

Distortions to Agricultural Incentives in Sri Lanka

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Sri Lanka's agricultural policies since independence in 1948 have reflected changes on overall development strategy, as well as the interplay of conflicting domestic political considerations, including the need to balance producer and consumer interests, government revenue needs, and ethnic and regional factors.

Sri Lanka was a relatively affluent open agricultural economy at the time of its independence from colonial rule in 1948, with one of the highest levels of per capita income in Asia, a vibrant democracy, and levels of health, education and other human development that rivalled even those of many developed industrial economies. It was an oasis of peace, stability and order in a turbulent region (de Silva 1981). Prospects for rapid economic development appeared rosy. To many observers it seemed the country with the best prospects for development in Asia (Athukorala and Jayasuriya 1994). However, five decades later it is clear that it has failed to live up to its early promise. It remains a low-income economy, having slipped well below the high-performing East Asian economies in per capita income terms, and mired in seemingly intractable violent ethnic and social conflicts.

Since independence Sri Lanka has experimented with a wide variety of policy regimes, switching from open 'non-interventionist' free-market policies (up to 1959) to *dirigiste* import-substituting industrialization (ISI) (1960 to 1977) and then to export-oriented liberalization (after 1977). Although its economic growth performance from the late 1970s has been relatively satisfactory in comparison to many similar developing countries, its agricultural sector performance – with nearly stagnant per capita agricultural output – has been disappointing and has hampered poverty alleviation. Its agricultural policies through this period have reflected the changes in the thrust and

direction of its broader development strategy. However, there are also elements of enduring continuity in agricultural policy throughout this period.¹

Sri Lanka's agricultural sector has two sub-sectors: an import-competing food crop sector dominated by rice but also including a range of 'subsidiary' food crops, and an export crop sector dominated by tea (Sri Lanka is the world's largest tea exporter) but also including rubber, coconut and several minor export crops (cinnamon, spices, etc.).² Fruits and vegetables, livestock and dairy are mostly import-competing (and generally protected) although small quantities of specific commodities are exported.

Agricultural policy until well into the 1980s taxed export agriculture while providing various forms of input subsidies (irrigation, fertilizer, R&D and extension) to protected import-competing food agriculture, particularly rice. The shift to inward-oriented development strategies from the late 1950s, with protection for import-substituting industries and accompanying real exchange overvaluation (leading to exchange controls and a discriminatory dual exchange rate regime) exacerbated the burden on export crops. Despite assistance and protection for import-competing food agriculture, the policy regime during this period probably had an overall anti-agricultural bias.

The process of policy liberalization from the late 1970s eroded the former overall anti-agricultural bias. Direct taxation of export crops was sharply reduced in the 1980s and largely eliminated by the early 1990s, and manufacturing trade liberalization drastically lowered the indirect burden on agriculture flowing from industrial protectionism. But policy reforms have been both limited and selective in the import-competing parts of the agricultural sector. Many import-competing agricultural industries, including not only rice but also several others such as sugar, potatoes and dairy, have continued to enjoy both direct input subsidies and, to varying degrees, protection through the trade regime. Thus the overall policy regime – in general far more liberal than at any

¹ For reviews of agricultural policy in Sri Lanka, see Thorbecke and Svejnar (1987), Bhalla (1991), World Bank (1995), Athukorala and Kelegama (1998), Anderson (2002) and Sanderatne (2004).

² These 'minor export crops' are often referred to as 'non-traditional' agricultural exports, distinguishing them from the 'traditional exports' of tea, rubber and coconut, even though many of these crops have been exported for thousands of years while tea and rubber were introduced to the country only in the late 19th century.

time since the late 1950s – now tends to have a pro-agricultural bias because of the reduction in taxes on agricultural exports.

Protection from import competitions and direct assistance to food agriculture have failed to achieve their stated goals of adequately encouraging production of staples and reducing the growing gap between rural and urban household incomes. True, domestic rice production increased substantially, but overall food production has almost stagnated (growing less than half as fast as in other developing countries over the 1990s) such that food self-sufficiency has kept declining and rural poverty alleviation has been slow. It is clear that a comprehensive re-assessment of agricultural policies should be on the policy agenda as a priority issue.

Economic growth and structural changes

Since independence in 1948, Sri Lanka has had regular changes in government with distinctly different economic policy orientations. As indicated earlier, it has experimented with a wide variety of economic policy regimes under different governments. However, since 1977 the basic direction of policy has not changed despite several changes of government, although there have been differences in the pace and scope of liberalization measures. Figure 1 shows real GDP growth rates and the changing policy regimes under different governments.³

Relatively slow per capita growth during the 1950s and 1960s was followed by particularly traumatic experiences during 1970-77, when policy responses to the impact of the first oil shock of 1973 and to a youth rebellion resulted in severe import compression and shortages of essential goods. This generated widespread popular discontent against the ISI policies and extensive government intervention in the economy. As a result, there was massive popular support for a shift in policy that brought into power a new United National Party (UNP) government in 1977 that pledged to adopt

³ For more details of the policy regimes and growth experience, see Athukorala and Rajapatirana (2000), Athukorala and Jayasuriya (1994), World Bank (2004), Weerakoon (2004) and Kelegama (2004).

‘open economy’ policies. A major liberalization effort was launched in 1977, marking a decisive break with the previous policy regime.

As a result of progressive pro-market reforms from 1977, Sri Lanka became and still is the most open economy in South Asia. Since 1977 it has averaged a reasonably healthy real average annual GDP growth rate of 4.75 percent (3.5 percent per capita), attaining a per capita income of US\$1200 by 2006 at the official exchange rate (and over \$4,000 in PPP dollars). Despite ongoing ethnic and social conflicts that have plagued the country for nearly two decades, this is a higher growth rate than achieved by most countries that had similar per capita incomes in the mid-1970s, with only Botswana recording faster growth.

Starting with above average human development indicators across a wide range of indicators from its early years of independence (achieved through investments in health and education financed by taxes on plantation crop exports), Sri Lanka has managed to maintain its position: life expectancy at birth for males and females, for example, averages 72 and 76 years – higher than the middle-income country average – and its literacy rate is over 90 percent. Nevertheless, Sri Lanka’s overall developmental performance is disappointing when compared with the high-performing East Asian economies, given that Sri Lanka had comparable or higher real incomes and human capital endowments in the 1950s and early 1960s. This poor performance is at least in part due to the ongoing civil war and ethnic conflict that has caused enormous damage to the economy and to the wider socio-political environment.⁴

The overall position of agriculture within the national economy is shown in Table 1. The shares of the agricultural sector in GDP, employment and exports has declined progressively from the 1950s, although the sector remains a major source of income and employment of a large proportion of the population, and a significant source of national export earnings.⁵ In contrast to the gradual shrinking of agriculture’s share of GDP, the fall in its share in exports in the 1970s and 1980s has been sharp (Figure 2). Until the late

⁴ The cost of the war between 1983 and 2000 was conservatively estimated at twice the value of Sri Lanka’s 1996 GDP (Arunatilaka, Jayasuriya and Kelegama 2001).

⁵ Note that processing of tea, rubber and coconut products – usually included under manufacturing – is included in this table under Agriculture, Forestry and Fisheries to indicate the overall contribution of the sector to the economy.

1960s agricultural commodities accounted for more than 90 percent of Sri Lanka's exports but since the early 1990s its share has been below 20 percent, with manufacturing – particularly garments – emerging as the major export category.⁶

The shares of different agricultural products in the value of agricultural production and in household consumption expenditure are shown in Figure 3. Paddy accounted for around 25 percent of agricultural and fisheries output in the early 1980s, but its share is now barely half that. Likewise, the share of rice in household spending has halved over that period and currently is around one-tenth.

The agricultural sector is widely considered to have contributed to the poor performance of the wider economy: “In terms of sectoral contributions to growth, agriculture has been a continual drag...”, and “the long-term average growth rate in agriculture has barely exceeded the rate of population growth, which has contributed to the persistence of poverty (the headcount ratio stood at 23 percent in 2002, which is relatively high for Sri Lanka's per capita income)” (IMF 2005, p. 5).

Within agriculture, the output of most crops has either stagnated or declined since the 1980s (Appendix Table 1). Tea is the sole important exception. Tea output expanded from around 200 million kgs per year in the early 1980s to around 300 million kgs at the turn of the century. A combination of area expansion (primarily from an expansion of smallholder cultivation in the low-altitude regions) and higher-yielding new cultivars was stimulated by higher prices for the ‘stronger’ teas produced in lower altitudes. Production of rice and coconuts – the two crops that dominate smallholder agriculture in Sri Lanka – has stagnated, while outputs of rubber, minor crops and subsidiary food crops, including income-elastic horticultural crops, have fallen quite significantly. This has meant that non-tea agricultural exports have fallen while food imports have grown. Overall, Sri Lanka's per capita food production has fallen by over 12 percent since 1980, compared with a rise of 48 percent in other developing countries on average (World Bank 2001). This raises the question: did policy distortions contribute to this relatively poor performance?

⁶ Agriculture's contribution to *net* exports is greater than implied by these gross export data because exports of garments that dominate manufactured exports have a large import content (Athukorala and Bandara 1989).

Policy evolution

At the time of independence, Sri Lanka's three plantation crops – tea, rubber and coconut – dominated Sri Lanka's exports, while significant quantities of rice, wheat and other food products were imported. This basic distinction between exportable and import-competing agricultural products is critical to understanding Sri Lankan agricultural policy. Export dependence varies greatly, however. For example, more than 80 percent of the coconut crop is domestically consumed, with both nuts and oil being essential parts of the Sri Lankan diet. The share of domestic consumption is quite low in the case of tea (less than 15 percent) while for rubber it is around 35 percent thanks to an expansion of rubber-based manufacturing industries.

The tea and rubber sectors had a pronounced dualistic structure. Foreign-owned large plantations contributed a large share of output at the start of the post-independence era, but they were taken over by the state in 1974. Then from the early 1990s they were progressively handed back to the private sector, including foreign companies, but the share of large plantations has been in gradual decline. By contrast, the import-competing food crops as well as the coconuts have always been dominated by smallholders, although a substantial proportion of the coconut industry was held in the form of large plantations until land reforms in the early 1970s.

Export taxes on agricultural crops (tea, rubber and coconut products) initially were a major source of government revenue, accounting for around 30 percent of all government tax revenues during the 1950s. They helped finance expenditures on public education and health, and on food subsidies. Levies on exports also financed agricultural research, extension and replanting programs for plantation crops. The structure of export taxes not only reduced average producer revenues but also had the effect of greatly lowering gains from any price increases. When domestic prices rose, whether due to world price increases or because of currency devaluations, government tax revenues siphoned off the bulk of the price increase. This meant that while producers had to bear the cost increases linked to domestic inflation, they were largely deprived of the benefit

of any exchange rate adjustments that were made – as happened on several occasions from the late 1960s onwards – to restore international competitiveness of tradeables sectors.

In common with many other developing countries, Sri Lanka followed a food self sufficiency policy, narrowly interpreted as one of encouraging ‘rice self sufficiency’. On the production side this involved major investments in irrigation (irrigation water being supplied at no cost to farmers), fertilizer subsidies, and the provision of rice and other agricultural research and extension services. There was also a public distribution system for procurement and marketing of paddy and other commodities, aimed at making rice more affordable for consumers. Staple food prices were heavily regulated until the 1977 liberalization, and many of them have remained subject to strong government interventions – including regulation of import volumes – aimed at maintaining price stability.

From the late 1950s, the structure of incentives was further biased against export crops with the adoption of import and exchange controls in response to growing balance of payments problems caused partly by a secular downward movement of Sri Lanka’s international terms of trade. The adoption of these measures, rather than a currency devaluation, led to real exchange rate overvaluation. The import restrictions (tariffs and, increasingly, non-tariff measures) and exchange controls were further strengthened subsequently as a result of the ideological shift to an ISI development strategy. The result was high manufacturing protection, severe import compression, pervasive state controls in trade, marketing and distribution, persistent exchange rate overvaluation, exchange controls and a formal dual exchange rate system between 1968 and 1977.⁷ Under the dual exchange rate system, there was a basic rate and a so-called Foreign Exchange Entitlement Certificate Scheme (FEECS) which was initially (in 1968) set at 44 percent higher (more depreciated) rate, but adjusted to 55 percent in 1969 and then to 65 percent in 1972. The main plantation crops (tea, rubber and coconut) – the ‘traditional exports’ – had to convert export earnings at the less favorable official exchange rate while non-

⁷ See Athukorala and Jayasuriya (1994) for a description of these developments. Athukorala and Rajapatirana (2000) provide an analysis of the manufacturing sector developments.

traditional exports were eligible for the FEECS rate.⁸ The highly overvalued official exchange rate, rather than the somewhat more realistic FEECS rate, was also applied to some imports of the major agricultural products such as rice, wheat and sugar. However, such imports were heavily regulated and under direct government control. Hence rice producers were still shielded from import competition. And there is other evidence (for example, the high premium in black market rates of exchange) that there was substantial real exchange overvaluation which discriminated against exportable industries and favored import-competing ones, both in agriculture and elsewhere.

In short, despite the fact that the rice sector was granted special incentives and other import-competing agricultural products also gained significant protection from the import substitution strategy, studies such as that of Bhalla (1991) conclude that there was an overall bias against agriculture because of the severity of the anti-export impact of the overvalued currency, the large weight of exports in farm output, and the high protection granted to manufacturing. This started to change only from 1977, with the policy shift away from the ISI strategy and its replacement with more liberal pro-market policies.

After the 1977 policy liberalization food subsidies to consumers were sharply reduced,⁹ and the emphasis on food self-sufficiency was enhanced. Public investments in major irrigation systems were expanded, for example. The government implemented a huge irrigation-cum-hydropower scheme (the Accelerated Mahaweli Development Project) with substantial foreign assistance, and around one-third of all government capital expenditure was devoted to this single project for several years from 1979. The project was explicitly rationalised as a major step towards achieving rice self sufficiency – the coveted national goal – and thereby it appealed to the popular imagination which partially blunted the political impact of cuts in food subsidies.¹⁰

⁸ The large plantation crop sector also suffered much investor uncertainty from the mid-1950s, including facing the threat of nationalization before they were finally taken over by the state in the mid-1970s.

⁹ In the past the government encouraged substitution in consumption of wheat for rice, to reduce the fiscal burden of the consumer rice subsidy.

¹⁰ However, the project was resented by sections of the minority Tamil community: not only was an appeal for extending irrigation to the existing Tamil farming areas rejected, but the newly irrigated lands were settled largely with members of the majority Sinhalese community. This has been highlighted in numerous studies. For example, a study by the OECD Development Assistance Committee pointed out how the project exacerbated ethnic tensions: “The conspicuous absence of consideration of the project’s possible negative impact on simmering tensions is striking – considering that it had glaring ethno-political implications: (1) there was an ethnic overlay to the geographical areas which would benefit (or not) from

The 1977 reforms also reduced manufacturing sector trade protection, and explicit export taxes on plantation crops were largely eliminated in the 1980s. There were both fiscal pressures and political imperatives driving the reduction of export taxes on plantation crops: nationalisation of large foreign-owned plantations had transferred them to state ownership from mid-1970s, and the land reforms of the early 1970s had broadened their ownership base, largely among Sinhalese smallholders (Moore 1985).

Trade liberalization was not uniform though: it extended to some import-competing agriculture, but excluded others. Crops that were widely cultivated in the North (e.g. red onion, chillies, grapes) were subject to liberalization while protection for other crops (such as potato) were maintained and even increased.

After the initial economic growth stimulus following the liberalization of 1977 and the huge public sector investment boom (assisted by a massive flow of foreign aid), growth started to slacken even though the economy was cushioned for a while by a tea price boom in the early 1980s. Simmering ethnic tensions erupted into a secessionist war following anti-Tamil riots in 1983, and social tensions in the south led to a highly disruptive rural youth rebellion in the late 1980s. Economic and political conditions worsened, and the economy lost steam. In 1990/91, responding an emerging balance of

the project; and (2) the government decision to resettle displaced Sinhalese villagers in traditionally Tamil regions. The decision by the Jayawardene government to compress and accelerate the 30-year program into six years further exacerbated ethnic tensions. The original version of the programme had included irrigation projects in the Tamil-majority Northern Province; but this was removed from the accelerated programme with the argument that it would be too expensive and problematic technically” (Bush 1999). These facts are well known, extensively documented and not contested by any serious scholar of Sri Lanka. “Since the 1930s and especially the 1940s resettlement projects have been implemented in Sri Lanka to alleviate the growing shortage of land in the south-west, where the population is very largely Sinhalese. Sri Lanka's Tamils have opposed these projects because they threaten to change the ethnic majority in the provinces concerned to the disadvantage of the Tamils and Muslims. With the Mahaweli project, which has been planned since the 1960s and consists of a large number of subsidiary energy generation projects, the country's largest scheme was launched, the aim being to use at least 74 percent of the settled area – where Tamils previously formed the majority of the population – for Sinhalese. The Sinhalese settlement projects became one of the decisive motivating factors in the Tamils' resistance. This is not least evident from the many attacks on colonies of new Sinhalese settlers during the civil war.” (Klingebiel, 2001, p. 10). Peebles (1990) points out how the scheme was re-designed in a way that excluded the largely Tamil populated Northern Province: “The choice of projects to be developed also reflects the focus on Sinhalese settlement. Under the Water Resources Development Plan systems J, K and L and part of system I fell within the Northern Province and were to irrigate 232,000 acres by a Northern Central Province canal. None of these systems were included in the Accelerated program...” (p.43). See also Moore (1985), Manogaran (1987). The World Bank, a major donor, subsequently acknowledged the problems related to this project's perceived ethnic bias in a World Bank study: “...donors may have missed a significant opportunity to promote equitable participation through the huge Mahaweli power, irrigation and resettlement scheme” (Kreimer et al. 1998, p. 22).

payments crisis, the government devalued the currency and initiated a second wave of liberalization (Dunham and Kelegama 1997).

Liberalization proceeded in an uneven way following the initial measures. Export duties on plantation crops, already reduced substantially from the mid-1980s, were eliminated in 1992, while high rates of nominal (and effective) protection for import-competing agriculture continued (Edwards 1993, World Bank 1995). The government frequently used regulatory controls on imports, manipulating licensing and variable tariffs, to achieve not only protection but also price stability. The latter was particularly important in the case of the highly politically sensitive commodities such as rice and, at times, also coconut. Tariffs on agricultural imports were gradually reduced through to 1993 and, as part of the GATT's Uruguay Round Agreement on Agriculture, Sri Lanka bound all its tariffs on agricultural goods at a uniform rate of 50 percent from January 1995 – although this was well above applied tariffs. Subsequently it removed quantitative restrictions on all agricultural imports except wheat and wheat flour. In fact some of the most important changes since the early 1990s have been not so much in the level of restrictions as in the move away from various forms of nontariff barriers including regulatory interventions to more transparent tariff-based import restrictions. The general picture, which is confirmed by the various indicators of assistance provided below, is that the policy regime in recent years has provided assistance to import-competing agriculture and at rates similar to the levels of assistance to manufacturing industry.¹¹

The general trend in overall policy – despite phases of slow progress and occasional backsliding – has been towards progressive liberalization, and Sri Lanka now has perhaps the most open trade regime in South Asia. The evolution of the overall structure of incentives can be seen by looking at the changes for the manufacturing sector and the two agricultural sub-sectors. At the time of the 1977 reforms, the implicit rates of protection for manufacturing as well as many import-competing agricultural commodities

¹¹ Athukorala and Kelegama (1998) suggest that the actual level of protection for manufacturing tended to be overestimated by the use of gazetted tariff rates which were often higher than actual tariffs because of various tariff loopholes and exemptions. But the same may be true of earlier estimates of effective assistance to agriculture. For example, the World Bank (1995) produced estimates that attempted to take into account the provision of free or subsidized inputs such as irrigation water used by many import-competing crops grown under irrigated conditions, including rice. We believe the approach used to derive that implicit subsidy associated with free irrigation water tended to overestimate it.

were extremely high. Even after major reforms, effective protection of the manufacturing sector in 1979 has been estimated to be 137 percent (Cuthbertson and Athukorala 1991). This had fallen to 90 percent in 1981, and was estimated to have come down to 77 percent in 1991 and 43 percent in 1994 (World Bank 2004). By 2005, liberalization in the manufacturing sector had proceeded further.

In addition to reforms in manufacturing, there have been important moves towards liberalizing the food import-competing sector. Wheat imports were liberalized by ending a government-granted long term monopoly on flour milling to a Singaporean based company (PRIMA) that also gave them a virtual monopoly on animal feed supply. Government trading enterprises play a role in both domestic distribution and international trade, but it is minor.

Trade policy continues to protect rice and several other import-competing food crops (such as potato) with the use of seasonally varying tariffs and specific duties. Those interventions respond to domestic price and supply conditions. Further, despite the shrinking share of agriculture in both GDP and employment, agricultural producer subsidies remain important as governments have responded to intense pressure to maintain and even expand them. For example, subsidies such as for fertilizer (targeted largely though not solely towards import-competing crops, particularly those cultivated by smallholders) continue, in a very volatile political environment. Periodically the fertilizer subsidy has been a component of government assistance to agriculture, and populist governments have used it to appeal to the politically important farming community. Until recently its aggregate assistance effect would have not been large, but the fertilizer subsidy doubled in 2006 compared with 2005, and its cost may have risen by a further one-third to reach Rs 11 billion (\$1200 million) or more in 2007 (Figure 4). There are also frequent ad hoc changes to import policies particularly in the case of 'subsidiary' food crops such as potato and onion, where small but politically powerful farm groups exercise much political clout.

Thus the broad contours of present agricultural policies in Sri Lanka appear to resemble some aspects of the early agricultural policy evolution in more-developed East Asian economies: overall a relatively liberal trade regime, but granting significant protection for particular import-competing agricultural industries. In the next section we

present the estimates of a number of indicators of incentives for major agricultural products and different commodity categories (such as exportable and import-competing products). We then attempt to explain the changing pattern of agricultural taxation/assistance since independence that has led to the current outcome.

Direct and indirect distortions to incentives

The main focus of the present study's methodology for estimating the extent of distortions to agricultural incentives (Anderson et al. 2008) is on government-imposed measures that create a gap between actual domestic prices and what they would be under free markets. Since it is not possible to understand the characteristics of agricultural development with a sectoral view alone, the project's methodology estimates the effects not only of direct agricultural policy measures (including distortions in the foreign exchange market), but also of distortions in non-agricultural sectors that compete with farmers for mobile resources such as labor and capital. More specifically, this study computes Nominal Rates of Assistance (NRAs) for farmers and also generates an NRA for nonagricultural tradables, for comparison with that for agricultural tradables via the calculation of a Relative Rate of Assistance (RRA – see Anderson et al. 2008).

We present in Table 2 our estimates of temporal patterns of distortions to agricultural incentives from 1955 to 2004 for seven major commodities: three exportables (rubber, coconut and tea) and four import-competing products (rice, potato, onion and chillies).¹² In Table 3 we also include a guesstimate of the NRA for non-covered farm products, which account for around one-third of the overall value of agricultural production. That guesstimate assumes non-covered products are equally divided between exportables, nontradables and import-competing products (one-third each of the residual

¹² Some commodities, such as livestock including dairying, are not included in this exercise because of severe data limitations. For the livestock sector, for example, consistent time series data on domestic prices of meat products are not available, and international prices for comparable quality meat products are also not available. The quality differences between domestic and world market products, except perhaps in the case of chicken, are so large as to make them almost completely different products.

value of farm production), and that for nontradables the NRA is zero while for exportables and importables they are equal to the estimated NRAs for the two sub-sets of covered products (all of which are tradable). The farm input assistance was minor before 2005 and so no estimate is included for such non-product-specific assistance. The NRA for non-agricultural tradables is based on the import duty collection rate for import-competing manufacturing and an assumption that direct assistance to non-agricultural exportables is zero.¹³ This can substantially underestimate the actual rate of manufacturing protection, because high tariffs (or binding non-tariff barriers) may result in low rates of import duty collections because they lead to lower import volumes. We believe the non-agricultural NRA before liberalization in 1977-78 would be significantly higher than indicated by these data, and that the RRAs may therefore correspondingly underestimate the policy bias against agriculture. (Annual time-series NRAs and value of production shares of different commodities are tabulated in the Appendix.)

Export crops

We begin by focusing on export crops before turning to import-competing ones, and in doing so refer to the NRA five-year average estimates in Table 2 and the annual estimates depicted in Figure 5.

Tea

The annual NRA estimate for tea, which is based on the ratio of the domestic Colombo Auction price and the average fob export price of bulk leaf tea, suggests that this industry has been taxed by more than 30 percent up to the mid-1980s. Since then the estimated rate of taxation has declined sharply as export taxes were progressively lowered and largely abolished by the early 1990s. The NRA has fluctuated around that trend (see Figure 5), primarily because the export tax rate was on a sliding scale such that taxation was higher during periods of high international prices. There was a steep increase in taxes

¹³ These NRAs for tradables include an estimate of the trade tax effect of the overvalued exchange rate. As outlined in the methodology, that estimate uses the black market exchange rate premium (see Easterly 2006) and assumes that only half of exporters' foreign exchange rate earnings are sold to the government at the official rate. See Anderson et al. (2008) for details of this methodology.

in the immediate aftermath of the 1977 reforms, for example, associated with the exchange rate depreciation that accompanied the liberalization (which increased the domestic currency price on which the tax was based) and the international tea price increase of the early 1980s. There is no evidence of significant market imperfections within the domestic market for tea production, processing and wholesale marketing through the auction. The Colombo Tea Auction is considered to be quite competitive though there have been some criticisms of the system in the past. Hence the rate of export taxes and cesses provides a reasonable estimate of NRAs given the fact that it is not possible to use domestic and border price data to directly compute NRAs because of the growth of importance of ‘value added teas’ (tea bags etc) for which a reliable border price is not available.

What is not reflected in these figures is that tea imports into Sri Lanka have been effectively subject to a near total ban until recently, ostensibly to ensure that cheap foreign teas are not re-exported as quality ‘Ceylon Tea’. Though there has been some relaxation of this recently, a prohibitive tariff has effectively ensured that tea imports are negligible. The outcome has been that Sri Lanka lost the chance to develop a tea blending industry, resulting in Dubai emerging as the centre of the lucrative tea blending centre using significant quantities of both Sri Lankan tea and imported Sri Lankan labor (Ganewatta 2002).

Rubber

The annual NRA for sheet rubber, which is based on the percentage gap between the average domestic Colombo Auction price for sheet rubber and the average fob export price of rubber, suggests that this industry has been taxed by even more than the tea industry, by more than 50 percent up to the early 1980s. Since then the rate of taxation has declined fairly rapidly, and reflecting the virtual elimination of export taxes, the NRA estimate has averaged close to zero in recent years. The NRA has fluctuated around this trend (see Figure 5), again primarily because the export tax rate was on a sliding scale such that taxation was higher during periods of high international prices. As with tea, the rate of export taxes and cesses provide a reasonable estimate of NRAs in recent years

given that it is difficult to compute reliable NRAs from available price data because of the changes in the composition of exported rubbers.

Coconut

Coconut products (copra, oil, fibre and coir products, etc.) were a major export product category at the time of independence, but export volumes have since fallen. Because of its importance as a food crop (in the form of nuts) and for coconut oil for household consumption (it is the most widely used cooking oil), it attracted significant direct price and non-price interventions by the government with the aim of stabilising domestic prices while maintaining 'reasonable' producer prices (de Silva 1979). However, over time imported palm oil has emerged as a viable substitute for coconut oil in many domestic uses. Thus in more recent years coconut oil may be considered an import-competing product. Up to the early 1980s, the NRA estimates suggest the coconut industry was taxed to a similar degree to tea (hence less than rubber), but since then its taxation has averaged closer to zero and in the late 1990s/early 2000s the industry enjoyed a positive NRA. This reflects the fact that imported palm oil has become a viable substitute for coconut oil in many uses, and protection from that competition raised the domestic price of coconuts above what it would have been without palm oil import restrictions. In the case of coconuts, the reductions in export taxes did not produce corresponding reductions in NRAs because of trade restrictions on coconuts and coconut products (such as export bans) imposed to maintain low consumer prices (and 'reasonable' producer prices).

Import-competing farm products

Rice

The pattern of NRAs for rice reflects the fluctuating impacts of direct government interventions in response to changes in domestic supplies and international prices. Apart from the 1980s, the NRA average each decade has been positive (Table 2), which is

consistent with the fact that both average consumer and producer domestic rice prices have been usually above the average cif import price.¹⁴

When domestic prices fall, whether due to a bumper harvest at home or due to a fall in the price of imports, pressures for assistance emerge. Rather than increase domestic prices by direct purchases, the response to such political pressures from the rice farming lobby usually has been to raise import barriers and expand input subsidies for fertilizer, R&D, etc. Those ad-hoc policy changes in rice import tariffs since 1995 are shown in Appendix Table A3, while the Figure 4 shows the dramatic increase in the fertiliser subsidy in recent years.

A fuller picture of rice policy requires that it be placed in the context of the wider cereal staples policies, particularly for wheat which is the closest substitute for rice in consumption even though it is not produced domestically. Rice consumption in Sri Lanka averages around 100 kg per capit per year, but wheat consumption has increased with urbanization from less than 25 kg during the 1950s to nearly 50 kilogram per capita at present. The consumer tax equivalent on wheat flour from import measures was low and sometimes even negative until the early 1980s, but then it increased significantly and has since fluctuated widely around an average value of more than 50 percent.

Chillies, onions and potatoes

High rates of import protection were enjoyed by producers of chillies and onions in the pre-liberalization protectionist period, but this protection came down after the liberalization in 1977/78. In contrast, protection for potatoes increased sharply in the post-liberalization period, particularly in the 1990s. Although imports were briefly liberalised around 1996, potatoes – grown by only a few thousand farmers – have continued to enjoy a pre-eminent position among protected crops.¹⁵

¹⁴ For those familiar with Sri Lanka's history of government subsidized rice provision for consumers, this may seem rather puzzling. But those subsidies via ration shops apply only to a small fraction of national consumption, such that the weighted average of the (very low) price of government-provided rice rations and the open market price consumer price is close to the latter.

¹⁵ Tobacco is another crop that enjoys a high level of protection. According to the WTO Trade Policy Review 2004, the average tariff for the tobacco sub-sector was 149 percent in 1998 and 153 percent in 2003 – well above the bound rate of 50 percent applying to most agricultural products.

Sugar

NRAs are not provided for sugar because it is predominantly imported and domestic production is quite small. This is despite the fact that sugar has been heavily protected. The level of protection has come down since the 1980s but remains quite high. During the period up to the late 1970s when consumer food subsidies were not uncommon, sugar was an exception: its high tariff brought in much needed government revenues that helped maintain other food subsidy expenditures.

Agricultural versus nonagricultural assistance

The products covered in Table 2 account for about two-thirds of the overall value of agricultural production. Their weighted average NRA was around -30 percent in the 1960s and 1970s, but following the reform of the late 1970s it rose to around -15 percent in the 1980s, to -2 percent in the first half of the 1990s, and to an average of around 10 percent since then. The picture does not change much when our assumptions about the NRA for non-covered products are included (top of Table 3), allowing us to conclude that the direct taxing of Sri Lanka's agricultural sector has been gradually phased out over the past three decades. This is not to say the sector is without price distortions, as there is still some dispersion in the product NRAs and, in particular, the NRA for exportables remains below that for importables. However, both of those indicators of dispersion are now well below what they were in earlier decades. This is depicted in Figure 6, and is captured also in the trade bias index shown in the middle of Table 3.

Also important for intersectoral resource allocation is the extent to which non-agricultural tradables have been assisted by the government. Prior to the 1977 reforms, protection for import-competing manufacturing was extremely high. Even taking into account the lower assistance to producers of other tradables, the nominal rates of assistance to all non-agricultural tradable sectors was well over 100 percent prior to the 1970s. By the late 1970s it had fallen to below 60 percent, and since the early 1990s it has fallen further and is now less than 25 percent. When these estimates are combined

with those for agriculture to generate the relative rate of assistance (RRA), the full extent of the discrimination against farmers becomes evident. As shown in the middle rows of Table 3, those RRA values suggest that during the 1960s, Sri Lankan farmers received only one-third of what they would have received had markets for both farm and non-farm goods been free (RRA average of -67 percent). In the 1970s the extent of discrimination was not much less (RRA average of -53 percent), but then the average RRA continued to fall to around -45 percent in the 1980s, to -25 percent in the 1990s, and to just under -10 percent on average in recent years. As is clear from Figure 7, the decline in protection to manufacturing did more to reduce distortions harming farmers than did the changes in direct agricultural policies. And the exchange rate distortions were not a major contributor to this trend in average NRA and RRA values, but they did affect substantially the anti-trade bias of past policies (see bottom rows of Table 3)

The political economy of agricultural policies

What were the political forces behind the government's agricultural policy choices? We consider first the export subsector, and then the import-competing subsector.

Export crops

At the time of independence relatively large scale, foreign owned companies dominated tea and, to a lesser extent, rubber sectors. Even the coconut sector, though largely smallholder based, still had a significant number of large 'estates'. There was little political sympathy for the plantation sector from the left of centre coalitions that ruled the country from 1956 to 1965 (with a brief interruption in 1960) and then again from 1970-77. The foreign plantations were under threat of nationalization from 1956 onwards, and finally they were nationalized in the mid-1970s when all large holdings were subjected to a land reform. The majority of the workers in the large plantations, who had migrated from South India from the mid-19th century, had been politically marginalized by being

disenfranchised by the first post-independence government. And, most importantly perhaps, government revenues depended heavily on foreign trade taxes, with export duties alone contributing nearly one-third of all government revenues in the first decade after independence. With slow economic growth, governments were continually under fiscal pressure and had little scope, even if they desired, to reduce the export taxes on plantation crops.

The combination of high taxes, secular falls in real world prices, and the threat of nationalization led to a slow but steady decline of the plantation sector, particularly the large plantations. The sector became more and more smallholder-based, a process that accelerated after the land reforms. The large foreign-owned firms passed into state ownership. The 1977 liberalization did not have an immediate positive impact on these industries, however. The exchange rate reforms that involved a significant nominal devaluation failed to have much of a positive impact on the sector because the structure of progressive export taxes – involving a sliding scale of taxes – effectively taxed away most of the gains from the devaluation (and periodic relative price improvements).

The plantation crop sector, and its role within the economy, had changed in quite fundamental ways by the mid-1980s. Its share of the national economy had shrunk, and it became quite clear that new investment in replantings and factory modernization were essential if the decline of the sector was to be arrested. The political tensions that emerged in the aftermath of the 1977 liberalization made the government more sensitive to the political importance of plantation crop cultivators. The plantation crops were cultivated almost entirely in the wetter central, western and southern regions of the country, and the cultivators were predominantly from the majority Sinhalese community, whose support was critical if the governing political parties were to stay in power. Also, export taxes on plantation crops directly reduced revenues of state-owned large plantations. These factors combined to erode the economic and political incentives for maintaining the traditional high export tax regime.

Import-competing crops

We have seen that government policies towards import-competing crops have not been uniform. Further, in the case of key staple food crops, most importantly in the case of rice, there has been tension between the twin objectives of producer support and maintenance of low consumer prices. As mentioned earlier, the enduring theme that runs through Sri Lankan import-competing agricultural policy in the post-independence period is this difficult balancing act between producers and consumers in staple food crops. This is best illustrated when we examine policies towards the rice sector.

Rice policy

Rice is the most sensitive political commodity in the country. The immediate post-independence governments – aided by the proceeds from high commodity prices during the Korean War – were able to maintain and even expand the policy of providing cheap subsidized rice to consumers through a universal rice ration, which they had inherited from the British colonial rulers. It formed a central component of a wider political strategy that aimed to undercut the potential threat from a Marxist left with strong roots in trade unions. An attempt to reduce the rice subsidy in 1953 brought the country to the verge of revolution. Subsequent attempts in this direction almost invariably led to the downfall or political humiliation of the government. Subsidized rice distributed through the ration system became a symbol of the political power of the powerful left-wing parties in Sri Lanka.

Rice has enormous symbolism and emotive power in Sri Lanka. Rice self sufficiency has been a slogan that appealed to deep seated nationalist aspirations, particularly among the Sinhalese, whose ancient civilization was based on irrigated rice cultivation and who are stirred by the vision – irrespective of its historical veracity – of a Golden Age when Sri Lanka was supposedly the granary of the east and exported rice to other parts of Asia. At a more mundane level, the landed rice cultivators and politically powerful rice millers exert much clout in terms of garnering electoral support for particular political parties. In Sri Lanka, the drive to attain rice self sufficiency was not simply one of achieving a Green Revolution on existing rice lands. From the 1930s, promotion of rice cultivation through land settlement schemes (“Colonisation Schemes”) were linked to the restoration of the ancient glory of the Sinhalese in the sparsely

populated so-called dry zone of the country which had been the cradle of the ancient hydraulic civilization. Restoration of old irrigation systems – already initiated during colonial times by the British – and the building of new and grandiose irrigation systems were seen as a vehicle for new Sinhalese farmer settlements in those parts of the country that had been largely abandoned by previous generations.¹⁶ As Brunton (1992, p. 82) pointed out, “the paddy society was almost entirely Sinhalese”. Thus the rice self sufficiency drive became associated with the rising Sinhala nationalism of the post-independence era.

In addition to free or subsidized provision of irrigation, fertilizer, seeds, research and extension, etc. to assist producers, the government also purchased paddy from farmers at a guaranteed price through a state trading entity. It distributed varying quantities of rice rations to consumers at subsidized prices until the late 1970s, including a period (1966-78) when some rationed rice was distributed free. In addition farmers sold rice to private buyers who either milled it themselves or sold it to millers who then sold it in the ‘open market’. In 1972, facing rising international prices and hoping to increase domestic supplies at lower prices, the government granted monopoly procurement rights to the state-owned Paddy Marketing Board – but the monopoly could not be enforced, and was abolished in 1975.¹⁷ The government has regulated international trade and

¹⁶ The President and other government leaders were quite explicit about the goal of land settlement. For example, the Minister responsible for the Mahaweli project, Gamini Dissanayake, wrote that it represented “a return of the people to the ancient homeland ...in the Rajarata” (Dissanayake 1983, p. 6, cited in Tennekoon 1988). Rajarata is the popular name for the area, largely in the North Central province, that was the heartland of the ancient Sinhalese kingdoms. Nimal Sanderatne, former Director of Economic Research at the Central Bank of Sri Lanka, writes: “Colonization had another political significance in pluralist Sri Lanka. It gave the majority ethnic community the opportunity to resettle Sinhalese in the ancient historical capitals and ancient kingdoms and thereby confirm the area as a Sinhalese rather than a Tamil region. The land settlement issue has been a most controversial issue and was an underlying cause for the ethnic conflict” (Sanderatne 2004, p. 211). Moore (1985, p. 96). adds: “...Dry Zone development has been explicitly viewed as a means of increasing the Sinhalese population in the historic heartland of Sinhalese civilization....Between 1946 and 1971 the Sinhalese proportion of the population of the five ‘frontier’ districts – Amparai, Batticaloa, Polonnaruwa, Trincomalee and Anuradhapura – increased from 33 to 51 percent. The main cause was the migration of Sinhalese settlers to new irrigation schemes.”

¹⁷ These measures included prohibiting of storage and transportation of paddy in bulk, and procurement price increases. But with open market prices high and private traders active in procuring rice despite restrictions, the state agency was unable to procure expected quantities.

supplies to maintain stable consumer prices, and that remains a central goal of food policy.¹⁸

The non-uniform pattern of trade liberalization from 1977 onwards can only be understood by recognizing the central political role of rice, both in consumption and in production. The reform government of 1977 was led by Mr J.R Jayawardena, a lifelong opponent of the left, strongly pro-western in foreign policy, and a man who had tried and failed once to dismantle the rice subsidy scheme. This was where the Accelerated Mahaweli Development Project played a critical political role. It provided crucial popular political support that enabled him to dismantle the rice subsidy scheme and crush the traditional political left, while implementing major liberalization measures.

But the end of the rice subsidy scheme did not mean that domestic rice prices were ‘left to the market’, whereby rice producers would be exposed to the pressure of cheap imports. So post-1977 government policies continued to aim at consumer price stabilization around a ‘reasonable’ price, while assisting producers through input subsidies and import protection. The NRAs in rice also reflects the impact of international price and weather-related domestic supply changes. Because non-tariff barriers insulate domestic markets from international markets, changes in domestic supply change domestic prices and, even in the absence of any change in the policy regime, change estimated NRAs. Hence good harvests depress domestic prices and generate pressures for assistance and increased protection.

Sri Lanka’s signing of the Uruguay Round Agreement on Agriculture in 1994 did not constrain the government from exercising a high degree of discretion in changing tariffs, because applied tariffs were significantly lower than bound tariffs. The government has frequently chosen to change import tariffs in response to domestic pressures. For example, from 1995 rice imports were subject to a tariff of 35 percent, but an import licensing requirement was imposed in July 2000. In July 2001 when the domestic rice price increased because of a production shortfall, the government allowed the state agency (the Cooperative Wholesale Establishment, CWE) as well as private traders to import rice duty free, waiving the 35 percent tariff. Then in January 2002 a

¹⁸ For a comprehensive recent discussion of the paddy-rice sector, see Weerahewa (2004). Note that a variety of both consumer and producer rice prices have existed, and the wide variety of different rice varieties compound the problem of estimating average prices.

specific duty of Rs 7 per kg replaced the tariff – but the CWE was allowed to import rice at a specific duty of Rs 4 per kg. In March 2002 the licensing requirement was removed and the specific duty was raised to Rs. 5 per kg.¹⁹ It was raised further to Rs. 7 in March 2003, to Rs. 9 in August 2003, and to Rs. 20 in January 2006 (Appendix Table A3).

These policy gyrations reflect the political power of the large rice producers and processors, but also the sensitivity of governments to consumer opposition to increases in the price of the main staple food. The policy liberalization in 1977 clearly reduced protection from the previous high levels, but they have not trended down since then. Sri Lanka is considered a high-cost rice producer at the margin, so the sector would come under considerable pressure, particularly in marginal areas, if trade were to be fully liberalized.²⁰ It would be a mistake to assume that the negative rice NRAs observed in 2003 and 2004, for example, represent a permanent policy shift. The difficult balancing act between serving producer and consumer interests will continue. The policy responses will be most sensitive to domestic price movements: high domestic prices will tend to induce import liberalization, while low domestic prices will tend to induce import restrictions and/or input subsidies (constrained of course by fiscal deficit considerations).

Wheat and sugar import policies

The changes over time in government policies towards wheat have been closely linked to rice policies. During the 1950s and 1960s, when the government was providing a subsidized rice ration to consumers, a significant proportion of the ‘ration rice’ had to be imported as domestic procurement was inadequate. The government had an incentive to encourage substitution of wheat for rice in consumption to reduce the fiscal burden of the rice subsidy, because wheat was relatively cheaper in international markets than rice (and some came through US government aid). With the phase-out of the subsidized rice ration

¹⁹ This discussion is based on the WTO Trade Policy Review (2004) and IPS (2003).

²⁰ The extent to which Sri Lanka has any comparative advantage in rice production has been the subject of several studies and much debate. See Abeyratna et al. (1990), Shilipi (1995), Rafeek and Samarathunage (2000), Kikuchi et al. (2000 and 2001), Weerahewa, Gunatilake and Pitigala (2003), and Thibbotuwawa (2004).

scheme starting in 1979, incentives changed. Thus from the early 1980s rice was implicitly protected via tougher restrictions on wheat imports.²¹

Sugar imports were very heavily taxed in the pre-liberalization period. Tax levels have come down since 1977, but are still high. The past heavy taxation has a simple explanation: almost all sugar was imported as there was little domestic production, and import taxes contributed to reducing the fiscal burden imposed by other food subsidies. The prevailing domestic price of sugar was accepted by consumers though much higher than the international price, and so long as domestic prices were not increased too much, there was little political opposition to the maintenance of this implicit protection. The continuing high protection of the sugar industry in recent years is not so much for government revenue reasons as to honor a government-foreign private enterprise agreement signed in the early 1980s.²²

Chillies and onions

As noted previously, the liberalization of 1977 involved import liberalization that was selective and discriminatory. The agricultural sub-sectors chosen for liberalization (and continuing protection) had a clear regional dimension, which also overlapped with ethnicity. The previous protectionist policies benefited so-called subsidiary food crops (chillies, red onions) as well as crops like grapes. This encouraged expansion of these

²¹ The state monopoly on wheat imports and distribution that prevailed until 2001 (CWE) enabled the government to influence domestic grain prices. PRIMA, a Singapore-based company had a monopoly on wheat milling from 1980 under a 20-year agreement signed by the government (and extended for a further 5 years in 2000). CWE supplied wheat to this monopoly miller until 2001 when PRIMA was granted right to import wheat. PRIMA also gained a virtual monopoly in the animal feed sector because it could retain wheat bran and other milling by-products and had bought out the only viable competitor (a state agency that was privatised). During the contract period, PRIMA could import wheat grain and mill-related equipment duty-free, and also enjoyed income-tax exemptions. PRIMA's monopoly in wheat imports was ended in 2006 but is being challenged in courts. The official justification given for the agreement with PRIMA is that it helped to attract a wheat miller to Sri Lanka. This has certainly come at a large cost to the country. Clearly these special privileges given to a foreign owned entity impose a burden on consumers while not offering any benefits either to producers (no wheat is produced in the country) or in the way of government revenues. We refrain from speculating on why the government provided these special privileges for a large foreign firm with no obvious compensating benefits to the country. For a fuller discussion of this, see Athukorala and Kelegama (1998).

²² That agreement has some quite striking similarities with the government agreement with the PRIMA wheat agreement. This agreement has imposed a huge cost on domestic consumers while delivering extremely high profits to the subsidiary of a giant US-based sugar producer. As in the case of PRIMA, this too was 'justified' by the government on the grounds that it attracted a foreign investor. Again, there are other explanations possible as to why the government entered into this agreement, raising issues of good governance, and complicity in rent extraction and rent sharing.

crops in particular regions, such as the Jaffna peninsula. Jaffna district produced two-thirds of the country's entire production of red onions. The dependency of farmers in these areas on these high-value crops was such that by 1977/78 red onions and chillies accounted for around 75 percent of the total area devoted to non-rice (minor food crop) cultivation in the Jaffna district.²³ It was also the only dry zone district that was a rice-deficit region. The 1977 liberalization produced a sharp fall in protection. Despite the negative income effects on producers, their opposition to the reform was ineffective. The ability of Jaffna farmers to obtain any response to their demands was constrained by the "marginality of the Sri Lankan Tamils to the electoral system as a whole" (Moore 1985, p. 109).

Even so, this issue played an important role in Jaffna in the 1982 presidential elections. The escalation of the ethnic tensions into a full-scale secessionist war from 1983 onwards has had devastating effects on the agricultural economy in the northern and eastern provinces. During the past two decades, commercial ties with the rest of the country have been massively disrupted. The upshot of these developments has been that farmers in the southern regions expanded their production of minor food crops, and this has changed the political dynamic in relation to minor crop policies. This is seen most clearly in the case of policy towards crops such as potatoes, where a small group of producers have been able to exercise much political clout, and consumer resistance to high prices could be largely ignored. As seen in Table 2, despite occasional declines, protection for potatoes has tended to *increase* over time (with increases also – although to a lesser degree – for crops such as red onions and chillies). From many viewpoints, a strong case can be made for removing assistance to potato growing, given its destructive environmental impact on the fragile ecosystems of the country's most important river catchments and repositories of sources of bio-diversity. As Bruton (1992, p. 170) points out, "the strong commitment to the Sinhalese culture made it difficult to design an economic policy that was equally appropriate for both major ethnic groups"; and there can be little doubt that the pattern of liberalization in the 1977/78 period is suggestive of a strong ethnic bias. However, the near-complete marginalization of Tamil farmers in the North and East from mainstream political life, and the collapse of the agricultural

²³ Based on data from Department of Census and Statistics, Statistical Abstract – 1979.

economy of these regions from the mid-1980s due to the secessionist war, has meant that the role of ethnicity has diminished in agricultural policy formulation. Tensions between producer and consumer interests have thereby become the dominant political economy issue.

Future prospects

Our discussion of the political economy of agricultural policies has pointed out a range of factors that have influenced policy formation in agricultural crops. The broad sweep of trade liberalization since the late 1970s has not by-passed the agricultural sector. Further progress along these lines is likely, as many of the smaller import-competing sectors may find it difficult to withstand the pressures for reform and liberalization. But liberalization will be difficult in the case of rice, the most politically sensitive industry. The history of agricultural policy in Sri Lanka and the experience of other countries in Asia suggest that this will remain the strongest bastion of protectionist pressures in the country for some time to come. Even in recent times, whenever the rice industry has been stressed by falling prices, the government has come under pressure to placate the industry. Almost invariably the government has done so, maintaining the historical pattern of special treatment for this sector. Arguably the course of future agricultural trade liberalization will depend on the extent to which rice producers in Sri Lanka are able to maintain their political clout. But as long as rice (and wheat) remain major items in consumption baskets, the level of direct price protection will also be constrained by the need to keep an eye on consumer interests, particularly when international prices spike upwards as in 2008. Fiscal pressures will also place a limit to the extent to which governments can provide assistance in the form of input subsidies. It will also be interesting to see if governments will be able to maintain current levels and forms of protection for livestock, chicken and dairy industries (past data for which were not adequate for including in this study).

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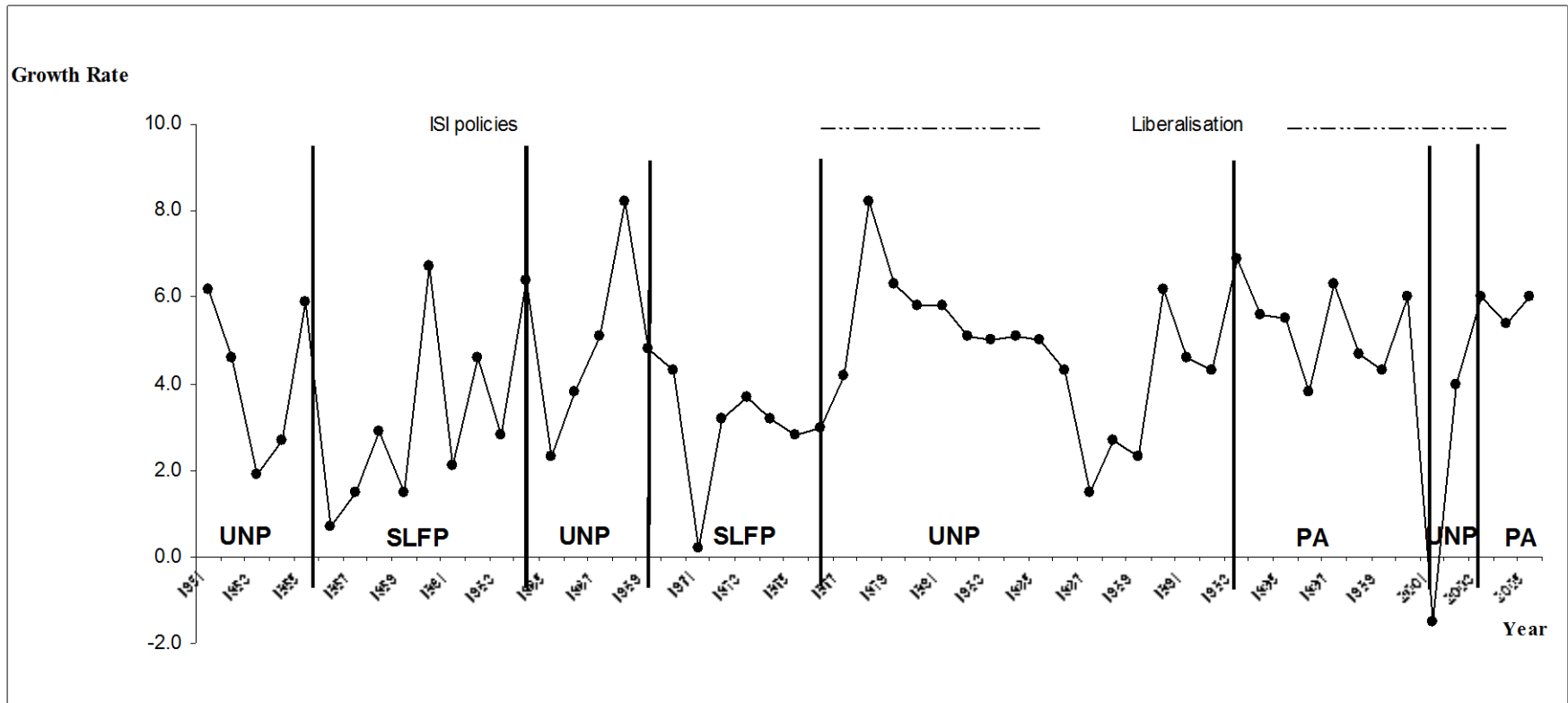
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Figure 1: Real GDP growth rate and political episodes and policy regimes,^a Sri Lanka, 1951 to 2005

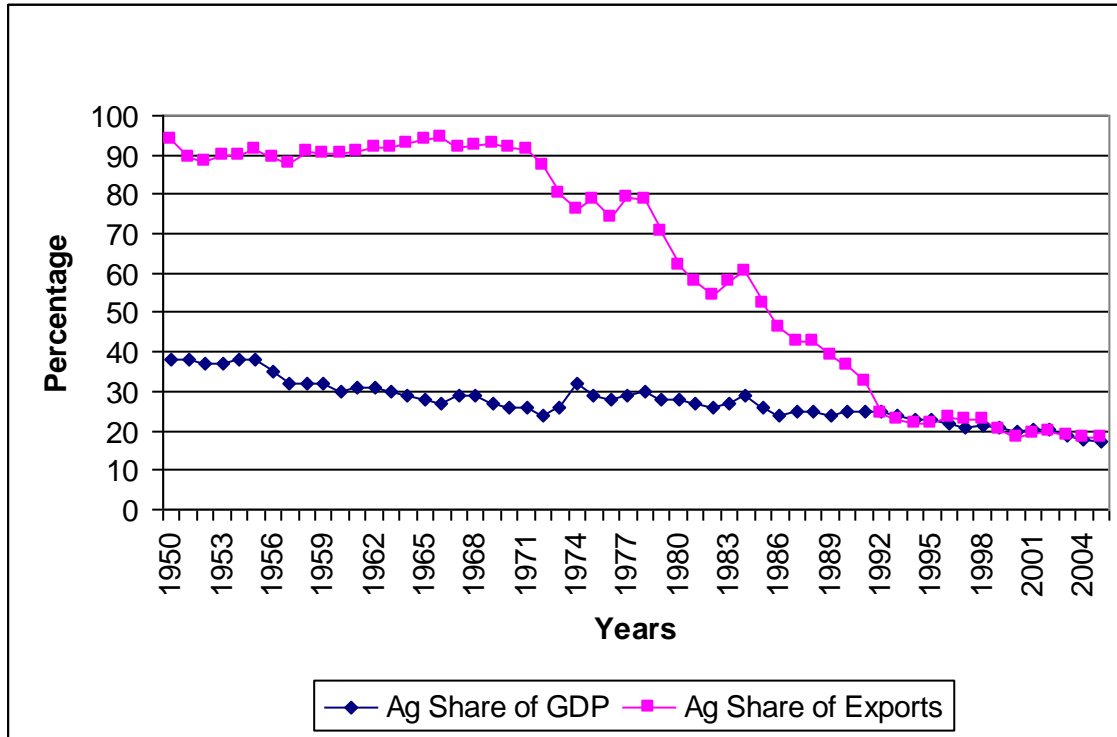


^a The United National Party (UNP) has been a right of centre party; the Sri Lanka Freedom Party (SLFP) has been a left of centre party. Both parties have frequently entered into coalition governments with other parties. The Peoples' Alliance (PA) is a SLFP-dominated coalition.

Source: Authors' compilation

Figure 2: Share of agriculture in GDP and exports, Sri Lanka, 1950 to 2005

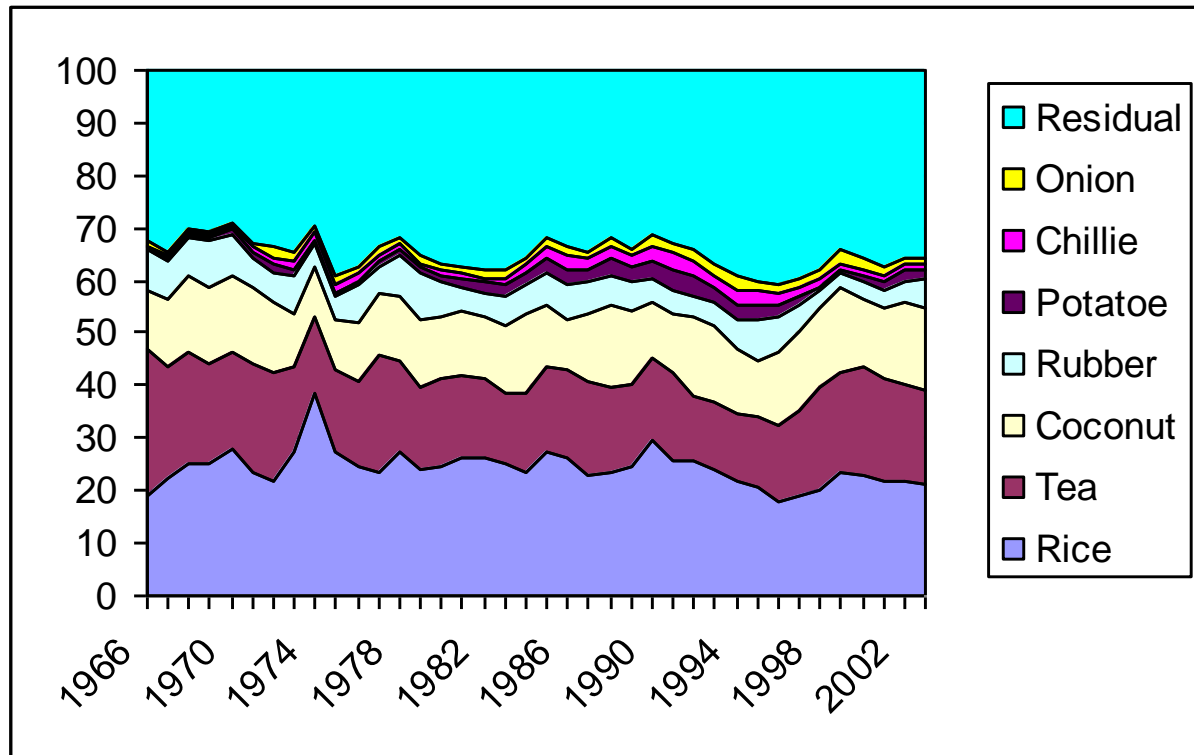
(percent)



Source: Central Bank of Sri Lanka, Annual Report, Various Issues

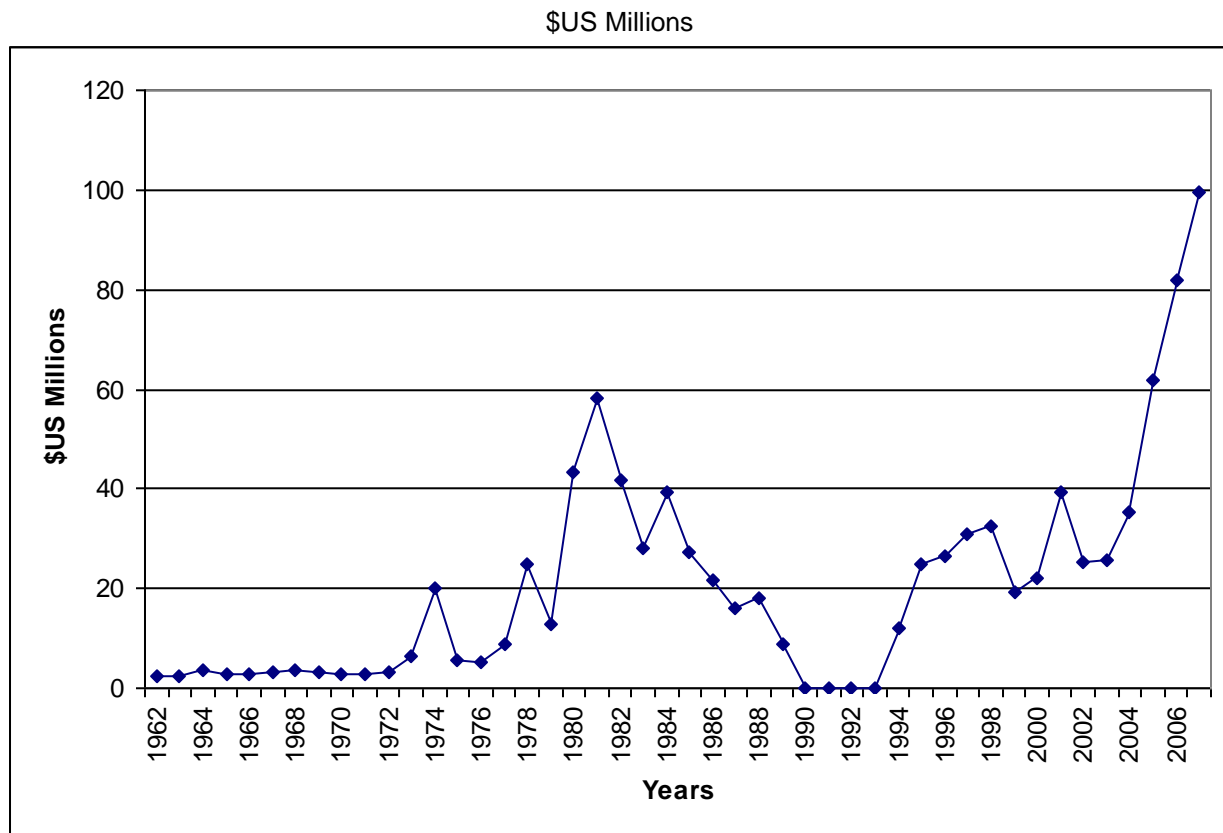
Figure 3: Shares of covered crops in value of agricultural production at undistorted prices, Sri Lanka, 1966 to 2004

(percent)



Source: Derived from FAO data and authors' spreadsheet

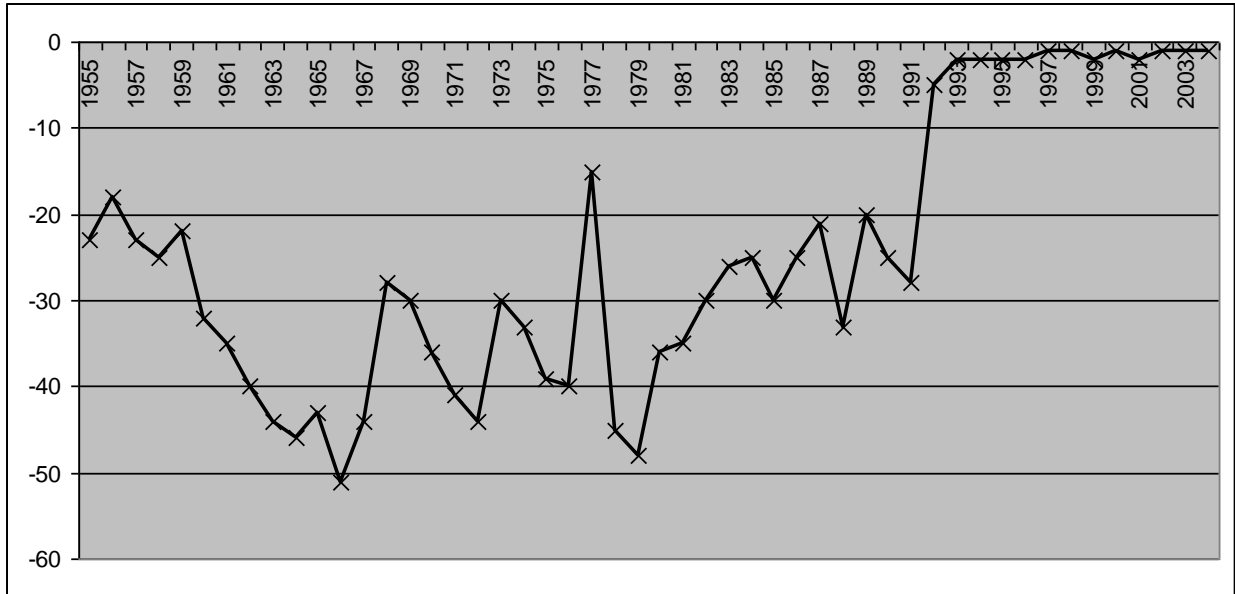
Figure 4: Fertilizer subsidy, Sri Lanka, 1962 to 2007



Source: Central Bank of Sri Lanka (various issues).

Figure 5: Nominal rates of assistance to tea, rubber, coconut and rice, Sri Lanka, 1955 to 2004
(percent)

Tea



Rubber

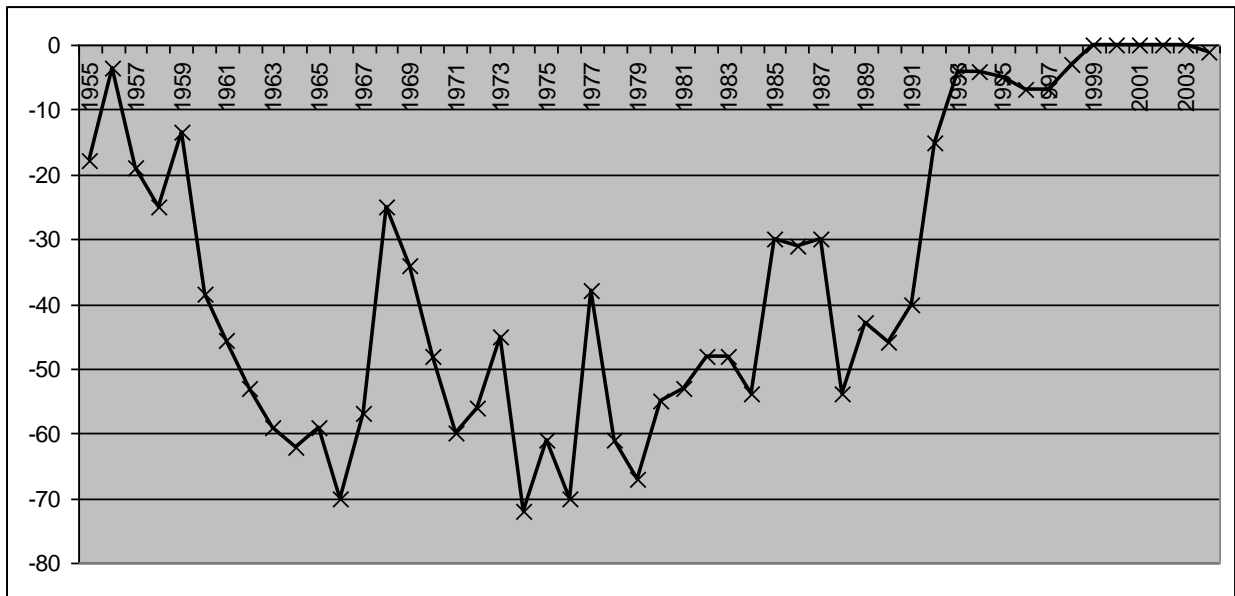
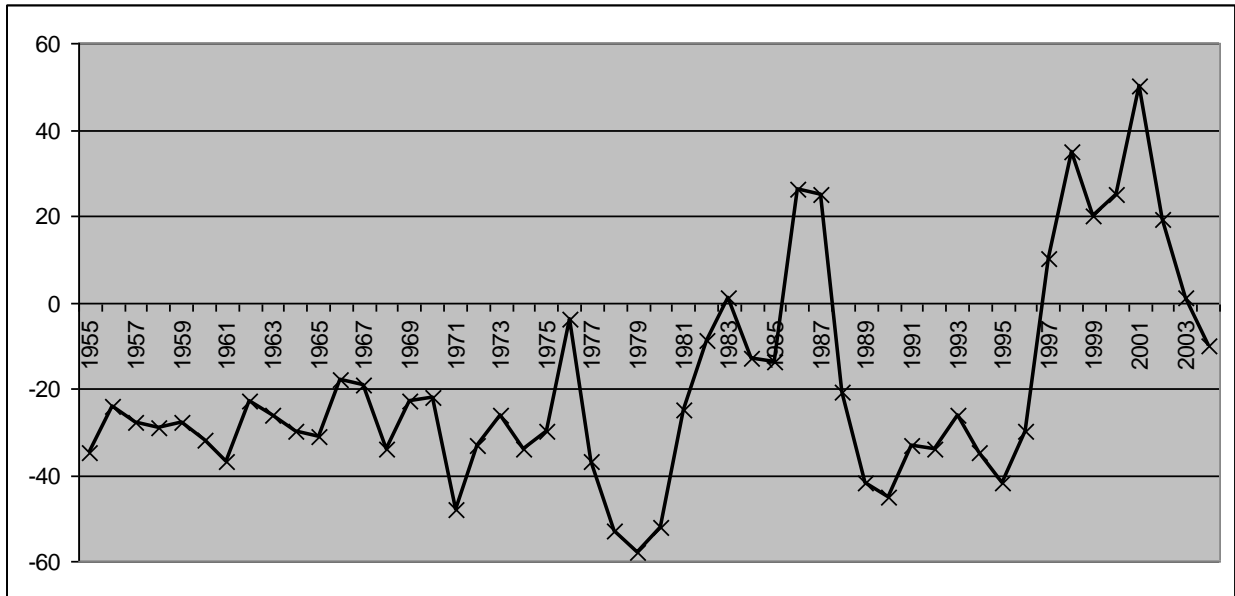


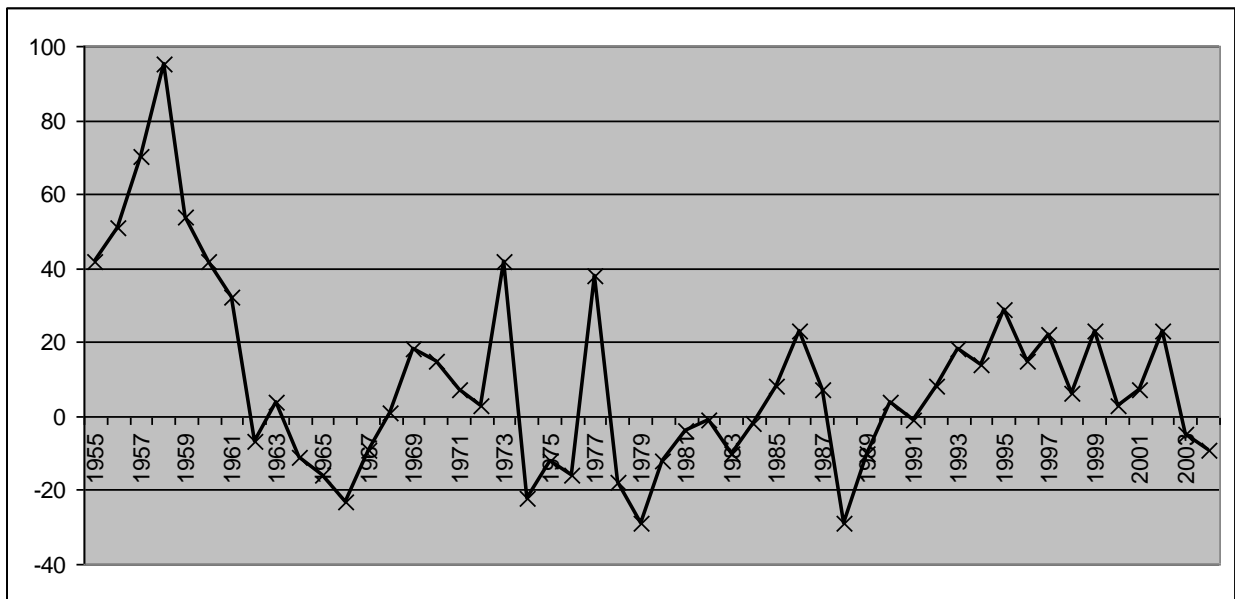
Figure 5 (continued): Nominal rates of assistance to tea, rubber, coconut and rice, Sri Lanka, 1955 to 2004

(percent)

Coconut



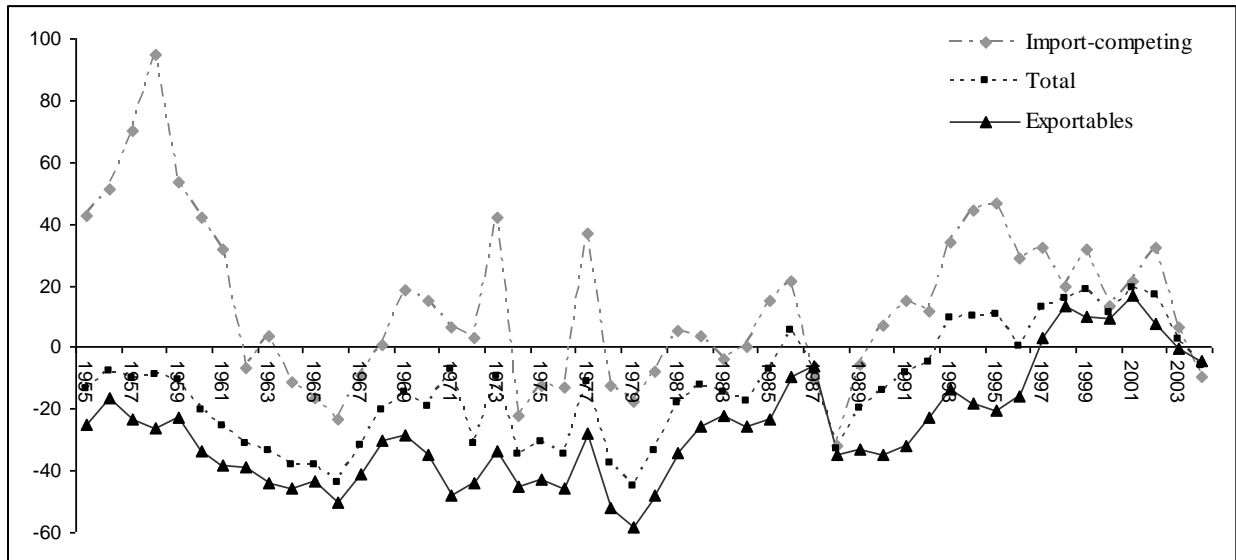
Rice



Source: Authors' spreadsheet

Figure 6: Nominal rates of assistance to exportable, importable and all covered agricultural products, Sri Lanka, 1955 to 2004

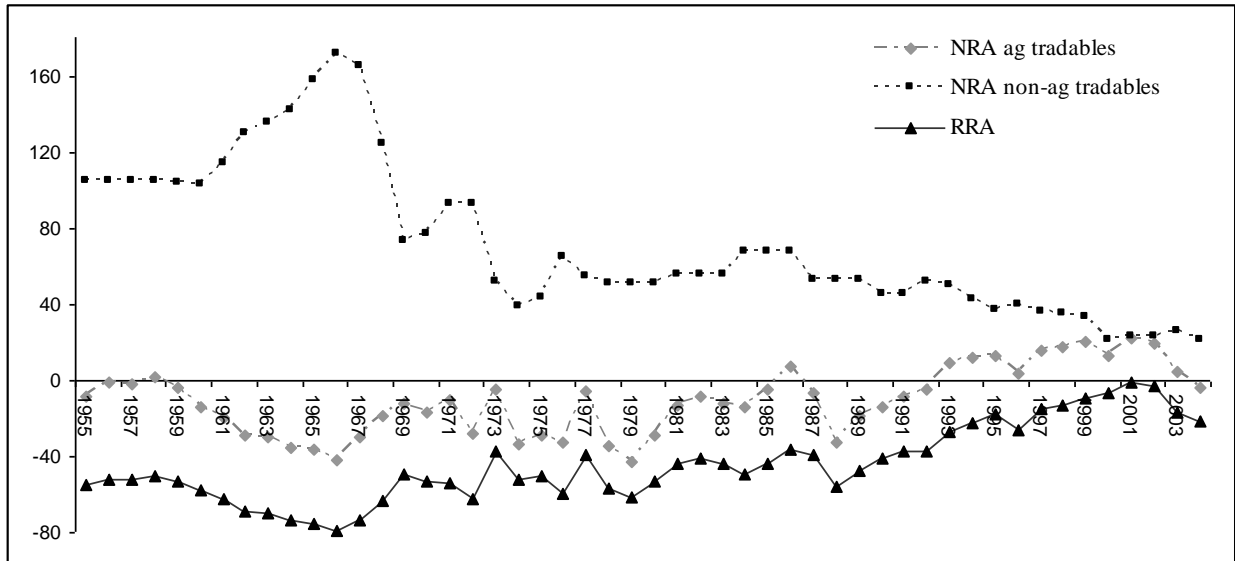
(percent)



Source: Authors' spreadsheet

Figure 7: Nominal rates of assistance to all agricultural tradable industries, all nonagricultural tradables, and relative rates of assistance, Sri Lanka, 1955 to 2004

(percent)



^a The RRA is defined as $100 * [(100 + \text{NRA}_{\text{ag}}^t) / (100 + \text{NRA}_{\text{non-ag}}^t) - 1]$, where NRA_{ag}^t and $\text{NRA}_{\text{non-ag}}^t$ are the percentage NRAs for the tradable parts of the agricultural and nonagricultural sectors, respectively.

Source: Authors' spreadsheet

Table 1: Agriculture's share of GDP, employment and exports, Sri Lanka, 1950 to 2005

(percent)

	1950-51	1960-61	1970-71	1980-81	1990-91	2000-02	2005
Sectoral shares of GDP							
Agriculture	44.5	34.6	35.1	33.7	26.3	21.9	18.9
Plantation Agriculture	26.3	17.8	15.8	13.9	8.1	5.2	4.4
Tea	7.7	6.5	3.2	2.6	2.4	1.4	1.2
Rubber	5.5	2.3	1.8	1.4	0.6	0.4	0.4
Coconut	7.1	4.8	4.0	3.8	2.4	1.4	1.1
Processing of tea, rubber, coconut ^a	6.5	4.2	6.8	6.1	2.7	2.0	1.7
Non-plantation Agriculture	14.6	14.5	16.7	15.0	14.8	12.1	11.5
Paddy	1.5	5.7	7.2	6.1	4.9	3.1	3.0
Other	13.1	8.8	9.4	8.9	9.9	9.0	8.5
Forestry	1.9	1.4	1.4	2.0	1.6	1.9	1.7
Fishing	1.2	0.9	1.2	2.7	1.8	2.7	1.3
Industries	8	9	14	18	23	26	27
Services	53	55	51	48	51	52	55
Sectoral shares of exports							
Agricultural Exports	>90	>90	94.6	61.6	36.3	19.3	18.2
Tea	>50	>50	55.5	35.1	24.9	14.3	12.8
Rubber	>20	>20	22.0	14.7	3.9	0.5	0.7
Coconut	>15	>15	14.5	7.0	3.5	1.7	1.8
Other			3.1	4.8	4.0	2.8	2.9
Manufactures	<2	<2	1.7	31.2	56.6	77.1	80.3
Unclassified			3.9	2.7	7.1	1.0	1.5
Sectoral shares of employment							
Agriculture	53	53	50	45	42	33	31
Industry	12	12	12	15	20	22	24
Services	35	35	38	40	38	45	45

^a Processing of tea, rubber and coconut products is usually included under manufacturing. Here it is included under Agriculture, Forestry and Fisheries in GDP and export shares, but not in employment shares.

Source: Central Bank of Sri Lanka (various issues)

Table 2: NRAs of covered agricultural products, Sri Lanka, 1955 to 2004
(percent, five-year averages)

	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Exportables^a	-22.8	-40.0	-38.6	-41.1	-45.2	-31.1	-21.4	-24.2	-2.0	5.9
Rubber	-15.8	-51.5	-48.9	-56.2	-59.6	-51.4	-37.7	-21.8	-4.4	-0.2
Coconut	-28.6	-29.6	-24.9	-32.8	-36.5	-19.6	-5.1	-34.6	-1.3	16.7
Tea	-22.3	-39.4	-39.1	-36.8	-37.4	-30.4	-25.6	-12.6	-1.5	-1.2
Importables^a	62.5	11.9	-5.9	9.0	-3.7	-0.6	-2.1	22.4	31.8	12.8
Rice	62.5	11.9	-5.9	9.0	-7.7	-5.8	0.1	8.6	19.2	3.7
Potato	-	-	-	-	77.6	43.3	32.6	157.7	124.8	205.8
Onion	-	-	-	-	-11.6	28.7	-12.6	43.7	79.3	53.4
Chillies	-	-	-	-	52.6	33.4	6.9	62.1	76.9	67.2
All covered products^a	-10.3	-29.9	-30.0	-20.3	-31.9	-19.2	-12.6	-1.7	11.5	8.6
Dispersion of covered products ^b	44.2	28.7	20.9	31.9	26.2	22.8	22.4	25.0	20.8	12.6
% coverage (at undistorted prices)	66	66	67	65	64	63	67	65	62	64

^a Weighted averages, with weights based on value of production at undistorted prices.

^b Dispersion is a simple 5-year average of the annual standard deviation around the weighted mean of NRAs of covered products.

Source: Authors' spreadsheet

Table 3: Nominal rates of assistance to agricultural and non-agricultural industries and relative rate of assistance, Sri Lanka, 1955 to 2004

	(percent)									
	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Covered agric. products ^a	-10.3	-29.9	-30.0	-20.3	-31.9	-19.2	-12.6	-1.7	11.5	8.6
Non-covered agric. products	13.2	-9.3	-14.8	-10.7	-16.3	-10.6	-7.8	-0.6	9.9	6.2
All agricultural products ^a	-2.4	-23.0	-24.9	-16.9	-26.4	-16.0	-11.1	-1.4	10.9	7.7
Non-product-specific input assistance (NPS)	0.0	0.2	0.4	0.6	0.8	2.4	1.1	0.1	1.3	1.7
Total agriculture (incl. NPS)^b	-2.4	-22.8	-24.5	-16.3	-25.5	-13.5	-9.9	-1.2	12.2	9.5
Agricultural trade bias index ^c	-0.52	-0.45	-0.35	-0.45	-0.43	-0.31	-0.18	-0.38	-0.25	-0.05
Tradables										
NRA, All Agriculture	-2.7	-25.7	-27.6	-18.5	-29.0	-15.4	-11.2	-1.3	14.0	10.8
NRA, All Non-Agriculture	104.9	124.6	138.4	70.7	52.9	57.1	59.0	47.1	36.4	22.9
Relative rate of assistance (RRA) ^d	-52.5	-66.6	-68.0	-51.6	-53.5	-46.2	-44.3	-32.9	-16.3	-9.8
MEMO, ignoring exchange rate distortions:^d										
NRA, all agric. products	-2.4	-12.9	-15.2	-11.0	-19.7	-11.0	-8.0	-0.9	11.7	9.5
Agricultural trade bias index	-0.52	-0.21	-0.06	-0.23	-0.23	-0.22	-0.09	-0.34	-0.24	-0.05
RRA	-52.5	-61.7	-63.9	-48.0	-49.2	-44.3	-42.9	-32.6	-16.8	-9.8

^a NRA including product-specific input subsidies.

^b NRAs including product-specific input subsidies and non-product-specific (NPS) assistance. Total of assistance to primary factors and intermediate inputs divided by total value of primary agriculture production at undistorted price, expressed as a percentage.

^c Trade bias index is $TBI = (1 + NRA_{agx}/100)/(1 + NRA_{agm}/100) - 1$, where NRA_{agm} and NRA_{agx} are the average percentage NRAs for the import-competing and exportable parts of the agricultural sector.

^d The RRA is defined as $100 * [(100 + NRA_{agt}) / (100 + NRA_{nonagt}) - 1]$, where NRA_{agt} and NRA_{nonagt} are the percentage NRAs for the tradables parts of the agricultural and nonagricultural sectors, respectively.

Source: Authors' spreadsheet

Appendix: Key quantity and price data, assumptions and sources for Sri Lanka

Volume of production, exports and imports data for agricultural products

From various publications of Central Bank of Sri Lanka's *Annual Report* (various issues) and *Economics and Social Statistics of Sri Lanka* (various issues) and FAO.

Farm-gate product prices data

Data for paddy/rice are from Bhalla (1987) for the period of 1955 to 1986 and data are from the data series of producer price of paddy of Central Bank of Sri Lanka *Annual Report* (various issues) and adjusted following the method of Bhalla (1987). Data for other products are from Central Bank of Sri Lanka's *Annual Report* (various issues) and *Economics and Social Statistics of Sri Lanka* (various issues) and FAO.

Wholesale and retail product prices

From Central Bank of Sri Lanka's *Annual Report* (various issues) and *Economics and Social Statistics of Sri Lanka* (various issues)

Border prices

Fob and cif prices are directly from Central Bank of Sri Lanka's *Annual Report* (various issues) and *Economics and Social Statistics of Sri Lanka* (various issues) and FAO.

Exchange rates

Official exchange rates are from Central Bank of Sri Lanka's *Annual Report* (various issues) and *Economics and Social Statistics of Sri Lanka* (various issues) and, for black market premia, from Easterly (2006).

Production, consumption, input and trade taxes and subsidies

These data are from Central Bank of Sri Lanka's *Annual Report* (various issues) and *Economics and Social Statistics of Sri Lanka* (various issues) and the Ministry of Plantation Industries (various issues).

Appendix Table A1: Production of major agricultural crops, Sri Lanka, 1948 to 2005

Year	Tea Prod (Mn.Kg)	Rubber Pro(Kg, Mn)	Coconut Prod(Mn.nuts)	Paddy Prod(MT,000)	Minor Exports Crops Prod(MT'000)	Sub.Food Crops Prod(MT'000)	Sugar Prod(MT'000)	Chillies &Peper Prod (MT)	Red Onion Prod (MT)	B'Onion Prod (MT)	Potatoes Prod(MT)
1948	136	96	1765	390.7	na	na					
1949	135	91	1763	482.7	3	14					
1950	139	115	1982	461	4	37					
1951	148	107	2238	459.7	4	39					
1952	144	98	2455	603.9	na	44					
1953	137	100	2288	457.6	na	36					
1954	166	95	2203	649.8	na	0					
1955	172	95	2420	745	8	73					
1956	170	97	2374	561	8	68					
1957	180	99	2108	652	8	75					
1958	187	102	2109	763	21	55					
1959	187	93	2313	760	20	59					
1960	197	99	2183	897	20	62					
1961	206	98	2601	899	21	76	11,000	36,593			3,928
1962	212	104	2811	1001	17	64	12,000	0			1,148
1963	220	105	2549	1026	8	87	13,000	29,216			7,271
1964	219	112	2991	1054	11	59	16,243	27,202			4,721
1965	228	119	2681	757	23	55	20,231	31,956			2,117
1966	222	131	2468	954	14	99	19,367	31,888			7,361
1967	221	144	2416	1145	21	97	28,916	38,425			11,509
1968	225	149	2601	1346	13	68	24,108	34,922			18,270
1969	220	151	2440	1374	15	91	19,812	34,581			26,927
1970	212	160	2410	1616	26	78	32,198	38,218			31,741
1971	218	142	2610	1396	14	106	30,000	41,613			30,500
1972	213	140	2963	1312	15	133	31,980	43,679			31,279
1973	211	155	1935	1312	49	144	40,037	46,011			26,384
1974	204	132	2031	1602	50	144	44,581	52,798			26,896

1975	214	149	2398	1154	46	160		37,607	55,680		21,924
1976	197	152	2330	1252	50	171		43,535	58,407		27,876
1977	209	146	1821	1677	52	181		42,972	61,496		29,102
1978	199	116	2207	1891	60	182		38,586	58,426		29,098
1979	206	153	2393	1917	58	173		46,400	67,900		37,900
1980	191	133	2026	2133	63	225		50,987	66,891		51,121
1981	210	124	2258	2230	54	231		37,500	59,100		66,000
1982	188	125	2521	2156	68	247		36,445	67,543		76,893
1983	179	140	2312	2484	69	313		40,600	95,300		89,800
1984	208	142	1942	2420	42	219		73,600	36,700	3,249	68,300
1985	214	138	2958	2661	41	261		98,700	41,700	3,184	89,000
1986	211	138	3039	2588	25	296		105,784	57,124	3,806	82,482
1987	213	122	2292	2127	26	299	29	73,501	56,267	2,723	81,042
1988	227	122	1937	2477	27	329	53	82,700	59,200	4,222	87,500
1989	207	111	2484	2063	31	299	54	67,900	77,000	5,365	83,500
1990	233	113	2532	2538	33	307	57	100,000	61,000	15,903	87,200
1991	241	104	2184	2389	35	258	66	99,507	41,630	14,046	66,737
1992	179	106	2296	2340	28	254	60	73,919	82,340	27,879	78,562
1993	232	104	2164	2570	37	342	69	94,700	72,860	22,838	78,180
1994	242	105	2622	2684	34	293	72	93,014	82,950	34,726	79,385
1995	246	106	2755	2810	20	232	71	101,485	78,110	29,719	81,657
1996	258	112	2546	2061	20	305	70	73,611	63,305	19,367	100,755
1997	277	106	2631	2239	21	257	63	72,231	73,940	29,138	66,484
1998	280	96	2552	2692	24	207	62	62,470	55,480	17,444	25,900
1999	284	97	2828	2857	31	259	66	60,030	105,380	62,729	27,170
2000	306	88	3096	2860	30	248	64	55,860	79,060	36,560	48,410
2001	295	86	2769	2695	28	226	48	49,040	68,830	31,966	57,680
2002	310	90	2392	2856	33	241	38	46,350	66,890	31,560	88,710
2003	303	92	2562	3071	33	244	61	46,190	67,820	32,301	71,740
2004	308	95	2591	2609			63	40,480	76,970	37,508	81,270
2005			2515					50,000	80,000	55,552	76,300

Source: Central Bank of Sri Lanka (various issues of *Annual Report*)

Appendix Table A2: Composition of imports, Sri Lanka, 1970 to 2004
(percent)

	1970	1980	1990	2000	2004
Agricultural Imports	46.4	20.6	14.2	11.3	11.2
Rice	15.1	2.2	1.2	0.1	0.8
Flour	9.7	5.3	1.0	0.0	0.0
Wheat & Meslin	1.0	1.6	2.1	1.7	2.3
Sugar	6.7	5.7	4.9	1.9	1.4
Milk and milk products	2.4	2.5	2.2	1.6	1.5
Other	11.5	3.3	2.8	6.05	5.2
Other Imports	53.6	79.4	85.8	88.7	88.8
Total	100.0	100.0	100.0	100.0	100.0

Source: Central Bank of Sri Lanka (various issues)

Appendix Table A3: Rice import tariffs, Sri Lanka, 1995 to 2006

Period	Statutory Duty	Duty Waiver	Effective Import Duty/tariff	Surcharge %	TT/GST VAT %	DL/ NSL %	Total Tax Incidence
Jan 1, 1995-Feb 7, 1995	35% or Rs7/Kg	0	55%	0	EX	4.5	65.7%
Feb 8, 1995- April 1996	35%	0	35%	0	EX	4.5	44.6%
Apr 15, 1996-Jan 30, 1997	35%	35%	0	0	EX	4.5	7.6%
Jan 31, 1997-Nov 20, 1997	35%	0	35%	0	EX	4.5	44.6%
Nov 21, 1997- Jan 31, 1998	35%	35%	0	0	EX	4.5	7.6%
Feb 1, 1998- Nov 5, 1998		0	35%	0	EX	4.5	44.6%
Nov 6, 1998-Oct 23, 1999	35%	0	35%	0	EX	5.5	46.3%
Oct 24, 1999-Dec 31, 1999	35%	25%	10%	0	EX	6.5	20.9%
Jan 1, 2000-May 10, 2000	35%	0	35%	0	EX	6.5	48.0%
May 11, 2000-July 16, 2000	35%	0	35%	0	EX	6.5	48.0%
July 17, 2000-Feb 19, 2001	35%+QR	0	35%+QR	0	EX	6.5	48.0%
Feb 20, 2001- Mar 31, 2001	35%+QR	0	35%+QR	40	EX	6.5	60.0%
Apr 01, 2001-Sep 11, 2001	35%+QR	0	35%+QR	40	EX	7.5	61.7%
Sep 12, 2001 – Nov 21, 2001	35%+QR	0	35%+QR	40	EX	6.5	60.0%
Nov 22, 2001-Dec 8, 2001	35%+QR	35%	0+QR	40	EX	6.5	8.1%
Dec 9, 2001-Dec 31,2001	35%+QR	17.5%	17.5%+QR	40	EX	6.5	34.1%
Jan 1, 2002- Jan 20, 2002	35%+QR	0	35%+QR	40	EX	6.5	60.0%
Jan 21, 2002- Jul 31, 2002	Rs 7/Kg	0	Rs. 7/Kg	0	EX	6.5	55.6%
CWE was allowed to import 30,000 MT							
August 1, 2002 – Nov 5, 2002	Rs 7/Kg	0	Rs. 7/Kg	0	10		36.6%
Nov 6, 2002-Mar 4, 2003	Rs 5/Kg	0	Rs. 5/Kg	0	10		27.4%
Mar 5, 2003-Aug 18, 2003	Rs 7/Kg	0	Rs. 7/Kg	0	10		36.4%
Aug 19, 2003-Jan 31, 2006	Rs 9/Kg	0	Rs. 9/Kg	0	10		Na
Jan 31, 2006 todate	Rs 20/Kg	0	Rs: 20/Kg	0	10		Na

Source: Updated Table 4 of Jayanetti and Tilakaratna (2005) using Various Notifications of Sri Lanka Customs.

a. Includes the defense levy, stamp duty & other surcharges

Figures in brackets are Average Duty Collection Rates.

Appendix Table A4: Exchange rates, Sri Lanka, 1960 to 2005
(Rs./US\$)

Year	Official Exchange Rate	Secondary Market Rate
1960	4.75	6.8
1961	4.76	8.1
1962	4.76	9.6
1963	4.76	11.3
1964	4.78	12.6
1965	4.78	11.5
1966	4.78	16.2
1967	5.93	14.1
1968	5.93	7.9
1969	5.96	7.7
1970	5.96	9.8
1971	5.96	13.4
1972	6.7	16.6
1973	7.75	11.0
1974	6.6	13.9
1975	7.71	16.9
1976	8.83	24.3
1977	15.56	17.7
1978	15.51	21.2
1979	15.45	25.0
1980	18	22.4
1981	20.55	22.6
1982	21.32	27.6
1983	25	36.4
1984	26.28	36.2
1985	27.41	32.8
1986	28.52	31.5
1987	30.76	33.8
1988	33.03	54.5
1989	40	48.3
1990	40.24	53.1
1991	42.58	53.5
1992	46	54.2
1993	49.56	54.8
1994	49.98	54.1
1995	54.05	56.7
1996	56.71	62.1
1997	61.29	68.8
1998	67.78	72.1
1999	72.12	80.1
2000	80.06	80.1
2001	93.16	93.2
2002	96.73	96.7
2003	96.74	96.7
2004	104.61	104.6

Source: Official from Central Bank of Sri Lanka; black market premia from Easterly (2006)

Appendix Table A5: Annual distortion estimates, Sri Lanka, 1955 to 2004

(a) Nominal rates of assistance to covered products (percent)

	Chillies	Coconut	Onion	Potato	Rice	Rubber	Tea	All covered
1955	na	-35	na	na	42	-18.0	-23	-14
1956	na	-24	na	na	51	-3.6	-18	-8
1957	na	-28	na	na	70	-19.0	-23	-10
1958	na	-29	na	na	95	-24.9	-25	-9
1959	na	-28	na	na	54	-13.5	-22	-11
1960	na	-32	na	na	42	-38.5	-32	-21
1961	na	-37	na	na	32	-45.6	-35	-26
1962	na	-23	na	na	-7	-53	-40	-31
1963	na	-26	na	na	4	-59	-44	-34
1964	na	-30	na	na	-11	-62	-46	-38
1965	na	-31	na	na	-16	-59	-43	-38
1966	na	-18	na	na	-23	-70	-51	-44
1967	na	-19	na	na	-9	-57	-44	-32
1968	na	-34	na	na	1	-25	-28	-20
1969	na	-23	na	na	18	-34	-30	-15
1970	na	-22	na	na	15	-48	-36	-19
1971	na	-48	na	na	7	-60	-41	-7
1972	na	-33	na	na	3	-56	-44	-31
1973	na	-26	na	na	42	-45	-30	-10
1974	na	-34	na	na	-22	-72	-33	-35
1975	na	-30	na	na	-12	-61	-39	-31
1976	na	-4	na	91	-16	-70	-40	-35
1977	na	-37	na	23	38	-38	-15	-11
1978	36	-53	-36	150	-18	-61	-45	-38
1979	69	-58	13	46	-29	-67	-48	-45
1980	52	-52	-9	-41	-12	-55	-36	-33
1981	36	-25	97	164	-4	-53	-35	-18
1982	48	-9	16	25	-1	-48	-30	-12
1983	35	1	11	28	-10	-48	-26	-15
1984	-5	-13	28	40	-2	-54	-25	-17
1985	22	-14	51	70	8	-30	-30	-7
1986	0	26	59	80	23	-31	-25	5
1987	-22	25	-62	-39	7	-30	-21	-8
1988	30	-21	-87	14	-29	-54	-33	-33
1989	5	-42	-25	38	-10	-43	-20	-20
1990	41	-45	-47	67	4	-46	-25	-14
1991	47	-33	3	178	-1	-40	-28	-8
1992	32	-34	-42	146	8	-15	-5	-5
1993	73	-26	68	144	18	-4	-2	9
1994	118	-35	236	253	14	-4	-2	10
1995	102	-42	61	177	29	-5	-2	10
1996	59	-30	86	66	15	-7	-2	0
1997	74	10	65	83	22	-7	-1	13
1998	83	35	108	149	6	-3	-1	16
1999	67	20	78	150	23	0	-2	18
2000	71	25	65	160	3	0	-1	11
2001	81	50	78	225	7	0	-2	19
2002	63	19	37	181	23	0	-1	17
2003	54	1	34	257	-5	0	-1	2
2004	na	-10	na	na	-9	-1	-1	-6

Appendix Table A5 (continued): Annual distortion estimates, Sri Lanka, 1955 to 2004

(b) Nominal and relative rates of assistance to all^a agricultural products, to exportable^b and import-competing^b agricultural industries, and relative^c to non-agricultural industries (percent)

	Total ag NRA				Ag tradables NRA			Non-ag tradables	
	Covered products		Non-covered products	All products (incl NPS)	Export-ables	Import-competing	All	NRA	RRA
	Inputs	Outputs							
1955	0	-14	6	-7	-25	42	-8	105	-55
1956	0	-8	12	-1	-16	51	-1	105	-52
1957	0	-10	16	-1	-23	70	-2	105	-52
1958	0	-9	23	2	-26	95	2	105	-50
1959	0	-11	10	-4	-23	54	-4	104	-53
1960	0	-21	3	-13	-34	42	-14	103	-58
1961	0	-26	-2	-18	-38	32	-20	114	-63
1962	0	-31	-15	-26	-39	-7	-29	130	-69
1963	0	-34	-13	-27	-44	4	-30	135	-70
1964	0	-38	-19	-31	-46	-11	-36	142	-73
1965	0	-38	-20	-32	-43	-16	-36	158	-75
1966	0	-44	-24	-37	-50	-23	-42	172	-79
1967	0	-32	-17	-26	-41	-9	-30	165	-74
1968	0	-20	-10	-17	-30	1	-19	124	-64
1969	0	-15	-3	-11	-29	18	-12	73	-50
1970	0	-19	-6	-15	-35	15	-17	77	-53
1971	0	-7	-14	-9	-48	7	-11	93	-54
1972	0	-31	-14	-24	-44	3	-28	93	-63
1973	0	-10	3	-4	-34	42	-5	52	-38
1974	0	-35	-22	-29	-45	-22	-34	39	-53
1975	0	-31	-18	-25	-43	-12	-30	43	-51
1976	0	-35	-20	-29	-45	-13	-33	65	-60
1977	0	-11	3	-5	-28	37	-7	55	-40
1978	0	-38	-22	-31	-52	-13	-37	51	-58
1979	0	-45	-25	-37	-58	-17	-43	51	-62
1980	0	-33	-19	-26	-48	-8	-32	51	-55
1981	0	-18	-10	-11	-34	5	-17	56	-47
1982	0	-12	-7	-8	-25	4	-12	56	-43
1983	0	-15	-9	-11	-22	-4	-14	56	-45
1984	0	-17	-9	-13	-26	0	-16	68	-50
1985	0	-7	-3	-4	-23	15	-7	68	-44
1986	0	5	4	6	-10	22	5	68	-37
1987	0	-8	-5	-6	-6	-10	-8	53	-40
1988	0	-33	-22	-29	-35	-32	-33	53	-56
1989	0	-20	-13	-17	-33	-5	-20	53	-48
1990	0	-14	-9	-13	-35	7	-14	45	-41
1991	0	-8	-6	-7	-32	15	-8	45	-37
1992	0	-5	-4	-4	-23	12	-5	52	-38
1993	0	9	7	8	-14	34	10	50	-27
1994	0	10	9	10	-18	44	11	43	-23
1995	0	10	9	11	-20	47	11	37	-19
1996	0	0	4	3	-16	29	2	40	-27
1997	0	13	12	14	3	32	14	36	-16
1998	0	16	11	16	13	20	16	35	-14
1999	0	18	14	18	10	32	19	33	-11
2000	0	11	8	11	10	14	11	21	-8
2001	0	19	13	19	17	22	19	23	-3
2002	0	17	13	17	8	32	17	23	-4
2003	0	2	2	4	0	6	3	25	-18
2004	0	-6	-5	-4	-4	-9	-6	22	-23

a. NRAs including assistance to nontradables and non-product specific assistance.

b. NRAs including products specific input subsidies.

c. The Relative Rate of Assistance (RRA) is defined as $100 * [(100 + \text{NRA}_{\text{ag}}^t) / (100 + \text{NRA}_{\text{nonag}}^t) - 1]$, where NRA_{ag}^t and $\text{NRA}_{\text{nonag}}^t$ are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

Appendix Table A5 (continued): Annual distortion estimates, Sri Lanka, 1955 to 2004
(c) Value shares of primary production of covered^a and non-covered products,
(percent)

	Chillies	Coconut	Onion	Potato	Rice	Rubber	Tea	Non-covered
1955	na	15	na	na	11	12	27	34
1956	na	16	na	na	9	13	28	34
1957	na	16	na	na	9	13	27	34
1958	na	18	na	na	9	12	27	34
1959	na	21	na	na	10	11	24	34
1960	na	15	na	na	11	14	26	34
1961	na	15	na	na	11	12	28	34
1962	na	12	na	na	15	12	26	34
1963	na	12	na	na	14	13	27	34
1964	na	14	na	na	15	13	25	34
1965	na	16	na	na	12	13	25	34
1966	na	11	na	na	14	18	23	34
1967	na	11	na	na	18	13	21	36
1968	na	20	na	na	21	8	19	32
1969	na	17	na	na	20	12	18	32
1970	na	16	na	na	21	13	18	31
1971	na	5	na	na	48	4	7	36
1972	na	12	na	na	17	11	22	38
1973	na	12	na	na	19	13	16	39
1974	na	14	na	na	31	11	12	33
1975	na	10	na	na	23	10	15	43
1976	na	9	na	1	20	17	16	37
1977	na	21	na	1	16	8	21	33
1978	2	18	2	0	21	9	16	32
1979	2	19	1	1	18	14	11	35
1980	2	19	1	1	18	10	11	37
1981	2	16	1	1	23	8	12	38
1982	2	14	1	1	23	7	13	38
1983	2	12	1	1	21	8	16	38
1984	3	16	1	1	16	8	20	36
1985	6	16	1	1	20	7	17	32
1986	8	11	1	2	21	9	15	34
1987	6	12	2	4	18	7	15	35
1988	4	10	7	2	22	9	13	32
1989	6	13	1	2	23	7	15	34
1990	5	11	3	1	24	6	18	31
1991	7	13	1	1	24	5	16	33
1992	6	18	4	1	24	4	9	34
1993	5	15	1	1	23	4	13	37
1994	4	16	1	1	21	6	12	39
1995	4	15	1	1	21	7	11	40
1996	4	18	1	1	15	6	14	41
1997	2	19	1	1	16	5	17	40
1998	3	16	1	0	20	4	19	38
1999	3	20	2	0	22	3	16	34
2000	2	15	1	0	22	3	19	36
2001	2	14	1	1	21	3	21	37
2002	2	17	1	1	20	4	19	36
2003	2	14	1	1	23	5	18	36
2004	na	16	na	na	22	6	21	36

^a At farmgate undistorted prices

Source: Authors' spreadsheet