2

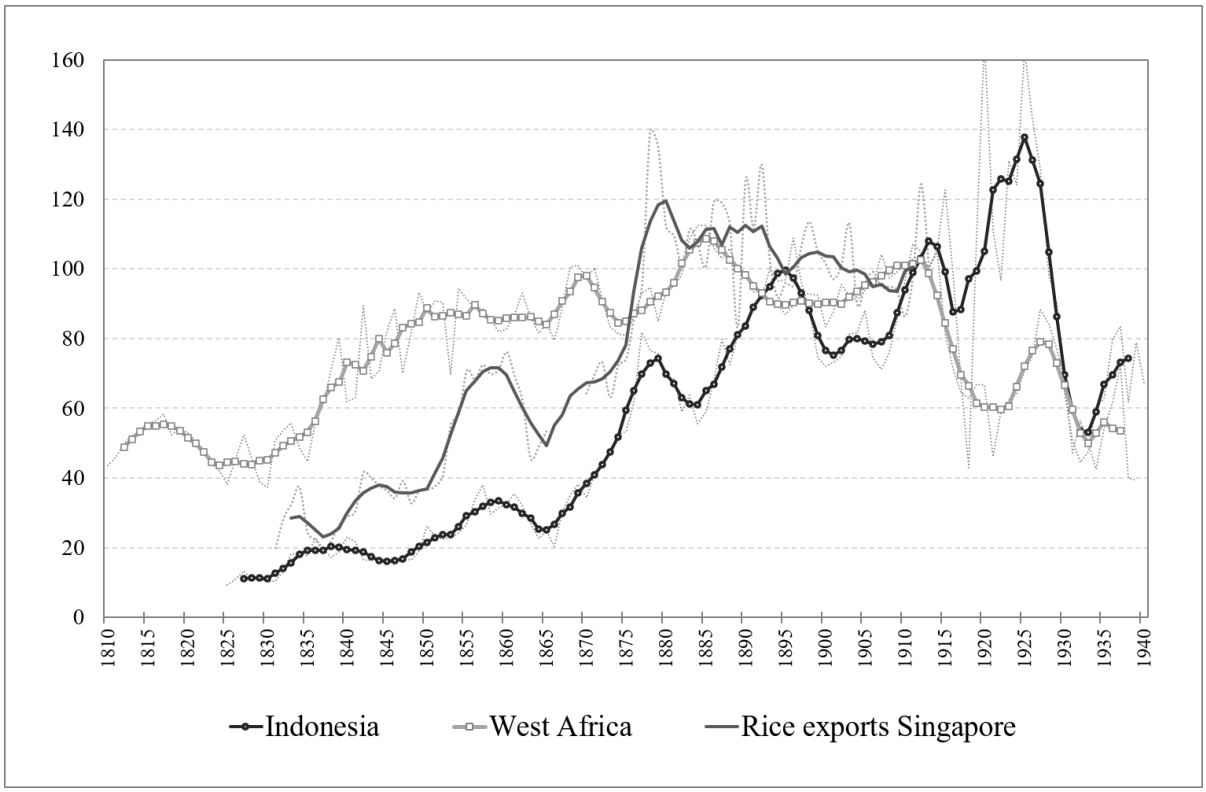
The surge in European demand for industrial inputs such as palm-oil, rubber and tin, as well as consumer luxuries like sugar, cocoa and coffee, spurred a long secular boom in the terms of trade of the Asian and African tropics (Williamson 2011, Francis 2015). Rice was an integral part of this trade boom as it served markets across Europe, North America and Asia. Figure 2.4 shows the terms of trade boom for Indonesia with the Netherlands, one of the biggest and longest lasting booms in 19th century world trade (Williamson 2011, p. 42). The terms of trade for West Africa with Britain and France improved at a slower pace from the 1830s to 1890s, but their subsequent decline was also less steep. The terms of trade for Southeast Asian rice experienced a dramatic boom from 1850 to 1880 relative to the commodities imported into Singapore. This boom tapered off due to the effective supply response of Asian rice farmers, moneylenders, millers and merchants, stabilising prices at a relatively high plateau in the 1880s to 1910s.

It was not that Africa had much less to offer to the industrialising economies of the North Atlantic. In fact, Africa contained a considerably larger diversity of crop ecologies and mineral deposits than Southeast Asia. The main difference was rather that declining ocean transportation costs unlocked larger stretches of the Southeast Asian land frontier at once.[5] Asia's export producing zones were located closer to harbours with seagoing draught and were also better connected to the coast via natural waterways and earlier completed railway arteries. Moreover, declining shipping costs *also* greatly enhanced intra-Asian seaborne trade and immigration, a boon that largely bypassed Africa for obvious geographic reasons. The labour migrants who arrived in Southeast Asia predominantly did so by ship. In contrast, in Tropical Africa, the great majority of migrant workers engaged in export production arrived over land and, during the 19th century, mostly on foot. Headloading was common across Africa to 'ship' goods from one place to another (see Figure 2.5). From the turn of the century onwards newly constructed railway tracks and the arrival of lorries considerably shortened African migrants' journeys,

[5] See for the concept of 'commodity frontiers' Moore (2000) and Beckert et al. (2021).

and unlocked larger parts of the African interior to international trade. Little wonder that Southeast Asia was lifted up by the 19th century globalisation wave first. All the more remarkable how Tropical Africa caught up after 1890.

Figure 2.4 Net barter terms of trade of Indonesia, West Africa and Singaporean rice, 1810-1940 (5-year moving averages)

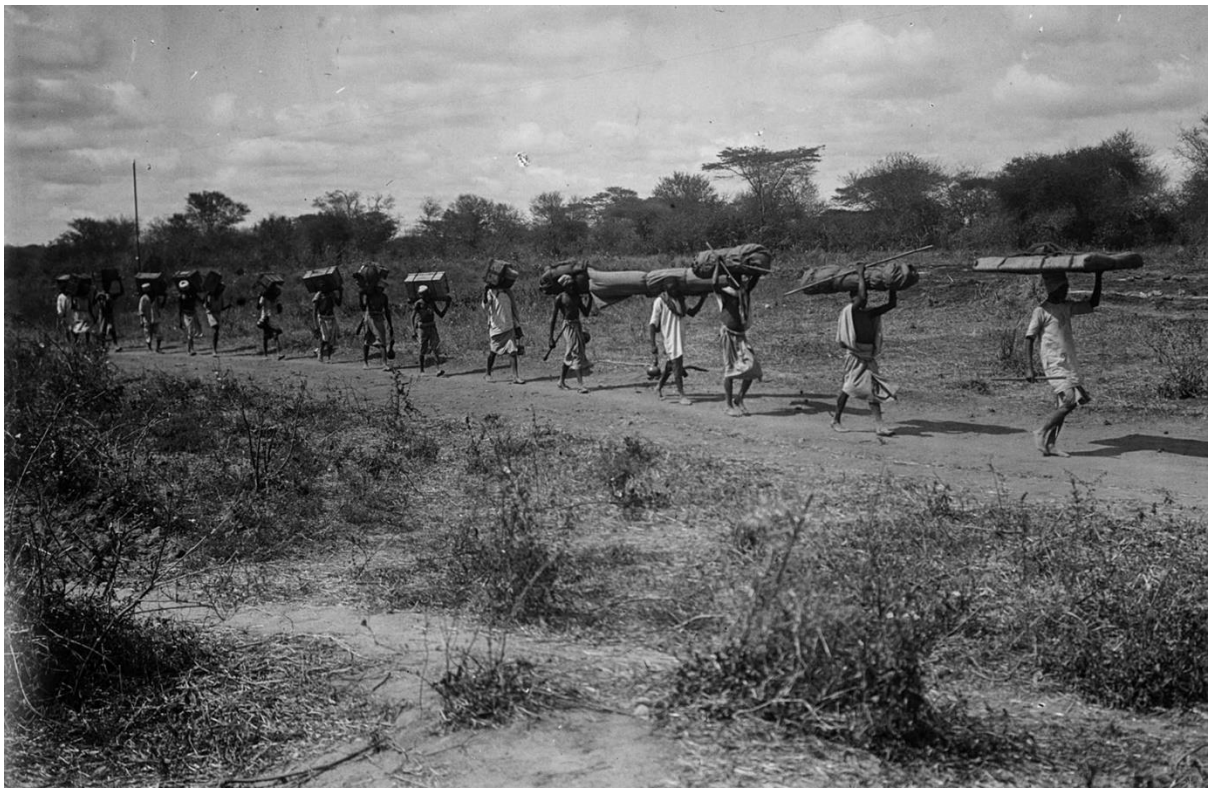


Sources and notes: Online Appendix Chapter 2

Migration

The shifting commodity frontiers of the African and Asian tropics required vast supplies of human labour. However, with notable exceptions such as Northern Nigeria, the Great Lakes area, Java and the Red River delta, the hinterlands were sparsely populated. In contexts of land abundance, peasant farmers were not eager to swap their autonomy for the insecurities and indignities of contract labour, while the wage premiums needed to lure them into wage work easily eroded profit margins. Even if employers were prepared to pay market-clearing wages, diseases or limited local food supplies could pose other constraints. Labour shortages in both regions were thus often accommodated through coercion. Violent recruitment, forced cultivation schemes, large-scale land alienation, anti-vagrancy laws, labour corvée regulations, cash-tax obligations and quasi-military service formed a range of policy options used in different colonial contexts to mobilise the labour that foreign and domestic farmers, plantation-owners or mining companies needed. The more effective solution, however, was 'voluntary' migration by people from densely populated and impoverished 'labour reserves' where the prospect of higher earnings sufficed to incentivise mobility.

Figure 2.5 Head porterage in Tanzania, 1903



Source and notes: Online Appendix Chapter 2

Mass migration was integral to the 19th century globalisation wave and colonial powers had a keen interest in facilitating it. Two differences are crucial to understand how this played out in Africa and Asia. First, in Tropical Africa the great majority of cross-border migrants originated from *within* the region, albeit not necessarily from within the same empire (de Haas and Frankema 2022). In Southeast Asia, the lion's share of labour migrants came from densely populated areas in Eastern India and Southern China where the exit of surplus labour, often accompanied by investment capital, relieved local economic strains (Kaur 2004, Macauley 2021). Second, the timing of the migration waves differed as these, unsurprisingly, coincided with the main periods of export growth. In Tropical Africa voluntary labour migration was largely, albeit not exclusively, a colonial phenomenon, peaking in the middle decades of the 20th century and in some places in the early post-colonial era (de Haas and Frankema 2026). In Southeast Asia immigration rates rose already in the 1840s and tapered off during the Depression of the 1930s, to end abruptly with the Japanese invasion in World War Two. In both regions, mass migration had to be facilitated by increasing local food supplies. In Southeast Asia, rice was vital to keep the cost of living and related subsistence wages relatively low. In Africa, additional food more often had to be grown on the side. These differences resulted in significantly higher rates of population growth in Southeast Asia before 1940.

Table 2.2 sums up the registered number of immigrants in a selection of African and Asian countries between 1918 and 1970. These estimates are mostly based on population census records. The migrant stock is expressed as a percentage share of the overall population and the selected years represent their peaks. Direct comparisons of migrant shares are tricky for the definition of migrant status varied across censuses, depending on specific citizenship regulations. For example, children born to Chinese immigrants in Thailand were considered Thai citizens and would not be recorded as ethnically Chinese, whereas in neighbouring Malaysia, the ethnic distinctions between the indigenous Malay and foreigners

were strictly maintained. Moreover, in Tropical Africa, where migrants would mostly enter via land borders, large undercounts are more likely than with overseas migrants who were usually registered in the port of arrival. The size of a country also matters. In Burma, the influx of Indian migrant workers was meticulously recorded, but a comparable mass movement of workers overland from upper to lower Burma was not. Likewise, in colonial Nigeria, hundreds of thousands of migrants would come down from the North to the South without crossing a formal border. Such domestic movements occurred in many places where densely populated core areas, such as Tonkin in Northern Vietnam, were joined with sparsely settled regions, such as the Mekong Delta, in a unified polity.

Bearing such issues of comparability in mind, we can still distil some important patterns from Table 2.2. For instance, both regions include an exceptional migration magnet. The spectacular growth of tin mining and rubber cultivation in Malaya has already been alluded to. In addition, Singapore grew from about 10,500 inhabitants in 1824 to over 225,000 enumerated persons in 1901, largely as a result of Chinese immigration. The Chinese share in the Singaporean population rose from c. 31% in 1824 to 72% in 1901 (Saw 2012, pp. 9 and 29). In Africa, Côte d'Ivoire stood out because of its booming cocoa and coffee exports. Whereas the colony initially struggled to attract migrants from the southern parts of Mali and Burkina Faso – migrants preferred the Gold Coast because of higher wages and less coercion – after the relaxation of institutional constraints on African peasant production in 1946, the number of immigrants jumped from about 100,000 in 1950 to close to one million in 1965 (Frankema, Green and Hillbom 2016, pp. 256-260, de Haas and Travieso 2022, p. 244). Migration was further enhanced by the open border policies adopted under the first independence government of Félix Houphouët-Boigny (1960-1993). Such open door policies were common in large parts of Africa before the economic depression of the 1970s-1990s struck, leading to new restrictions on African mobility such as the introduction of passports and occasional mass expulsions of foreigners (Frankema 2022).

Table 2.2 Immigrant stocks in Southeast Asia and Tropical Africa, 1918-1970

	year	immigrants (thousands)	immigrants % total pop	prime countries of origin (% of immigrants)
Southeast Asia				
Malaya	1931	1,924	50.8	China 66.8; India 29.7
Thailand	1929	1,013	8.8	China 44.0; India & Malaya 37.5
Burma	1931	1,018	6.9	India ~ 95-100
Indonesia	1930	1,233	2.6	China 77.6
Indochina	1921	293	1.7	China 92.7
Philippines	1918	44	0.6	China 67.9
Tropical Africa				
Côte d'Ivoire	1970	1,186	21.9	Burkina Faso 52.5; Mali 24
Zambia	1960	361	11.4	Malawi 20.5; Angola 11.7
Zimbabwe	1960	387	10.2	Malawi 34.8; Zambia 11.2
Uganda	1960	772	10.1	Rwanda 32; Kenya 20.4
Gold Coast	1931	289	9.1	French West Africa 67.9
Senegal	1960	932	5.0	Guinea 35.4; Guinea-Bissau 20.1
Tanzania	1960	477	4.8	Mozambique 29.1; Kenya 21.3

Sources and notes: Online Appendix Chapter 2

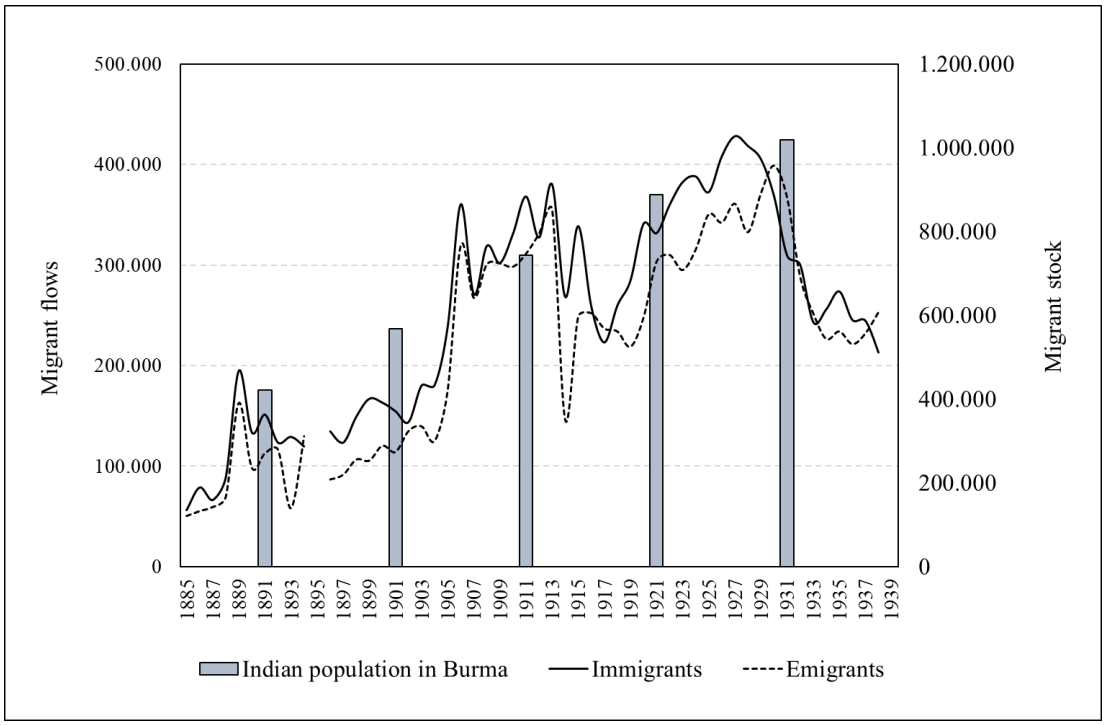
In Southeast Asia all countries were open to the influx of Indian and Chinese migrant workers, with the exception of the Philippines under American rule. The US was reluctant to facilitate a further growth of Chinese merchant networks in the archipelago. In the Netherlands Indies, where the Chinese immigrant community consisted not only of coolie labourers, but also of commercial intermediaries employed in retail and wholesale trading and small manufacturing industries in major cities such as Jakarta and Surabaya, such restrictions were not in place. The Chinese were granted important tax farms by the Dutch colonial authorities, which provided them with the right to collect revenues from gambling, opium consumption and all sorts of retail trades in return for a fixed sum paid to the government (Wahid 2013).

The prevalence of slavery was one of several reasons why the development of commercial agriculture in Tropical Africa lagged behind Southeast Asia. Far into the 19th century, slave raiding activities made long-distance voyages particularly hazardous. Even though forced labour was practised and sanctioned through a variety of policies after slavery had been abolished, the real shift from forced to voluntary migration occurred only after 1900 (de Haas and Frankema 2022). Migration histories pertaining to the Central African Copperbelt reflect this transition well. While the authorities in the Belgian Congo permitted recruitment companies to mobilise workers at gunpoint in the 1910s, during the interwar years, when copper revenues soared, policies of coercion gave way to policies of compensation and labour stabilisation (Juif and Frankema 2018).

Up to 1960, most of Africa's labour migration was circular rural-rural migration. De Haas and Travieso (2022) have studied four of the largest and longest lasting rural-rural migration waves. These include the migrants from Ruanda-Urundi who assisted with the cultivation of cotton in Uganda, the Burkinabe from French West Africa who migrated to the cocoa-farms in the Southern parts of the Gold Coast and Côte d'Ivoire, the large annual North-South flow in Nigeria towards the cocoa and oil-palm plantations, and the migration from present-day Mali into the groundnut farms of the Senegambia which originated already in the early 19th century long before colonial rule. Portuguese Mozambique and British Nyasaland were key sending areas for the mines in respectively South Africa and the Central African Copperbelt. The high tide of most of these migrations occurred in the half century between 1920 and 1970. In many cases the annual inflow constituted more than 10% of the resident population and in the exceptional case of the Buganda province the share of immigrants even rose to over 40% in the 1950s. In all cases considerable wage differentials created tangible incentives. During the dry season of 1952-53 alone about 190,000 migrants were counted travelling from the North to the South of Nigeria in search of temporary agricultural jobs (de Haas and Travieso 2022, p. 233). With the collapse of agricultural exports in the 1970s and 1980s such rural-rural migrations vanished, while urban destinations had become more attractive (Meier zu Selhausen 2022).

Itinerant migration, driven by the seasonality of agriculture, also dominated in Southeast Asia. The annual migration cycles into Burma from poverty-stricken areas in India such as Madras and Bengal are exceptionally well documented. Figure 2.6 presents the Indian migrant flows and stocks. In her classic study of the Burmese rice industry, Cheng (1968, chapter 5) explains how several hundred thousand immigrants arrived each year, especially in the months of October to December, to work in the rice fields, the rice mills, in transportation, at dockyards or at public works projects. Migrants usually stayed for two to four years, sending remittances home to support their families. The peak of their return voyages was from March to May, at the beginning of the slack season. While land ownership remained predominantly in the hands of Burmese owner-cultivators, Indian migrants engaged on a large scale in tenant-cultivation, or hired themselves as agricultural labourers, individually or as part of gangs of up to 60 workers (Cheng 1968, p. 129). While migrant workers remained a minority in rice cultivation, in the rice mills Indian coolies as well as skilled workers formed the great majority (Cheng 1968, pp. 131-34).

Figure 2.6 Indian migration to Burma, 1885-1939



Sources and notes: Online Appendix Chapter 2

A more in-depth comparison of migration patterns in Tropical Africa and Southeast Asia quickly runs into the limitations of historical knowledge. Solid estimates of the total size of long-distance labour migration that occurred between as well as within colonies are lacking. McKeown (2004, p. 156) puts the total number of migratory movements from India and China into Southeast Asia, the wider Indian Ocean basin and the Pacific rim for the century between 1840 and 1940 at 48 to 52 million. These are mere guesstimates. Similar ballpark estimates for Africa south of the Sahara remain absent, even though the Global Bilateral Migration Database provides more solid benchmarks of migrant stock after 1960.

More important for our comparison even is the question about the diversity of jobs taken up by migrants. There is no doubt that in both regions unskilled workers formed the majority, but we also know that a sizeable minority of Asian labour migrants took up skilled jobs, and that many of these jobs had a particular ethnic profile. Hup and de Zwart (2026) have shown that perhaps a majority of the Chinese immigrants into the Netherlands Indies performed skilled work in rice mills, sugar estates or urban services, and were paid comparatively high skill premiums. Skilled Indian workers ran the rice mills in Burma. In the Malayan railways, senior administrative positions were reserved for Europeans, but stationmasters were North Indians or Jaffna Tamils, while technicians, surveyors and draughtsmen were predominantly Chinese. Clerical positions, in turn, tended to be filled by Jaffna Tamils or Malayalees from Kerala (India). Sikhs from North India dominated the railway police and security services (Kaur 2004, pp. 136-7). The Chettiyars from Tamil Nadu specialised in money lending and were found in various Southeast Asian countries, but especially Burma, Malaya and Singapore.

In Africa skilled migrants were not uncommon either. Indian migrants dominated the retail sector in emerging East African cities and ran the cotton ginneries in Uganda, where the cotton was handled by Indian merchant communities to be processed in Indian textile mills. Specific ethnic profiles and martial skills were also demanded by colonial armies. Yet, given the fact that Southeast Asia joined the globalisation wave earlier, and received most immigrants from outside the region, it is tempting to speculate that skilled work was a more common source of mobility. That said, the degree to which

educated and trained workers contributed to the broader commercialisation process in both regions is a comparative question that requires more research to underpin conclusive statements.

What is certain, however, is that the influx of millions of migrants from outside the region contributed to a faster rate of demographic growth in Southeast Asia across the long 19th and early 20th century. Even though migration in both regions was mostly circular in nature, the permanent settlement of millions of Indians and Chinese pushed total population growth rates of Southeast Asia over 1% per year after 1850. While the African population no longer experienced the reproductive losses of export slavery, there is no evidence that demographic growth was above 0.5% anywhere before the 1930s. Population estimates of Tropical Africa prior to 1940 remain mere educated guesses (Manning 2010, Frankema and Jerven 2014), but if we take these guesses at face value, Southeast Asia held roughly half of the Tropical African population in 1850 (48 vs 91 million), while for 1940 the estimates fall within the error bounds (142 vs 159 million). It is again unknown what the migrant contribution to Southeast Asian population growth has been, as natural rates of population growth in Southeast Asia were also significantly higher than in Tropical Africa. This difference may reflect differences in disease environment as well as the earlier onset of vaccination campaigns in Southeast Asia (Bosma 2019, pp. 23-43), but it is also possible that, despite episodes of famine and endemic poverty, more stable supplies of rice benefitted the general health of the population.

Conclusion

This chapter has highlighted three factors that set Tropical Africa and Southeast Asia apart after 1820. First, the per capita exports of Southeast Asia grew faster across the 19th century. Tropical Africa caught up during the first half of the 20th century, and especially during the 1930s when Southeast Asian exports were particularly hard hit by the Great Depression. By 1940, both regions were on a par and this remained the case up to the early 1970s. Second, around 1900 rice had become the leading export commodity of Southeast Asia, comprising around one quarter to one third of total regional exports. Rice dominated the trade within the region, and was one of several key commodities exported to North Atlantic and other Asian markets, China and India in particular. Tropical Africa, by contrast, did not specialise in the export of staple food crops. While intra-African trade in millet and maize was not uncommon, the volumes paled in comparison to Southeast Asia. Third, millions of labour immigrants from China and India converged upon Southeast Asia's commodity frontiers. In Tropical Africa mass migration was also impressive, but the great majority of migrants came overland and from within the region, which led to important disparities in regional demographic growth prior to 1940. Rice exports played a key role in Southeast Asian immigration: its production attracted workers, its trade attracted merchants and its consumption allowed millions of immigrants to specialise in non-food agriculture, in trade, or in a widening range of urban service jobs.

3 Markets

Markets: The Long View

Across Southeast Asia and Tropical Africa markets were fundamentally, yet unevenly, transformed by the trade revolution highlighted in Chapter 2. One of the effects was the convergence of prices in Asian and African port cities with those prevailing in the world's economic core, the Northern Atlantic. This process began much earlier than the 19th century, but it was conditioned by the high cost of shipping prior to the advent of steam and the abolition of trade and transport monopolies. In the 16th century it would have been economically unthinkable to trade rice from Asia to Europe in any great quantities. Long-distance trade rather focused on luxuries like pepper and nutmeg, markets in which the growth of global trade pushed down price gaps between Europe and Asia (de Zwart 2016). Africa, too, was gradually integrated into global markets, though in a much more exploitative fashion. In the early modern era prices converged for its most important export, enslaved people. For example, slave price gaps between Portuguese Angola and Brazil declined from the 17th century onwards (Rönnbäck 2009). Africa also exported commodities such as gold, ivory and ostrich feathers, but on a relatively small scale. Important as they were in setting in motion the dynamics of globalisation, these trades did not affect the daily economic lives of most Asians and Africans. With the exception of the slave trades, the traded volumes were simply not yet large enough.

This chapter focuses on the processes of market integration that occurred after 1820. We explore integration in both regions at three levels: first, each region as a whole with the rest of the world; second, different colonies and countries within each region with each other, and third, domestic markets within colonies or countries integrated among themselves. We show that, at all levels, integration occurred more profoundly in Southeast Asia than in Tropical Africa. To underpin this argument, we follow the traditional focus in economic history on the behaviour of *prices* in relation to the changing costs of transportation over water and land.[6] We show that prices for staple grains integrated much earlier and more substantially in Southeast Asia than in Tropical Africa, with several consequences, including more stable and less seasonal prices in major urban centres, which was a necessary if not a sufficient condition for the growth of urban economies. Cities were generally larger in Southeast Asia than in Tropical Africa by 1950: Bangkok and Manila, for example, were well over 1 million inhabitants in size, while a major African city like Ibadan had fewer than half a million. In addition, market integration led to a higher concentration of market-supporting workers such as moneylenders, traders and insurance agents, who were essential in providing inputs during the Green Revolution and during early industrialisation.

From Water to Overland Transportation

In Chapter 2 we showed how the declining ocean-bound transportation costs enabled Burma to become the world's largest rice exporting economy, followed at a distance by Thailand and Indochina. Most of the rice in these countries was produced in the vicinity of port cities. Yet, in order to expand production the reduction of land-based transportation costs became an increasingly important factor in the process

[6] New communication technologies like the telegraph also played a role in promoting market integration (Hao, Li and Nye 2022) though comparative research on the impact in Southeast Asia and Africa is still mostly lacking.

of market integration. Water and land transportation were complementary, and the decline in ocean-freight rates opened up new investment opportunities in overland infrastructure.

Despite Southeast Asia's relatively more developed river networks, overland transportation remained expensive in locations where rivers could not be relied on. In Africa, where navigable rivers are relatively few, overland transportation was even more onerous due to the tsetse fly, which spreads trypanosomiasis that effectively rules out the use of beasts of burden in the forest belt. A 1907 inquiry into mechanised transport in the British Empire gives a relatively good set of data on which to make comparisons of transportation costs at a given point in time across Africa and Southeast Asia, as well as on the means by which goods were transported (House of Commons 1909). In Gambia groundnuts were 'carried on the heads of men and by pack donkeys to the river'; in Southern Nigeria, in the tsetse fly zone, agricultural produce was carried 'by head-load usually' though Hausa traders 'employ also pack donkeys and bullocks'. In Northwestern Rhodesia (today Zambia), goods were carried 'by native carriers' (i.e. human porters) 'or ox-wagons'. In the Gold Coast, where the cocoa boom had provided the financial means for private investment in mechanised transport, goods like cocoa and palm oil were carried 'by motor lorries, rolled in casks along the road, by head loads; hand trucks'. These methods of transport were expensive: the cost of transporting goods by lorry in the Gold Coast was 23 pence per ton-mile, around the same as rolling palm oil by cask. The absence of tsetse flies in Southeast Asia and the corresponding prevalence of efficient pack animals meant that overland transport costs could be lower than in Africa: in Singapore, bullock cart transportation was a little cheaper, at around 20 pence per ton-mile, but the same method was considerably cheaper in Sarawak and Penang, where labour was considerably cheaper (6 pence per ton-mile and 4.2 pence per ton-mile respectively).

The biggest impetus for domestic market integration came with the development of railways and roads. Already during the Napoleonic era the French government ruling over the Dutch Republic commanded the governor of Java, Herman Willem Daendels, to build the Great Post Road (*Jalan Raya Pos*) to protect the island against British invasion (Nas and Pratiwo 2002). The road, stretching over a thousand kilometres, was completed in barely one year (1808-1809) through the excessive use of forced labourers, thousands of whom died during its construction. The road connects the northwest and the northeast of Java, linking Jakarta, Bogor, Semarang, and Surabaya. The first railway line (Semarang-Tanggung) opened in 1867. By 1900, Java had one of the densest railway networks of all of Asia. In the 1880s, the French also began construction of long-distance railways in Indochina, while in Thailand the small Paknam Railway was opened in 1893, followed shortly after by the much longer standard-gauge railway from Bangkok to Khorat, this time under the aegis of the Siamese state.

In Tropical Africa the first major project was the Dakar-Saint Louis line in French Senegal, opening in 1885 and connecting its two most important coastal settlements, but also opening up the region of Kajoor for the expansion of groundnut cultivation (Moitt 2001). The British were only marginally behind, opening railways in what are now Ghana and Nigeria in the late 1890s, as well as beginning lines in the East African colonies. By the 1920s, or thereabouts, there was a relatively extensive rail network in Africa, though the density of lines remained thin.

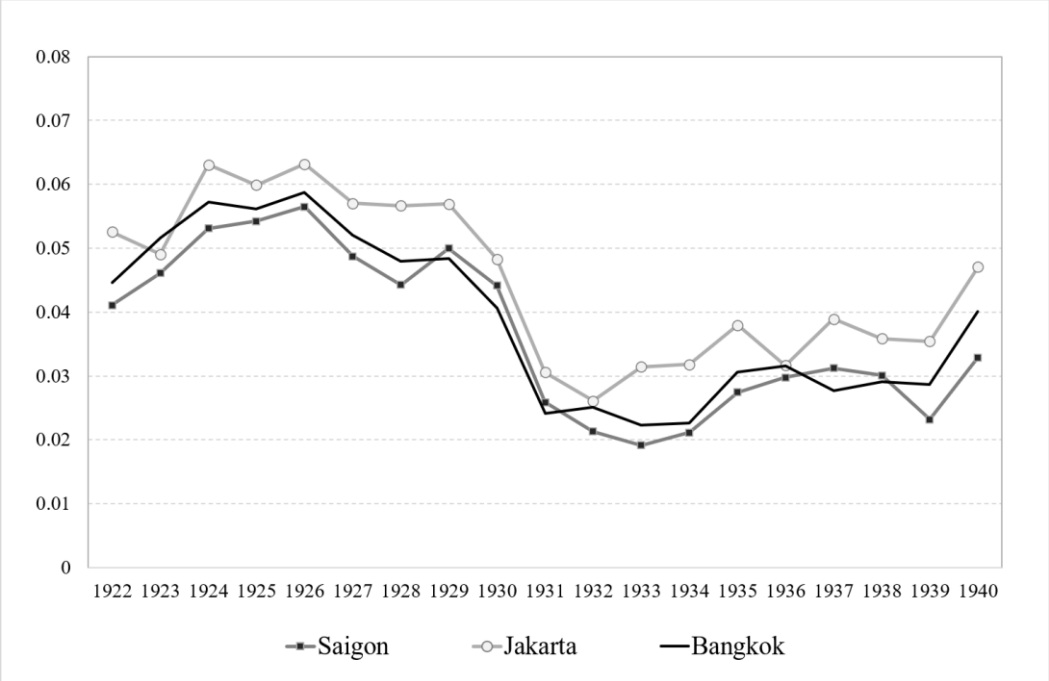
In both regions, the main purpose of the railways was to facilitate the export economy. Railways drastically cut transport costs for areas along their routes compared to traditional methods of moving freight. But even for African railways designed to maximise the export of cash crops and minerals, the railways also proved a useful way of transporting domestic foodstuffs to areas of concentrated demand. In the Belgian Congo, for example, the railway line that connected the Katanga copper mines was vital to transport foodstuffs to the miners, creating a long corridor of dense market-oriented agriculture beginning in the late 1920s (Lasserre 1956, de Nil 2025). Because railways were, along with river

transport, considerably cheaper than any other means of land transport, they allowed trade of low-value bulk commodities like rice or maize over considerable distances. For example, on the Kayes-Niger railway, in what is now Mali, millet was transported an average of 197 kilometres in 1923-4, and rice an average of 296 kilometres (Westland 2025). But these were only narrow corridors within vast regions. Outside them, food crops were much less widely traded.

Market Integration at Different Spatial Scales

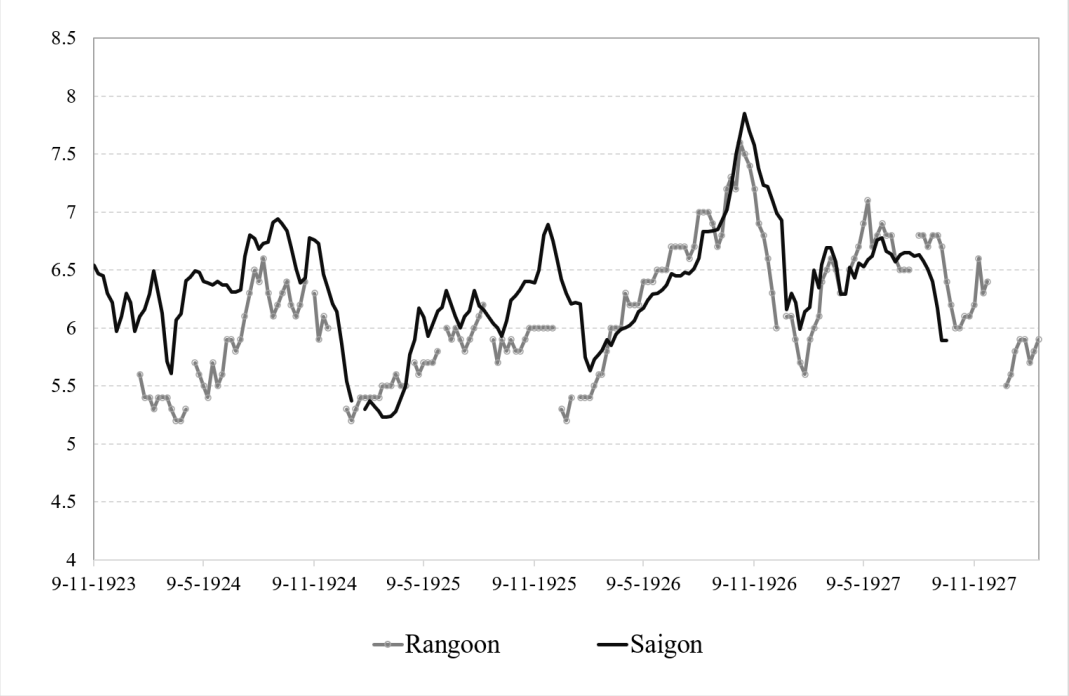
Given the wider availability of waterways and the earlier development of railways and feeder-roads, it is no surprise that regional markets in Southeast Asia became more deeply integrated. Kobayashi (2022, 2026) has shown that this process of intra-regional rice market integration was already ongoing from the 1830s onwards, with Singapore playing a pivotal role as the leading rice trade entrepôt. Consequently, in the early 20th century, rice prices in exporting ports and importing ports followed one another in a tight band. This can be seen in Figure 3.1, where we compare the annual price of milled rice in two 'sending' ports, Bangkok and Saigon, with a 'receiving' port, in rice-deficit Java. It is also evident at a more frequent time-scale, when we compare weekly prices in two exporting ports like Saigon and Rangoon (see Figure 3.2). In each case, rice prices moved closely in line with one another in cities separated by over a thousand kilometres. This integrated regional rice market was a key factor in the rapid rise in urbanisation in Southeast Asia, as cities like Singapore or Manila were no longer dependent on their immediate hinterlands, or even on good domestic transportation links, to ensure a reliable food supply with relatively stable prices (Huff and Angeles 2011).

Figure 3.1 Annual price of rice in three cities in Southeast Asia, 1922-1940 (USD/kg)



Source: Online Appendix Chapter 3.

Figure 3.2 Weekly prices of paddy in Saigon and Rangoon, 1923-1927 (Piastres/100 kg)

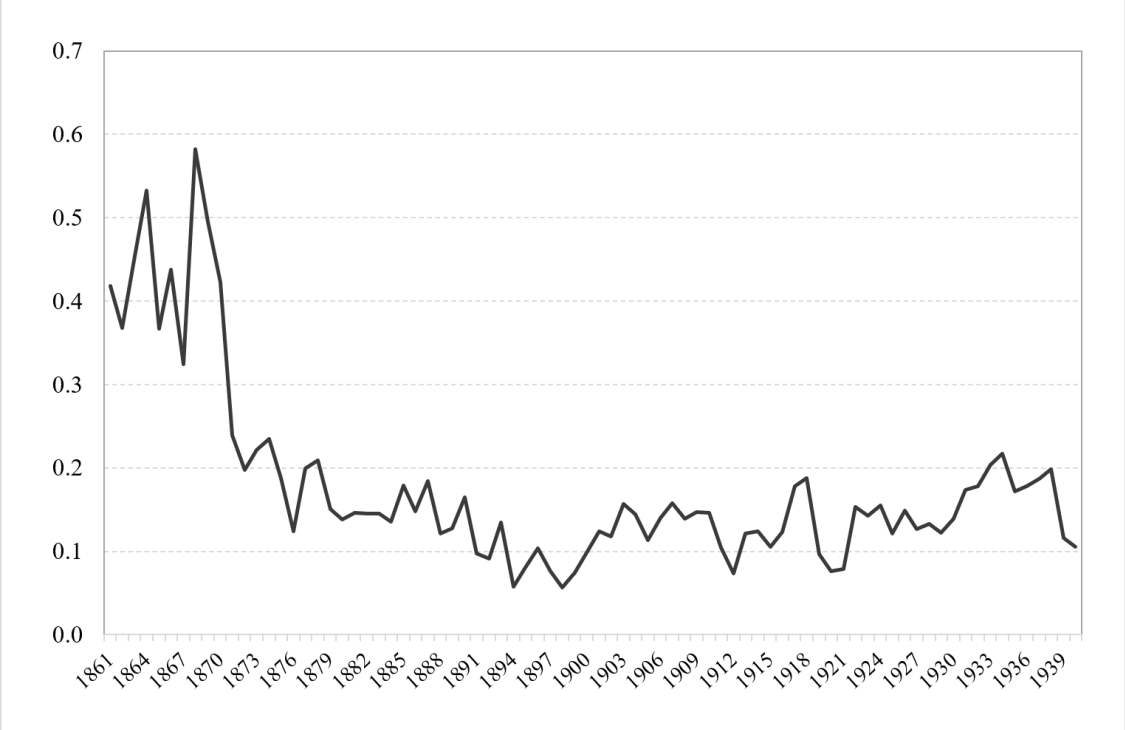


Sources: Online Appendix Chapter 3.

Not only did markets begin to integrate regionally in Southeast Asia, they rapidly did so *within* colonies and countries too. Probably the best documented case in the historical literature is the Dutch East Indies. Between the first half of the 19th century and the early 20th century Java experienced a substantial deepening of market integration (van Zanden 2004, Marks 2010). Not only had rice prices in Batavia, Semarang and Surabaya already closely tracked one another since the 1820s, rice prices also became more stable over time, with the notable exception of the 1840s famines. In Burma, the undisputed preeminent 'rice bowl' of Asia between 1860 and 1940, a similar process took place, albeit a handful of decades later. Figure 3.3 demonstrates the extraordinary convergence of prices in Lower Burma in the late 19th century, and the 1870s in particular. Figure 3.4 illustrates how regular waterborne transport on the Irrawaddy would supply steam powered rice mills. The opening of the first part of Burma's railway network in 1877 reduced transport costs even further. Price dispersion fell rapidly as rice markets within Burma integrated with each other and with the broader Asian rice economy.

In contrast, structural food import dependence for the most part came much later for Africa, albeit with some notable exceptions. For example, due to easy coastal access, Senegambian workers in town and country began to rely on cheap Indochinese broken rice rather than locally produced grains already in the early 20th century (Lombard 1993, p. 39). Farmers specialised entirely in groundnuts to the detriment of local food production. But in general, few regional markets for staple foodstuffs emerged before 1940, and where they did, they usually did so thanks to the presence of rivers or easily traversable ocean. One example of this is the Swahili coast, where boats could ferry grain, particularly from the mainland grain plantations to the clove plantations of Zanzibar. Figure 3.5 shows that prices for maize moved relatively closely together between Zanzibar, Mombasa and Dar-es-Salaam in the interwar period – which might be expected, given the long political integration of the coast. What this demonstrates is that farmers and traders in Africa responded to price incentives as readily as their counterparts in Southeast Asia, provided they had the means to transport their crops to locations where they were demanded.

Figure 3.3 Rice market integration in Lower Burma, 1861-1940 (coefficient of variation)



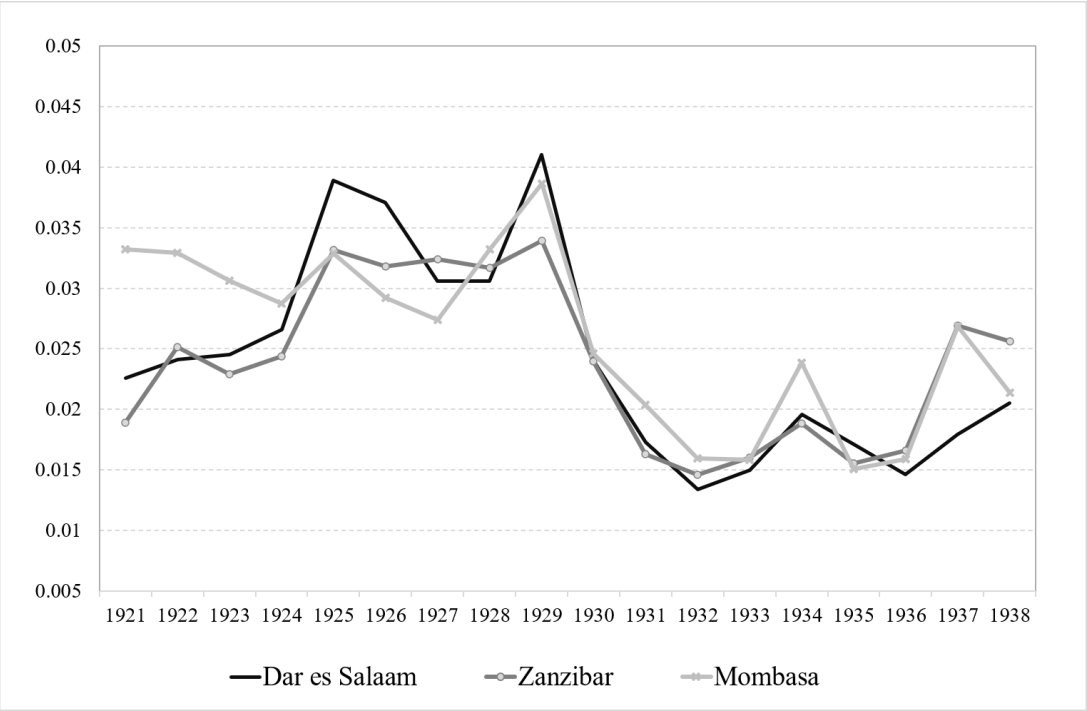
Sources: Online Appendix Chapter 3

Figure 3.4 The Pazundaung creek in Rangoon with rice mills in the background, c. 1885

Source: Online Appendix Chapter 3

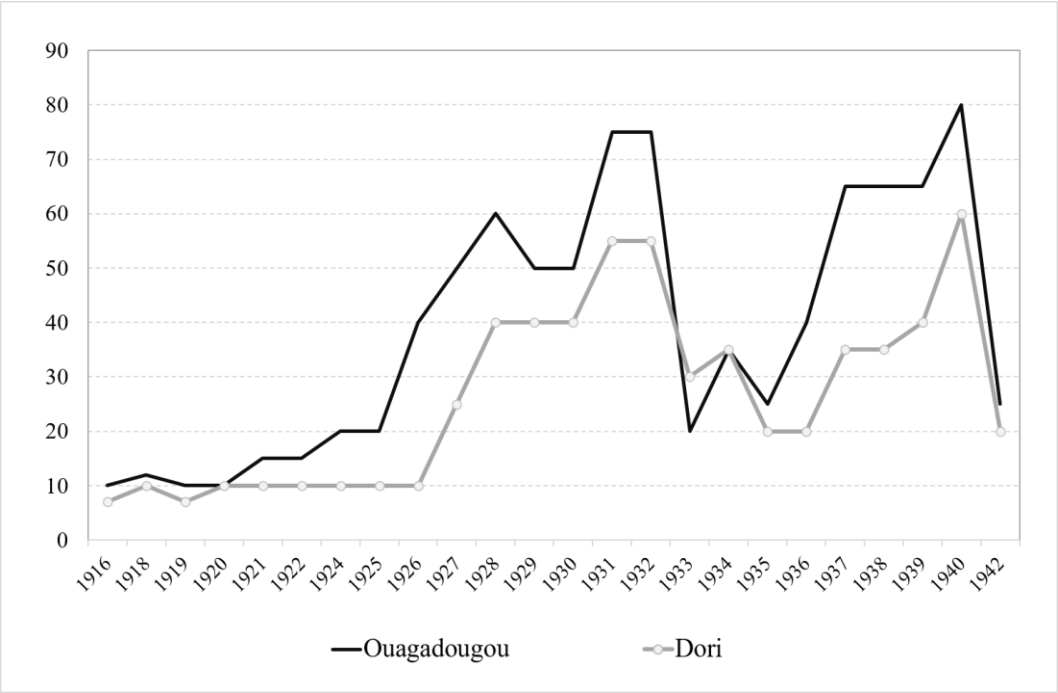
Yet these conditions were exceptional. A more characteristic pattern of prices in Africa is demonstrated in Figure 3.6, where we plot annual millet prices for Ouagadougou and Dori – towns in what is now Burkina Faso some 250 kilometres apart – in the interwar period. While prices follow similar long-term trends, there are large price gaps and long periods in which price developments in Ouagadougou, the capital of the colony, are not reflected in price changes in Dori. Of course, African smallholders did not have some innate aversion to markets, but the geographical conditions for market integration and the *type* of agricultural commercial revolution present in Africa were quite different from its Southeast Asian counterpart. Urban centres in Africa were less able to depend on either their own hinterlands, or on imports of a cheap, stable supply of staple cereals and tubers from neighbouring economies.

Figure 3.5 Average annual price of maize in three coastal cities in East Africa, 1921-1938 (USD per kg)



Source: Online Appendix Chapter 3.

Figure 3.6 Millet prices in Ouagadougou and Dori, 1916-1942 (francs/100 kg)

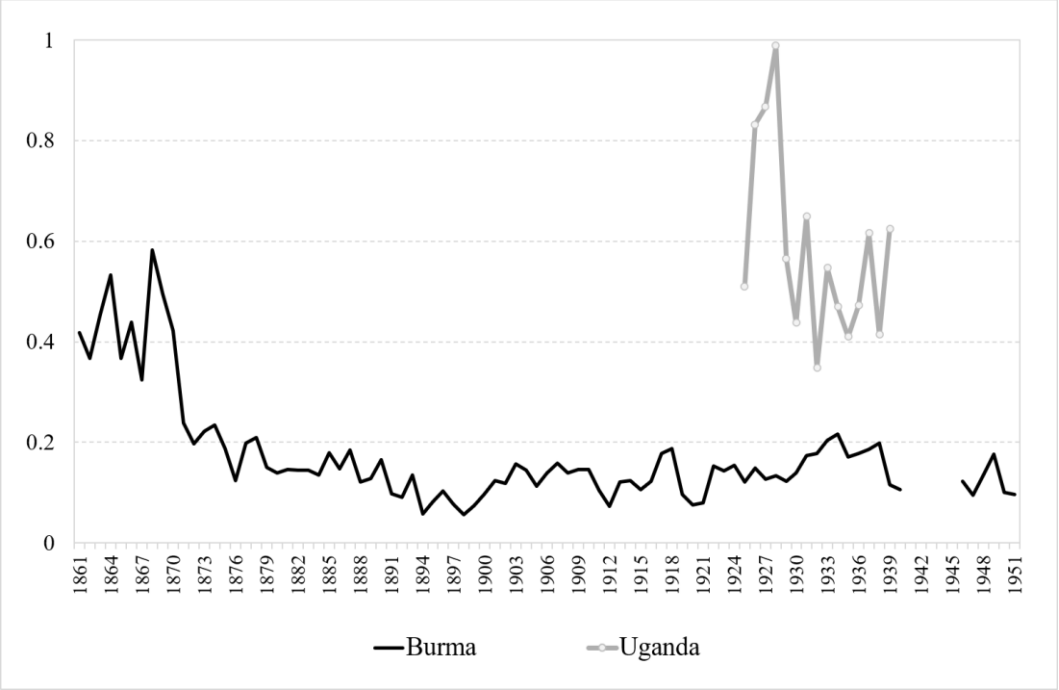


Sources: Online Appendix Chapter 3.

Even when colonial governments began carpeting the continent with railways in the late 19th century, and, shortly after, with motorable roads, the opportunities for food marketing remained scarce. Outside the narrow low-cost corridors, transport costs remained high all the way to independence. Because very few African cultivators were able to export staple foodstuffs like maize and millet, colonial infrastructure tended to be organised around the evacuation of cash-crops, not the supply of food to towns. Figure 3.7 underscores this point. We take 8 towns from Burma, from the data presented above in Figure 3.3, and 8 towns from Uganda in the interwar period. The average bilateral distance between towns in both regions was just around 300km (297 kilometres in Burma and 283 km in Uganda), making the two samples highly comparable. The data show that the level of maize price dispersion across the sample of Ugandan towns during the interwar period was incredibly high, and far above the levels seen in Burma some eighty years prior.

The intra-regional food markets that did exist in Africa were brittle. Consequently, state interventions in grain markets in bad years were often heavy-handed in order to avoid famines (a fact which may have, in turn, discouraged the development of grain markets). Sometimes, this took the form of completely banning interdistrict trade in grain. After the harvest of 1935 in French Soudan (now Mali), for example, all grain exports from the Soudanese districts of Bamako, Kayes, Nioro, Kita, Bafoulabé, Macina and Koutiala were banned by administrative decree. Even in the Copperbelt of the Belgian Congo, one of the most industrialised economies between the Sahara and the Zambezi by 1960, food production for urban centres had to be tightly managed by the colonial authorities, with compulsory cultivation of foodstuffs and a system of fixed prices (Yamba 1990). Late colonial and post-colonial African governments faced a serious ‘food price policy dilemma’, wherein they struggled to choose between low prices for urban workers at the expense of farmers’ incomes, or keeping farmgate prices high at the expense of, often politically potent, urban consumers (Frankema et al. 2025).

Figure 3.7 Coefficient of variation of rice prices across 8 towns in Lower Burma (1861-1951) and maize prices across 8 towns in Uganda (1925-1939)



Sources: Online Appendix Chapter 3.

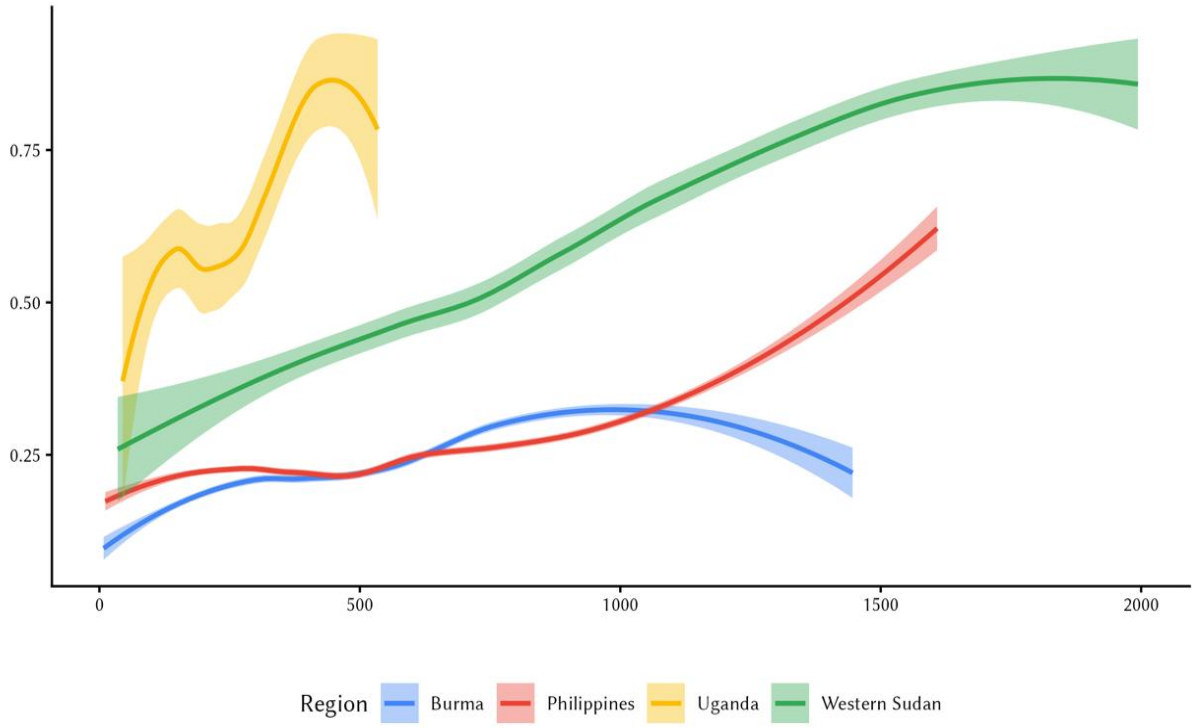
High transport costs for food meant that this problem was particularly acute, since the wedge that freight costs drove between farmgate and retail prices in the cities limited the scope for price intervention. In Southeast Asia, however, the fact that every rice farmer was potentially an exporter meant that expensive infrastructure could serve a much wider catchment area and still hope to recoup its costs. The upshot of this was that *domestic* market integration for staple foodstuffs remained much lower in Africa, and the market as an organising principle of economic life penetrated less profoundly.

Market Integration: A Comparative Lens

Comparisons of market integration are complicated by the inherent spatial heterogeneity of regions: how can we make commensurable the urban structure of Java and Uganda, or the archipelago of the Philippines with the savannah of West Africa? One solution is to express the degree of integration in *cost of distance* terms, that is, by measuring the average price gap between towns at different distances, and constructing so-called distance-price gap gradients per country.[7] To do this, we draw on four food price datasets for the interwar period: rice prices for Burma and the Philippines, millet prices for French Western Sudan (comprising parts of what are now Senegal, Mali, Niger and Burkina Faso), and maize prices in Uganda. Figure 3.8 visualises the resulting gradients.

[7] More technically, we fit a cubic spline function to the absolute value of the log of the price ratio between two locations on the (log) of bilateral great-circle distance between those two locations. We then estimate the value of the function at benchmark distances, with the value of the predicted price ratio at that distance being our estimate of the 'cost of distance'.

Figure 3.8 The cost of distance in Southeast Asia and Tropical Africa, 1919-1940



Sources: Online Appendix Chapter 3

We find that African food buyers in the first half of the 20th century paid a higher price premium for distance than their Asian counterparts. In both the Philippines and Burma, price dispersion rose moderately with distance. Only at distances of around 500-600 km between town pairs was there an appreciable rise in the price-distance relationship. In the Western Sudan and Uganda, however, distance quickly became costly to traders. At smaller distances below c. 100km the price gaps in Africa were already clearly above those in Asia, but at larger distances these differences were even more pronounced. Table 3.1 shows the results of this exercise for a larger number of countries covering a wider range of periods for which we were able to collect food price data. This table lends further support to the view that the cost of distance in Africa was higher, and that price gaps increased faster as distances grew. The table also shows that, by the time we get to the 21st century, the cost of distance had declined considerably in Africa – for example, in Tanzania, maize price gaps between towns 500 kilometres apart declined from around 40% in 1901-1914 to 17% in 2006-2025 – but at best this brought price gaps down to levels that parts of Southeast Asia already enjoyed in the early 20th century.

There are considerable benefits of larger and thicker markets for staple grains. In more developed markets prices tend to be less seasonal and less volatile. As urban workers or their employers have to purchase food on the market, they benefit from predictable prices. When price regimes are volatile or strongly seasonal, this raises the perceived risks of market dependence and negatively affects household welfare, urban consumption expenditure and the ability of employers to obtain a stabilised workforce. We can measure volatility as the average month-to-month price change (in logarithms, to give us change in percentage terms) and seasonality as the average gap between the highest and lowest monthly price

in a year (see for technical details the Online Appendix Chapter 3). The evidence we have marshalled in Table 3.2 on the volatility and seasonality of grain prices indicates that grain markets were less efficient in Africa than in Southeast Asia throughout the 20th century and up to today. Some of this seems to be a function of rice's dominance as an easily storable grain: the volatility of rice prices was also lower in Dar-es-Salaam and Freetown than for maize prices in the same period, for example. That said, even in the early 20th century rice prices were more volatile in those two cities than they were in Jakarta in the early 19th century. Moreover, rice was not grown in Tropical Africa to nearly the same extent as in Southeast Asia, which meant that most of Africa's urban consumers faced staple grain prices that were far less predictable than in Asian towns and cities.

Table 3.1 The cost of distance in price gaps, Tropical Africa and Southeast Asia in various time periods

Country	Crop	Period	Range	100	200	300	400	500	800
Tropical Africa									
Tanzania	Maize	1901-1914	42-589 km	11%	18%	26%	34%	40%	—
French West Africa	Millet	1919-1939	35-2851 km	38%	48%	56%	64%	72%	93%
French West Africa	Rice	1919-1939	35-2851 km	36%	43%	50%	56%	63%	81%
Uganda	Maize	1923-1939	18-659 km	69%	66%	58%	72%	100%	—
Nigeria	Yams	1955-1972	53-328 km	12%	14%	53%	—	—	—
Côte d'Ivoire	Maize flour	1962-1974	164-490 km	—	29%	18%	32%	—	—
Rwanda	Beans	1975-1988	24-186 km	14%	—	—	—	—	—
Tanzania	Maize	2006-2025	59-1358 km	14%	10%	11%	14%	17%	22%
Southeast Asia									
Burma	Rice	1921-1938	8-1444 km	14%	15%	18%	20%	22%	29%
Java	Rice	1878-1897	23-936 km	14%	15%	14%	15%	17%	26%
Philippines	Rice	1920-1938	11-1607 km	20%	22%	21%	19%	19%	25%
Indonesia	Rice	2016-2024	1-5238 km	8%	10%	10%	11%	11%	12%
Philippines	Rice	2000-2025	1-4666 km	11%	10%	11%	11%	11%	12%

Sources and notes: Online Appendix to Chapter 3. Price gaps are estimated using a natural cubic spline.

Table 3.2 Volatility and seasonality of grain prices in Tropical Africa and Southeast Asia, 1824-2024

Location	Period	Crop	Seasonality (log points * 100)	Volatility (log points * 100)
Tropical Africa				
Dar-es-Salaam (Tanzania)	1901-1914	Maize	31.4	62.7
Dar-es-Salaam (Tanzania)	1901-1914	Rice	7.9	37.3
Freetown (Sierra Leone)	1912-1919	Maize	22.2	79.5
Freetown (Sierra Leone)	1914-1919	Rice	24.9	44.7
Abidjan (Côte d'Ivoire)	1962-1974	Maize flour	23.7	102.3
Lomé (Togo)	1963-1989	Maize	45.8	65.4
Nakuru (Kenya)	1973-1981	Maize	16.7	110.7
Bujumbura (Burundi)	1979-1986	Maize	34.8	65.7
Bamako (Mali)	1981-1990	Millet	26.4	29.1
Dar-es-Salaam	2006-2020	Maize	18.0	41.4
Dar-es-Salaam	2006-2020	Rice	27.6	57.6
Southeast Asia				
Jakarta (Indonesia)	1824-1852	Rice	12.6	27.2
Rangoon (Burma)	1901-1939	Rice	15	29.3
Jakarta (Indonesia)	1878-1897	Rice	6	18.3
Jakarta (Indonesia)	1924-1930	Rice	5.1	19.8
Manila (Philippines)	1968-1977	Rice	10.4	20.9
Saigon (Vietnam)	1956-1974	Rice	4.6	25.2
Jakarta (Indonesia)	2020-2024	Rice	1.4	2.6

Sources and notes: Online Appendix to Chapter 3. Volatility is measured as the average monthly change in prices in logs; seasonality is measured as the difference in log points between the highest and lowest estimated monthly seasonal factor using the best of three seasonal models.

The Importance of Markets in Agricultural Economies

Because of the 'rice difference', a rising share of Southeast Asian producers were exposed to market forces between 1820 and 1940. This was the era in which the great majority of peasants producing primarily for subsistence became predominantly market-oriented farmers (Elson 1997). Even if the remaining peasants did not produce rice for the market, the market price of rice weighed on their decisions of how to allocate their labour. Drawing on national accounts and other statistical material, we can calculate the level of market exposure for several economies by taking the total number of calories produced available to the domestic economy in starchy staples (grains, roots and tubers), and calculating the share that reached the market, either through foreign trade or domestic marketing.

Table 3.3 shows that the difference between Tropical African and Southeast Asian economies was stark. In the 'rice bowls' of Southeast Asia, the marketed share of calories was very high. In Burma some 83% of the annual harvest of rice in 1941 was either sold to Burmese consumers or exported. In southern Vietnam in 1931 and Cambodia in 1964, just under two-thirds of the available rice in the country was bought and sold. In Niger, admittedly an extreme case of a landlocked, arid tropical economy, we find that only 6% of starchy staples had been marketed in 1959. The figure was only slightly higher in Chad

in 1963. In Dahomey, a coastal and more fertile country, the share was notably higher in 1959, around 25%, but still nowhere near the levels seen in Southeast Asia. Of course, not all countries in Southeast Asia were net rice exporters. However, if rice importers did not grow rice for export, they were *purchasing* the shortfalls, exposing them too to regional market dynamics.

Table 3.3 Marketisation of the food economy in Tropical Africa and Southeast Asia

Country	Year	Main food crops	Total calories (millions) (production + imports)	% marketed
		Tropical Africa		
Niger	1959	Millet/sorghum, cassava	3,561,616	6%
Cameroon	1957	Cassava, plantains, millet, cocoyams	3,726,276	9%
Chad	1963	Millet/sorghum, rice	3,563,489	10%
Dahomey	1959	Yams, cassava, maize	3,250,618	25%
		Southeast Asia		
Cochinchina	1931	Rice	10,220,000	64%
Cambodia	1964	Rice, maize, cassava	6,864,909	60%
Burma	1941	Rice	n.a.	83%

Sources: Online Appendix Chapter 3

This of course does not mean that African food producers did not have any kind of interaction with markets. African farmers did produce large amounts of cash-crops such as groundnuts, cocoa, cotton, coffee, rubber, tobacco and palm products for sale. In fact, if we exclude rice as a cash-crop, African and European farmers produced more cash crops per head of the population in the middle decades of the 20th century than Southeast Asian farmers. The main difference is that *food producers* in Tropical Africa were much less market-oriented than their Southeast Asian counterparts. And indeed, the great majority of farmers in both regions were primarily involved in the cultivation of food crops.

Markets, regionally and domestically, were more integrated in Southeast Asia than in Tropical Africa. By 1940, Africa counted many more peasants than Asia. But did this make a decisive difference in the economic growth of the two regions? The role of market integration in economic development has a long tradition in economic history, stretching back to Adam Smith. The main idea is that the scope of the market enables specialisation, and specialisation encourages productivity growth. Those who remain in agriculture may get better prices for their output and cheaper imported goods. Market integration also smooths local climatic shocks and hence makes the prospect of buying food on the market more palatable for those who could be more productive growing something else, or leaving agriculture entirely. And because of the perverse price effects of bumper harvests when markets are thin and isolated, larger markets can also encourage farmers to cultivate more land, or supply more labour.

When trade costs fall, the gains can accrue to both consumers and producers. This dynamic certainly existed in Tropical Africa and Southeast Asia regarding their access to international markets for non-food crops. For example, coffee-growers in the Dutch East Indies in the 19th century enjoyed part of the fruits from price convergence. Overall, market integration with the industrial core countries boosted Indonesian GDP by around 1.55 percentage points in the period from 1870 to 1913 (Chilosi and Federico 2016, p. 37). This is appreciable, but hardly transformative. Nor were the consequences of

integration into the global market universally beneficial. The convergence of prices between the global core and periphery has been blamed for causing deindustrialisation in the 'periphery' (Williamson 2008), though expansion of domestic markets could also counteract relative price changes, which makes the impact of market integration ambiguous. Measures of biological welfare also tell a less rosy story: heights in Lower Burma, for example, declined in absolute terms in the late 19th century, just as Burma's rice boom was at its peak (Bassino and Coclanis 2008).

A different story emerges when we consider the benefits of intra-regional and domestic market integration. We emphasise two important developmental consequences of market integration. The first is that well-developed food markets can deliver a reliable supply of staple grain to skilled and unskilled workers in growing cities. Rice allowed Southeast Asian cities to optimise their role in a process of economic diversification. Food is more expensive in African cities than one would expect given the continent's level of economic development; conversely food in Asian cities is cheaper than one would expect (Frankema 2025b). Lower food prices mean at least one of two things: either lower nominal wages for any given real wage, or, for any given nominal wage, a higher real wage and hence (given Engel's law) a higher consumption of manufactured goods. Southeast Asia's market-driven solution to the food problem implied either larger domestic markets for nascent industry or cheap wages that helped to keep unit labour costs in labour-intensive manufacturing low – perhaps a mix of both. For this reason, the high degree of market integration in colonial Southeast Asia laid one of the foundations required for major structural change in the second half of the 20th century. Africa's story is quite different. Urbanisation came later, and when it did, the agricultural sector was often unable to supply enough food for urban consumption at low and predictable prices (Frankema et al. 2025).

Secondly, the process of market integration generates demand for services – a 'market supporting' sector – that lowers transaction costs in the economy at large and provides the infrastructural support for entrepreneurship. This demand does not just concern trade services, such as wholesale and retailing, but the entire spectrum of ancillary services that lubricate the flow of trade, domestic and international: the provision of credit, insurance, transportation, information, and so on. The intermediaries who perform these tasks for the trade sector are by no means limited to it, and this market-supporting ecosystem can be exploited by industrial entrepreneurs looking to gain a foothold in domestic markets. Crucially, we see evidence that this market-supporting sector was more advanced in Southeast Asia than in Tropical Africa. Without detailed national accounts, we cannot directly compare sectoral output, but we can compare occupational statistics from colonial censuses. To be sure, one possible interpretation of a larger market-enabling sector is that labour productivity was low: the number of hawkers and peddlers could be seen as a sign that labour is abundant and poorly employed. But Southeast Asia's advantage extended beyond the petty trading sector and into genuinely skilled market-supporting occupations.

To make this explicit, we contrast the occupational structure of Burma and Nigeria in 1921, a year in which British colonial officials conducted a census in both colonies. The occupational statistics presented in Table 3.4 are far from perfect: even the census reports from Nigeria itself note that occupational statistics were among the least accurate of those gathered. We report figures for both men and women, noting that the figures for women are more suspect than those for males. Nonetheless, we detect a striking difference. While the secondary sector accounted for roughly the same proportion of all workers in Burma and Nigeria, agricultural employment was considerably lower (69%) for men in Burma compared to Nigeria (79%), while the tertiary sector – where one would expect to find the traders, transporters, moneylenders and other service sector workers who lubricated domestic and international trade – was much larger in Burma (23%) than in Nigeria (12%).

Table 3.4 Occupational structure of Burma and Nigeria in 1921

Sector	Male	Female	Both sexes
Burma			
Primary	69%	72%	70%
Secondary	8%	10%	9%
Tertiary	23%	17%	21%
Nigeria			
Primary	79%	70%	75%
Secondary	9%	16%	12%
Tertiary	12%	14%	13%

Sources: Online Appendix Chapter 3

That the market-supporting sector was larger in Southeast Asia is to some extent both a consequence and a cause of market integration. After all, the growth of markets is a process that gathers momentum as traders and other entrepreneurs exploit the possibilities of an expanded market to offer new products and services that then further enlarge the possibilities of an economy. In our case, the extent to which markets for everyday staple foods were efficient, thick and integrated in Southeast Asia set the region on a different path, one characterised by more extensive industrialisation, deeper financial markets and a more commercialised market in land.

Conclusion

The food-inclusive path of agricultural commercialisation that Southeast Asia followed led to efficient, stable and deep markets for the major staple grain – rice – and ensured that workers and their employers in Singapore, Penang, Hanoi or Jakarta could predict with some confidence what they would pay from week to week for the main subsistence good. Tropical Africa followed a food-exclusive path of agricultural commercialisation, focused on the production of non-staple products for export. Markets for maize, millet, and cassava never attained the depth or stability that the markets for cash crops did, or that rice markets did in Southeast Asia. Being an urban worker in Africa meant being constantly unsure of how the price of their main food grain might change when they next had to go to the market to buy it.

4 Mills

From Field to Factory

Food crops such as rice, maize, millet, yams or cassava have been processed by peasants for millennia using a variety of artisanal techniques, some of which remain in use today. This chapter explores the rise and spread of industrial grain milling in Southeast Asia and Tropical Africa. When food crops are produced for subsistence or the provisioning of local communities alone, the unit costs of industrial milling will far exceed those of artisanal processing, and even more so in settings with low (seasonal) opportunity costs of household labour. Industrial food processing requires scale. More capital-intensive methods of milling evolved in response to spatial concentrations of food demand. The development of industrial grain mills was linked to deeper changes in the economy, such as the growth of cities, mines or plantations, or to the opening up of overseas markets. Transportation costs were the crucial factor in determining which places could, and which places could not, be served at a profit.

We define crop processing as an industrial activity when use is made of standardised processing machinery in a factory setting driven by inanimate sources of power (e.g. steam, electricity, gasoline), and when non-family labour is hired to operate the mill. These conditions separate industrial processing from many versatile forms of artisanal processing carried out within farming households, relying on human or animal draught power, and often carried out in the open air. The spread of industrial milling entailed aspects of both Smithian and Schumpeterian growth. It stimulated labour specialisation through economies of scale and it facilitated the expansion of rural credit to farmers who committed to sell their harvest to the mill. It raised demand for skilled workers such as engineers and bookkeepers, as well as for transport and energy infrastructures.

We will demonstrate that the expansion of industrial grain milling began earlier in Southeast Asia and progressed much faster prior to 1940 than in Tropical Africa. In fact, without industrial mills, Southeast Asia's booming rice trade would have been inconceivable. In Tropical Africa, barring notable exceptions, the dearth of large-scale long-distance food trading pre-empted the development of large-scale grain milling. Larger mills emerged especially in settings with high concentrations of non-agricultural workers such as mines. The great majority of Africans, however, continued to mainly consume artisanally processed food crops – often processed by the same household that grew them. The dearth of larger mills, in turn, denied the African countryside the same spatially dispersed, dense network of credit provision and industrial infrastructure that emerged in Southeast Asia. State-directed efforts to centralise the processing of food crops – maize in particular – in late colonial and early post-colonial Africa often proved uneconomical because of high overland transportation costs, limited market size and fundamental incentive problems associated with pre-harvest price-setting and contracting (Frankema et al. 2025).

Of course, food crops were not the only commodities that promoted rural industrialisation.[8] All agricultural export crops required some processing, depending, among other things, on features such as perishability and weight-value ratios. For instance, sugar cane needs to be milled shortly after harvesting to prevent microbial growth and to preserve sugar content. The juice is more easily extracted, and of higher quality, when the cane is still fresh. While these features promote the establishment of mills close to cane fields, once processed, sugar can be shipped over long distances. Comparable considerations apply to palm oil, while groundnuts need to be dried to preserve their oil content, but do not have to be milled immediately to extract their oil. Cotton bolls, on the other hand, do not perish easily, but the cotton seeds typically comprise 30 to 40% of their weight, so that separating the seeds from the fibre in a ginnery before transportation makes economic sense.

Considerations of perishability and weight-value ratios also matter for food crops. Cereals such as wheat, rice, millets or maize tend to have a higher value-weight ratio than roots or tubers such as cassava, yams or potatoes. The higher water content of roots and tubers also causes easy spoilage during transportation. This is the main reason that cereals were traded over longer distances earlier, and to vastly greater extents than roots or tubers.[9] But processing and storage requirements also vary across major cereals. In general, maize and rice spoil more easily than wheat given their greater moisture content. To prevent spoilage, these crops will have to be dried immediately after harvesting. Rice, in turn, has the advantage over millets and sorghum that de-husking paddy is relatively straightforward. Millets are drought-resistant and can be stored for long without perishing, and are an exceptionally nutritious cereal in terms of minerals, protein, vitamins, fibres and fatty acids, while being gluten-free. However, the tight attachment of hull and bran to the endosperm makes millet hard to mill without breaking the grain and without introducing anti-nutrients. Moreover, given the many distinct varieties (and sizes) of millet, each variety requires its own machinery. This means that artisanal millet processing has prevailed for long, while research to reduce the disadvantages of industrial millet milling remains ongoing (Singh, Joshi and Rao 2024).

The Spread of Rice Mills in Southeast Asia

The surge of Southeast Asia's rice exports during the second half of the 19th century was inextricably connected with the emergence of industrial mills in major port cities such as Cholon (Saigon), Bangkok and Rangoon. These mills were to connect millions of paddy farmers to the world market, removing

[8] Even though the larger rice mills were usually located in Asian port cities, we adopt the adjective 'rural' here to signal the direct links with rural production systems.
[9] A notable exception is the cassava flour which was used as a staple in the Transatlantic slave trades (Dalrymple-Smith and Frankema 2017).

barriers that had previously isolated them. Milling paddy rice into so-called cargo rice (a mixture of paddy and milled rice) or clean (white) rice (milled and/or polished in various stages) cut overland and overseas freight costs by up to 50% (Owen 1971, p. 109). But rice mills did more than cut transportation costs alone. The mills also assumed a pivotal role in disseminating new seed and fertiliser technologies, in providing credit to farmers, in generating seasonal employment for domestic and immigrant workers and in securing the transport and energy infrastructures required to supply the mills with paddy, and the market with processed rice. Moreover, the commercialisation of rice cultivation, in which the mills were pivotal, also supported a partial but large-scale transition from labour-saving dryland rice cultivation relying on broadcast sowing techniques, to much more labour-intensive (and land-saving) wet rice cultivation techniques based on transplanting seedlings.

The first steam-powered rice mill was erected in Bangkok in 1858 and financed by an American entrepreneur. In 1861 the first industrial mill in Rangoon opened its doors. Several British-financed mills followed in both cities during the 1860s. The first industrial mill in Vietnam was established in Cholon in 1870. Although these early mills were erected with Western capital, Asian investors quickly stepped into the business and took over. Chinese merchants, who had long dominated the – much shallower – rice trade before 1850, invested in rice mills using imported machinery from the US and Germany. By 1889, 18 of the 23 largest mills in Bangkok, all with a processing capacity of over 100 tons a day, were Chinese-owned, including the pioneer mill of 1858. In Cochinchina in 1910, the Chinese owned 7 of the 9 largest mills, all with a capacity of over 500 tons per day. By 1914 they owned every rice factory with a capacity exceeding 300 tons a day. In Burma, where the Chinese controlled a tiny share of rice exports, the milling industry remained dominated by European and especially British and German capital, albeit with a growing role for Indian and Burmese investors and owners (Grist 1953, Cheng 1968, p. 9; Owen 1971, pp. 109-110).

These early mills stood out because of their large capacity and related dependence on seasonal inflows of grain from nearby paddy fields. Pro-active brokering was essential to initiate, expand and maintain these flows. The importance of connections with farmers as well as rice-importing companies is one reason for the success of Chinese brokers who could leverage existing trade networks, as well as their cultural and linguistic proximity to build and maintain relations with farmers. Trust and repeated interactions played a key role in the provision of rice to the mills, including the organisation of transportation from the field to the factory and the supply of credit (often delivered in the form of rice seed) to farmers in exchange for the right to buy harvests at pre-agreed prices. The identity of the millers also mattered in the destination of rice exports. Chinese mills were connected to Chinese importers who were either based in China, or in Chinese trade hubs such as Hong Kong or Singapore. Indian millers in Burma also sold predominantly to Indian importers (Owen 1971, pp. 110-111).

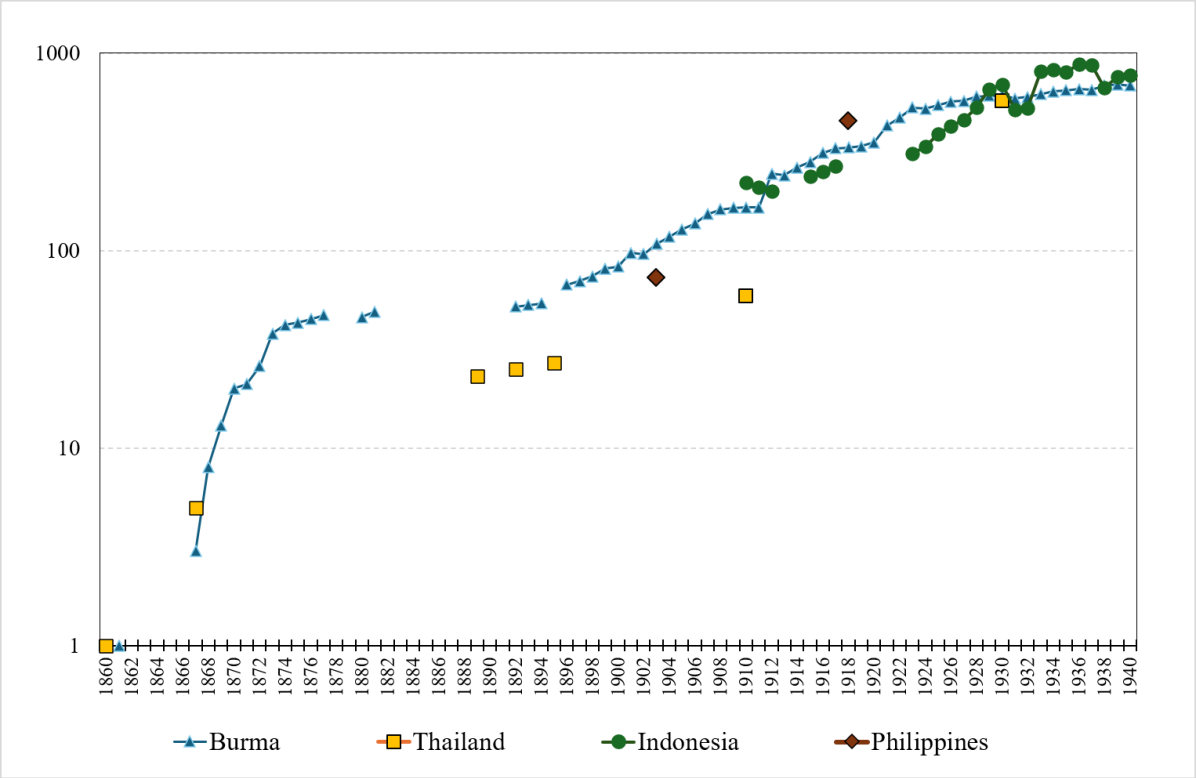
The rapid expansion of industrial milling capacity was not confined to the three major rice-exporting countries. Similar developments took place in Indonesia, where the domestic size of the market far outweighed that of the Southeast Asian monsoon economies. In the Philippines also the growth of the export sector and of cities such as Manila stimulated the growth of domestic rice markets. Prior to the 1840s, Java had been the main regional exporter of rice and Dutch investors had built up positions in rice mills. It is hard to reconstruct the installed capacity of these early Javanese mills and to find out whether they complied with our definition of ‘industrial’ milling, but the fact that they were financed with foreign capital and sourced their rice from a circle of local communities suggests they operated at considerable scale. A further indication of scale is that, according to Fernando (1980), the hoarding of rice by a local mill in the Cirebon residency aggravated local famine conditions in the 1840s.

Figure 4.1 shows the growth of industrial rice milling in Burma, Thailand, Indonesia and the Philippines. Two decades after the first mill had opened its doors in Rangoon, Lower Burma counted close to 50 rice mills, all located in one of the four main port cities (Rangoon, Akyab, Bassein and Moulmein) (Cheng 1968, p. 81). In Thailand the spread was slower, with 27 mills by 1895 which were

all concentrated in Bangkok, conveniently located in the Chao Phraya river delta. For Indonesia we lack data prior to 1910 and for the Philippines we must rely on the census reports of 1903 and 1918. Yet the data that is available suggests that the archipelagos experienced a comparable pattern of expansion. For Malaya and Vietnam we draw on industrial surveys conducted in the post-war era shown below.

Industrial censuses and surveys adopted different definitions of 'industrial' milling. In many surveys a minimum number of employees is used as one threshold, but these could vary from 5 to as much as 50 workers per establishment. The industrial surveys of the Netherlands Indies state that a rice or maize mill counts as an 'industrial establishment' when it either has installed more than 5 HP of machinery, or when it employs at least 50 workers (Segers 1988, p. 94). That varying definitions thus prevent direct comparisons is also shown by the industrial census of Thailand of 1963 which reports more than 19,000 rice and flour mills employing over 54,000 workers. Only 740 mills employed more than ten workers, 4,331 establishments employed fewer than ten (on average 3.6), and the remaining 14,126 were family businesses, employing more than 23,000 people, with an average of 1.6 per establishment. The survey thus reveals how varied in scale and scope the rice milling sector in Thailand had become since 1858. This diversity was, in turn, facilitated by the electrification of the countryside and the diffusion of (smaller) types of milling machinery.

Figure 4.1 Number of industrial rice mills in Southeast Asian countries (log-scale), 1860-1940



Source: Online Appendix Chapter 4

Figure 4.1 also reveals how, after a rapid start, the expansion of mills in Burma and Thailand tapered off in the final quarter of the 19th century, to pick up again after 1900. For Burma, Cheng (1968, pp. 79-

84) argues that it was not the number but the increasing capacity of existing mills which drove the expansion in the early phase. The subsequent spread from around 100 to around 1000 mills after 1900 was largely due to the dispersal of smaller mills further inland. Having smaller catchment areas, these mills employed fewer workers and typically operated on a daily capacity of 10 to 75 tons (p. 79).

The diffusion of larger and smaller industrial mills also intersected with changes in transportation technology. Up to the 1850s, most British imports of 'rough rice', or 'rice in the husk' (paddy) came from US states such as South Carolina and Georgia. From 1790 onward, rice was also increasingly sourced from Bengal, in India. Paddy kept much better on long-distance transport than milled rice, and paddy imports also had lower tariffs. The paddy was milled in British port cities such as London, Liverpool and Glasgow, or re-exported to other European destinations (Coclanis 1993).[10] The spread of steam-powered rice mills in Southeast Asia thus implied a new competitive frontier for European rice mills. In the third quarter of the 19th century, the import of paddy gave way to the import of cargo rice (a mix of paddy and de-husked rice) and after 1880, when shipping times were greatly reduced due to steamships and the opening of the Suez Canal, white rice (de-husked and cleaned) survived the journey much better than before. By that time, milling rice in Asia would have saved about a third of variable freight costs, shifting the comparative advantage decisively towards Asian mills (Cheng 1968, p. 14).

This shift in the location of the rice milling industry coincided with a long stagnation and decline of world market prices for agricultural commodities in the wake of the agricultural depression in Europe. In 1895 international rice prices were about one-third of the levels of 1865 (Sauerbeck, n.d.). The depression, resulting from the transportation revolution, thus reinforced pressures to further cut transportation costs. Meanwhile, British investors in Burma actively opposed the activities of upcountry millers, which they perceived as a threat to their stakes in the larger port mills (Cheng 1968, pp. 8-15, 93-95). Coquerel (1911, pp. 193-7) documented similar concerns of French mill owners in Vietnam. Colonial policies to stifle the competition from indigenous mills could not defy the long-run trend though. Smaller industrial mills continued to spread inland, hand in hand with diesel generators and electricity infrastructure.

Grain Mills in Tropical Africa

Reconstructing the development of industrial grain milling in Tropical Africa confronts economic historians with a much bigger challenge. Colonial administrative and statistical infrastructures were developed later in Africa than in Asia, and the scattered sources we have for individual mills often do not inform us exactly whether, and if so as of when, a mill would qualify as an industrial establishment. That said, there are several industrial surveys, mostly conducted during the 1950s-1970s, which contain categories for 'food processing' or 'grain milling', and which provide snapshots of the number of mills, the number of employees and, occasionally, their installed capacity or annual production volumes. The information we were able to extract from these industrial surveys is presented in Table 4.1. While these numbers cannot be compared without caveats (see above), at least four conclusions may safely be drawn.

First, industrial grain milling in Tropical Africa paled in comparison to Southeast Asia. This is reflected in annual per capita output, in installed capacity and in the share of the estimated total male labour force employed by grain mills. Most of our African observations are considerably later in time, which further underlines the notion of a structural, rather than a gradual difference. Second, and unsurprisingly, there is also considerable variation within both regions. Even though the first survey for Madagascar is only for 1971, the rice milling capacity in this country compares favourably to almost all of the African mainland economies. With ca. 19kg per head of the population and some 0.25% of the adult male labour

[10] The Dutch market was mainly supplied with Javanese rice.

force employed, the sector resembles the situation in Indonesia in 1940 (it must be remembered, though, that the threshold adopted in the Indonesian records is set very high). In Zambia, too, where a small settler community along with many African smallholders were invested in maize production for the Copperbelt, the size of the industry appears larger than elsewhere. In West Africa, grain milling appears to have lagged behind the maize-producing regions of East and Central Africa. Third, apart from both the inter- and intra-regional variation, Burma stood out as the world's leading rice exporter. This is clearly reflected in the size of its milling sector, whose growth between 1860 and 1940 was unrivalled. Fourth, South Africa was the only country south of the Sahara that equalled the degree of industrial grain milling capacity in Southeast Asia in the 1920s-1930s. Clearly, the higher rates of urbanisation and industrialisation associated with the 19th century mining boom had created backward linkages with the food processing sector, even though commercial agriculture largely remained under the control of a state-subsidised class of white settler farmers (Feinstein 2005, pp. 135-142).

Table 4.1 Industrial grain mills in Southeast Asia, Tropical Africa and South Africa, 1921-1971

Country	year	Foods processed	no. of factories	no. of employees	no. of employees per mill	% of male adult labour force	Kg per capita processed
Southeast Asia							
Burma	1938	Rice	683	41,695	61	1.03	> 185*
Indonesia	1940	Rice, tapioca	1,260	42,490	34	0.23	>18.7**
Philippines	1948	Rice, maize	3,580	17,678	5	0.36	33.5
Thailand	1963	Rice	5,071	31,138	6	0.41	> 47*
Malaya	1959	Rice	728	3,815	5	0.19	..
South & Central Vietnam	1964	Rice	1,687	6,182	4	0.26	94.7
West Africa							
French West Africa	1936	Rice, maize, cassava	9	796	88	0.02	0.1
Côte d'Ivoire	1965	Wheat	1	..	..	..	8.8
Mali	1966	Rice	3	..	..	..	6.6
Togo	1960	Cassava	1	103	103	0.02	3.4
Nigeria	1963	Grain	6	535	89	0.004	..
Ghana	1960	Grain	7	39	6	0.002	..
Central Africa							
Uganda	1963	Maize	22	385	18	0.02	6.6
Angola	1965	Wheat, rice, maize	24	595	25	0.04	8.5
Zambia	1962	Maize	13	1,175	90	0.14	..
Malawi	1965	Maize	6	135	23	0.013	..
Belgian Congo	1954	Maize, cassava, rice	334	..	..	..	13.7
East Africa							
Tanzania	1965	Maize	29	1,330	46	0.05	..
Kenya	1963	Maize, wheat, rice	39	1,973	51	0.09	..
Mozambique	1957	Grain, cassava	82	1,768	22	0.11	10.3
Madagascar	1971	Rice	56	4,372	78	0.26	18.7
Southern Africa							
South Africa	1921-22	Wheat, maize, oats	692	4,841	7	0.28	91.1

Sources: Online Appendix Chapter 4. * Based on export volumes instead of volume data supplied by the mills. ** A lower bound estimate due to the rather restrictive definition of industrial milling adopted in the sources.

How did the slower and rather uneven diffusion of industrial milling in the African tropics then evolve? To answer this question Kenya is a good place to start. In Kenya we can trace back the establishment of the first mechanised grain mill to 1909, on Sadler St in Nairobi (now Koinange Street). Nairobi was founded as a railway depot in 1899, but replaced Mombasa as the main administrative centre of British East Africa in 1907, attracting European settlers, Indian migrant labourers and merchants and African wage workers alike. The 1911 population count already reported over 16,000 inhabitants (East Africa Protectorate 1913, p. 48). Tellingly, the first mill was a wheat mill catering to a group of settler farmers in the Kenyan highlands (and a CMS mission station near Machakos) who had just started to grow wheat in the expectation of transforming the region into a new African wheat basket. The first bag of wheat flour was branded on the 5th of April 1909 as 'Kenia's Mist'. Unga Ltd, the corporation that founded the mill, was listed on the Nairobi Stock Exchange in 1956 and became Kenya's leading company in human and animal nutrition, a position it has retained up to today (Unga Group Plc 2019, pp. 10-11).

While Kenya indeed became a modest wheat exporter in subsequent years, maize soon overtook wheat in importance as a crop much better suited to local ecologies. Maize was not only grown by settler farmers, African smallholders also embraced the crop. We are not sure when industrial maize milling began. By its own account, Unga Ltd states that it acquired Maida Ltd, including its reputed Jahoo maize meal brand in 1965, which suggests that Maida operated at least one mill during (or soon after) its registration as an industrial company in 1959 (KIPI 2020, p. 15). However, trade statistics for 1935 indicate that Kenya already exported £20,000 worth of maize meal to Tanganyika, and £18,000 of unprocessed maize, about one-fifth of a maize export total of £185,000 (Kenya Colony and Protectorate 1936, p. 22).[11] Table 4.1 shows that in 1963, there were 39 recorded industrial grain mills, with an average number of 51 employees.[12] Most of these must have been maize mills.

The Kenyan colonial government began to promote maize cultivation among African smallholders around Mount Elgon, in Western Kenya, in the 1930s as part of a broader campaign to enhance the quantity and quality of African-grown maize (Hoskinson 1997). The increasing availability of (semi)automated hand grinders supported these policies. The spread of hand-driven maize grinders and smaller hydro-powered 'posho mills' accelerated in the 1920s and 1930s. In a study of economic change in Bunyore, a region in Western Kenya, Omasaba (1997, p. 128) shows how maize became the region's main staple, and how its surpluses were destined for export to nearby Uganda. Maize mills were established on the initiative of African entrepreneurs, who were often linked to missionary movements. According to one count in 1927, the region of Northern Kavirondo had '411 "native" owned flour mills, of which 209 were hand driven, 96 were hydro mills and 6 were oil driven engines' (Omasaba 1997, pp. 52-3).[13] New grain milling technology thus followed and further stimulated commercial maize production.

Yet, on the eve of independence, Kenya's milling capacity was not in any measure comparable to the capacity developed in Burma, Thailand or Indonesia between 1860 and 1914. In neighbouring Uganda, the industrial survey of 1963 recorded only one mechanised grain mill employing over 10 workers before 1944, and 22 in 1963. The Uganda Herald of April 3rd 1935 covered the opening of a new hydro-powered posho mill at Mazibe, ten miles away from Kabale on the Mbarare-Kabale road, by Mr. Powell, the district commissioner of Kigezi. The newspaper noted that there was a growing demand for posho due to expanding mining activities in the district and that, for the mill to become successful and to diminish dependence on imports from Kenya, 'native' farmers had to be stimulated to cultivate maize. Uganda did not produce maize for export, but it catered to concentrated local demand of mines and cities. While remaining small in size, the spread of posho mills was facilitated by the rapid expansion

[11] Canada (part of the British imperial preference system) alone imported £110,000 worth of Kenyan maize.
[12] The industrial survey of Kenya included all industrial establishments with a minimum of 5 employees.
[13] These numbers add up to 311 rather than 411. We have not been able to establish the source of error. Most likely the 4 had to be a 3.

of mechanised cotton ginneries, which were key in the development of rural energy and transport infrastructures (Schalken 2025, p. 19).

The close connection between mining and industrial grain milling is also evident in the Belgian Congo. With the rapid growth of the copper mines in Katanga, the need for processed food to feed the mine-workers became a pressing issue. De Nil (2025, pp. 79-104) explored how the *Union Minière du Haut-Katanga* (UMHK) established a range of subsidiaries to feed, clothe and house its expanding workforce. One of the subsidiaries, the Minoteries du Katanga (MINOKA), was tasked in 1927 with the milling of wheat, cassava and especially maize to improve both the quality as well as the stability of maize meal supplies to the mines, and to decrease dependencies on imports from South Africa and the Rhodesias. A first industrial mill opened its doors in Kakontwe in 1929 (see Figure 4.2). The number of workers rose from 62 to 350 in the three decades between 1929 and 1958 (p. 100). The mill operated with modern machines imported from a Swiss manufacturer (*Bühler frères*) that could process no less than 60 tons per day. The mill also contained five metal silos with a total storage capacity of 4,300 tons of maize meal (p. 101). After the completion of the railway line between Port-Francqui and Bukuma, which connected the district of Kasaï with Katanga, this region became the principal supplier of maize to the Katangese copper mines.

Figure 4.2 Different sides of the Kakontwe maize mill supplying the copper mines, 1929

Source and notes: Online Appendix Chapter 4

In West Africa, mechanised grain milling expanded at a slower pace than in the maize-growing areas of East and Central Africa. Given its relatively high level of welfare development, one would expect some forms of industrial food processing to emerge in the Gold Coast during colonial times. Administration reports provide an account of a government-owned rice mill in *Esiama* (Western Province) that started its operations in 1926, but the mill struggled to break even. Local rice supplies

fell short of the mill's capacity and the marketing of white rice proved unprofitable, in part, according to the report, due to the availability of cheap rice imports from Burma. The falling price of Burmese rice during the Great Depression compounded the problem. In the early 1930s, rice imports from Burma reached ca. 450 tons per year, about 0.01% of Burmese rice exports at that point.

In Côte d'Ivoire, which built up a reputation as the region's agricultural powerhouse after 1950, industrial grain milling also barely developed. In the Ivory Coast Development Report of 1970, four rice mills are mentioned with an estimated capacity of 15,000 tons, about 12% of the capacity installed in Madagascar (see Table 4.1), a country with a comparable population (ca. 6.7 million). Fast-forwarding to 2019, the World Bank still observed that 'Côte d'Ivoire's rice value chain is clearly underperforming […]. Most of Côte d'Ivoire's rice traders, who procure for the local markets, do not face quality requirements. As a result, they do not have the means or willingness to provide the inputs farmers would need to boost quality: agronomic advice, quality seeds and fertilizers on credit, and reliable purchasing power that would smooth out mill utilization. The country's rice mills mostly operate well below capacity and at low and decreasing profit margins' (Levoy and Konate 2019, n.p.).

In the 1960s and 1970s the milling industry in West African port cities such as Lagos, Cotonou, Tema, Abidjan and Freetown received an impulse from increasing imports of wheat from outside of Africa. For example, the first large-scale wheat mill in Apapa (Lagos) was established in 1962 with a grinding capacity of 600 tons.[14] Dakar and Gambia were importing considerable quantities of broken rice from Vietnam long before, but this arrived in processed form. It remains an open question why imported Asian rice was able to make such a large inroad in the Senegambia, despite local traditions of rice cultivation and long-established millet trades. Yet, the fact that Asian rice was able to compete with local rice production in West Africa underscores our central argument: the efficiency gains reaped through the development of a regionally integrated rice market allowed Southeast Asia to effectively compete with local African alternatives. Asian exports to Africa did not really enhance, but rather symbolised the contrast between a food-inclusive and food-exclusive pathway of agricultural commercialisation.

Why Did African Grain Milling Trail Behind?

Why did grain milling trail so far behind in Tropical Africa? First and foremost, food crop agriculture lacked the concentrated market demand that Southeast Asia had. Apart from South Africa, which had a very different agricultural and industrial basis, the two prominent sub-Saharan food exporters were Kenya and Southern Rhodesia. In these colonies, the export trades were dominated by relatively small, but influential, settler farming communities who grew maize on large land concessions (Mosley 1983). To offer a comparative sense of magnitude, Table 4.2 expresses the volume of maize exports (including flour) from Kenya and Southern Rhodesia as a percentage share of the volume of Thai rice exports for a number of years between 1910 and 1950. Thailand was the least populated country of the three main Southeast Asian rice exporters; its domestic population roughly equalled the combined total of Kenya and Southern Rhodesia (c. 8 million). In 1910, the first year in which Thai rice exports surpassed the threshold of one million tons, commercial maize farming in Kenya and Southern Rhodesia was still in its infancy. For every ton of maize exported from either country, Thailand exported 500 tons of rice. In the subsequent three decades, Thai rice exports continued to expand, hovering between one and two million tons. Maize exports in Kenya and Southern Rhodesia also soared, but remained in a bandwidth of 2 to 5% of Thailand's rice export volumes. Only in the final years of the Second World War, when Thai rice exports collapsed, did the gap narrow a bit, but these temporary interruptions did not affect the long-term ratio. In 1950, Kenyan maize exports were back to under 4% of Thai rice exports. In other

[14] Flour Mills of Nigeria (FMN) https://www.fmnplc.com/about/history/

words, whereas industrial milling in Southeast Asia received major impetus from international trade, the market opportunities of industrial mills in Tropical Africa remained much smaller.

Table 4.2 Kenyan and Southern Rhodesian maize export volumes as a percentage share of Thai rice export volumes, 1910-1950

	Kenya	Southern Rhodesia
1910	0.2%	0.2%
1918	0.0%	2.3%
1925	4.5%	2.6%
1929	3.5%	4.7%
1933	3.5%	3.6%
1938	3.8%	2.3%
1944	0.7%	7.7%
1950	3.8%	0.6%

Sources: Online Appendix Chapter 4

Second, high overland transportation costs hampered the integration of domestic food markets and reduced the scale at which industrial mills could expect to operate. The spread of hand-grinding machines in Kenya underscores this point. Rather than a lack of entrepreneurship or a rejection of 'modern' technology, it was the smaller market size that elicited the choice for different milling techniques that required much lower capital investments. The barrier of overland transportation costs worked in several directions. It not only constrained the size of the catchment area from which mills could hope to receive a harvest, it also hampered the provisioning of credit, fertiliser and seeds to farmers.

Third, the greater variety of staple crops being produced across Tropical Africa effectively sustained the chicken-and-egg problem. In Tropical Africa, maize grew in popularity during colonial times, precisely because it could be relatively easily processed and transformed into a porridge to feed growing numbers of workers outside the subsistence sector. Yet, in many parts of the region, roots or tubers prevailed, which were too heavy for long-distance transportation. In West Africa a regional millet trade existed and there is some evidence millet markets integrated (Westland 2025). But again the size of these markets and the large overland distances barred the growth of a large commercial sector. In addition, as noted above, industrial milling technologies were slow to develop, and thus inhibited the possibility to reduce transportation costs by lowering weight-value ratios.

In Southeast Asia rice was of course not the only staple crop, but clearly the dominant one. The pre-eminence of rice was not self-evident though. Even dryland rice cultivation is relatively labour intensive and in the vast, yet sparsely populated upland areas of Southeast Asia maize and various roots and tubers were an integral part of the production and consumption package. The large-scale transition to wet rice production in the delta regions and the associated investments in irrigation infrastructure did not emerge out of the blue; for this to happen several lights had to turn green. Access to enormous overseas markets was the catalyst of this process, but without capital, merchant networks, mills, migrant labour or steamships the rice boom could not have reached such heights.

Considering Africa's relatively small domestic markets and scattered population settlements, it is not surprising that large-scale machine-operated mills remained economically unfeasible in most places. Larger mills, with a daily capacity exceeding 100 tons, only emerged after 1950, almost a full century after the first of these were erected in Southeast Asia. These larger mills were usually built with public

funds, as they became part of marketing boards' attempts to centralise domestic food supply, to stabilise prices for farmers and consumers, and to expand state control over food distribution. These marketing boards for food crops were more common in Eastern than in Western Africa, and were established especially in countries where maize played a leading role in local diets. These experiments with state-led value chain integration were doomed to fail, however, because domestic markets remained insufficiently developed and integrated (Temu 1984, Bryceson, Seppala and Tapio-Bistrom 1999, Frankema et al. 2025). We lack the space here to discuss why state intervention in maize marketing might have done more harm than good, and to what extent the radical liberalisation in the 1980s and 1990s instigated by the IMF and World Bank was, in turn, the right response. The bottom line is that whatever economic policies would have been adopted to promote commercial food crop agriculture across the African tropics, these would have to find a much narrower and longer path to success than in Southeast Asia.

Conclusion

Southeast Asia had the threefold advantage of having a single dominant crop, of having integrated domestic and regional markets for this crop, and of having mills that served as pivots in the distribution of key inputs, and the marketing of output. The latter two features emerged in the eight decades between the late 1850s and early 1930s, before the region descended into several decades of crisis, warfare, and economic disintegration. The demand for rice came not only from Northern Atlantic markets, but also from Asia's giants, China and India, and from within Southeast Asia. Southeast Asia's maritime space was key in connecting producers to consumers. In the process, millions of Southeast Asian peasants became farmers who produced for the market. Once high-yielding rice varieties appeared on the scene, government policies to enhance productivity growth were not so difficult to design or implement. In Africa, the barriers for such policies to be successful were much higher, perhaps insurmountable. That the 'take-off' of grain mills in Tropical Africa lagged almost a century behind the industrialisation of rice milling in Southeast Asia is telling. Mills were nodes of credit, inputs and information. For a Green Revolution this was exactly what was needed. States connected to farmers via local brokers to disseminate new seeds, fertilisers, pesticides, extension services and price information.

5 Land and Credit

Land Abundance and Its Consequences

In both Southeast Asia and Tropical Africa, large regions were characterised by a general abundance of land relative to labour. Unlike the smallholders of Europe or East Asia, farmers in these regions generally did not have difficulty finding land to cultivate: what constrained output was their ability to mobilise labour, particularly in peak seasons. In general, this pattern of factor ratios was a boon for workers: because farmers had access to abundant land, their labour productivity was high, and relatively high wages were needed to tempt workers to leave the land and take up work in other sectors. But there were also developmental consequences that were less benign. In labour-abundant economies land often serves as the most important form of collateral for long-term credit, since it is both valuable and immoveable. Where land is abundant, however, land often has little or no market value, and is therefore harder to use as collateral (Binswanger and McIntyre 1987, Austin 2009). Long-term credit is therefore often secured on people (pawning), and credit volumes are consequently lower. Credit as such existed, of course, and usually extensively, but mostly unsecured by substantial collateral and extended on the basis of trust or family connections rather than on impersonal terms. Interest rates are almost always higher for unsecured loans than for those with collateral.

This poses a substantial problem for economic development, one that was resolved earlier and more completely in Southeast Asia than in Tropical Africa. If credit is unavailable, or available only in limited circumstances and on onerous terms, then capital investment — in agriculture, primarily, but also elsewhere in the economy — will be lower. Farmers will have fewer means to invest in irrigation or in land improvement; credit for small-scale rural industry will be scarce, which discourages agricultural processing activities close to the point of production. Even when industry develops, credit is still often extended based on kinship or ethnic ties, which freezes out 'outsiders' and in so doing impedes market competition from driving productivity growth in industry and services sectors (Fafchamps 2003). In other words, credit constraints hinder economic specialisation and diversification, and can thus trap land-abundant economies into a relatively stagnant structure.

This chapter zooms in on the transition from a 'traditional' credit system, geared largely towards small-scale agricultural credit provision, consumption loans, and trade credit, to a 'modern' credit system that can provide long-term loans to industry. The transition between these two systems is not a linear and preordained path, and in Africa it was a less successful transition than in Southeast Asia. We argue that this is primarily because land markets developed earlier and more deeply in the latter region. This divergence between the two regions had several causes. One which we do not explore at great depth here is a fiscal one: in some parts of Southeast Asia at least, land was systematically taxed by central (colonial) governments: the Dutch introduced land taxation in Java, Bali and Lombok in the 19th century as did the British in Burma. While land taxation was less important in French Indochina and the Philippines, it was nonetheless present in some areas (Booth 2014). In Thailand, land taxes existed even though their level was constrained by the Bowring Treaty that assured the country's independence; the government introduced land titling in the early 20th century leading to a massive uptick in land transactions, particularly in the Chao Phraya delta (Vechbanyongratana 2025).

The fiscalisation of land helps to develop an economic incentive for the development of alienable property rights: by taxing land, governments impose a cost on holding land and – if levied in cash rather than in kind – force farmers to acquire cash. Moreover, when governments levied taxes on land, they issued receipts that could be used by farmers as proof of ownership. Taxation therefore supplied both economic and institutional encouragements for the commercialisation of land. In the African tropics land taxation was virtually absent throughout the colonial era (Frankema and Booth 2020, p. 22).

Tellingly, the only general land tax in Tropical Africa under colonial rule was in Northern Nigeria, where the colonial administration inherited a set of taxes from the predecessor state, the Sokoto Caliphate, that included levies on land (Pierce 2005). But in Northern Nigeria an ideological opposition to allowing private freehold tenure among the British prevented the growth of land markets, though these markets very obviously continued to grow even in the face of official opposition.

The other reason for increased commodification of land was the increasing integration of markets, domestic and regional. This process created scarcity rents, not because land in general became scarce but rather because certain kinds of land did. Market integration was driven by, and in its turn encouraged, the construction of transport infrastructure: railways, roads and ports. Land around railway stations or roads was valuable precisely because transport costs everywhere else were so high: land values capitalised the economic rents that accrued from proximity to cheaper forms of transport, and ensured that at least some land could be bought, sold, and pledged as collateral.

The impacts of these developments were far from universally positive, of course. With credit necessarily comes debt, and where indebtedness became common, so too did land dispossession. In bad years – in the case of the Great Depression, a bad decade – moneylenders could and did take ownership of the land that had been pledged as security for their loans. This process made the Southeast Asian countryside more unequal, and forced many former smallholders into the labour market, usually on very unfavourable terms. The commercialisation of land created winners and losers, and the suffering of the latter is well-documented by social historians of rural Asia (Elson 1997, Bosma 2019). But the winners, who consolidated larger landholdings and were able to use their land to borrow to invest in other profitable ventures, began to form an elite which could invest in industrial enterprises. Often these elites, like the Chettiar lenders in Burma and Singapore or the Chinese moneylenders in Indonesia and Malaysia, were not indigenous, and the deep resentment at increasing interethnic inequality was a flammable political issue, both in Southeast Asia (as for example in Burma, cf. Brown 2013) and in Africa, and particularly East Africa (Spencer 1981, Himbara 1997).

Monetisation and Credit

Most credit in both regions was probably informal, obtained by farmers, traders and other entrepreneurs from their neighbours, their family, or from semi-professional lenders, including merchants who extended trade credit and moneylenders. Much of this kind of credit is difficult to quantify, and while we have strong reason to suspect that it was more widely available and used in Southeast Asia than in Tropical Africa, we cannot be precise about volumes. A small amount of comparative information is available for later dates when comprehensive rural surveys began, though, importantly, our argument is that rural credit was already more important in Southeast Asia than in Tropical Africa at the turn of the 20th century. Nonetheless, around 1970, it was estimated that institutional lending for agriculture had resulted in debts of around US$1 per rural inhabitant in Ethiopia, $4 in Ghana, and $12 in Kenya (presumably reflecting a good deal of lending to large-scale white settler farmers). In the Philippines at around the same time, institutional credit to farmers was around $4 per rural inhabitant and $20 per rural inhabitant in Thailand (World Bank 1975). The distribution of rural credit was almost certainly more widespread in Southeast Asia than in Tropical Africa.

Southeast Asian and Tropical African economies were overwhelmingly agricultural, and because of their sheer demographic weight, most borrowers were probably farmers even if, as seems to have often been the case, only a minority of farmers borrowed in any given year. The need for credit in agricultural production varies greatly: in some agricultural systems, credit needs are relatively minor and consist largely in consumption loans to help smooth out seasonal scarcities. In others, recourse to borrowing is widespread, and can generate enormous inequalities. In the 1951 survey of cocoa-growing families in southern Nigeria, the authors were led to conclude that in Yorubaland, ‘there is little chronic

indebtedness, a limited amount of borrowing for long-term productive purposes, and widespread use of small loans taken for short periods on terms which range from the very easy to the extortionate' (Galletti, Baldwin and Dina 1956). This pattern seems characteristic of much of Africa.

In Thailand in 1955, survey evidence suggested that 28% of paddy farmers had borrowed money from any source in the past five years, though the figures varied widely by region: just under 5% of farmers in the Northern region had borrowed any money in that period while 45% had borrowed money in the Central Plain. Another survey a decade later suggested that 68% of families were indebted, with the most common reason cited 'living expenses' (Thisyamondol, Arromdee and Long 1965). A similar story was told by the figures in a survey of rice farmers in Malaya in 1967: in Malacca 66% of all borrowing was for 'consumption' and only 2% went to 'farm expenses' or 'farm investment' (Narkswasdi and Selvadurai 1967). Most debts were both short-term loans of relatively small size and were unsecured.

In general, the nature of agriculture, and particularly tropical agriculture, meant that the money and credit economy was highly seasonal. Money flowed during the harvest as expatriate trading firms and their intermediaries paid farmers for their export crops. Credit was usually extended to farmers during the rains to help tide them over until the harvest was in; these loans, often at usurious rates, were then repaid in cash or kind during the harvest. As the slack season progressed, money and credit dried up, and the money supply contracted sharply. Roy (2016) has argued for colonial India that this seasonal pattern posed especial problems for certain kinds of entrepreneurs, particularly those who could rely neither on finance from large banks nor from non-bank sources like business associates or retained earnings. These were usually medium-scale industrialists, who suffered from the fact that local banks rarely wanted to lend money out during the slack season.

So is there any evidence to support our argument that credit was more available in Southeast Asia generally, and particularly for long-term borrowers? A first impression can be obtained by looking at the overall structure of the money supply to gain some kind of indication of the financialisation of economies. Table 5.1 presents a series of estimates of the structure of the money supply as a share of the nominal value of merchandise trade in several Southeast Asian and African countries for 1913. It depicts a contrast: monetisation was very low in French Africa and Indonesia, though considering a broader measure of the money supply changes the picture substantially for the latter and hardly changes it for the former. The Belgian Congo was, perhaps unsurprisingly given its nature as a mining economy, relatively highly monetised, but again bank deposits were relatively meagre. By the end of the colonial period, the contrast was more starkly in favour of Southeast Asia, despite the devastation of the Second World War: by 1963, the stock of currency in Singapore was around 16% of nominal GDP and in the Philippines, it was 8%; in Ethiopia that figure was only 4% and in Benin it was 2%. Adding bank deposits to get to M1, Singapore's money supply was around 30% of GDP and the Philippines was 11%; for Ethiopia it was merely 5% of GDP and for Benin 3%. Certainly, these ratios are a relatively crude way to get at financial development, and missing data for many countries means we can only generalise with caution, but it seems likely that in aggregate, Southeast Asia was a more financialised region than Tropical Africa by mid-century, and probably in earlier periods too.

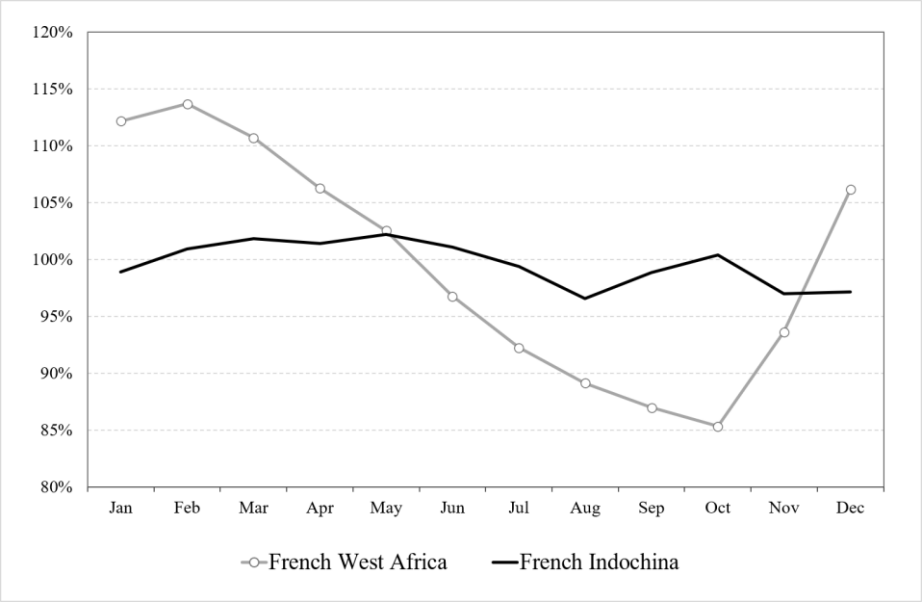
Table 5.1 Money supply in Southeast Asia and Tropical Africa in 1913, as % of total trade

Country	M0 (bank notes)	M1 (bank notes + demand deposits)	Ratio M1/M0
Burma	9%		
French Indochina	21%		
Thailand	21%		
Malaya	54%		
Indonesia	5%	30%	6
Philippines	24%	33%	1.38
French Africa	4%	6%	1.5
Belgian Congo	20%	23%	1.15

Sources: Online Appendix Chapter 5

A second indicator that reveals the more underdeveloped structure of African finance and points to the challenges faced by those seeking finance for long-term investment is the seasonality of the money supply. In a financially developed economy, where agricultural producers and intermediaries have access to deposit banking, the seasonal pattern of exports need not result in a seasonal money supply, since money is not necessarily 'drained' to the metropole but rather saved and perhaps invested domestically. When we look, in Figure 5.1, at the seasonality of the stock of currency in French West Africa and French Indochina, both fixed to the same metropolitan franc standard, we see clear evidence that financial seasonality was more pronounced in West Africa than in Indochina. The extent of the seasonality is of similar magnitude to the levels shown by Gardner (2025) for Ghana and Nigeria in the early independence period.

Figure 5.1 Seasonal changes in the supply of currency in French West Africa (1901-1940) and French Indochina (1929-1948), average deviation from 13-month moving average



Sources: Online Appendix Chapter 5

The Growth of Land Markets

Land was bought and sold on the market in both Africa and Southeast Asia prior to colonial rule, but more so in the latter than the former. Boomgaard (2011) argues that even in the late medieval and early modern period, private alienable land tenure could be found in parts of Burma, Vietnam, Indonesia, and the Philippines. Yet land markets were absent in some parts of the region well into the 1950s. Farmers had usufruct rights over land they had cleared and then cultivated, but often lacked definite property rights to dispose of the land they held. Even when land could be bought or sold, there were often restrictions on the nature of those sales: for example, by limiting the potential buyers of land to those living within the seller's village (Boomgaard 2009). Mortgages secured on land were found in some parts of the region. For instance, Burmese archives contain a large sample of *thet-kayit* mortgage deeds that show that by the early 19th century land was a firm basis for some credit (Hla 1987, Saito 1997).

Land markets were slower to develop in colonial Africa. Generally speaking, prior to the turn of the 20th century, they were limited to coastal enclaves like Dakar or Lagos (Thioub 1989, Hopkins 2024), to inland cities, like Kumasi (Austin 2005), or to those of the Saharan desert edge, or to rural areas of acute land shortage, such as in Akyem Abuakwa in Ghana and in the Kano Close Settled Zone in Northern Nigeria (Austin 2009, Watts 1983). Mortgaging urban property was also common in the coastal cities, but could also be found in desert-edge cities like Katsina (Daddi Addoun and Lovejoy 2011). Markets generally seem to have been more developed in areas where Islam had been firmly entrenched and its legal principles absorbed by local institutions, but population density and proximity to markets were still the most important factor: among the Alladian people of coastal Côte d'Ivoire, for example, where commercial contact had been extensive and 'all land in any way cultivated or worked becomes the first property of the first man who cultivates or works it…' (Clozel and Villamur 1902, p. 404). Yet in very large parts of Africa land sales were unknown. For most African farmers use of land tended to be regulated by local institutions, even more so than in Southeast Asia: for example, by a 'master of fire', the descendant of the person who had originally cleared the land (Galvan 2004, p. 53). Overwhelmingly it could not be alienated from the community to which it belonged, even if the right to cultivate land could essentially be 'purchased' by outsiders with a gift or tribute to the owner of the land rights.

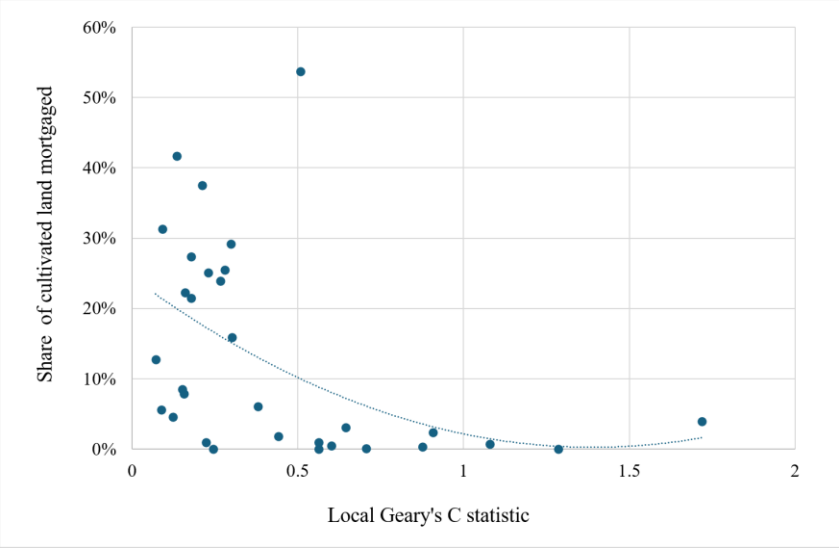
As European rule spread over the African continent, colonial administrations tended to change these institutions only when necessary to secure land for their own purposes: when they built colonial cities, for example, or expropriated land for roads and railways, or when they granted concessions to private European companies. They often attempted to codify what they saw as existing African practices, although usually with a modernising eye: Africa would evolve towards private rights in land, but only when it was ready. Changes that were made to African practices often reflected not only the state capacity and economic interests of the imperial power, but also dominant economic ideologies circulating within it. For example, the peculiar institutional set-up of colonial Northern Nigeria, where land had been bought and sold prior to colonial rule, stemmed not just from a colonial attempt to understand the nature of the Sokoto Caliphate's claims over land but also from a Georgist enthusiasm for land-value taxation that was at its apogee in Britain after the Liberal landslide election of 1906 (Lennihan 1982). There was also a substantial variation in approach across colonising powers: the British were the least likely to want to interfere with local practice, under the general aegis of the doctrine of indirect rule, though this mattered little in the settler and semi-settler colonies where any excuse was found to alienate land wanted by others. The French, following their own ideological preference for consistency across the empire, introduced formal title in their African colonies but rather than producing a cadastral survey, required Africans to register their titles for a considerable price; few did (Noronha 1988).

Rural Mortgage Markets

As land gained prominence as a source of state taxation and collateral, more formal institutions emerged to regulate the expanding markets for land. In Southeast Asia, the Torrens system of land registration – in which land parcels are registered formally at a central office, the register serving as the central means of proving ownership of any given piece of land – was introduced comprehensively in the Federated Malay States in 1897, in Thailand in 1901 and in the Philippines in 1903. In the Dutch East Indies a slightly different and less comprehensive version of land titling was introduced, and the same is true of Burma. In Indochina the adoption of Torrens titling was slower and developed extensively only in the southern, directly ruled region of Cochinchina, drawing partly on the tradition of the land surveys of the Nguyễn dynasty in the 19th century (Kleinen 2011). This institutional revolution provided the basis for a rapidly growing land mortgage market in much of Southeast Asia that had no equivalent in Tropical Africa. By the late 19th century, even parts of Burma that were land abundant had thriving mortgage markets. By the end of the Second World War, land speculation close to Bangkok was rampant, 'greatly accelerated', one study argued, 'by an enormous increase since the war of banking facilities, which traditionally lend loans of mortgage of real estate'. Financial institutions, moreover, purchased land to further inflate land prices (Janlekha 1955, p. 71).

One of the most obvious patterns in mortgage markets was the spatial element. Unsurprisingly, mortgages were most common in both regions in urban areas, where title was most secure (often, in Africa, cities were the only places where secure land titles were a possibility). Rural mortgage lending was most widespread where land was valuable, and what made land valuable in a land-abundant context was its proximity either to a final demand point, such as a city, or to low-cost methods of transport, such as railroads or waterways. The clearest evidence we have for this comes from Burma, where mortgage records were kept on a district level, and where we have comprehensive price statistics that allow us to look at market integration. In Figure 5.2, we plot the degree of market integration measured using Geary's C statistic (for which a low score indicates high integration: cf. Shiue and Keller 2007) against the share of agricultural land that was under mortgage. There was a clear relationship between the two: more integrated markets also had more land under mortgage. The commercialisation of rice agriculture in Southeast Asia was thus a powerful means through which a species of collateral was created that helped spur financial development.

Figure 5.2 Relationship between rice market integration (Geary's C statistic) and share of agricultural land mortgaged in Burma, 1921



Sources: Online Appendix Chapter 5. Note: A smaller Geary's C statistic indicates higher integration of district x with other districts.

Not all land-backed debt served a directly productive purpose, of course: some of it was used to finance consumption, and some of it was probably used to expand land holdings rather than invest in intensifying production. Nonetheless, the growth of collateralised borrowing in the countryside helped to develop a financial infrastructure that allowed entrepreneurial farmers to invest in capital equipment, livestock (which could provide natural fertiliser) and in the education of their children. When the land frontier began to close, as it began to in much of formerly land-abundant Southeast Asia during the second half of the 20th century, an active rural credit market was able to step in to provide for the intensification of production that higher population densities and swelling urban centres demanded. In Africa, by contrast, rural credit was still largely informal and much more rarely backed by secure title than in Southeast Asia.

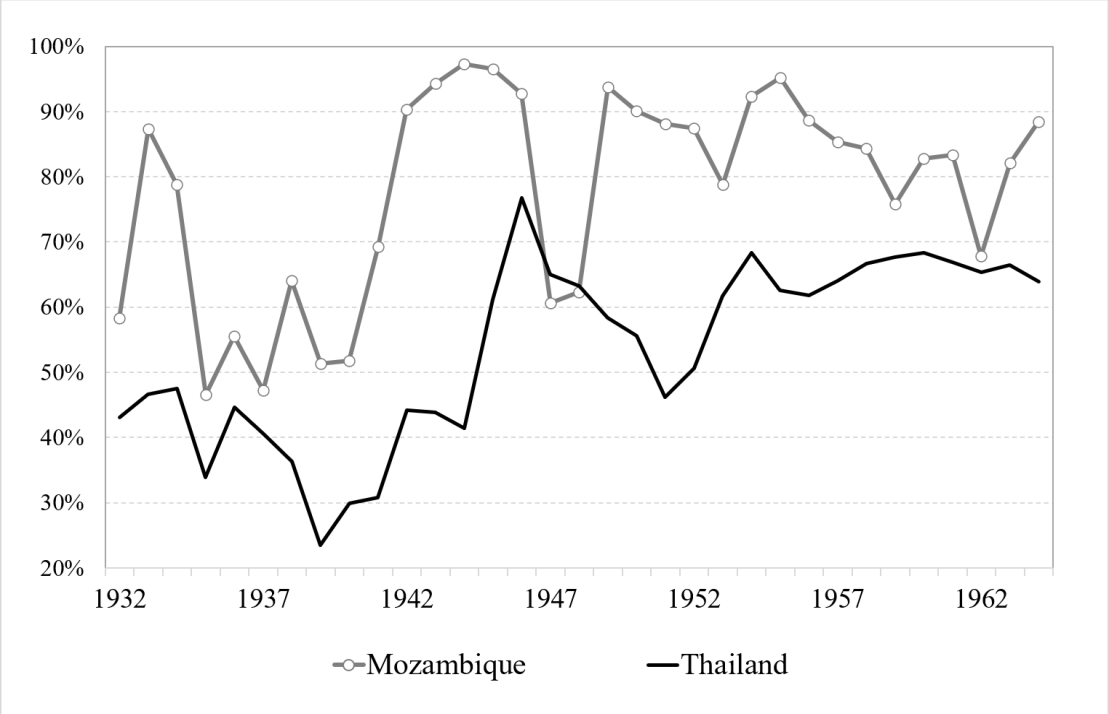
Land is not the only form of immoveable property that can serve as collateral. What did develop in Africa (and in Southeast Asia as well) with the cash-crop revolution of the 19th and 20th centuries were tree crop farms. Tea, coffee, cocoa, rubber and palm plantations had value that the land itself might have lacked, since these crops took time to establish and produce. Farm pledging – whereby the owner of a farm would offer the use of a cocoa farm as collateral for seasonal borrowing – became relatively common in Ghana (Austin 2005). In Africa, too, financial and institutional innovation went hand in hand, and deepened regional inequalities: in Côte d'Ivoire, colonial officials tended to believe that land registration was both unnecessary and undesirable in the savannah regions where farmers practised shifting cultivation and grew only food crops; consequently, they concentrated their efforts to promote titling almost exclusively in the forest zone, where coffee and cocoa trees could provide collateral (Bonnecase 2001). But the extent of this alternative form of collateral was sharply circumscribed by the illiquidity of the market for tree plantations in an environment in which the establishment of new plantations required only a small investment from new entrants.

That the scale of land-backed credit in Southeast Asia was considerably larger was not due to any lack of intrinsic market orientation of African farmers. Indeed, the case of Buganda is the exception that proves the rule: in an exceptional case in which land tenure institutions were changed wholesale and large land grants given to African elites, induced scarcity quickly led to a thriving domestic market in land, in which elites and peasants alike participated (Richards 1963). The settler and semi-settler economies were also partial exceptions, where, again, institutionalised land dispossession created scarcity where land had previously been abundant. In Kenya, for example, where a relatively substantial settler population expropriated land on a large scale in the fertile highlands, long-term credit was available for white farmers through land mortgages, and land sales even among Africans were documented in the 1930s (Platteau 1996). That said, it is worth noting that not all parts of Kenya enjoyed a credit boom when the Swynnerton Plan was implemented in the 1950s to encourage private landholding. Shipton (1995), for example, suggests that among the Luo the spiritual value of land was such that lenders were afraid of being unable to foreclose on defaulting borrowers without provoking violence.

Mortgage markets did develop rapidly in African cities, just as they did in Southeast Asia. The economic significance of this was that urban land could be used as collateral for loans by urban entrepreneurs. While many, perhaps most urban property-owners in both regions invested further in urban property, at least some used their newfound access to credit to establish or expand manufacturing businesses. What is significant for the financial divergence between the two regions, however, is that land-backed credit was much more intensively an urban phenomenon in Africa than in Southeast Asia. As Figure 5.3 shows, the share of urban properties in the national-level mortgage market hovered around 80% in Mozambique after World War Two, whereas it was around 60% in Thailand. This was despite the fact that by 1960, when statistics begin, Mozambique's urbanisation rate was only 4% of the population, compared to 12% in Thailand. Major urban centres like Maputo and Bangkok dominated the financial

systems in both countries, but Thailand's credit network stretched further out into the countryside. Moreover, we might expect Mozambique, with extensive European-owned plantations, to have had a relatively strong rural mortgage market. The very lack of statistics on mortgages elsewhere on the African continent is also telling.

Figure 5.3 Share of registered mortgages backed by urban, rather than rural property in Thailand and Mozambique, 1932-1964



Sources: Online Appendix Chapter 5

Southeast Asia's Financial Revolution: Developmental Consequences

The deeper credit markets of Southeast Asia relieved some of the obstacles in the path of industrialisation and, perhaps most crucially, were a necessary condition for the Green Revolution that allowed Southeast Asian countries to release agricultural labour en masse to the growing manufacturing sector. Inputs like fertiliser and irrigation usually required smallholders to borrow money regularly (Mosley 2002, Johnson, Hazell and Gulati 2003). Even recently, few African smallholders use credit to purchase modern inputs, despite the proliferation of mobile banking and other financial innovations (Sheahan and Barrett 2017).

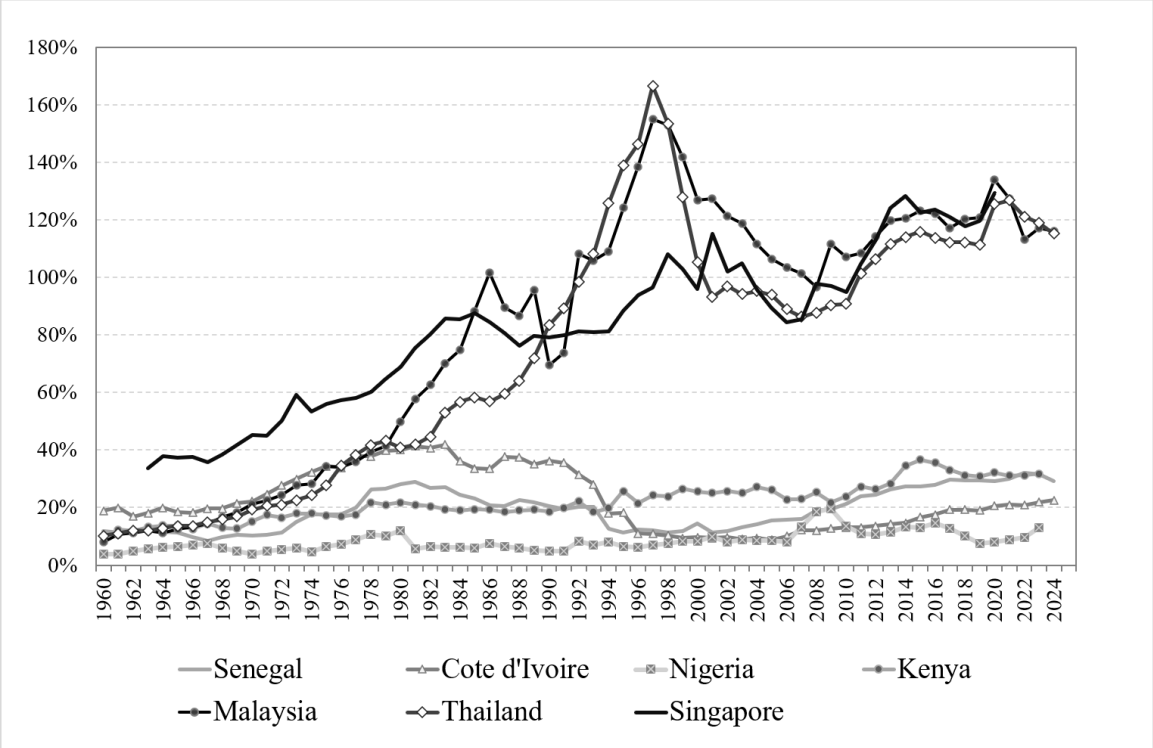
But access to collateral like urban or rural land also allowed industrial firms to access formal credit, which is often offered on much less constraining terms than informal credit. In Africa, access to finance has been found to be one of the major constraints faced by industrial enterprises (Fafchamps 2003). But where could potential industrialists in colonial Southeast Asia and Tropical Africa find the capital to invest in mills and other industrial concerns? Generally speaking, industrial finance in market economies comes either from debt or from equity. Domestic markets for securities were extremely underdeveloped in Africa until quite late, though African firms could and did raise capital in outside markets. The first stock exchanges were opened on the continent in the late 19th century, in both North and South Africa (Lukasiewicz 2021). Equity markets were especially deep in South Africa, where the

value of listed corporate stock in 1910 was around 120% of GDP, the fifth highest such ratio in the world, and reflecting the significance of the country's mining sector (Hannah 2015). It took a much longer time for stock exchanges to arrive in the tropical parts of the continent. A stock exchange opened in Nairobi in 1954, and in Nigeria in 1960, but most date only to the 1990s or 2000s (Schiereck et al. 2018).

By contrast, even prior to World War Two there were several important exchanges in Southeast Asia, including in Jakarta in 1912 (van der Eng 2022a) and Manila in 1927 (Ho and Odhiambo 2018). The corporate stock-to-GDP ratio in the Netherlands Indies was around 25% in 1910; for the Philippines it was just behind, at 22% (Hannah 2015, p. 558). Though these numbers were low compared to more developed economies, they were substantial for poor agricultural economies. By way of comparison, in 1999, the market capitalisation of the Indonesian stock exchange was 45.7% of GDP and in the Philippines 49.3%. In stark contrast, in 1999 Côte d'Ivoire's market capitalisation was only 6.9% of GDP and Ghana's 11.9%. Does this matter for industrialisation? A long-standing debate in the literature turns on whether underdeveloped securities markets are a cause of financial underdevelopment, or merely a symptom of it (cf. Wai and Patrick 1973, Drake 1977). Without taking a position in that debate here, we take the lack of substantial stock exchanges as yet another sign that local financial markets in Tropical Africa were less developed than in Southeast Asia.

The other main source of capital was borrowing, particularly from banks. The evidence again suggests that there was a significant difference in the quantity of credit available from the banking sector in Southeast Asia and Tropical Africa. Whereas Table 5.1 hints at a deeper deposit base in Southeast Asia than in Tropical Africa during the first half of the 20th century, a clear divergence in bank lending occurred in the 1960s and 1970s, as can be seen in data from the IMF shown in Figure 5.4. While it was hardly all for productive investment – as the 1998 financial crisis eventually demonstrated – financial constraints were clearly more binding for African firms. Access to credit played a role in this: in Nigeria around 13% of firms reported in 2020 that they were entirely credit constrained, and 42% at least partially credit constrained; in Cambodia, with a roughly similar per capita income, those figures were 4.1% and 10.4% respectively (World Bank 2026).

Figure 5.4 Domestic credit to the private sector from banks as a percentage of GDP for selected major African and Southeast Asian economies, 1960-2024.



Source: Online Appendix Chapter 5

Of course, not all of this gap can be explained by the development of formal banking. More informal sources of credit were a particular strength of Southeast Asian economies. Some historians have suggested that Chinese financiers in Southeast Asia played only a limited role in promoting industrial growth (Brown 1994). This may have been true of most Chinese merchants and moneylenders active in the region, but it does not mean that there was no linkage between traditional forms of moneylending and more developed forms of credit. Smaller institutions that initially focused on extending trade credit to those underserved by metropolitan banks could branch out into small-scale industrial finance, as with the Chinese banks in the Netherlands Indies (van der Eng 2022b). Turnell (2009) argues that the Chettiar lenders in Burma loaned frequently to factory-owners and petty industrialists. Industrialists in Burma tended to think that European capital was out of their reach: 'the banks in Burma are European concerns and these will never think of financing any industry', claimed one in evidence given to the 1916-7 Indian Industrial Inquiry (Indian Industrial Commission 1918, p. 517). The Burma Provincial Banking Inquiry in 1930 suggested that 'the larger establishments in all the industries mentioned…can deal with the exchange-banks and the Imperial Bank of India and other banks, and some have access also the London money-market' (Burma Provincial Banking Enquiry Committee 1930, p. 129). But cooperative credit societies for cottage industries in Burma supported the other end of the market.

In East Africa, South Asian merchants also diversified into industrial ventures (such as cotton ginning in Uganda) and in West Africa Levantine merchants fulfilled a similar role, albeit less extensively. In the previous chapter, we argued that the rapid expansion of rice milling was one of the major differences between the 'food-inclusive' and 'food-exclusive' paths of agricultural commercialisation of Southeast Asia and Tropical Africa respectively. An upshot of this was that there was a set of easily mortgageable capital assets dotted around the Southeast Asian countryside: the Russei-Keo mill in Cambodia, for example, was purchased by the *Société rizicole de Russei-Keo* in 1921 and immediately leased to a

syndicate of Chinese businessmen for 15,000 piastres per year (Gouvernement Général de l'Indochine Française 1928), demonstrating an impressive liquidity in the market for large-scale capital assets. Aside from startup costs, which could be considerable, rice mills required relatively modest amounts of working capital, principally to acquire the rice itself, for which they often advanced money to brokers. Millers, therefore, occupied an intermediary role in the rural financial network. Credit could be obtained by small-scale rice mill owners from the Chettiar moneylenders or from Chinese banks; Dawsons Bank, the major European financial institution in the colony, loaned money to some larger millers. These lenders also borrowed from, and loaned to, each other. Chettiar firms frequently borrowed from banks on the security of their mortgage portfolios (cf. Figure 5.5.).

Figure 5.5 A Chettiar father and son, ca. 1920

Source and notes: Online Appendix Chapter 5

Conclusion

Historically, land and credit were tightly connected. There is a virtuous circle: land can serve as collateral to obtain credit, and credit can provide the means to invest in land quality and raise its value. In this chapter we have argued that the earlier rise and wider spread of land markets in Southeast Asia had a positive effect on the growth of credit provisions for smallholders, including food crop cultivators. While the evidence for a regional contrast in this virtuous cycle of land and credit market development before 1950 remains patchy, the data that we were able to compile all point in the same direction: in Tropical Africa credit and land mortgages were more confined to urban areas, and penetrated less deeply into the countryside. The implications of credit constraints for the possibilities of an agricultural revolution that requires farmers to invest in new seeds, fertilisers and pesticides are straightforward. Further research is needed to quantify these effects, to allow for more precise comparisons of orders of magnitude and to link the inter-regional contrasts more directly to the rural economic policies adopted by successive African and Asian governments. One conclusion seems clear however: Asian governments could, in general, rely on a much more developed grassroots system of credit provision than their African counterparts.

6 Conclusion

The Great Divergence is almost over. If population and economic growth continue at present trends, it will take around 30 years for China's economic output per person to draw level with the United Kingdom's at nominal exchange rates. Shanghai is not yet London, but the differences are less profound than the similarities. Global inequality in the 21st century will increasingly be determined by the divergence between Asia and Africa, which between them will account for the vast bulk of the world population. South-South divergence, as we have argued, has deep historical roots. We cannot understand the growing economic disparity within what was once known as *the* global South, without tracing the dynamics of agricultural commercialisation back into the 19th century.

The economic development of rural Southeast Asia in the late 19th and early 20th centuries involved the 'end of the peasantry', that is, the decline of subsistence farming and the spread of the market to all aspects of rural life (Elson 1997). In this short book we have argued that while the peasantry had disappeared in much of Southeast Asia before the Green Revolution, in Tropical Africa it endured. The trade boom of the 19th century led both regions to embrace export-oriented cash cropping, but only in Southeast Asia did the trade boom result in deeply integrated, region-wide markets for staple foods like rice. This had profound effects: it enabled mass immigration from outside the region, it facilitated the early growth of large, diversified cities which, given the low and stable prices for the main wage good, did not have to offer comparatively high wages to attract workers, and it placed millions of cultivators under a regime of (international) competition.

The commercialisation of the food sector resulted in personal hardship, while it simultaneously rendered economic benefits that spread beyond agriculture. In particular, processing mills for rice in Southeast Asia created a wave of rural industrialisation that provided not only employment but also new demand for skilled labour and energy provision. Market integration drove a process of land commercialisation that provided the collateral for a thriving credit economy. In Africa farmers could sometimes borrow on the security of fixed investments, like oil-palm and cocoa plantations, but the great majority of food producers were left outside the formal credit economy entirely because they lacked suitable collateral.

Throughout the chapters we have emphasised the role of transportation costs, and the distinction between water and overland transport as the key factor in explaining the integration of food crop markets. But there is more to this story that sets Tropical Africa apart from Southeast Asia. The African tropics are arguably an ecologically more heterogeneous, and therefore also more fragmented space, in which each ecological zone has its own leading staples. This diversity in crops, and the consumer cultures that emerged around them, also constrained the potential size of markets apart from the costs of moving maize, millets, teff, plantains, yams, cassava or, indeed, African rice from A to B. Another factor, which we have only lightly touched on in this book, is still an open question: did these different commercial opportunities also lead to a greater degree of colonial 'neglect' of the food producing subsistence sector in Africa than in Southeast Asia where colonial governments could not afford to neglect the emergence of a regional market?

The concept of South-South divergence sketches out a new research agenda to explain a major global economic phenomenon that has implications beyond those we have emphasised here. This book focused on contrasting pathways of agricultural commercialisation, because we consider it the most important driving mechanism in the long-term process of divergence, but there are many connected factors that deserve more sustained attention from economic historians. We know, for example, that educational enrolment rates in Southeast Asia were considerably higher than in Tropical Africa (Booth 2007, Barro and Lee 2015), and this must have played a major role in driving the divergence between the two

regions. Much work remains to be done in understanding *when* and *why* this educational disparity emerged, and *how* it influenced long-run development. There are also empirical questions that deserve further research, particularly into how differing paths of agricultural commercialisation affected comparative living standards not only between regions but also within them. Moreover, the comparative evolution of land and credit markets and the spread of grain mills also deserve much more in-depth research than we have been able to put forward here.

Our comparison of Tropical Africa and Southeast Asia is motivated by the seven similarities that we identified in the introduction. However, there are ample opportunities to extend the comparison to other parts of the former global South, including major regions such as Latin America, Southern Asia, the Middle East and North Africa. All of these regions are characterised by a set of 'family resemblances' that make it worthwhile to treat them as regions (Frankema 2025a, p. 533). Moreover, comparative historical analyses of the dynamics of agricultural commercialisation in these regions can also extend, enrich or challenge the thesis we developed here. For one, we have paid fairly limited attention to the role of local and regional power structures or class formation. These topics may have to be given more prominence when extending Asia-Africa comparisons to Latin America for example.

Another major question we have not addressed, but which is directly related to the different pathways of agricultural commercialisation discussed above, is the question of comparative living standards and demography. If capitalism and market development were more pervasive in Southeast Asia than in Tropical Africa, did that then make its population better off, or not? Here we run up against the limits of the existing data, particularly on rural living standards. Perhaps real income levels for the bottom 80% of the rural population were somewhat higher in Southeast Asia in the period between 1850 and 1929, to then fall back in a period of successive crises (depression, Japanese invasion, wars of decolonisation, famines, civil warfare and genocides) and market disintegration?

If so, one has to take into account that a considerable share of the surpluses were siphoned off by colonial companies, governments, landlords and Asian expatriate entrepreneurs in the form of remittances to India and China. Moreover, with capitalism spreading deeper into the countryside, income and wealth distributions are likely to have been more skewed in Southeast Asia too. Another important factor is that considerably higher rates of population growth since the early 19th century may have enhanced the commercial dynamics in Southeast Asia, while at the same time eroding the surpluses available per head of the population. Moreover, when after 1929 a sequence of economic setbacks held Southeast Asia back, whereas African export sectors did not experience nearly the same negative consequences of the Great Depression or the Second World War. Hence, it may not be all that surprising that in the 1950s and 1960s, both regions had broadly comparable average per capita incomes, even though the structures of their agricultural regional economies differed considerably.

More importantly, higher real income levels are, as Scott (1976) has emphatically argued, not necessarily what peasants or farmers care most about. Especially in situations where real incomes remain fairly close to bare-bones subsistence, the long-term stability of those incomes, and the insulation against negative income shocks may be valued much more. How insecure were the livelihoods of Southeast Asia's rice farmers, as compared to African subsistence farmers? The risk of market dependence became especially clear in the 1930s in the highly commercialised Irrawaddy delta of Lower Burma, and the Mekong delta of Cochinchina. Subsistence farmers in Tropical Africa, on the other hand, were particularly vulnerable to consumption shocks as a result of local harvest failures. While there is ample evidence of both forms of insecurity translating into large-scale human suffering, the loss of access to land and credit because of structural indebtedness was probably more common in Southeast Asia than in Tropical Africa. New research on comparative rural living standards that takes into account both income levels and income volatility would help deepen our understanding of chronology, causes and consequences of South-South divergence.

Our story can also be extended in time, backwards as well as forwards. The process of rice commercialisation we document for Southeast Asia had a history that extended much further back than the 19th century, even if its extent was vastly enlarged by the fall in transport costs. The effects of the trans-Atlantic slave trade and indeed domestic slavery are a common theme in African economic history, but much more work remains to be done in understanding their impacts on agriculture and regional markets. Similarly, connections can be made between the institutions and actors that drove agricultural commercialisation in both regions and the later success of the Green Revolution in Southeast Asia and its relative failure in Africa. We argued that the 'market enabling' sector – comprised of actors like petty traders, moneylenders, mill owners and so on – was larger and more developed in Southeast Asia, and that this has played a major role in enabling the technological advances of the 1960s and 1970s to penetrate the countryside in Southeast Asia to an extent that was unmatched in Tropical Africa. But the connection between these two developments requires closer scrutiny.

More broadly, institutions also deserve further elaboration: to what extent did food-inclusive and food-exclusive agricultural commercialisation result in different institutional developments? If so, can we start to speak of *distinct varieties of agricultural capitalism* in the tropical world driving South-South divergence? Equally, our approach of connecting the regional stories to individual country dynamics can be extended to consider the growth of regional economic bodies in the post-independence period. Did initiatives like the Association of Southeast Asian Nations and Asia-Pacific Economic Cooperation provide the institutional basis for deepened economic integration that African equivalents such as the Economic Community of West African States did not? Southeast Asia's industrialisation is deeply entwined with the story of Japan, South Korea and, in the past few decades, China. The contrast with the role played by relatively richer temperate economies like South Africa is stark. Expanding the analysis to other tropical land-abundant regions, in particular Latin America, is also a natural avenue for future research. This will help deepen our understanding of a major historical divergence that has already shaped, and will continue to shape, the contours of the 21st century world economy.

This divergence, we have argued, was not necessarily obvious to observers half a century ago. After all, the historical experiences of land-abundant tropical economies in Southeast Asia and Tropical Africa in the 19th century encompass many points of similarity. Both regions were (mostly) colonised by Western powers, some for hundreds of years. Both regions were incorporated into the world economy on extractive terms, with labour coercion heavily present in the raw commodity export sectors that drove economic expansion in the late 19th and first half of the 20th centuries. Both experienced large-scale violence during and after decolonisation. It was not unreasonable to suppose, in the mid-20th century, that their future trajectories might be similar too. Yet their economic paths diverged markedly in the second half of the 20th century, a product of the nature of their incorporation into the global agricultural economy. Southeast Asia's staple food sector underwent a process of domestic, regional and global integration; Tropical Africa's did not. Though undoubtedly disruptive, this process meant that Southeast Asia emerged from the colonial period with the prerequisites for the widespread intensification of agriculture during the Green Revolution and rapid structural change towards a model of labour-intensive manufacturing that has seen the region shake off widespread poverty. In Tropical Africa, food markets never saw the same kind of dynamic integration under colonial rule, and even today remain thin and volatile in comparison to Southeast Asian markets of even a century ago.

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