



FIG. 4.7 Rice price and public investment in irrigation, Philippines and Sri Lanka, 1960-98

Note:

^a Weighted average of government's purchasing price called GPS (guarantee price scheme)

^b Paddy price (pesos per kilogramme) deflated by GDP deflator.

^c Bangkok fob price (Thai 5% broken, US dollars per kilogramme) deflated by IMF index of world export price.

Source: Kikuchi, Maruyama and Hayami (2002, 2003).

response to short-run price fluctuations depending on such factors as weather variations. A more basic concern is whether it is appropriate to leave the agricultural production base being weakened because of current low food prices, when the relatively abundant supply of food today is being maintained through progressive exhaustion of the yield-increasing potential of Green-Revolution technology that was created by investments in the past.

4.4 Development via Natural Resource Slack

Economic activities, especially exports, in developing economies are characterized by a high dependency on natural resources (Table 2.3). Even

though the scarcity of natural resources has been rapidly increasing, some developing economies are still endowed with significant slack in mineral, forest, and other natural resources for the production of primary commodities. Several historical examples are available from countries such as Australia, Canada, and the USA, in which economic growth in the early stage of development was primarily based on exploitation of natural resources. Is it possible today that some developing economies with relatively favourable endowments of natural resources might achieve economic take-off through exploitation of their resource slack? This possibility will be examined here with reference to theories pertaining to the development process of resource-rich economies.

4.4.1 Colonialism and the vent-for-surplus theory

The so-called 'vent-for-surplus theory' by a Burmese economist, Hla Myint (1971, ch. 5) focused on the process of development in 'empty lands' with low population density, large tracts of unused land, and abundant natural resources, typically found in South-East Asia and Africa at the outset of Western colonization. When these economies were integrated into international trade under colonialism, unused natural resources (hitherto having had no value to indigenous people) began to command market value since they were found useful to produce primary commodities of high external demand. These natural resources, when exploited by foreign capital and entrepreneurship, became a new source of income. A typical example is the development of Malaysia as a major exporter of primary commodities through the exploitation of tin-mines and the conversion of jungle to rubber plantations by migrant labourers from China and India, mobilized by British capital.

Such vent-for-surplus development, however, did not bring about significant increases in the levels of income and living of the native people. According to Hla Myint, this was because colonial government and foreign enterprises in collusion suppressed education and skill formation of native workers to preserve the source of cheap labour. Another underlying factor was identified as the monopolistic exploitation of small peasants by foreign traders (Hla Myint, 1965, chs. 3 and 5). A similar perspective prevailed on the regressive effects of foreign entrepreneurs' activities in mines and plantations to create enclaves in indigenous economies and consume large resource rents for the import of luxurious goods from abroad. This argument was once widely accepted to explain poverty and underdevelopment in former colonial economies (Singer, 1950; Boeke, 1953; Lewis, 1989).

This theory, together with 'dependency theory'—advancing the neo-Marxist perspective that poverty in the Third World is bound to be reproduced in order

to maintain the high rate of return to capital in advanced economies (Baran, 1957; Furtado, 1963; Frank, 1967)—provided an ideology in support of import-substitution-industrialization policies and nationalization of foreign-owned enterprises and resources (see Section 8.2.4).

However, a strong criticism of these theories was made by Jamaica-born W. A. Lewis (1970, ch. 1). He insisted that it was not large plantations but small peasants that made a major contribution to increased export of tropical crops in the late nineteenth to the early twentieth century. Peasants' income, if not the wage rate, did increase in this process through more intensive use of their family labour and land resources. Further, he maintained that incomes produced from mines and plantations also had the effect of inducing local industrialization. Although he recognized that some colonial policies had repressive effects on the development of local economies, the meagre supply of public goods such as education and roads was not intended by colonial governments to suppress local development. The governments failed to undertake major public investment simply because their financial basis was very weak at that time. Thus, he conjectured that if the tropical export boom from the 1880s had not been interrupted by the World Depression in the 1930s, many tropical economies would have been able to switch gradually from natural resource-based economies to industrial economies.

Thus, interpretation of the intentions and consequences of colonial policies differs sharply between Hla Myint and Lewis. However, these two great economists, both born in the Third World, are in complete agreement that whether economic growth based on exploitation of natural resource slack could lead to sustained economic growth and increased welfare of indigenous people depended critically on mobilization of resource rent for investment in human capital and on improvements in both physical and institutional infrastructure for efficient functioning of the market mechanism.

4.4.2 *The staple theory*

The 'staple theory', originally developed by Canadian economic historians (Innis, 1933; Watkins, 1963), has the same theoretical structure as the vent-for-surplus theory for explaining the development process of empty lands under the impact of international trade. However, this theory, based on the historical experience of developed economies, focused on the transition pattern in the economic development of empty lands from exploitation of natural resource slack for export to growth in domestic commerce and industry.

'Staple' here means a major primary commodity which plays a leading role in expansion of exports from the empty lands. As population increases owing to employment and income opportunities created from the staple export, domestic consumption as well as the processing and transportation activities related to staple production and export would increase, inducing developments in domestic commerce and industry. However, it takes time before a local population can reach a threshold beyond which scale economies operate for commerce and industry. If unused slack of resources for the production of a staple is exhausted before this point is reached, sustained economic growth cannot be achieved.

Therefore, the successful transition from development based on natural resource exploitation to that based on expansion in commercial and industrial activities would require switching from one staple to another based on different natural resources until the economy reaches a threshold of industrial and commercial development. In Canada, this switching took place from cod and fur on the East Coast to timber in inland forests, and further to wheat in the Great Plains. Through this process the domestic market was expanded with developments in commercial and transportation networks accompanied by developments in timber and wheat mills as well as manufactures for domestic consumption demands.

Such switching among staples was carried out by the private profit-seeking motives of farmers, traders, and mining entrepreneurs. However, effective switching to sustain the growth momentum of a resource-based economy must be supported by the supply of public goods. The switching from coastal marine products to timber and wheat could not have been possible without public investment in inland transportation infrastructure such as canals and railways. Institutional infrastructure such as land registry and homesteading had been developed to push the cultivation frontiers to the West. As the frontiers began to be closed, development of agricultural research and extension systems was required to maintain the vigour of wheat exports (North, 1955). Many kinds of physical, human, and institutional infrastructure had to be laid out for developments in commerce and industry.

Development mechanism, as described by the staple theory, was successful in transforming empty lands in North America and Australasia into economies of sustained growth resulting in major gains in the economic welfare of the resident population (albeit at the expense of the aboriginal population). No comparable outcome has yet been achieved from the vent-for-surplus growth in Asia and Africa. The failure in the latter to reach sustained economic growth may be explained by colonial exploitation policies, a late start in development interrupted by the World Depression, or

other factors. Yet, it is certain from comparisons between the staple theory experienced and the vent-for-surplus growth that the simple exploitation of natural resources alone can neither sustain economic growth nor improve the living standards of indigenous populations. The problem for the developing economies that are still endowed with relatively abundant natural resources is to find a way to mobilize rent produced from the exploitation of natural resources for investment in human capital and social overhead capital needed for shifting to sustainable economic development.

4.4.3 *The Dutch disease*

While the endowment of abundant natural resources is a large asset for economic development, it sometimes harbours a pitfall leading to economic retardation. This phenomenon is called the 'Dutch disease', after the experience of the Netherlands on its discovery of a rich natural gas deposit in the North Sea in the late 1950s. Exploitation of this new resource base brought about a major improvement in the balance of trade for the Netherlands, but ironically resulted in declines in domestic industries with increased unemployment. Appreciation in the real rate of exchange for local currency resulted from increased trade surplus, which undermined the international competitive position of agriculture and industry (Corden and Neary, 1982).

In general, the shrinkage in value added in the agricultural and manufacturing sectors in resource-rich economies due to the resource export boom is more than compensated for by increased income in the resource sector. However, because the mining of gas and oil as well as minerals is characterized by high capital intensity (Bairoch, 1975, ch. 3), the increase in employment in the mining sector is not sufficient to absorb workers laid off from agriculture and industry.

A part of this employment loss may be compensated for by increased employment in the production of non-tradables, such as construction and services, for which expanded demand is derived from the booming resource sector. This intersectoral labour reallocation, however, usually involves a significant time-lag.

The danger for resource-rich economies is that the resource-export booms, such as those experienced in the first and the second oil crisis in 1973–5 and 1979–81 respectively, vastly increase export prices and earnings but are also abrupt and short-lived. Sharp appreciation in the exchange rate of the local currency in the boom period tends to seriously damage domestic agriculture and industry, resulting in an irreversible loss in fixed facilities, and labour and management skills for the production of non-resource tradables. As a result,

recovery of these sectors will become difficult. Meanwhile, with the collapse of the resource boom, derived demand for non-tradables will decline precipitously. A major economic slump with a high unemployment rate will then become inevitable. If some key manufactures (or agriculture) having strategic complementarities with other industries are destroyed by the natural resource boom, the economy may not only be unable to return to the former development path but might even be trapped at a low-level equilibrium (Krugman, 1987, 1991; Matsuyama, 1991).

This pathology of the Dutch disease was typically observed in Nigeria. As a major oil exporter, this country benefited from a major export boom during in the two oil-crisis periods. Similar to other developing economies, the official exchange rate was fixed. However, because much of increased oil revenue was spent for conspicuous development projects and government consumption, excess effective demands were created that resulted in inflation. The real rate of exchange sharply appreciated under the fixed official exchange as the domestic price level increased faster than the international level. Consequently, the sectors producing non-oil tradables, especially agriculture, were severely damaged. Rural villages were deserted, and urban slums were inflated by migrants seeking employment in service sectors. This process was aggravated by the government's construction of modern large-scale, capital-intensive industries, based on large oil revenues and foreign credits attracted by high solvency of Nigeria in the expectation of continued high oil prices. After the collapse of the second oil boom in 1981, Nigeria was left with desolated rural villages and swarms of unemployed workers in cities—a situation resembling the low-equilibrium trap in the strategic complementarity theory.

This Nigerian experience was commonly shared by many other oil exporters such as Mexico (Gelb *et al.*, 1988; Little *et al.*, 1993). However, an example of escape from the Dutch disease is found in the case of Indonesia (Pinto, 1987). Like Nigeria, Indonesia had a high dependency on oil for both government revenue and export earnings. However, during the two oil booms, the Indonesian government increased assistance to agriculture through investment in irrigation and agricultural research as well as giving subsidies for fertilizers and other farm inputs, so that the productive base of domestic agriculture was strengthened. This was demonstrated by their achievement of self-sufficiency in rice. Also, a disciplined fiscal policy prevented galloping inflation. Repeated devaluations in the exchange rate (1978, 1983, 1986), together with liberalization in international trade and foreign direct investment, were successful in supporting the development of labour-intensive manufacture in which Indonesia's comparative advantage lay (Oguro and Kohama, 1995; Thorbeck, 1998).

Major differences in the economic growth performance of Nigeria and Indonesia can be observed in Tables 2.1, 2.2 and 2.3. The contrast between Nigeria and Indonesia was not unique but was rather general between Sub-Saharan African and East Asia (Thorbecke, 1995a). This shows that a rich endowment of natural resources is not necessarily a good support for economic development, but can instead be a stumbling-block. It also clearly demonstrates that such a trap for resource-rich economies can be avoided with the application of appropriate policies.

NOTES

1. Allen argued that landlords' innovation did not increase yields much but reduced labour inputs significantly. His view is consistent with Marx's that enclosure of smallholders' plots into large estates by landlords contributed to the formation of an industrial reserve army (ch. 5, sect. 1). According to Allen, however, not many labourers displaced from agriculture in the eighteenth century were able to find productive employment in manufacturing.
2. This section draws heavily on Kikuchi and Hayami (1985). For a comprehensive treatment of international agricultural technology transfer, see Hayami and Ruttan (1985, chs. 9 and 10).
3. Interregional diffusion of agricultural technology has always been a major source of productivity growth in agriculture since prehistoric times (Sauer, 1952). In the case of rice, the transfer of drought-resistant and short-maturing varieties from the state of Champa in central Indo-China to central and south China resulted in major increases in rice production during the Sung, Yuang, and Ming Dynasties (the twelfth to the seventeenth centuries), as these varieties permitted the practice of double-cropping (Ho, 1956; Barker and Herdt, 1985: 17). However, such pre-modern technology transfer was typically very slow relative to technology transfer in the era of scientific agriculture, as it was not speeded up by organized adaptive research and extension.
4. For more detailed analyses of yield stagnation in advanced rice-producing areas in the tropics, see Hayami and Otsuka (1994) and Pingali, Hossain, and Gerpacio (1997).