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Distortions to Agricultural Incentives in China and Southeast Asia

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Distortions to Agricultural Incentives in China and Southeast Asia

Kym Anderson and Will Martin¹

In the past, farm earnings in China and Southeast Asia have often been depressed by pro-urban, anti-agricultural biases of government policies in developing countries. Much progress has been made since the 1980s in reducing that policy bias, especially in China where these changes have been transformational. Nonetheless, many trade-reducing price distortions remain within the agricultural sector, and some countries have moved from taxing to protecting their farmers which involves a different but still inefficient use of national resources as compared with removing all price distortions.

In this study we include the People's Republic of China (the mainland excluding Hong Kong, Macao and Taiwan, herein referred to simply as China) and the five large Southeast Asian economies of Indonesia, Malaysia, the Philippines, Thailand and Vietnam. Estimates of distortions are provided for as many years as data permit over the past five decades, and for an average of 8 crop and livestock products per economy which in aggregate amounts to about 70 percent of the gross value of agricultural production in those economies.²

There is considerable diversity within the region in terms of stage of development, relative resource endowments, comparative advantage and hence trade specialization, and the incidence of poverty and income inequality. These economies thus provide a rich sample for comparative study. Per capita income in Vietnam is barely one-twelfth the global average; in Indonesia and the Philippines it is around one-sixth, whereas in China it is more than one-

¹ This chapter draws on the introductory and country chapters in Anderson and Martin (2008), with data updated using Anderson and Valenzuela (2008).

² The time series and commodity coverage greatly exceed that of earlier studies. Krueger, Schiff and Valdes (1991) analyse Malaysia, the Philippines and Thailand but for only 3 or 4 crops from 1960 to 1984; Orden et al. (2007) provide producer support estimates for China, Indonesia and Vietnam for the period since 1985; and the OECD has begun examining China (OECD 2005). A common finding of these earlier studies is that the average nominal rate of assistance to farmers is higher in higher-income settings and where agricultural comparative advantage is weaker, and to be much higher for the import-competing sub-sector than for exporters of farm products in each economy.

quarter, in Thailand more than one-third, and in Malaysia around three-quarters of the world average. In terms of endowments of agricultural land per capita, the Philippines is the least well endowed in this group, but even Indonesia has only about one-quarter of the global average endowment, while Malaysia and Thailand have about two-fifths and China one-half.³ That is, none of these Asian economies is relatively well endowed with crop or pasture land. This might suggest they would have a low comparative advantage in agricultural goods, were it not for two facts: these economies are at varying stages of industrial development, and the quality of and institutional arrangements/entitlement to their land and water vary greatly. As a result, there is a wide range in their comparative advantages and trade specialization. The share of agricultural and food products in the country's merchandise trade is about 60 percent of the global average share for China and the Philippines, while it is well above 100 percent for the other Southeast Asian countries in our sample (Appendix Table 1).

The recent poverty decline in the region has been unprecedented in world history. The number of Asian people living on less than \$1/day (1993 PPP) has halved since 1981, with most of that decline in East Asia (especially China), and represents a decline from 58 to less than 10 percent of the population (table 1). During the ten years to 2002, no less than three-quarters of that decline in the proportion of Asia's poor occurred in rural areas, and another one-sixth was due to a movement out of poverty by rural people migrating to better opportunities in urban areas (Chen and Ravallion 2007).⁴

Policy developments have made non-trivial contributions to the growth, structural changes and poverty alleviation observed in East Asia over the past five decades. The transformational move away from planning and state-owned enterprises to greater dependence on markets and private entrepreneurship has had a particularly dramatic effect in China and Vietnam from the 1980s. Also important has been the move in market economies away from import-substituting industrialization towards export-oriented development strategies. Agricultural policies were not the only – or even the main – target of these reforms, but they were an integral part of the process.

³ In terms of overall (as distinct from just crop and pasture) land endowment per capita, China is only one-third of the global average.

⁴ Income inequality has risen a little over the past two decades but is still low throughout much of the region compared with the rest of the world: as of 2004, the Gini coefficient is between 0.40 and 0.49 for Malaysia, the Philippines and Thailand. Likewise, the Gini coefficient for land distribution is relatively low, at just 0.41 for China, below 0.50 also in Indonesia and Thailand, and just on 0.5 in Vietnam. This implies reasonably even distributions of land compared with, say, Latin America where the Gini coefficient for land distribution is above 0.7 for major countries such as Argentina and Brazil (World Bank 2007).

This chapter begins with a brief summary of economic growth and structural changes in the region since the 1950s and of agricultural and other economic policies as they affected agriculture before and after the various reforms – and in several cases fundamental regime changes – of the past half-century.⁵ It then summarizes new estimates of the nominal rate of assistance (NRA) and the relative rate of assistance (RRA) to farmers delivered by national farm and nonfarm policies over the past several decades (depending on data availability), and of those policies' impacts on consumer prices of farm products. Both farmer assistance and consumer taxation is negative in periods where there is an anti-agricultural, pro-urban consumer bias in a country's policy regime. The final sections summarize what we have learned and draw out implications of the findings, including for poverty and inequality and for possible future directions of policies affecting agricultural incentives in this part of Asia.

Growth and structural changes⁶

The most striking economic characteristic of East Asia's developing economies is their rates of economic growth and industrial development over the past three decades. The recent report of the Commission on Growth and Development (Spence 2008) noted that 13 of the world's economies have had sustained growth of real per capita income of more than 7 percent for at least 25 consecutive years since World War II, and nine of those are East Asian.⁷ Between 1980 and 2004, East Asia's per capita GDP grew at 6.3 percent per year, which contrasts with the global average of just 4 percent and South Asia's 3.4 percent. Industrial growth in that period was more than three times the world's average of 2.5 percent; and even agricultural growth was well above the world average of 2.0 percent per year except in Malaysia and the Philippines (Appendix table 2). A consequence is that per capita incomes of most of these East Asian economies have been converging rapidly – albeit from a low base – on those of rich countries, while other developing and transition economies have, on average been slipping further away from the US level.

⁵ Apart from the regime changes that occurred during this period, such as the move from socialism to the market in China and Vietnam, the region saw the end of colonization between the late 1940s and late 1950s: Indonesia from the Netherlands in 1949, Indochina from France in 1954, and Malaya from Britain in 1957.

⁶ The rest of this chapter draws in part on Anderson (2008).

⁷ The nine are Japan, Korea, Taiwan, China, Indonesia, Malaysia, Thailand, Hong Kong and Singapore. Brazil is the only other large economy in the set, the other three being Botswana, Malta and Oman.

A key driver of the rapid growth and industrialization of East Asia has been the decision by many countries of the region to become more open and switch away from an import-substituting development strategy to one that is export oriented. That change occurred at different times in our focus countries, following the experience of Taiwan and Korea in the 1960s. China joined the group from the late 1970s and Vietnam in the mid-1980s. As a result, export volumes grew at double-digit rates, and the share of exports in GDP rose steadily for the region, more than doubling in the 30 years to 2004 (Appendix table 3). The East Asian region's share of global exports of non-food manufactures has quadrupled since 1990, thanks especially to China's industrialization. China in 2006 accounted for 11 percent of the world's manufacturing exports, compared with less than 1 percent in 1990: a twenty-fold increase in current dollar terms. But even the increase for Southeast Asia has been five-fold, contributing to the region's growing share of global manufacturing exports since 1990 (Appendix table 4).

With that export-led industrial growth has come dramatic restructuring of Asia's economies away from agriculture and towards not only manufacturing but also service activities. In East Asia the farm sector's share of GDP is now less than 30 percent of what it was in the latter 1960s. The biggest changes are in China and Indonesia, where agriculture's shares of GDP have dropped from more than 40 and 50 percent, respectively, in the 1960s to 13 percent by 2005. The Philippines, being the slowest-growing of our focus economies, has been the slowest to move away from agriculture since the 1960s (Appendix table 5).

The shares of overall employment accounted for by farming activities have fallen somewhat more slowly than agriculture's GDP shares, according to statistics in the FAOSTAT Database of the Food and Agriculture Organization of the United Nations (which, because of definitional differences, is not always consistent with national databases). These shares remain much higher than the GDP shares, implying relatively low labor productivity on farms. Malaysia has seen a major fall, from 57 to 18 percent of the workforce, but elsewhere in the region the share of the labor force remaining in farming is between two-fifths and two-thirds (Appendix table 6). These shares would be somewhat less in full-time equivalent terms if more-careful account were taken of part-time off-farm work activities (see, e.g., Otsuka and Yamano 2006), but nonetheless they underscore the fact that incentives faced by farmers affect the well-being of the majority of Chinese and Southeast Asian households.

Agriculture's share of merchandise exports has declined even more dramatically than its GDP share in the past four decades, as the share of non-primary goods has grown. Among our focus countries, only Vietnam has more than one-sixth of its exports coming from farms (Appendix table 7). The declining relative importance of farm exports has been much more rapid in East Asia than in the rest of the world: the index of the revealed agricultural comparative advantage (defined as the share of agriculture and processed food in national exports as a ratio of the share of such products in worldwide merchandise exports) has fallen since the 1980s by about two-thirds for the region. So too has the index of agricultural trade specialization (defined as net exports divided by the sum of the imports and exports of agricultural and processed food products). That index, which ranges from -1 to +1, has become less and less positive since the 1970s and has become negative in the cases of China and the Philippines (Appendix table 8).

That apparent decline in agricultural comparative advantage is evident in the self-sufficiency data for primary farm products. The share of farm production exported has declined steadily for Malaysia and the Philippines but has been offset by increases in Vietnam, Thailand and China. Since the 1980s the share of imports in domestic consumption of farm products has also grown (Appendix table 9), though in China's case largely because of the need to import more cotton to supply its booming exports of textiles and clothing. As will become clear below, the increasing dependence on imports of farm products in East Asia has occurred despite reductions in the taxation of agricultural exports and increases in incentives provided to farmers via government policy reforms.

Quantifying the distortions to agricultural incentives

The main focus of the present study's methodology is on government-imposed distortions that create a gap between 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 not only estimates the effects of direct agricultural policy measures (including distortions in the foreign exchange market), but also generates estimates of distortions in non-agricultural sectors for comparative evaluation. Specifically, we compute Nominal Rates of Assistance (NRAs) for farmers including any input subsidies and non-product-specific forms of assistance or taxation. We also generate a production-

weighted average 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). This approach is not well suited to analysis of China's and Vietnam's policies prior to their reform era, because prices then played only an accounting function and currency exchange rates were enormously distorted. During their reform era, however, the price comparison approach provides as valuable a set of indicators for them as for other market economies of distortions to incentives for farm production, consumption and trade, and of the income transfers associated with interventions.

While most of the focus is on agricultural producers, we also consider the extent to which consumers are taxed or subsidized. To do so, we calculate a Consumer Tax Equivalent (CTE) by comparing the price that consumers pay for their food and the international price of each food product at the border. Differences between the NRA and the CTE arise from distortions in the domestic economy that are caused by transfer policies and taxes/subsidies that cause the prices paid by consumers (adjusted to the farmgate level) to differ from those received by producers.

To obtain dollar values of farmer assistance and consumer taxation, we have taken the country authors' estimates of *NRA* and multiplied them by the gross value of production at undistorted prices to obtain an estimate in US dollars of the direct gross subsidy equivalent of assistance to farmers (*GSE*). These *GSE* values are calculated in constant dollars, and are also expressed on per-farm-worker basis. They (and their equivalent on the consumption side) can be added up across products for a country, and across countries for any or all products, to get regional aggregate transfer estimates for the studied economies.

Nominal rates of assistance to agriculture

Prior to the 1980s, agricultural price policies, together with trade and exchange rate policies, almost always reduced farmers' earnings in China and Southeast Asia. The only exceptions were the Philippines in the latter 1960s and Indonesia in the latter 1970s. That explicit or implicit taxation declined from the early 1980s, however, and from the mid-1990s in China and 2000 in Southeast Asia the average NRA switched sign and became slightly positive. The average hides considerable diversity within the region, however. The Philippines' average NRAs became positive from the 1980s and has averaged close to 20 percent since then, while at the other extreme China and Vietnam's average NRAs were heavily negative until the mid-1990s. Meanwhile, NRAs in Indonesia, Malaysia and Thailand averaging much closer to zero

from the early 1980s (table 2). A visual impression of both the differences across countries and the rise in average NRAs is clear in figure 1, where 2000-04 is compared with 1980-84 for all agricultural products and for rice (by far the region's most important food).

The trends are less obvious when looking at the commodity NRAs for the region. Table 3, which compares the Southeast Asian averages with those for China, illustrates the diversity of the region's average NRAs across farm commodities. As is true for other regions of the world, assistance is highest for sugar, but it is also high for maize, and for milk in China and rice and poultry in parts of Southeast Asia (see the Appendix for country details). This, together with NRA estimates for the higher-income countries of Northeast Asia (Honma and Hayami 2008), suggests the production of these products within East Asia may be far from optimally allocated from the viewpoint of efficient resource use.

There is a great deal of NRA diversity not only across countries in their average NRA but also across commodities *within* each Asian economy's farm sector. The extent of the latter type of diversity (as measured by the standard deviation) has declined markedly in China but has been greater in Southeast Asia in the past 25 years than in the previous couple of decades (see the dispersion indicators in the middle and bottom of table 3). It means that there is still much that could be gained also from improved resource reallocation within the agricultural sector of Asian economies, were intra-national differences in rates of assistance to be reduced.

A striking feature of the distortion pattern within the farm sector is its strong anti-trade bias. This is evident in figure 2, which depicts the average NRAs for agriculture's import-competing and export sub-sectors for the region: the former average is almost always positive and its trend is upward-sloping, whereas the NRA average for exportables is almost always negative, although much less so in China from the mid-1980s and has been close to zero since the late 1990s. The gap between the NRAs for those two sub-sectors has not diminished greatly since the 1960s for the region as a whole, but it clearly has narrowed for China.

The rise in the average NRAs since the 1980s is too large to be explained just by economies becoming more import-dependent as they lose their comparative advantage in farm products with industrialization: the proportion of tradable farm production that is produced by the export sub-sector has not declined very much for most Asian economies. Nor can the main motive for altered interevention be solely to reduce distortions, for otherwise we would not have seen some 'overshooting', in going from negative to positive

NRA for some products (maize in China, rice in Indonesia), nor would we have seen an increase in the average NRA for import-competing farmers.

The US dollar value equivalent of the positive or negative assistance to farmers due to agricultural price and trade policies has been non-trivial, but is dominated by China where it was a tax of more than \$100 billion per year (in constant 2000 US dollars) in the early 1980s but has become a subsidy of around \$15 billion in the past decade (table 4(a)). In Southeast Asia too, the reforms do not mean there is no intervention now. Rather, their annual transfers changed from being a net negative for farmers of \$0.7 billion in 1985-89 to a net positive of \$8 billion in 2000-04. In recent years those totals represent transfers to farmers of around \$30 per farm worker in China and \$70 in Southeast Asia (table 4(b)).

Assistance to non-farm sectors and relative rates of assistance

What matters for the incentives to produce agricultural goods is not just the NRA for agricultural products alone, but this rate of assistance relative to that for other traded goods. The anti-agricultural policy biases of the past were due not just to agricultural policies. Also important to changes in incentives affecting inter-sectorally mobile resources have been the significant reductions in border protection to the manufacturing sector (which has been the dominant intervention in the tradables part of non-agricultural sectors). That reduction in assistance to producers of non-farm tradables has been at least as responsible for the improvement in farmer incentives as the reduction in direct taxation of agricultural industries.

It has not been possible to quantify the distortions to non-farm tradable sectors as carefully as for agriculture. Authors typically have had to rely on applied trade taxes (for exports as well as imports) plus some adjustments for exchange rate distortions and quantitative restrictions, rather than being able to undertake comprehensive price comparisons. Hence they usually do not capture fully the quantitative restrictions on trade which were important in earlier decades but decreasingly so through recent times. Nor do they capture distortions in the services sectors, some of which now produce tradables (or would do in the absence of interventions preventing their emergence). As a result the estimated NRAs for non-farm importables are smaller and decline less rapidly than in fact was the case – while those for non-farm exportables have in some cases been negative. Of those two elements of under-estimation, the former bias certainly dominates, so the authors' estimate of the overall NRA for non-agricultural tradables should be considered a lower-

bound estimate, and more so in the past than presently, so that its decline appears to have been less rapid than it has been in reality⁸

Despite these methodological limitations, the estimated NRAs for non-farm tradables are very sizeable prior to the 1990s. For the region as a whole, the average NRA value has steadily declined since the 1980s as policy reforms have spread. This has therefore contributed to a decline in the estimated negative relative rate of assistance for farmers: the RRA in Southeast Asia in the early 1970s averaged -25 percent and in China as recently as the early 1980s was worse than -50 percent, whereas now it averages slightly above zero (figure 3). Thailand is the only country in the region with a negative RRA this decade (table 5).

Consumer tax equivalents of agricultural policies

The extent to which farm policies impact on the retail consumer price of food and on the price of livestock feedstuffs depends on a wide range of things including the degree of processing undertaken and the extent of competition along the value chain. We, like the OECD (2007), therefore attempt only to ask how much impact policies have on the buyer's price at the point on the value chain where the farm product is first traded internationally and hence where comparisons are made between domestic and international prices (e.g., as milled rice, or raw sugar, or beef). To get weights to make it possible to sum up across commodities and countries, if they were not supplied from national sources we obtained consumption data either directly from the FAO food balance sheets or, in the case of minor products, indirectly by using FAO value of trade data and assuming the undistorted value of consumption is production valued at undistorted prices plus imports minus exports.

If there were no farm input distortions and no domestic output price distortions so that the NRA was entirely the result of border measures such as an import or export tax or restriction, and there were no domestic consumption taxes or subsidies, then the CTE would equal the NRA for each covered product. But such domestic distortions are present in several Asian economies. In China, for example, producer prices were held below consumer prices for several important crop products at least until the early 1990s: producers of food staples were taxed more than consumers were subsidized, even taking into account the 'iron rice bowl' system under which urban consumers were able to purchase foodstuffs at low prices.

⁸ This bias is accentuated in those cases where distortions to exchange rates are not included, as noted above in the methodology section. Exchange rate distortions were included in the studies for China, Malaysia and Vietnam. Their impact was greatest in China, where it made the RRA more negative to the extent of about 2 percentage points in the 1970s, 6 percentage points in the 1980s and 3 points in the 1990s (Huang et al. 2009).

Also, because of international trade, the weights used to aggregate product distortion rates on the consumption side differ from those on the production side of the market. Hence the aggregate CTE differs somewhat from the aggregate NRA for each economy, as can be seen by comparing the CTEs in table 6(a) with the NRAs in table 2 for the 1980s. The CTE was negative until the mid-1990s for China, Thailand and Vietnam, but above zero thereafter.

In total dollar terms the current transfers from consumers are clearly largest in China, but on a per capita basis they are almost as large in the Philippines and Indonesia, at between \$22 and 34 per capita (table 6(c)). They have been minor in Malaysia and Thailand in recent years. In 2000-04 they were non trivial as a percentage of income in Vietnam the introduction of export restrictions on rice in 2008 would have reduced this consumer taxation.

The role of agricultural policies in stabilizing domestic prices

An often-stated objective of food policies in Asia (and elsewhere) is to reduce fluctuations in domestic food prices and in the quantities available for consumption. Nowhere is that more so than in rice, for which fluctuations in trade barriers are frequently used as a buffer against domestic or international shocks, rather than using trade as a source of cheaper imports or an opportunity for greater export earnings. Since Asia produces and consumes four-fifths of the world's rice (compared with about one-third of the world's wheat and maize), this market-insulating behavior of Asian policy makers means that even by 2000-04 only 6.9 percent of global rice production was traded internationally⁹ (compared with 14 and 24 percent for maize and wheat). Nominal rates of protection for rice have been above trend in years of low international prices and conversely in years when international prices for rice are high. The effect of a thin market and price insulation has been much more volatile international prices for rice than for those other grains.

Figure 4 confirms that this indeed is the case. Even when averaging over all our focus countries in Southeast Asia, the negative correlation between the rice NRAs and the international rice price is very high, at -0.59. Moreover, that behavior is evident whether the NRA trend is upward or downward. A clear illustration of the latter point is provided by Malaysia, whose policy was reformed during its financial crisis years of 1985-87. Even

⁹ This was up from the pre-1990s half-decade global shares which are all less than 4.5 percent (e.g., 4.1 percent in 1985-89), and is greater than the Asian share of just 5.7 percent in 2000-04, according to the project's database (Anderson and Valenzuela 2008).

though the growth in rice protection was reversed (figure 5), insulation of prices around the trend level of protection continued.

This beggar-thy-neighbor dimension of each economy's food policy reduces hugely the international public good role that trade between nations can play in bringing stability to the world's food markets. The more some countries insulate their domestic markets, the more they export their volatility to the international market, and the greater the resulting volatility in that marketplace. This, in turn, creates a perceived need for other countries to do likewise. In most cases, volatility is exported through changes in import tariffs; but export taxes and export controls are sometimes also used by exporting countries. When NRAs in enough countries are adjusted in this way to changes in international prices, this exacerbates those changes in world prices so that even larger changes in NRAs are needed to achieve any given target level of stability in domestic prices—a classic collective action problem.

A multilateral agreement to desist is thus needed. That is precisely what was sought during the GATT's Uruguay Round Agreement on Agriculture through mechanisms such as tariff bindings, and disciplines on administered domestic prices and export subsidies. Tariff bindings can reduce the extent of the problem by restricting the range over which tariffs can increase in response to low prices. But to date the bindings are so far above applied import tariffs that this discipline on food-importing members in years of low international prices is very weak. Moreover, there is no corresponding GATT or WTO discipline on food export restrictions, which – as 2008 has starkly revealed – can be the problem in years of high international prices.

Summary: What have we learned?

One of the most salient features of price and trade policies in the region since the 1980s is the spate of major economic reforms, including significant trade liberalization. A key feature has been reductions in the taxation of exportable agriculture. Another has been an upward trend in protection to import-competing agriculture in Southeast Asia—any liberalization in this sub-sector has been outweighed by increases in protection of other products. Overall levels of non-agricultural protection have declined considerably, which has improved the competitiveness of the agricultural sector in many economies but especially in China and Vietnam.

These features are captured in figure 6, which shows agriculture's trade bias index on the horizontal axis and the RRA on the vertical axis. An economy with no anti-agricultural

bias ($RRA = 0$) and no anti-trade bias within the farm sector ($TBI = 0$) would be located at the intersection of the two axes in figure 6. China and all the focus countries of Southeast Asia were to the southwest of that neutral point as of 1980-84, but by 2000-04 all but Indonesia and the Philippines had moved to the right to become closer to the vertical axis (meaning they had reduced their anti-trade bias in agriculture). All had shifted up also, except for the Philippines had become closer to the horizontal axis – although some are now above rather than below that axis, which means they are assisting farmers relative to producers of other tradable products and that can lead to just as much waste of resources as the earlier, anti-agricultural, policy bias.

More specifically, the following features of the region's experience of the past four decades are worth highlighting by way of summarizing the key findings of this regional study.

The region has seen a gradual movement away from taxing farmers relative to non-agricultural producers and the emergence during the most recent decade of slightly positive assistance on average for farmers. The gradual fall in the estimated (negative) RRA for the region has been not dissimilar to but is more dramatic than the trends in other developing countries. Instead of being effectively taxed more than \$100 billion per year as in the early 1980s (or more than \$200 per person working in agriculture), farmers in the region now enjoy support worth more than \$30 per person employed on farms in China and \$70 in Southeast Asia.

The dispersion in nominal rates of assistance to farmers has diminished in China but it has increased in Southeast Asian countries on average. This result means there is still scope for reducing distortions in resource use within agriculture even in countries with an average NRA for agriculture and an RRA close to zero.

The anti-trade bias in assistance rates within the farm sectors of Southeast Asia remains in place. The NRA for import-competing farm industries has increased over the decades studied, while the negative NRA for agricultural exportables has been reduced in absolute value. The fact that the average NRAs for import-competing and exportable agricultural industries have risen roughly in parallel in Southeast Asia (though not in China) means that those countries' anti-trade bias within agriculture has not fallen much from the high levels of the past. This may be understandable from a political economy viewpoint, but it nonetheless means that resources are not allocated efficiently within the farm sector and – since openness tends to promote economic growth (Spence et al. 2008) – that total factor

productivity growth in Southeast Asian agriculture is slower than it would be if remaining interventions were removed.

Movements in the consumer tax equivalent closely replicate changes in farm support/taxation, because agricultural taxation or assistance is mostly due to trade measures, although consumer subsidies in China prior to 1994 were an important exception. This broad pattern means that before the reforms food prices were kept artificially low but, in recent years, they have been above international levels on average in the region (although only trivially so for Malaysia and Thailand). It also means there is considerable variation in consumer tax equivalents across countries in the region. The current level of taxation of food consumers for the region as a whole is rising, and in 2000-04 it amounted to more than \$30 per capita per year in China and the Philippines.

The decline in negative relative rates of assistance has been due as much to cuts in protection for non-agricultural sectors as to reforms of agricultural policies. This underscores the fact that the reductions in distortions to agricultural incentives in the region have been part of a series of economy-wide reform programs and not just due to farm policy reforms.

Food policies in continue to seek to reduce fluctuations in domestic food prices and in the quantities available for consumption via fluctuations in barriers to trade. This beggar-thy-neighbor dimension of each economy's food policy reduces hugely the international public good role that trade between nations can play in bringing stability to the world's food markets. This is especially the case for rice, because it is the main staple in Asia, because countries in the region heavily intervene to insulate their market from international price developments, and because Asia accounts for five-sixths of the global market for rice.

Where to from here?

The expectation is that, provided they remain open and continue to free up domestic markets and practice good macroeconomic governance, East Asia's developing economies will keep growing rapidly in the foreseeable future, and the growth there will be more rapid in manufacturing and service activities than in agriculture. In the more densely populated economies of the region that growth will be accompanied by rapid increases in per capita incomes of low-skilled workers where labor-intensive exports boom. Agricultural

comparative advantage is thus likely to decline in such economies. Whether these economies become more dependent on imports of farm products depends, however, on what happens to the RRA. The first wave of Asian industrializers (Japan, and then Korea and Taiwan) chose to slow the growth of food import dependence by raising their NRA for agriculture even as they were bringing down their NRA for non-farm tradables, such that their RRA became increasingly above the neutral zero level (Honma and Hayami 2009). A key question is: will later industrializers follow suit, given the past close association of RRAs with rising per capita income and falling agricultural comparative advantage?

When the RRAs for Japan, Korea and Taiwan are mapped against real per capita income, it is possible to superimpose on that same graph the RRAs for lower-income economies to see how they are tracking relative to the first industrializers. Figure 7 does that for China (and India), and shows that its RRA trend of the past 25 years is on the same trajectory as the richer Northeast Asians. A glance at figure 3 suggests the same is true for Southeast Asia.

One reason one might expect different government behavior now is because the earlier industrializers were not bound under GATT to keep down their agricultural protection. Had there been strict discipline on farm trade measures at the time Japan and Korea joined GATT in 1955 and 1967, respectively, their NRAs may have been halted at less than 20 percent. At the time of China's accession to WTO in December 2001, its NRA was less than 5 percent, or 7.3 percent for just import-competing agriculture. Its average bound import tariff commitment was about twice that (16 percent in 2005), but what matters most is China's out-of-quota bindings on the items whose imports are restricted by tariff rate quotas. The latter tariff bindings as of 2005 were 65 percent for grains, 50 percent for sugar and 40 percent for cotton (WTO, ITC and UNCTAD 2007, p. 60). China also has bindings on farm product-specific domestic supports of 8.5 percent, and can provide another 8.5 percent as non-product specific assistance if it so wishes – a total 17 percent NRA from domestic support measures alone, in addition to what is available through out-of-quota tariff protection.

Clearly the legal commitments China made on acceding to WTO are a long way from current levels of domestic and border support for its farmers, and so are unlikely to constrain the government very much in the next decade or so;¹⁰ and the legal constraints on Asia's developing countries that joined the WTO earlier (except for Korea) are even less constraining.

¹⁰ For more on this point, see Anderson, Martin and Valenzuela (2008).

One can only hope that the China and Southeast Asia will not make use of the legal wiggle room they have allowed themselves in their WTO bindings and thereby follow Japan, Korea and Taiwan into high agricultural protection.¹¹ A much more efficient and equitable strategy would be to instead treat agriculture in the same way they have been treating non-farm tradable sectors.

It might be argued that such a laissez faire strategy could increase rural-urban inequality and poverty and thereby generate social unrest. On the other hand, policies that lead to high prices for staple foods, in particular, involve potentially serious risks for the urban and rural poor who are net buyers of food in developing countries, as has been demonstrated by concerns about the recent increases in prices of these goods (Ivanic and Martin 2008). Available evidence suggests that problems of rural-urban poverty gaps have been alleviated in parts of Asia by some of the more-mobile members of farm households finding full- or part-time work off the farm and repatriating part of their higher earnings back to those remaining in farm households (Otsuka and Yamano 2006, World Bank 2007). Concerted government intervention through social policy measures are hugely important both in reducing the gaps between rural and urban incomes, identified by Hayami (2007) as a concern, and in raising national incomes overall (Winters, McCulloch and McKay 2004). Efficient ways of assisting any left-behind groups of poor (nonfarm as well as farm) households include public investment measures that have high social payoffs such as in basic education and health and in rural infrastructure, as well as in agricultural research and development.

What do the above lessons and implications suggest developing country policymakers should do when confronted, as in recent years, with a sharp upward movement in international food prices? In the past, as illustrated for rice in figures 4 and 5, many governments have simply either increased their export restrictions or lowered their import restrictions on food staples for the duration of the spike. But what if this recent rise in international prices is much more prolonged than the short-lived spikes of recent decades? This year's outlook projections by international agencies are suggesting prices could remain

¹¹ The indications in the on-going Doha round of multilateral trade negotiations at the WTO are not encouraging. The Group of 33 developing countries, led by Indonesia but strongly supported by India and the Philippines, among others, is arguing for additional 'special and differential treatment' for developing countries in the form of exemptions from agricultural tariff cuts for so-called 'special products', and for a special safeguard mechanism that would allow such countries to impose even higher than bound tariffs in years of likely import surges.

high for the foreseeable future, and that growth in net food imports by rapidly industrializing economies of Asia is one of the significant contributors.¹² Yet China and India over the past two or more decades have steadily raised their RRAs which had been sufficient to keep both countries very close to self sufficient in primary agricultural products over the previous four decades. In terms of all agricultural and processed food trade though, in 2000-04 China for the first time became a net importer (Sandri, Valenzuela and Anderson 2007).¹³ Should the countries of the region choose to keep their RRAs at current (close to zero) levels, their import dependence in agriculture could well increase over time. If so, other developing countries might well re-consider their current position in the WTO's Doha round of trade negotiations: by agreeing to lower substantially their bound tariffs and subsidies on agricultural products. In this way, the region's governments might well be able to extract greater 'concessions' from high-income countries without having to reduce their actual applied rates for the foreseeable future.

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¹² The World Bank's commodity forecast as of May 2008 for grain prices is that by 2020 in real terms they will still be 10 percent above 2006 levels, which in turn were 20 percent above the average for 2001-05. IFPRI (von Braun 2007) and the OECD and FAO (2008) similarly expect food prices to remain high well into next decade and beyond.

¹³ This change for China was largely due to increases in imports of cotton needed to supply China's surging production of textiles and clothing for export.

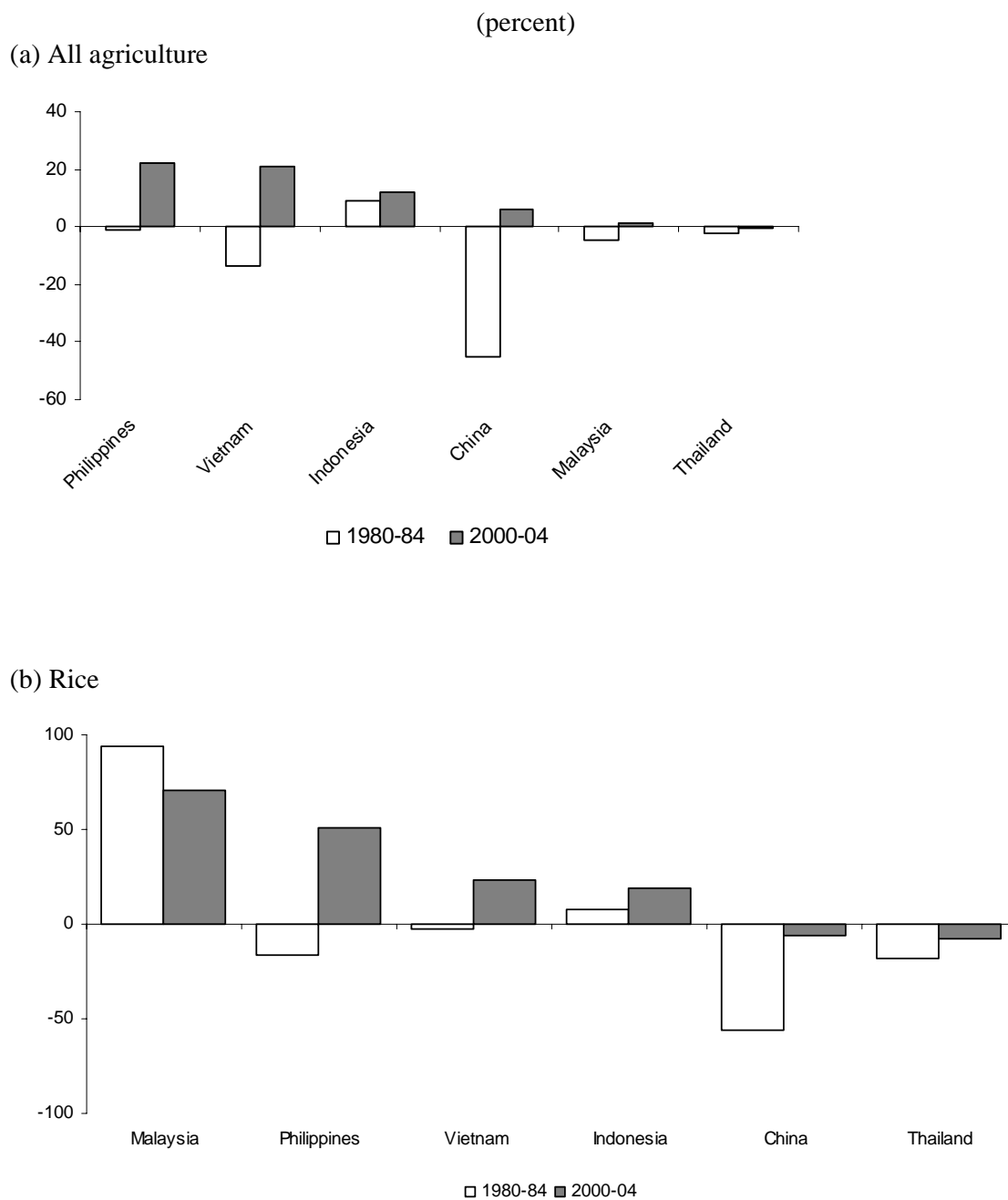
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Figure 1: Nominal rates of assistance to all agriculture and to rice, China and Southeast Asian countries, 1980-84^a and 2000-04



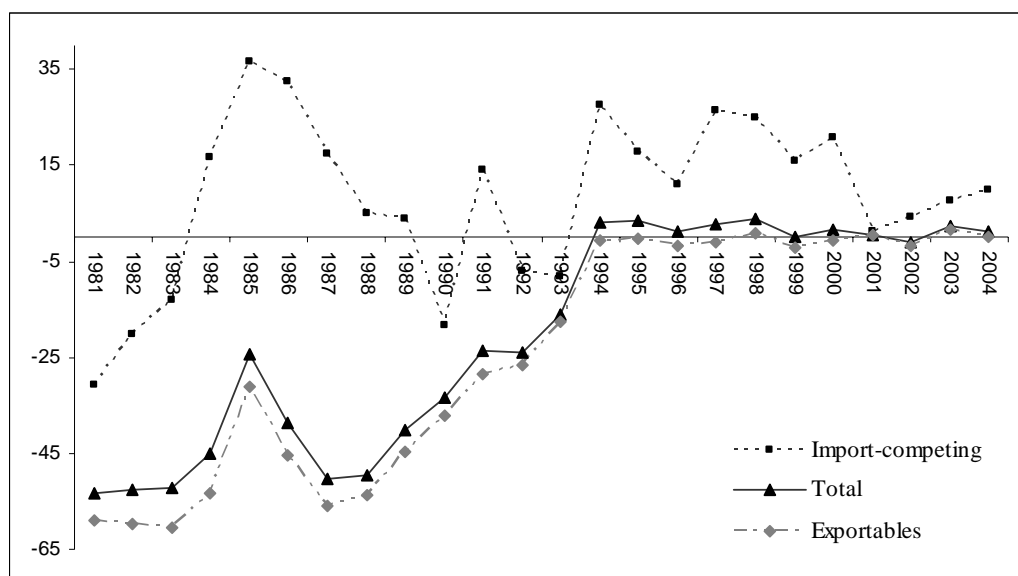
^a Data for Vietnam are for 1985-89 because 1980-84 estimates are not available.

Source: Anderson and Valenzuela (2008), drawn from NRA estimates reported in Anderson and Martin (2009).

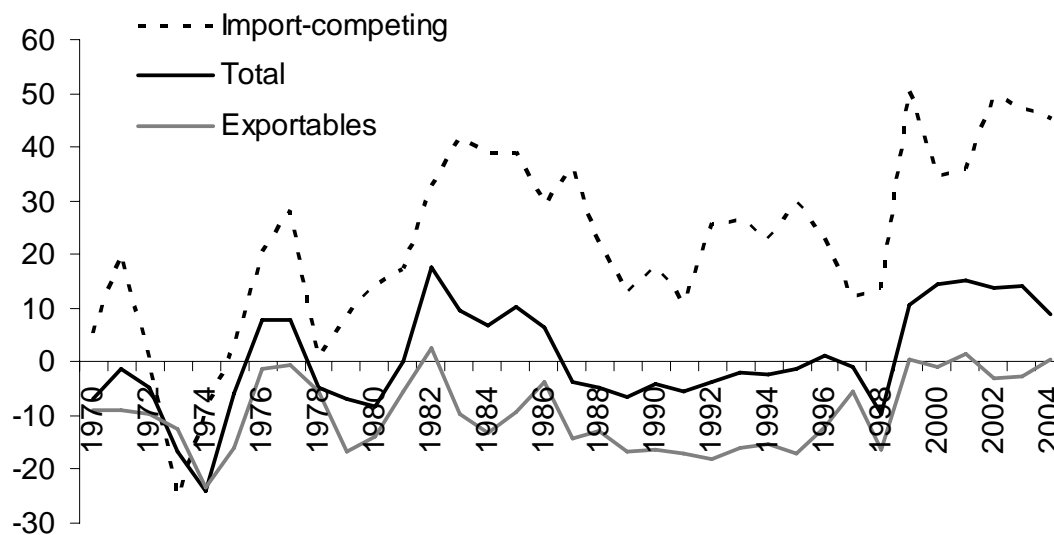
Figure 2: Nominal rates of assistance to exportable, import-competing and all^a agricultural products, China and Southeast Asia, 1970 to 2004

(percent)

(a) China



(b) weighted averages across 5 Southeast Asian countries

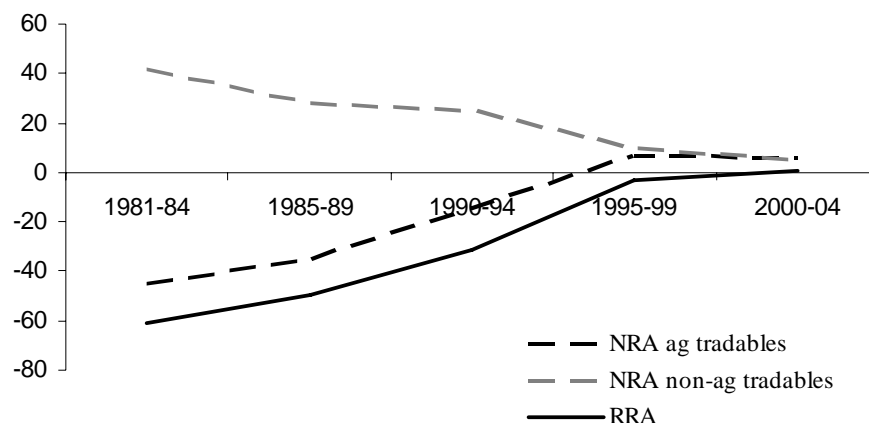


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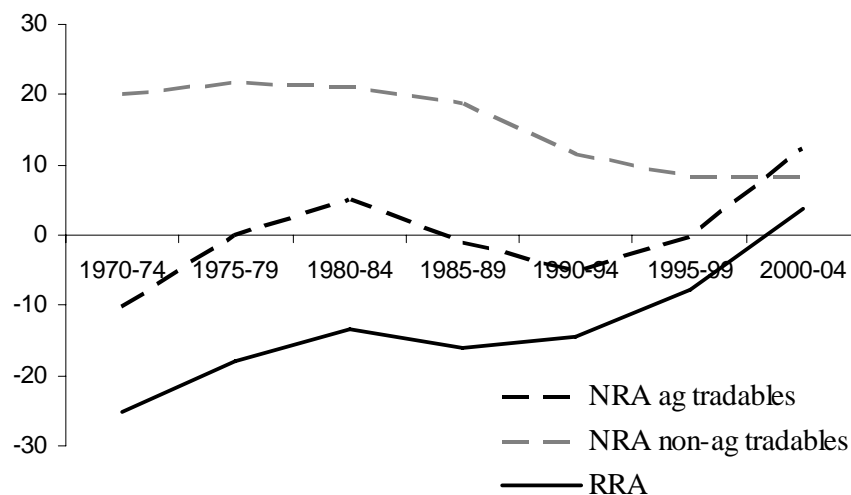
Figure 3: Nominal rates of assistance to agricultural and non-agricultural tradable products and relative rate of assistance,^a China and Southeast Asia, 1970 to 2004

(percent, 5-year averages)

(a) China



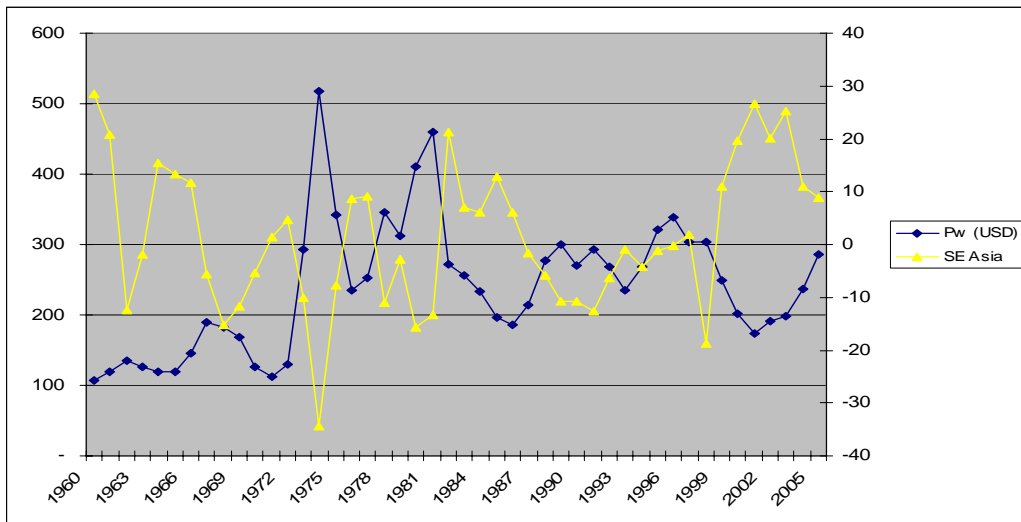
(b) weighted averages across 5 Southeast Asian countries



^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 tradables parts of the agricultural and non-agricultural sectors, respectively.

Source: Anderson and Valenzuela (2008), drawn from NRA estimates reported in Anderson and Martin (2009).

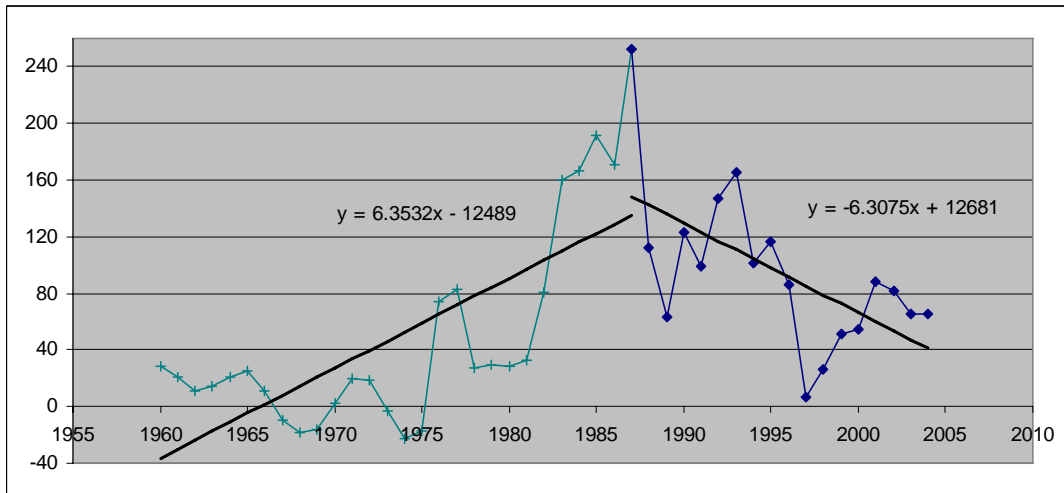
Figure 4: Rice NRA and international rice price, Southeast Asia, 1960 to 2005
(left axis is int'l price in USD, right axis is NRA in percent)



Correlation coefficient is -0.59

Source: Authors' compilation based on data in Anderson and Valenzuela (2008)

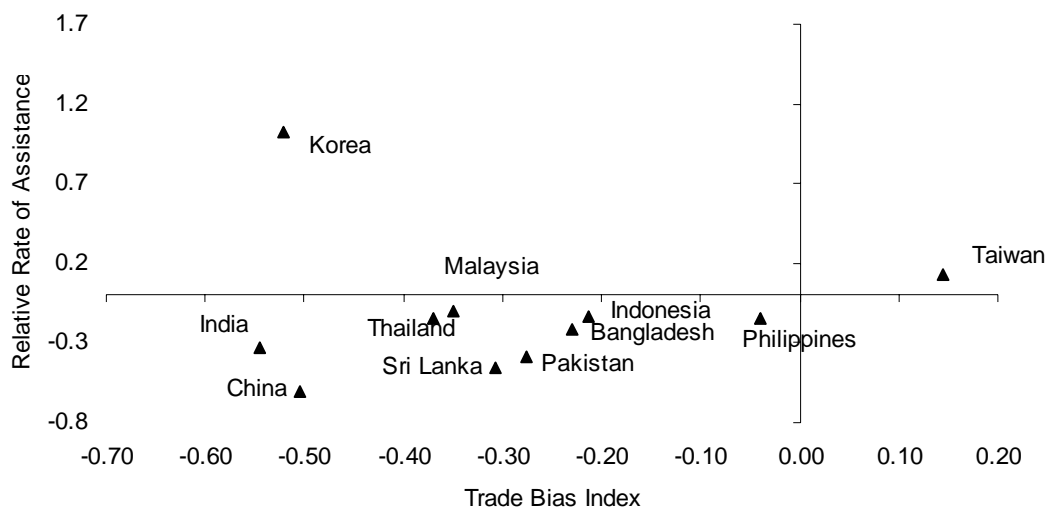
Figure 5: NRA for rice, Malaysia, 1960 to 2004
(percent)



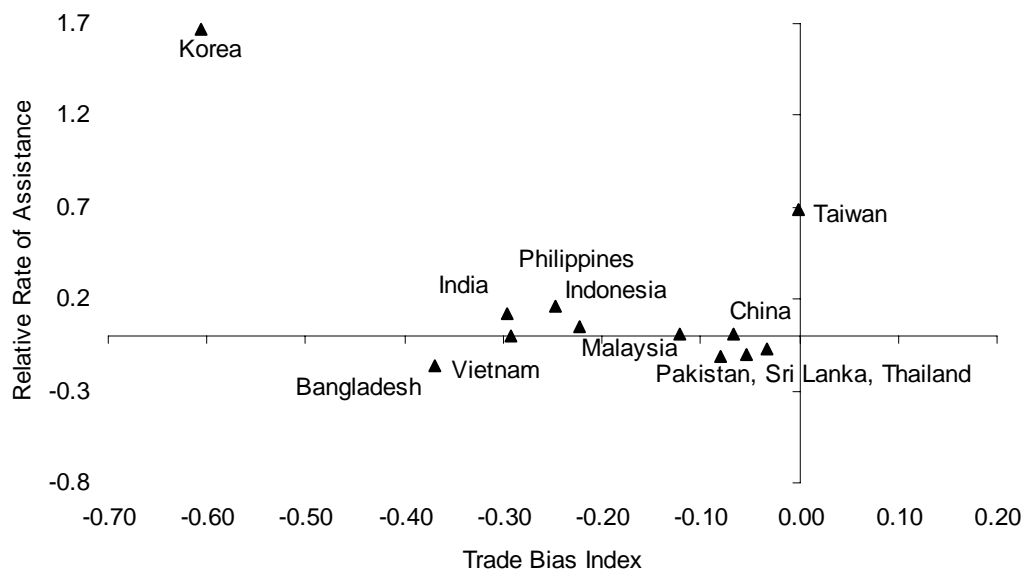
Source: Authors' compilation based on data in Anderson and Valenzuela (2008)

Figure 6: Relationship between RRA and the trade bias index for agriculture, China and Southeast Asian countries, 1980-84 and 2000-04

a. 1980-84^a



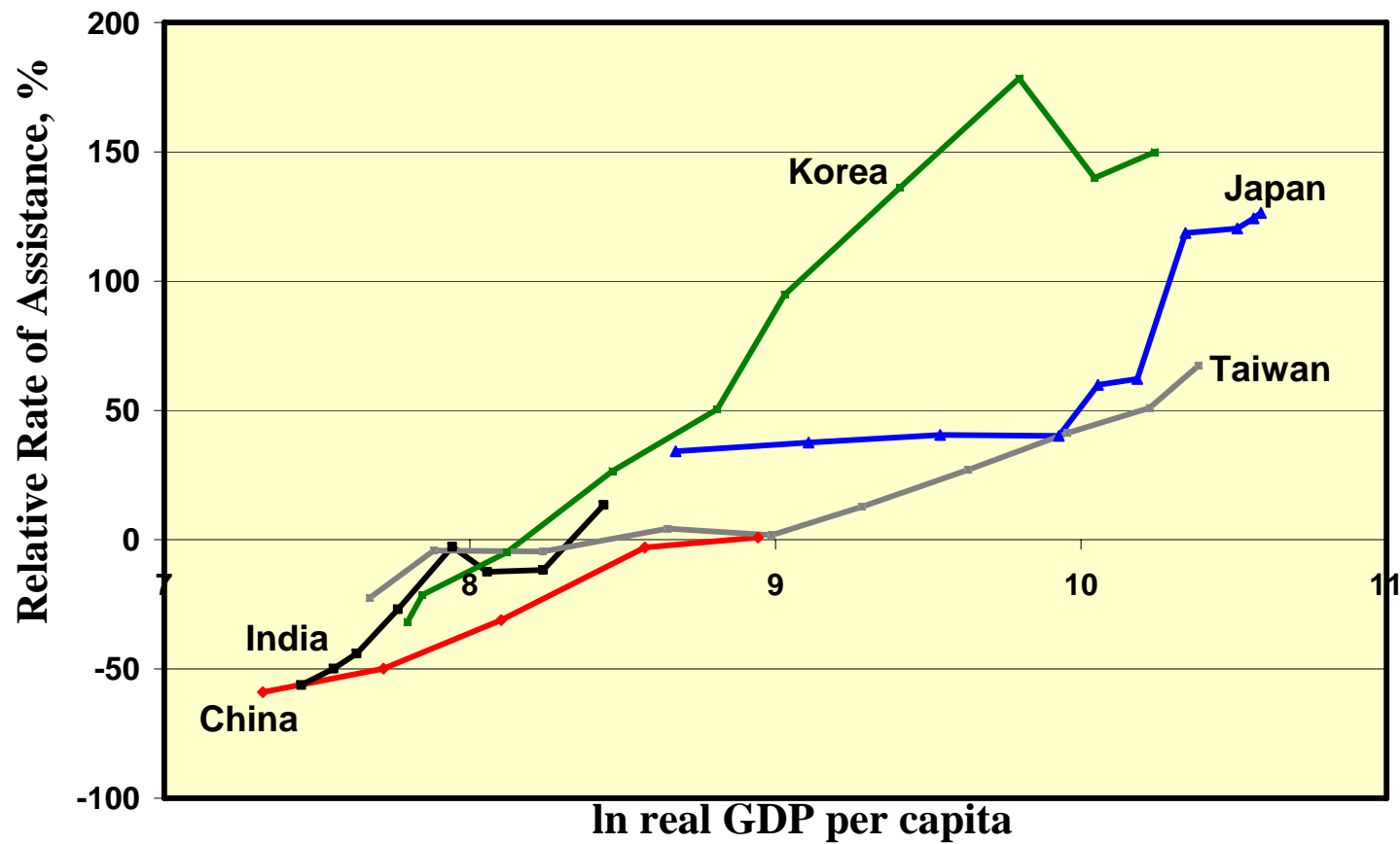
b. 2000-04



^a Data for Vietnam are for 1985-89 because 1980-84 estimates are not available.

Source: Authors' compilation based on data in Anderson and Valenzuela (2008)

Figure 7: RRAs and log of real per capita GDP, selected Asian countries, 1955^a to 2005



^a Data for China begin in 1981 and for India in 1965

Source: Based on estimates in Anderson and Valenzuela (2008)

Table 1: Changes in poverty in Asia, 1981 to 2004

	1981	1987	1993	1999	2004
No. of people (million):					
China	634	310	334	223	128
Other East Asia	162	119	86	53	41
India	364	369	376	376	371
Other South Asia	91	102	61	87	75
TOTAL, Asia	1251	900	857	740	615
% of population					
East Asia	58	28	25	15	9
South Asia	50	45	37	35	31

Source: Chen and Ravallion (2007).

Table 2: Nominal rates of assistance to agriculture,^a China and Southeast Asia, 1960 to 2004

	(percent)								
	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
China ^b	na	na	na	na	-45.2	-35.5	-14.3	6.6	5.9
Southeast Asia^c	na	na	-8.8	0.0	4.6	-0.4	-4.2	0.0	11.1
Indonesia	na	na	-2.6	9.3	9.2	-1.7	-6.6	-8.6	12.0
Malaysia	-7.2	-7.5	-9.0	-13.0	-4.6	1.3	2.3	-0.2	1.2
Philippines	-5.3	14.4	-5.1	-7.1	-1.0	18.7	18.5	32.9	22.0
Thailand	na	na	-20.3	-14.0	-2.0	-6.2	-5.7	1.7	-0.2
Vietnam ^b	na	na	na	na	na	-13.9	-25.4	0.6	21.2

^a Weighted average for each country, including product-specific input distortions and non-product specific assistance as well as authors' guesstimates for non-covered farm products, with weights based on gross value of agricultural production at undistorted prices.

^b Chinese data for 1980-84 are actually 1981-84; Vietnamese data for 1985-89 are 1986-89.

^c Weighted average for the five countries below, with weights based on gross value of agricultural production at undistorted prices.

Source: Anderson and Valenzuela (2008), drawn from estimates reported in Anderson and Martin (2009).

Table 3: Nominal rates of assistance, by covered product, China and Southeast Asia, 1970 to 2005
(percent)

	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
China^a							
Rice	na	na	-56	-34	-30	-7	-7
Maize	na	na	-35	-16	-25	5	13
Wheat	na	na	2	22	11	30	4
Sugar	na	na	44	45	12	27	29
Cotton	na	na	-34	-35	-26	-4	1
Milk	na	na	129	58	-4	18	25
Pigmeat	na	na	-79	-49	-15	0	0
Poultry	na	na	25	-27	-3	0	0
All covered^b	na	na	-51	-41	-19	2	1
Dispersion of NRAs ^c	na	na	74	52	21	18	15
Southeast Asia							
Rice	-22	-1	1	0	-7	-1	21
Maize	-2	13	14	26	28	28	20
Sugar	-1	11	48	19	11	24	49
Coconut	-7	-1	-11	-20	-34	-23	-10
Palm oil	-15	-14	-1	-2	2	-9	-3
Rubber	-5	-17	-18	-13	-16	5	4
Pigmeat	0	-3	41	9	-1	12	-6
Poultry	6	48	70	36	24	38	39
All covered^b	-9	0	5	0	-4	0	11
Dispersion of NRAs ^c	24	33	46	48	42	40	40

^a The first and last columns of Chinese NRAs refer to 1981-84 and 2000-05, respectively.

^b Weighted average across all covered products (including some not shown above), with weights based on the unassisted value of production.

^c Simple 5-year average of the annual standard deviation around a weighted mean of the national NRAs each year.

Source: Anderson and Valenzuela (2008), drawn from estimates reported in Anderson and Martin (2009).

Table 4: Annual gross subsidy equivalents of assistance to farmers, total and per farm worker, Asian economies,^a 1955 to 2004

(a) Total (constant 2000 US\$ million using the US GDP deflator)

	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
China ^b	na	na	na	na	-118224	-75780	-28381	15667	15644
Indonesia	na	na	-848	3783	4131	-785	-2729	-4101	4286
Malaysia	-250	-246	-547	-1097	-456	75	156	3	100
Philippines	-225	735	-1082	-903	-299	1399	1850	3832	1951
Thailand	na	na	-2434	-2148	-324	-645	-719	260	-14
Vietnam ^b	na	na	na	na	na	-726	-1815	-18	1602

(b) Per person engaged in agriculture (constant 2000 US\$ using the US GDP deflator)^a

	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
China ^b	na	na	na	na	-280	-163	-57	31	31
Indonesia	na	na	-27	113	113	-19	-60	-86	86
Malaysia	-135	-126	-267	-515	-213	36	79	2	56
Philippines	-33	99	-132	-99	-30	132	163	318	155
Thailand	na	na	-163	-130	-18	-34	-36	13	-1
Vietnam ^b	na	na	na	na	na	-33	-73	-1	57

^a Gross subsidy equivalents including assistance to nontradables and non-product-specific assistance. Farmer numbers are from FAOSTAT which may differ from national statistics.

^b Chinese data for 1980-84 are actually 1981-84; Vietnamese data for 1985-89 are 1986-89.

Source: Anderson and Valenzuela (2008), drawn from NRA estimates reported in Anderson and Martin (2009).

Table 5: Nominal rates of assistance to agricultural and non-agricultural tradable industries and relative rates of assistance,^a China and Southeast Asia, 1960 to 2004 (percent)

	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
China ^b									
NRA Ag.	-45.2	-45.2	-45.2	-45.2	-45.2	-35.5	-14.3	6.6	5.9
NRA Non-Ag.	41.6	41.6	41.6	41.6	41.6	28.3	24.9	9.9	5.0
RRA	-60.5	-60.5	-60.5	-60.5	-60.5	-49.9	-31.1	-3.0	0.9
Southeast Asia									
NRA Ag.	-5.8	5.6	-10.2	0.1	4.9	-0.9	-4.7	0.0	12.1
NRA Non-Ag.	11.5	15.4	20.2	22.0	21.1	18.0	11.5	8.2	8.1
RRA	-15.5	-8.5	-25.3	-18.0	-13.4	-16.1	-14.5	-7.7	3.7
Indonesia									
NRA Ag.	na	na	-3.8	10.4	10.5	-1.9	-7.5	-9.7	13.9
NRA Non-Ag.	na	na	27.7	27.7	27.7	26.5	17.6	10.6	8.1
RRA	na	na	-24.7	-13.6	-13.5	-22.5	-21.3	-18.3	5.4
Malaysia									
NRA Ag.	-7.6	-7.9	-9.4	-13.7	-4.9	1.4	2.6	-0.2	1.5
NRA Non-Ag.	7.4	7.0	7.1	6.5	5.2	3.9	2.8	2.0	0.9
RRA	-14.0	-13.9	-15.5	-18.9	-9.6	-2.4	-0.3	-2.2	0.6
Philippines									
NRA Ag.	-1.7	14.3	-6.0	-7.2	-4.0	15.8	16.7	35.7	23.5
NRA Non-Ag.	19.0	20.3	16.3	16.3	12.9	11.0	9.9	8.6	6.4
RRA	-17.4	-5.0	-19.8	-20.3	-14.9	4.3	6.1	24.9	15.9
Thailand									
NRA Ag.	na	na	-23.1	-15.9	-2.3	-6.9	-6.4	1.8	-0.2
NRA Non-Ag.	na	na	16.1	16.0	14.2	11.1	10.0	8.9	7.8
RRA	na	na	-33.7	-27.5	-14.4	-16.3	-14.9	-6.5	-7.4
Vietnam ^b									
NRA Ag.	na	na	na	na	na	-15.9	-26.4	0.0	20.7
NRA Non-Ag.	na	na	na	na	na	4.3	-11.2	1.5	20.8
RRA	na	na	na	na	na	-19.2	-17.4	-1.3	0.0

^a The 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.

^b Chinese data for 1980-84 are actually 1981-84; Vietnamese data for 1985-89 are 1986-89.

Source: Anderson and Valenzuela (2008), drawn from NRA and RRA estimates reported in Anderson and Martin (2009).

Table 6: Consumer tax equivalent of policies assisting producers of covered farm products,^a China and Southeast Asia, 1970 to 2004

(a) percent CTE (at primary product level)

	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
China	na	na	-38.7	-35.8	-14.2	0.4	0.2
Indonesia	-9.0	6.4	8.4	-4.3	-6.7	-11.2	18.3
Malaysia	3.6	18.1	18.1	28.8	15.7	2.8	6.1
Philippines	-4.5	-7.4	-3.1	23.7	22.3	40.2	30.6
Thailand	-27.3	-19.6	-5.7	-6.1	-6.8	3.1	2.3
Vietnam	na	na	na	-11.5	-24.3	1.0	19.3

(b) aggregate CTE (constant 2000 US\$ million at primary product level)

	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
China	na	na	-62859	-33988	923	58257	44497
Indonesia	-1676	2147	3378	-500	-884	-2524	4849
Malaysia	2	163	196	208	169	43	67
Philippines	-890	-467	96	1808	2059	4178	2509
Thailand	-1552	-1253	-347	-229	-344	168	83
Vietnam	na	na	na	-36	-939	320	991

(c) CTE per capita (constant 2000 US\$ at primary product level)

	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
China	na	na	-60.9	-30.6	0.8	46.6	34.2
Indonesia	-13.3	15.3	21.6	-2.9	-4.7	-12.4	22.3
Malaysia	0.2	12.7	13.5	12.6	9.0	2.0	2.8
Philippines	-23.0	-10.5	1.9	31.7	32.2	58.6	31.9
Thailand	-40.5	-28.9	-7.2	-4.4	-6.2	2.8	1.3
Vietnam	na	na	na	-0.6	-13.6	4.3	12.3

^a Assumes the CTE is the same as the NRA derived from trade measures (that is, not including any input taxes/subsidies or domestic producer price subsidies/taxes). Consumption values are production values at undistorted prices divided by the self sufficiency ratios derived using FAO commodity balance sheets. Vietnam data for 1985-89 is 1986-89. The GDP deflator is used to bring current US dollars to the level in the year 2000.

Source: Anderson and Valenzuela (2008), derived from national NRA estimates reported in Anderson and Martin (2009).

Appendix Table 1: Key economic and trade indicators, China and Southeast Asia, 2000–04

	Share (%) of world:			National rel. to world (world=100)			Agric trade specialization index ^b	Poverty incidence ^c	Gini index for per capita income ^d		
	Pop'n	Total GDP	Agric GDP	Agric workers	GDP per capita	Ag land per capita			RCA ^a ag & food	1984	2004
China	20.60	4.33	16.62	38.4	21	54	58	-0.05	10	0.20	0.36
Indonesia	3.41	0.59	2.62	3.8	17	27	173	0.08	4	0.30	0.35
Malaysia	0.39	0.28	0.73	0.1	74	41	107	-0.18	0	0.49	0.49
Philippines	1.27	0.22	0.91	1.0	18	19	67	-0.10	13	0.41	0.44
Taiwan	0.36	0.84	0.45	0.1	232	5	28	-0.72	0	na	na
Thailand	1.01	0.38	1.05	1.5	38	39	204	0.38	1	0.45	0.42
Vietnam	1.29	0.11	0.69	2.1	8	14	301	0.61	1	0.36	0.37

^a Revealed comparative advantage index is the share of agriculture and processed food in national exports as a ratio of that sector's share of global exports.

^b Primary agricultural trade specialization index is net exports as a ratio of the sum of exports and imports of agricultural and processed food products (world average =0.0).

^c Percentage of the population living on less than US \$1 per day.

^d The poverty incidence and the 2004 Gini index are for the most recent year available between 2000 and 2004. The 1984 Gini coefficients are for the year nearest 1984, from the World Bank's Povcal website. The weighted averages for the focus economies use population as the basis for weights.

Source: Sandri, Valenzuela and Anderson (2007), compiled mainly from World Bank's *World Development Indicators*.

Appendix Table 2: Growth of real GDP and exports, China and Southeast Asia, 1980 to 2004

(at constant 2000 prices, percent per year, trend-based)

	Agriculture	Industry	Services	Total GDP	GDP per capita	Export volume ^a
China	4.4	12.1	11.3	9.9	8.6	15.1
Indonesia	2.9	6.6	5.3	5.4	3.7	10.4
Malaysia	1.7	7.8	6.9	6.6	3.9	10.3
Philippines	1.7	2.0	3.5	2.7	0.4	12.8
Thailand	2.4	8.5	5.8	6.3	4.9	17.3
Vietnam	3.9	9.7	7.5	7.0	5.1	n.a.
WORLD	2.0	2.5	3.2	3.0	1.4	n.a.

^a 1985-95, from World Bank's *World Development Indicators 2008*, Table 6.2.

Source: Sandri, Valenzuela and Anderson (2007), compiled from World Bank's *World Development Indicators*.

Appendix Table 3: Exports of goods and services as a share of GDP, China and Southeast Asia, 1965 to 2004

(percent)

	1965-69 ^b	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
China	3	6	11	14	22	21	28
Indonesia	10	23	25	23	26	32	35
Malaysia	37	49	53	63	82	103	117
Philippines	11	20	21	25	28	47	53
Thailand	18	21	23	30	38	49	68
Vietnam	na	na	na	na	na	44	55

Source: Sandri, Valenzuela and Anderson (2007), compiled from World Bank's *World Development Indicators*.

Appendix Table 4: Share of world exports of non-food manufactures, China and Southeast Asia, 1990 to 2006

(percent)

	1990-94	1995-99	2000-04	2006	Current value in 2006 as % of 1990
China	1.0	2.4	6.1	10.8	2020
Indonesia	0.1	0.5	0.6	0.5	490
Malaysia	0.2	1.0	1.5	1.4	750
Philippines	0.1	0.2	0.6	0.5	730
Thailand	0.2	0.8	1.0	1.2	670
Vietnam	0.0	0.1	0.2	0.2	na

Source: Sandri, Valenzuela and Anderson (2007), compiled from World Bank's *World Development Indicators*, updated from the WTO's, *International Trade Statistics 2007*.

Appendix Table 5: Sectoral shares of GDP, China and Southeast Asia, 1965 to 2004

(percent)

	Agriculture				Industry				Services			
	1965 -69	1975 -79	1985 -89	2000 -04	1965 -69	1975 -79	1985 -89	2000 -04	1965 -69	1975 -79	1985 -89	2000 -04
China	39	31	27	14	35	47	44	46	26	22	30	41
Indonesia	49	29	23	16	16	35	36	45	35	36	41	40
Malaysia	29	26	20	9	27	37	39	49	44	37	42	42
Philippines	27	29	24	14	27	36	35	32	46	35	42	53
Thailand	30	25	16	10	24	29	34	43	46	46	50	48
Vietnam	na	na	41	23	na	na	27	39	na	na	32	38

Source: Sandri, Valenzuela and Anderson (2007), compiled from World Bank's *World Development Indicators*.

Appendix Table 6: Agriculture's shares of employment, China and Southeast Asia, 1965 to 2004

(percent)

	1965–69	1975–79	1985–89	2000–04
China	79	75	73	66
Indonesia	69	60	56	47
Malaysia	57	45	31	18
Philippines	60	54	48	39
Thailand	81	74	66	55
Vietnam	79	74	72	67

Source: Sandri, Valenzuela and Anderson (2007), compiled from FAOSTAT.

Appendix Table 7: Sectoral shares of merchandise exports, China and Southeast Asia, 1965 to 2004

(percent)

	Agriculture and processed food				Other primary				Other goods			
	1965	1975	1985	2000	1965	1975	1985	2000	1965	1975	1985	2000
	-69	-79	-89	-04	-69	-79	-89	-04	-69	-79	-89	-04
China	51	35	19	5	5	17	14	4	44	48	53	90
Indonesia	49	26	21	15	48	72	55	29	2	2	24	55
Malaysia	61	55	36	10	32	27	24	11	5	17	40	78
Philippines	78	55	27	6	16	17	11	3	7	18	32	83
Thailand	79	67	46	18	14	10	3	4	4	20	50	75
Vietnam	na	na	na	27	na	na	na	23	na	na	na	48

Source: Sandri, Valenzuela and Anderson (2007), compiled from World Bank's *World Development Indicators*.

Appendix Table 8: Indexes of comparative advantage in agriculture and processed food,^a China and Southeast Asia, 1965 to 2004

(a) Revealed comparative advantage index,^a world = 1.0

	1965–69	1975–79	1985–89	2000–04
China	2.1	2.1	1.3	0.6
Indonesia	2.0	1.3	1.4	1.7
Malaysia	2.4	2.9	2.4	1.1
Philippines	3.1	2.8	1.9	0.7
Thailand	3.1	3.5	3.1	2.0
Vietnam	na	na	na	3.0

(b) Trade specialization index,^b world = 0.0

	1965–69	1975–79	1985–89	2000–04
China	na	na	0.07	-0.16
Indonesia	0.48	0.42	0.43	0.16
Malaysia	0.44	0.60	0.56	0.29
Philippines	0.47	0.51	0.25	-0.18
Thailand	0.68	0.69	0.57	0.44
Vietnam	na	na	na	0.44

^a Share of agriculture and processed food in national exports as a ratio of that sector's share of global merchandise exports.

^b Net exports as a ratio of the sum of exports and imports of agricultural and processed food products.

Source: Sandri, Valenzuela and Anderson (2007), compiled from World Bank's *World Development Indicators*.

Appendix Table 9: Export orientation, import dependence and self-sufficiency in primary agricultural production, China and Southeast Asia, 1961 to 2004

(percent at undistorted prices)

(a) Exports as share of production

	1961-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
China	2	2	2	3	5	5	7	7	7
Indonesia	-	-	6	5	5	6	4	5	4
Malaysia	70	64	54	41	35	34	19	12	9
Philippines	13	11	14	8	7	2	1	1	1
Thailand	-	-	13	20	24	26	25	25	30
Vietnam	-	-	-	-	-	3	4	9	11

(b) Imports as share of apparent consumption

	1961-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
China	2	2	2	3	5	5	7	7	7
Indonesia	-	-	0	1	1	1	1	2	2
Malaysia	13	6	3	1	1	1	2	3	6
Philippines	0	0	1	0	1	0	0	2	1
Thailand	-	-	0	0	0	0	0	2	5
Vietnam	-	-	-	-	-	0	0	0	0

(c) Self-sufficiency ratio

	1961-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
China	99	101	100	99	98	101	101	99	98
Indonesia	-	-	106	105	104	106	104	103	102
Malaysia	293	265	215	167	152	150	122	110	104
Philippines	115	112	116	108	106	101	101	99	99
Thailand	-	-	115	125	131	135	133	130	137
Vietnam	-	-	-	-	-	103	104	110	112

Source: Compiled using the project's estimates of total agricultural production (both covered and non-covered products) valued at undistorted prices, plus the FAO's total agricultural trade value data, with self-sufficiency defined for each product as the ratio of production to production plus imports minus exports.

Appendix Table 10: Annual distortion estimates, **China**, 1981 to 2005
(a) Nominal rates of assistance to covered products
(percent)

	Cotton	Fruits	Maize	Milk	Pigmeat	Poultry	Rice	Soybean	Sugar	Vegetables	Wheat	All covered
1981	-38	-37	-54	124	-74	24	-66	-12	30	-37	-15	-53
1982	-28	-32	-43	114	-81	33	-62	-3	33	-29	-10	-53
1983	-38	-34	-39	124	-80	31	-56	10	36	-50	5	-52
1984	-31	-12	-5	152	-80	13	-38	9	76	-51	27	-45
1985	-20	-5	6	160	-36	32	-23	30	82	-43	31	-24
1986	-33	0	-3	88	-55	-53	-25	13	33	-58	36	-39
1987	-46	-25	-11	38	-62	-62	-37	-13	27	-67	27	-50
1988	-44	-7	-36	4	-53	-46	-47	-19	37	-63	10	-49
1989	-30	-10	-36	2	-37	-7	-38	-4	45	-56	8	-40
1990	-27	-8	-39	-6	-30	-5	-36	5	3	-45	-4	-34
1991	-25	-6	-31	22	-22	-4	-33	14	29	-34	26	-24
1992	-28	-4	-37	-18	-15	-3	-46	-4	3	-22	-5	-24
1993	-32	-2	-27	-22	-7	-1	-32	-11	-3	-11	-7	-16
1994	-19	0	9	2	0	0	-5	19	25	0	46	3
1995	0	0	-7	-5	0	0	-2	33	23	0	53	3
1996	2	0	-7	-3	0	0	-6	40	24	0	28	1
1997	3	0	11	15	0	0	-9	35	33	0	28	3
1998	-6	0	23	44	0	0	-5	28	18	0	29	4
1999	-17	0	7	40	0	0	-11	11	35	0	13	0
2000	22	0	9	45	0	0	-8	20	67	0	13	2
2001	-21	0	16	4	0	0	-6	21	11	0	-1	0
2002	2	0	7	11	0	0	-15	14	30	0	-3	-1
2003	0	0	20	27	0	0	0	23	10	0	-1	2
2004	-13	0	6	30	0	0	-2	10	25	0	8	1
2005	14	0	17	32	0	0	-12	10	34	0	8	1

Appendix Table 10 (continued): Annual distortion estimates, **China**, 1955 to 2005
 (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		
	Inputs	Outputs						NRA	RRA
1955-1980 ^d	na	na	na	-40	na	na	na	na	-54
1981	0	-54	-35	-48	-58	-28	-48	na	-54
1982	0	-53	-32	-47	-58	-19	-47	43	-63
1983	0	-52	-31	-46	-59	-12	-46	42	-62
1984	0	-45	-19	-39	-52	15	-39	40	-57
1985	0	-25	-1	-17	-31	34	-17	39	-40
1986	0	-39	-11	-33	-45	32	-33	24	-46
1987	0	-50	-23	-45	-56	20	-45	25	-56
1988	0	-50	-24	-46	-54	9	-46	26	-57
1989	0	-41	-18	-36	-45	6	-36	27	-50
1990	0	-34	-21	-29	-37	-16	-29	28	-45
1991	0	-24	-6	-18	-28	13	-18	27	-36
1992	0	-24	-12	-20	-26	-6	-20	26	-36
1993	0	-16	-9	-12	-17	-5	-12	24	-29
1994	0	3	11	7	0	25	7	19	-10
1995	0	3	7	6	0	17	6	13	-6
1996	1	0	4	4	-2	10	4	12	-7
1997	1	2	11	7	-1	23	7	9	-2
1998	1	3	11	10	1	21	10	9	1
1999	1	0	6	5	-2	13	5	7	-1
2000	1	1	9	8	0	17	8	6	2
2001	1	0	1	4	0	1	4	6	-1
2002	1	-2	1	4	-2	4	4	5	-1
2003	1	2	4	7	2	6	7	4	2
2004	0	1	4	7	0	8	7	3	3
2005	0	0	6	7	-1	12	7	3	3

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.

d. Estimates for China pre-1981 are based on the assumption that the nominal rate of assistance to agriculture in those years was the same as the average NRA estimates for for 1981-89.

Appendix Table 10 (continued): Annual distortion estimates, **China**, 1981 to 2005
(c) Value shares of primary production of covered^a and non-covered products,
(percent)

	Cotton	Fruits	Maize	Milk	Pigmeat	Poultry	Rice	Soybean	Sugar	Vegetables	Non-Wheat	Covered
1981	1	1	7	0	20	1	27	2	0	18	6	16
1982	1	1	5	0	26	1	25	2	0	16	6	16
1983	2	1	6	0	23	1	21	1	0	24	6	15
1984	2	1	5	0	26	1	19	1	0	25	6	12
1985	1	2	5	0	14	1	18	1	0	32	6	18
1986	1	2	5	0	18	2	16	2	1	37	5	11
1987	1	2	4	0	19	2	15	2	1	39	4	9
1988	1	2	4	0	19	3	18	2	1	38	4	8
1989	1	2	5	0	16	2	18	1	1	40	5	8
1990	1	2	6	0	14	3	17	1	1	34	6	14
1991	2	3	7	0	15	4	17	1	1	30	5	15
1992	1	3	7	1	14	3	19	2	1	32	7	13
1993	1	3	8	1	15	2	19	3	1	21	7	19
1994	2	4	7	1	18	4	19	2	1	24	6	13
1995	1	5	8	1	19	6	17	2	1	23	6	11
1996	1	3	9	1	18	5	17	1	1	21	7	15
1997	1	3	6	1	22	6	16	2	1	18	7	19
1998	1	3	6	0	18	6	15	1	1	18	6	25
1999	1	3	5	1	16	6	13	1	1	16	6	33
2000	1	3	4	1	16	6	11	1	1	19	5	34
2001	1	3	4	1	16	5	9	1	1	18	5	35
2002	1	3	4	1	15	5	9	1	1	18	4	37
2003	1	4	4	1	18	6	9	1	1	19	4	33
2004	1	4	5	1	19	5	10	2	1	17	4	32
2005	1	4	4	1	17	5	11	1	1	17	4	34

^a At farmgate undistorted prices

Appendix Table 10 (continued): Annual distortion estimates, **China**, 1981 to 2005
(d) Trade status^a of covered products

	Cotton	Fruits	Maize	Milk	Pigmeat	Poultry	Rice	Soybean	Sugar	Vegetables	Wheat
1981	M	X	M	M	X	X	X	M	M	X	M
1982	M	X	M	M	X	X	X	M	M	X	M
1983	M	X	M	M	X	X	X	M	M	X	M
1984	M	X	X	M	X	X	X	M	M	X	M
1985	X	X	X	M	X	X	X	M	M	X	M
1986	X	X	X	M	X	X	X	M	M	X	M
1987	X	X	X	M	X	X	X	M	M	X	M
1988	X	X	X	M	X	X	X	M	M	X	M
1989	M	X	X	M	X	X	X	M	M	X	M
1990	M	X	M	M	X	X	X	M	M	X	M
1991	M	X	X	M	X	X	X	M	M	X	M
1992	M	X	X	M	X	X	X	M	M	X	M
1993	X	X	X	M	X	X	X	M	M	X	M
1994	M	X	X	M	X	X	X	M	M	X	M
1995	M	X	M	M	X	X	X	M	M	X	M
1996	M	X	M	M	X	X	X	M	M	X	M
1997	M	X	X	M	X	X	X	M	M	X	M
1998	M	X	X	M	X	X	X	M	M	X	M
1999	X	X	X	M	X	X	X	M	M	X	M
2000	X	X	X	M	X	X	X	M	M	X	M
2001	M	X	X	M	X	X	X	M	M	X	M
2002	M	X	X	M	X	X	X	M	M	X	M
2003	M	X	X	M	X	X	X	M	M	X	M
2004	M	X	X	M	X	X	X	M	M	X	M
2005	M	X	X	M	X	X	X	M	M	X	M

^a Exportable (X), import-competing (M) and nontradables (H).

Source: Anderson and Valenzuela (2008), based on Huang et al. (2007)

Appendix Table 11: Annual distortion estimates, **Indonesia**, 1970 to 2004(a) Nominal rates of assistance to covered products
(percent)

	Coconut	Coffee	Maize	Palmoil	Poultry	Rice	Rubber	Soybean	Sugar	Tea	All covered
1970	-17	-9	-7	-33	na	na	12	2	26	10	-2
1971	-2	-11	-21	-30	89	na	12	2	27	9	7
1972	2	-14	-22	26	62	na	21	-4	1	-10	2
1973	-2	1	-5	7	50	na	27	-20	-32	-18	-10
1974	-11	-3	-22	-41	89	na	3	-9	-11	-21	-10
1975	-5	-2	-24	-15	107	22	15	27	28	-9	15
1976	10	-1	-3	7	92	19	21	28	62	-10	21
1977	14	-4	22	-3	187	22	1	29	37	-8	20
1978	9	-5	30	-13	220	-1	-28	35	4	17	3
1979	-17	-7	25	-22	115	8	-26	40	-14	0	-4
1980	-4	-8	11	10	138	-10	-29	32	25	3	-4
1981	9	-5	10	14	183	-6	-21	50	58	17	9
1982	8	-4	13	65	186	33	-13	77	30	9	27
1983	-18	-13	50	36	132	11	-14	42	66	-10	17
1984	-26	-13	10	-14	99	10	-3	45	90	-10	11
1985	-16	-9	9	4	144	15	-8	31	39	4	14
1986	0	-4	24	48	108	7	-25	37	20	3	11
1987	-19	6	32	-13	58	-4	-35	14	-1	-11	-5
1988	-24	1	50	-33	68	-9	-19	0	-8	-4	-9
1989	-51	-6	-5	-12	56	-14	-15	2	-7	-3	-12
1990	-43	-2	-3	17	69	-10	-23	20	14	-8	-5
1991	-45	1	28	0	147	-16	-28	18	15	-2	-7
1992	-47	1	35	4	69	-8	-33	14	4	-3	-5
1993	-44	0	21	23	86	-4	-37	16	-6	-5	-5
1994	-50	-2	31	14	103	-6	-38	19	-7	6	-6
1995	-47	-2	37	-18	102	-12	-31	28	-7	6	-11
1996	-47	6	29	2	136	-15	-21	19	-12	-13	-10
1997	-16	5	19	-12	71	-7	56	16	-29	-23	-7
1998	-26	-1	36	-57	-9	-34	58	0	67	-23	-24
1999	-11	4	2	-6	139	4	123	24	37	-16	6
2000	-8	7	23	-3	107	15	56	1	60	-19	16
2001	-9	4	-3	12	70	21	38	-5	26	-18	17
2002	-10	1	1	-12	120	23	0	5	42	-15	15
2003	-6	0	25	-13	101	25	-4	4	68	-12	18
2004	na	3	9	na	na	9	-6	0	51	-14	12

Appendix Table 11 (continued): Annual distortion estimates, **Indonesia**, 1970 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		
	Inputs	Outputs						NRA	RRA
1970	6	-8	-4	-3	-11	10	-8	28	-28
1971	6	1	6	6	-2	19	7	28	-16
1972	7	-5	1	2	5	-1	2	28	-20
1973	6	-16	-7	-9	2	-25	-10	28	-30
1974	5	-16	-7	-9	-11	-10	-10	28	-30
1975	9	6	6	12	-3	21	13	28	-11
1976	6	14	12	18	10	26	20	28	-6
1977	6	14	12	17	9	27	20	28	-6
1978	6	-3	2	3	1	4	3	28	-19
1979	7	-10	-4	-4	-18	5	-4	28	-25
1980	7	-10	-4	-4	-11	0	-4	28	-25
1981	7	2	5	8	3	12	9	28	-15
1982	8	20	13	22	7	34	25	28	-2
1983	8	9	5	12	-12	27	14	28	-11
1984	7	4	2	7	-21	25	9	28	-15
1985	7	7	4	10	-12	24	12	28	-12
1986	6	4	4	8	-3	15	9	28	-14
1987	6	-11	-6	-6	-20	1	-7	28	-27
1988	6	-15	-9	-9	-21	-5	-10	26	-29
1989	5	-17	-12	-12	-27	-9	-14	24	-30
1990	4	-9	-7	-6	-21	-1	-6	22	-23
1991	4	-11	-10	-8	-26	-3	-9	20	-24
1992	4	-9	-9	-7	-28	0	-7	18	-21
1993	2	-7	-8	-6	-23	0	-7	16	-19
1994	2	-8	-8	-7	-25	0	-8	14	-19
1995	2	-13	-11	-11	-28	-4	-12	12	-21
1996	2	-12	-9	-10	-21	-7	-11	11	-20
1997	2	-9	-4	-6	-5	-7	-7	11	-16
1998	3	-27	-17	-22	-30	-21	-25	10	-31
1999	3	3	3	5	-1	10	6	10	-4
2000	2	13	8	13	0	23	14	9	5
2001	2	15	9	14	4	22	16	9	7
2002	2	14	7	12	-8	29	14	8	5
2003	1	16	9	14	-8	34	16	8	8
2004	3	9	3	8	-5	15	10	8	2

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 11 (continued): Annual distortion estimates, **Indonesia**, 1970 to 2004 (c)
 Value shares of primary production of covered^a and non-covered products,
 (percent)

	Coconut	Coffee	Maize	Palm oil	Poultry	Rice	Rubber	Soybean	Sugar	Tea	Non-covered
1970	32	3	5	1	na	na	7	2	15	1	34
1971	31	2	5	1	1	na	5	2	20	1	32
1972	22	2	5	1	1	na	4	2	24	1	38
1973	27	1	4	1	1	na	5	2	22	1	36
1974	34	1	4	2	1	na	4	2	16	0	35
1975	12	1	4	1	1	34	2	1	11	0	31
1976	14	2	3	1	1	36	3	1	8	0	30
1977	18	3	2	1	0	30	3	1	9	1	33
1978	15	2	2	1	0	32	4	1	11	0	32
1979	15	2	2	1	1	28	5	1	11	0	33
1980	11	2	2	1	1	34	6	1	7	0	35
1981	10	1	2	1	1	35	3	1	11	0	35
1982	9	1	2	1	1	31	3	0	14	0	38
1983	11	1	2	1	1	33	3	1	10	0	36
1984	13	1	3	2	1	31	3	1	7	0	38
1985	10	1	3	2	1	30	3	1	10	0	40
1986	7	2	3	1	1	29	3	1	11	0	41
1987	8	2	2	2	1	27	5	1	11	0	40
1988	8	2	1	2	1	30	5	1	12	0	37
1989	4	1	2	2	1	35	4	1	12	0	36
1990	3	1	4	2	2	35	4	1	11	0	37
1991	4	1	3	2	1	35	4	1	11	0	37
1992	5	1	2	3	2	34	4	2	14	0	34
1993	4	1	2	2	2	29	5	1	14	0	39
1994	5	2	2	4	2	29	6	1	13	0	35
1995	5	2	2	4	1	30	6	1	10	0	39
1996	5	1	3	4	1	33	5	1	10	0	37
1997	8	1	3	5	2	30	2	1	10	0	38
1998	9	2	2	9	1	36	2	1	3	0	33
1999	13	2	3	4	1	35	1	1	4	0	36
2000	11	2	2	6	2	33	2	1	4	0	37
2001	9	1	3	6	2	29	2	1	7	0	39
2002	8	1	3	8	2	27	3	0	5	0	42
2003	8	1	3	7	2	23	4	0	4	0	46
2004	na	1	4	na	na	35	5	1	6	0	46

^a At farmgate undistorted prices

Appendix Table 11 (continued): Annual distortion estimates, **Indonesia**, 1970 to 2004
(d) Trade status^a of covered products

	Cocon ut	Coffee	Maize	Palmoi l	Poultry	Rice	Rubber	Soybea n	Sugar	Tea
1970	X	X	M	X	na	na	X	M	M	X
1971	X	X	M	X	M	na	X	M	M	X
1972	X	X	M	X	M	na	X	M	M	X
1973	X	X	M	X	M	na	X	M	M	X
1974	X	X	M	X	M	na	X	M	M	X
1975	X	X	M	X	M	M	X	M	M	X
1976	X	X	M	X	M	M	X	M	M	X
1977	X	X	M	X	M	M	X	M	M	X
1978	X	X	M	X	M	M	X	M	M	X
1979	X	X	M	X	M	M	X	M	M	X
1980	X	X	M	X	M	M	X	M	M	X
1981	X	X	M	X	M	M	X	M	M	X
1982	X	X	M	X	M	M	X	M	M	X
1983	X	X	M	X	M	M	X	M	M	X
1984	X	X	M	X	M	M	X	M	M	X
1985	X	X	M	X	M	M	X	M	M	X
1986	X	X	M	X	M	M	X	M	M	X
1987	X	X	M	X	M	M	X	M	M	X
1988	X	X	M	X	M	M	X	M	M	X
1989	X	X	M	X	M	M	X	M	M	X
1990	X	X	M	X	M	M	X	M	M	X
1991	X	X	M	X	M	M	X	M	M	X
1992	X	X	M	X	M	M	X	M	M	X
1993	X	X	M	X	M	M	X	M	M	X
1994	X	X	M	X	M	M	X	M	M	X
1995	X	X	M	X	M	M	X	M	M	X
1996	X	X	M	X	M	M	X	M	M	X
1997	X	X	M	X	M	M	X	M	M	X
1998	X	X	M	X	M	M	X	M	M	X
1999	X	X	M	X	M	M	X	M	M	X
2000	X	X	M	X	M	M	X	M	M	X
2001	X	X	M	X	M	M	X	M	M	X
2002	X	X	M	X	M	M	X	M	M	X
2003	X	X	M	X	M	M	X	M	M	X
2004	na	X	M	na	na	M	X	M	M	X

^a Exportable (X), import-competing (M) and nontradables (H).

Source: Anderson and Valenzuela (2008), based on Fane and Warr (2007)

Appendix Table 12: Annual distortion estimates, **Malaysia**, 1960 to 2004(a) Nominal rates of assistance to covered products
(percent)

	Cocoa	Palmoil	Rice	Rubber	All covered
1960	na	-11	29	-14	-11
1961	na	-11	21	-13	-8
1962	na	-9	11	-9	-6
1963	na	-10	14	-9	-6
1964	na	-16	21	-15	-11
1965	na	-10	25	-10	-5
1966	na	-12	11	-11	-8
1967	-1	-11	-10	-9	-10
1968	-3	-9	-19	-7	-10
1969	-2	-11	-16	-11	-12
1970	-1	-10	3	-9	-7
1971	-1	-17	20	-16	-10
1972	-1	-12	19	-9	-4
1973	-7	-11	-3	-11	-10
1974	-4	-26	-23	-19	-22
1975	1	-22	-17	-15	-18
1976	-1	-12	74	-18	-8
1977	-1	-22	83	-24	-16
1978	-6	-11	27	-26	-17
1979	-2	-9	30	-29	-18
1980	-2	-7	29	-29	-17
1981	-1	-7	33	-22	-10
1982	-1	-5	81	-13	0
1983	-1	-3	160	-15	1
1984	-3	-7	167	-13	-2
1985	4	1	192	-4	8
1986	-1	-3	171	-8	4
1987	-7	-8	253	-13	-3
1988	-4	-5	112	-12	-2
1989	1	0	63	-6	2
1990	-1	-2	123	-7	5
1991	-1	-2	100	-7	4
1992	-6	-6	147	-12	1
1993	-2	-3	165	-8	5
1994	-2	-3	101	-7	2
1995	-1	-3	117	-5	2
1996	-1	-2	86	-5	3
1997	-8	-9	6	-13	-8
1998	0	-1	26	-5	1
1999	0	-1	52	-6	2
2000	0	-1	54	-5	3
2001	0	-2	89	-6	3
2002	0	-1	82	-5	2
2003	0	-1	65	-4	1
2004	0	-1	65	-3	1

Appendix Table 12 (continued): Annual distortion estimates, **Malaysia**, 1960 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 NRA	
	Covered products		Non-covered products	All products (incl NPS)	Export-ables	Import-competing	All		
	Inputs	Outputs						RRA	
1960	0	-11	0	-10	-14	16	-10	8	-17
1961	0	-8	0	-7	-12	15	-8	8	-14
1962	0	-6	0	-5	-9	8	-6	8	-12
1963	0	-6	0	-5	-9	11	-5	7	-11
1964	0	-11	0	-9	-15	16	-9	7	-15
1965	0	-5	0	-4	-9	18	-4	6	-10
1966	0	-8	0	-7	-10	8	-7	6	-12
1967	0	-10	0	-8	-9	-8	-9	8	-15
1968	0	-10	0	-9	-7	-15	-9	8	-16
1969	0	-12	0	-10	-10	-12	-10	8	-17
1970	0	-7	0	-6	-9	2	-6	7	-12
1971	0	-10	0	-9	-15	16	-9	7	-15
1972	0	-4	0	-3	-9	15	-4	9	-12
1973	0	-10	0	-8	-10	-3	-9	8	-16
1974	0	-22	0	-19	-20	-18	-19	4	-23
1975	0	-18	0	-15	-17	-14	-16	6	-21
1976	0	-8	0	-7	-15	45	-7	6	-12
1977	0	-16	0	-13	-22	44	-14	7	-20
1978	0	-17	0	-15	-20	15	-15	6	-21
1979	0	-18	0	-15	-21	18	-16	7	-21
1980	0	-17	0	-14	-20	16	-15	6	-20
1981	0	-10	0	-8	-14	20	-8	5	-13
1982	0	0	0	0	-8	43	0	5	-5
1983	0	1	0	1	-9	60	1	5	-4
1984	0	-2	0	-2	-8	45	-2	5	-6
1985	0	8	0	6	-1	56	6	4	2
1986	0	4	0	3	-5	56	3	4	-1
1987	0	-3	0	-2	-10	55	-2	5	-7
1988	0	-2	0	-2	-7	32	-2	4	-5
1989	0	2	0	2	-2	22	2	3	-1
1990	0	5	0	4	-3	40	4	3	1
1991	0	4	0	3	-3	32	3	3	0
1992	0	1	0	1	-7	38	1	3	-2
1993	0	5	0	3	-4	35	3	3	1
1994	0	2	0	1	-3	21	1	3	-1
1995	0	2	0	1	-3	19	1	2	-1
1996	0	3	0	2	-2	18	2	3	-1
1997	0	-8	0	-5	-8	3	-6	2	-8
1998	0	1	0	0	-1	5	0	1	-1
1999	0	2	0	1	-1	9	1	2	0
2000	0	3	0	2	-1	13	2	1	1
2001	0	3	0	2	-2	17	2	1	1
2002	0	2	0	1	-1	13	1	1	0
2003	0	1	0	1	-1	9	1	1	0
2004	0	1	0	1	-1	9	1	1	0

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 12 (continued): Annual distortion estimates, **Malaysia**, 1960 to 2004
(c) Value shares of primary production of covered^a and non-covered products,
(percent)

	Cocoa	Palmoil	Rice	Rubber	Non-covered
1960	na	2	6	78	14
1961	na	3	11	72	14
1962	na	3	13	70	14
1963	na	4	13	69	14
1964	na	4	11	70	14
1965	na	6	12	68	14
1966	na	6	13	67	14
1967	0	7	17	62	14
1968	0	6	21	59	14
1969	0	5	16	65	14
1970	0	11	16	58	14
1971	0	16	14	56	14
1972	0	17	17	52	14
1973	0	11	17	57	14
1974	0	23	17	46	14
1975	0	29	18	37	15
1976	1	21	8	55	15
1977	0	30	6	49	15
1978	0	27	6	52	15
1979	0	26	7	51	15
1980	0	25	7	51	17
1981	1	29	9	41	19
1982	1	37	8	33	21
1983	1	30	5	41	23
1984	2	46	3	25	25
1985	2	43	3	27	25
1986	3	31	4	37	25
1987	3	29	2	41	25
1988	3	37	3	31	27
1989	2	40	5	23	29
1990	2	37	5	25	31
1991	2	39	5	21	33
1992	1	41	4	18	35
1993	1	41	3	18	37
1994	1	38	3	19	39
1995	1	42	3	14	41
1996	1	43	4	13	41
1997	0	44	5	10	41
1998	0	49	3	5	42
1999	0	49	3	6	42
2000	0	47	4	5	43
2001	0	44	4	9	43
2002	0	45	3	9	43
2003	0	45	2	10	43
2004	0	48	2	11	38

^a At farmgate undistorted prices

Appendix Table 12 (continued): Annual distortion estimates, **Malaysia**, 1960 to 2004
(d) Trade status^a of covered products

	Cocoa	Palmoil	Rice	Rubber
1960	na	X	M	X
1961	na	X	M	X
1962	na	X	M	X
1963	na	X	M	X
1964	na	X	M	X
1965	na	X	M	X
1966	na	X	M	X
1967	X	X	M	X
1968	X	X	M	X
1969	X	X	M	X
1970	X	X	M	X
1971	X	X	M	X
1972	X	X	M	X
1973	X	X	M	X
1974	X	X	M	X
1975	X	X	M	X
1976	X	X	M	X
1977	X	X	M	X
1978	X	X	M	X
1979	X	X	M	X
1980	X	X	M	X
1981	X	X	M	X
1982	X	X	M	X
1983	X	X	M	X
1984	X	X	M	X
1985	X	X	M	X
1986	X	X	M	X
1987	X	X	M	X
1988	X	X	M	X
1989	X	X	M	X
1990	X	X	M	X
1991	X	X	M	X
1992	X	X	M	X
1993	X	X	M	X
1994	X	X	M	X
1995	X	X	M	X
1996	X	X	M	X
1997	X	X	M	X
1998	X	X	M	X
1999	X	X	M	X
2000	X	X	M	X
2001	X	X	M	X
2002	X	X	M	X
2003	X	X	M	X
2004	X	X	M	X

^a Exportable (X), import-competing (M) and nontradables (H).

Source: Anderson and Valenzuela (2008), based on Athukorala and Loke (2007)

Appendix Table 13: Annual distortion estimates, **Philippines**, 1960 to 2005(a) Nominal rates of assistance to covered products
(percent)

	Banana	Beef	Coconut	Maize	Pigmeat	Poultry	Rice	Sugar	All covered
1962	0	15	-24	-14	-30	-13	-18	38	-13
1963	0	15	-25	8	-27	6	-6	-39	-8
1964	0	15	-25	8	-34	34	14	-24	1
1965	0	15	-25	42	-23	49	10	103	16
1966	0	15	-20	29	-4	48	12	157	22
1967	0	15	-23	39	10	66	-5	134	15
1968	0	15	-18	44	44	80	-14	142	14
1969	0	15	-16	38	40	92	-10	67	16
1970	-4	15	-28	-10	13	67	-8	38	5
1971	-4	15	-27	49	25	35	29	16	24
1972	-4	10	-29	43	-10	25	23	-31	4
1973	-4	10	-23	-8	-18	-1	-39	-48	-31
1974	-4	10	-19	-3	6	18	-53	-34	-32
1975	-4	10	-21	6	-23	13	-29	-44	-23
1976	-4	10	-18	22	-12	5	0	-19	-5
1977	-4	10	-14	41	-9	42	-4	14	1
1978	-4	10	-12	37	-15	42	-32	24	-11
1979	-4	10	-18	16	31	38	-24	16	-6
1980	-4	5	-25	25	48	48	-38	-18	-16
1981	-4	5	-21	28	42	46	-36	-15	-13
1982	-4	5	-31	42	30	44	3	73	12
1983	-4	5	-36	-2	21	27	-10	64	-3
1984	-4	5	-23	7	39	26	0	193	12
1985	-4	5	-37	41	59	50	43	273	26
1986	0	20	-27	62	32	40	26	114	26
1987	0	20	-17	96	43	44	11	126	27
1988	0	20	-14	46	65	43	-9	70	13
1989	0	20	-9	54	56	37	2	33	17
1990	0	20	-17	51	25	34	16	29	16
1991	0	30	-15	24	24	39	1	56	10
1992	0	30	-19	88	16	84	21	75	24
1993	0	30	-15	69	24	68	46	51	32
1994	0	30	-10	82	36	57	21	35	24
1995	0	30	-9	94	-2	50	55	80	36
1996	0	30	-4	48	31	37	71	80	47
1997	0	30	-22	84	53	39	63	60	45
1998	0	30	-5	66	-2	25	21	95	20
1999	0	20	2	100	23	60	53	171	41
2000	0	10	-23	96	6	66	73	77	39
2001	0	10	-23	72	0	51	69	67	36
2002	0	10	-5	45	-7	55	54	105	27
2003	0	10	-8	25	-22	49	41	84	15
2004	0	10	-11	35	-19	40	17	64	7

Appendix Table 13 (continued): Annual distortion estimates, **Philippines**, 1960 to 2005
 (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		
	Inputs	Outputs						NRA	RRA
1962	0	-13	-3	-11	3	-15	-8	19	-23
1963	0	-8	-1	-6	-11	-6	-3	19	-19
1964	0	1	3	2	-10	5	7	19	-10
1965	0	16	8	14	27	12	19	19	0
1966	0	22	8	19	44	15	21	22	-1
1967	0	15	5	13	40	8	13	20	-6
1968	0	14	4	12	40	6	9	19	-9
1969	0	16	4	13	27	10	10	21	-9
1970	0	5	1	4	14	1	3	20	-14
1971	0	24	8	21	4	31	19	24	-4
1972	0	4	2	4	-20	17	5	15	-9
1973	0	-31	-11	-27	-30	-28	-27	11	-35
1974	0	-32	-12	-28	-19	-35	-31	10	-37
1975	0	-23	-8	-19	-25	-19	-20	13	-29
1976	0	-5	-1	-4	-14	3	-3	17	-17
1977	0	1	2	2	-3	5	2	18	-13
1978	0	-11	-3	-8	-1	-14	-8	17	-21
1979	0	-6	-2	-5	-6	-5	-8	17	-22
1980	0	-16	-7	-13	-15	-14	-17	16	-29
1981	0	-13	-6	-11	-12	-13	-15	13	-25
1982	0	12	7	11	5	17	9	13	-3
1983	0	-3	1	-2	-6	0	-4	11	-14
1984	0	12	7	11	10	13	8	12	-4
1985	0	26	17	24	2	44	22	12	9
1986	0	26	12	22	7	35	21	10	10
1987	0	27	11	23	11	33	21	11	9
1988	0	13	4	11	5	17	6	13	-6
1989	0	17	5	14	5	21	10	9	0
1990	0	16	7	14	0	24	12	11	1
1991	0	10	3	8	5	11	6	9	-3
1992	0	24	10	21	8	30	20	11	9
1993	0	32	13	28	6	43	27	9	17
1994	0	24	8	21	4	31	18	10	8
1995	0	36	15	31	-4	44	34	7	26
1996	0	47	19	41	-2	58	44	8	33
1997	0	45	20	39	4	60	42	9	31
1998	0	20	8	17	-2	25	19	8	10
1999	0	41	18	36	1	53	39	11	25
2000	0	39	17	34	-9	50	37	9	25
2001	0	36	15	32	-8	45	34	8	24
2002	0	27	11	24	-2	34	26	7	18
2003	0	15	6	14	-3	19	15	5	10
2004	0	7	3	6	5	7	6	3	3

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 13 (continued): Annual distortion estimates, **Philippines**, 1960 to 2005
(c) Value shares of primary production of covered^a and non-covered products,
(percent)

	Banana	Beef	Coconut	Maize	Pigmeat	Poultry	Rice	Sugar	Non-covered
1962	5	7	2	8	11	5	37	3	22
1963	5	4	3	9	12	4	37	4	22
1964	5	4	3	9	14	4	34	5	22
1965	4	4	3	8	13	4	34	7	22
1966	4	4	2	8	14	4	36	5	22
1967	4	3	2	7	12	4	42	6	19
1968	4	3	2	7	9	3	45	6	20
1969	5	3	2	8	9	3	38	10	22
1970	4	4	3	11	11	2	31	12	22
1971	5	2	3	11	12	3	30	15	19
1972	4	3	4	9	11	2	27	17	23
1973	2	2	4	10	8	2	34	17	22
1974	3	3	5	10	6	1	41	11	21
1975	2	2	9	10	6	1	29	15	24
1976	2	2	12	10	6	1	25	15	25
1977	2	2	15	7	8	1	26	10	29
1978	3	2	15	7	9	1	28	7	28
1979	3	2	21	7	6	1	25	9	25
1980	4	3	14	6	6	1	28	10	28
1981	3	3	12	7	6	1	29	11	28
1982	4	4	15	8	8	1	25	9	27
1983	4	4	16	9	8	1	23	6	29
1984	4	3	22	9	9	1	21	5	26
1985	4	3	24	10	7	1	23	4	25
1986	5	3	14	9	9	1	24	5	30
1987	4	3	15	8	9	1	26	5	28
1988	5	3	17	9	8	1	26	6	24
1989	4	3	13	8	9	1	27	9	26
1990	4	3	14	8	12	2	23	9	26
1991	4	3	10	7	11	1	35	5	22
1992	4	3	13	7	13	1	31	6	22
1993	4	4	12	7	13	1	29	7	22
1994	4	3	10	6	12	1	35	6	22
1995	4	3	9	5	18	1	32	6	21
1996	4	3	9	7	14	2	33	6	22
1997	5	4	11	5	12	2	32	6	23
1998	4	5	10	5	16	2	28	5	25
1999	6	6	11	5	14	1	31	3	22
2000	5	7	8	5	18	1	29	5	21
2001	5	6	7	6	19	2	29	6	20
2002	5	5	9	6	21	1	30	4	19
2003	5	5	8	6	23	1	29	4	20
2004	4	4	10	6	21	1	30	4	20

^a At farmgate undistorted prices

Appendix Table 13 (continued): Annual distortion estimates, **Philippines**, 1960 to 2005
 (d) Trade status^a of covered products

	Banana	Beef	Coconut	Maize	Pigmeat	Poultry	Rice	Sugar
1962	X	M	X	M	M	M	M	X
1963	X	M	X	M	M	M	M	X
1964	X	M	X	M	M	M	M	X
1965	X	M	X	M	M	M	M	X
1966	X	M	X	M	M	M	M	X
1967	X	M	X	M	M	M	M	X
1968	X	M	X	M	M	M	M	X
1969	X	M	X	M	M	M	M	X
1970	X	M	X	M	M	M	M	X
1971	X	M	X	M	M	M	M	X
1972	X	M	X	M	M	M	M	X
1973	X	M	X	M	M	M	M	X
1974	X	M	X	M	M	M	M	X
1975	X	M	X	M	M	M	M	X
1976	X	M	X	M	M	M	M	X
1977	X	M	X	M	M	M	M	X
1978	X	M	X	M	M	M	M	X
1979	X	M	X	M	M	M	M	X
1980	X	M	X	M	M	M	M	X
1981	X	M	X	M	M	M	M	X
1982	X	M	X	M	M	M	M	X
1983	X	M	X	M	M	M	M	X
1984	X	M	X	M	M	M	M	X
1985	X	M	X	M	M	M	M	X
1986	X	M	X	M	M	M	M	X
1987	X	M	X	M	M	M	M	X
1988	X	M	X	M	M	M	M	X
1989	X	M	X	M	M	M	M	X
1990	X	M	X	M	M	M	M	X
1991	X	M	X	M	M	M	M	X
1992	X	M	X	M	M	M	M	X
1993	X	M	X	M	M	M	M	X
1994	X	M	X	M	M	M	M	X
1995	X	M	X	M	M	M	M	M
1996	X	M	X	M	M	M	M	M
1997	X	M	X	M	M	M	M	X
1998	X	M	X	M	M	M	M	M
1999	X	M	X	M	M	M	M	M
2000	X	M	X	M	M	M	M	M
2001	X	M	X	M	M	M	M	M
2002	X	M	X	M	M	M	M	M
2003	X	M	X	M	M	M	M	M
2004	X	M	X	M	M	M	M	X

^a Exportable (X), import-competing (M) and nontradables (H).

Source: Anderson and Valenzuela (2008), based on David, Intal and Balisacan (2007)

Appendix Table 14: Annual distortion estimates, **Thailand**, 1970 to 2004(a) Nominal rates of assistance to covered products
(percent)

	Cassava	Maize	Palmoil	Pigmeat	Poultry	Rice	Rubber	Soybean	Sugar	All covered
1970	-10	-2	na	-5	na	-26	-5	na	33	-20
1971	-25	-3	na	16	-37	-29	5	na	30	-24
1972	-33	5	na	-17	-43	-22	11	na	12	-23
1973	-39	-8	na	-35	-32	-21	-5	na	5	-22
1974	-8	-2	na	18	-19	-52	-8	na	-17	-41
1975	0	-5	na	-7	30	-40	2	na	-11	-28
1976	0	-3	na	-9	24	-21	-3	na	-3	-12
1977	-10	0	na	19	3	-26	-11	na	-2	-16
1978	-13	-2	na	-13	8	-31	-14	na	2	-22
1979	19	-4	na	19	15	-24	-18	na	-2	-13
1980	-2	-4	-25	83	45	-25	-21	na	6	-12
1981	-22	-7	-33	60	12	-29	-28	na	21	-17
1982	-7	0	-20	19	34	-16	-14	na	1	-7
1983	7	0	-19	68	27	-9	-8	na	7	0
1984	-21	0	-31	29	16	-12	-19	-18	28	-7
1985	-29	-7	-22	-5	16	-20	-14	-27	41	-13
1986	0	-12	12	-5	-9	-18	-11	-20	41	-11
1987	-21	-9	68	3	-13	-11	-15	-16	38	-10
1988	-20	-4	71	53	-13	-9	-14	-7	43	-5
1989	-13	-6	32	58	-17	-17	-13	-12	21	-9
1990	-11	-5	67	14	-5	-14	-4	-44	24	-7
1991	-16	-4	39	-6	-12	-14	-7	-16	35	-8
1992	-12	-13	18	15	-17	-10	-2	35	45	-4
1993	-17	0	22	-20	-10	-20	-8	21	37	-10
1994	1	-1	-14	5	-11	-24	-2	27	29	-9
1995	3	6	-13	60	17	-10	-2	22	21	3
1996	-19	-10	-3	32	18	-2	2	25	37	5
1997	-20	-37	-18	3	8	-17	-4	7	37	-8
1998	-11	-7	-19	19	23	-16	4	17	14	-4
1999	-22	-10	-11	67	23	-11	-6	37	2	-1
2000	-14	1	-11	-10	21	-13	-1	36	16	-3
2001	-8	-2	-38	-16	15	-9	1	30	8	-3
2002	-5	-2	-9	21	33	-6	4	33	12	5
2003	-13	0	-15	-3	13	-3	3	28	9	1
2004	-10	0	na	na	na	-6	-6	22	18	-2

Appendix Table 14 (continued): Annual distortion estimates, **Thailand**, 1970 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		
	Inputs	Outputs						NRA	RRA
1970	-1	-18	-9	-15	-21	-5	-18	16	-29
1971	-1	-22	-3	-16	-26	16	-18	16	-30
1972	-1	-21	-13	-19	-23	-17	-22	16	-33
1973	-1	-21	-19	-21	-21	-35	-23	16	-34
1974	-1	-40	-8	-30	-43	18	-34	16	-43
1975	-1	-27	-12	-23	-29	-7	-26	16	-36
1976	-1	-11	-7	-10	-13	-9	-12	16	-24
1977	-1	-15	0	-10	-18	19	-12	16	-24
1978	-1	-21	-12	-18	-23	-13	-21	16	-32
1979	-1	-12	2	-8	-15	19	-9	16	-22
1980	-1	-11	21	-1	-16	78	-1	16	-15
1981	-1	-16	11	-8	-21	55	-9	15	-21
1982	-1	-6	3	-4	-8	17	-4	14	-16
1983	-1	1	18	6	-3	56	7	13	-6
1984	-1	-5	4	-3	-8	21	-4	12	-14
1985	-3	-10	-7	-11	-14	-7	-13	11	-22
1986	-2	-9	-5	-9	-11	-4	-10	11	-19
1987	-3	-6	0	-7	-11	11	-8	11	-17
1988	-2	-3	16	0	-9	56	0	11	-10
1989	-3	-7	13	-4	-13	53	-4	11	-14
1990	-3	-3	4	-4	-9	22	-4	10	-13
1991	-2	-6	-3	-7	-9	-1	-8	10	-16
1992	-1	-3	4	-2	-7	18	-2	10	-11
1993	-2	-9	-7	-9	-10	-10	-10	10	-18
1994	-1	-8	-2	-7	-11	4	-8	10	-16
1995	-1	4	18	7	-1	54	7	9	-2
1996	0	5	11	6	2	31	7	9	-2
1997	0	-8	-2	-7	-10	3	-8	9	-15
1998	-2	-1	4	-2	-5	19	-2	9	-10
1999	-3	2	19	4	-5	64	4	8	-4
2000	-1	-2	-3	-3	-3	-6	-3	8	-11
2001	-1	-3	-5	-4	-2	-14	-4	8	-11
2002	-2	7	8	6	4	22	7	8	-1
2003	0	0	0	0	1	-1	0	8	-7
2004	-1	-2	7	-1	-3	22	-1	8	-8

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 14 (continued): Annual distortion estimates, **Thailand**, 1970 to 2004
(c) Value shares of primary production of covered^a and non-covered products,
(percent)

	Cassava	Maize	Palmoil	Pigmeat	Poultry	Rice	Rubber	Soybean	Sugar	Non-covered
1970	3	4	na	4	na	44	3	na	1	40
1971	3	4	na	3	9	40	3	na	1	37
1972	6	2	na	4	9	39	3	na	1	35
1973	4	5	na	5	7	42	4	na	2	31
1974	1	4	na	2	4	50	2	na	2	34
1975	2	5	na	3	3	47	2	na	3	35
1976	4	4	na	3	3	39	3	na	5	37
1977	6	2	na	3	5	38	4	na	7	36
1978	4	3	na	4	4	42	4	na	3	34
1979	5	4	na	3	4	39	7	na	6	33
1980	7	4	0	3	3	41	6	na	3	33
1981	6	4	0	3	4	42	5	na	5	32
1982	7	4	0	4	4	35	5	na	8	33
1983	7	5	0	3	5	36	6	na	4	33
1984	8	6	1	4	4	35	6	1	4	32
1985	6	5	1	5	4	34	7	1	3	33
1986	7	5	0	5	6	30	10	2	2	33
1987	10	3	1	5	6	28	11	1	3	31
1988	7	5	1	3	6	36	13	2	3	25
1989	6	5	1	3	6	38	10	2	4	24
1990	7	4	1	5	7	29	11	3	5	28
1991	7	4	1	6	9	30	9	1	4	28
1992	6	4	1	6	11	27	11	1	4	29
1993	5	3	1	7	11	24	12	1	4	31
1994	4	4	2	6	9	29	14	1	4	28
1995	5	4	2	4	8	28	18	1	5	25
1996	5	5	2	6	9	27	16	1	4	24
1997	4	6	2	7	9	31	12	1	4	24
1998	5	4	3	4	9	36	10	1	4	25
1999	4	5	2	4	10	33	11	1	6	25
2000	3	5	2	6	10	31	13	1	6	23
2001	4	4	2	9	12	27	12	0	5	25
2002	4	4	3	6	11	27	16	0	5	23
2003	4	4	3	6	9	24	21	0	6	21
2004	5	4	na	na	na	29	31	0	11	20

^a At farmgate undistorted prices

Appendix Table 14 (continued): Annual distortion estimates, **Thailand**, 1970 to 2004
(d) Trade status^a of covered products

	Cassava	Maize	Palmoil	Pigmeat	Poultry	Rice	Rubber	Soybean	Sugar
1970	X	X	na	M	X	X	X	na	X
1971	X	X	na	M	X	X	X	na	X
1972	X	X	na	M	X	X	X	na	X
1973	X	X	na	M	X	X	X	na	X
1974	X	X	na	M	X	X	X	na	X
1975	X	X	na	M	X	X	X	na	X
1976	X	X	na	M	X	X	X	na	X
1977	X	X	na	M	X	X	X	na	X
1978	X	X	na	M	X	X	X	na	X
1979	X	X	na	M	X	X	X	na	X
1980	X	X	M	M	X	X	X	na	X
1981	X	X	M	M	X	X	X	na	X
1982	X	X	M	M	X	X	X	na	X
1983	X	X	M	M	X	X	X	na	X
1984	X	X	M	M	X	X	X	X	X
1985	X	X	M	M	X	X	X	X	X
1986	X	X	M	M	X	X	X	X	X
1987	X	X	M	M	X	X	X	X	X
1988	X	X	M	M	X	X	X	X	X
1989	X	X	M	M	X	X	X	X	X
1990	X	X	M	M	X	X	X	X	X
1991	X	X	M	M	X	X	X	X	X
1992	X	X	M	M	X	X	X	M	X
1993	X	X	M	M	X	X	X	M	X
1994	X	X	M	M	X	X	X	M	X
1995	X	X	X	M	X	X	X	M	X
1996	X	X	X	M	X	X	X	M	X
1997	X	X	X	M	X	X	X	M	X
1998	X	X	X	M	X	X	X	M	X
1999	X	X	X	M	X	X	X	M	X
2000	X	X	X	M	X	X	X	M	X
2001	X	X	X	M	X	X	X	M	X
2002	X	X	X	M	X	X	X	M	X
2003	X	X	X	M	X	X	X	M	X
2004	X	X	X	M	X	X	X	M	X

^a Exportable (X), import-competing (M) and nontradables (H).

Source: Anderson and Valenzuela (2008), based on Warr and Sarntisart (2007)

Appendix Table 15: Annual distortion estimates, **Vietnam**, 1986 to 2005(a) Nominal rates of assistance to covered products
(percent)

	Coffee	Pigmeat	Poultry	Rice	Rubber	Sugar	All covered
1986	-58	-45	na	1	na	na	-11
1987	-74	-73	na	-7	na	na	-29
1988	-36	-27	na	2	na	na	-3
1989	-30	-22	na	-7	na	na	-11
1990	-34	-52	-3	-37	92	26	-36
1991	-27	-46	-4	-20	14	37	-23
1992	-21	-50	-4	-35	-5	38	-34
1993	-12	-32	-4	-25	5	67	-23
1994	-12	-8	-4	-16	0	80	-11
1995	-10	5	-4	-8	1	61	-4
1996	0	16	5	-7	2	79	0
1997	-2	-37	5	0	8	80	-6
1998	-15	-22	6	-9	33	105	-8
1999	-8	8	6	22	50	239	21
2000	-7	-4	2	19	24	99	14
2001	-16	-14	2	35	50	97	20
2002	-16	45	2	4	23	160	14
2003	-9	na	2	34	-6	218	31
2004	na	na	2	22	-6	227	24
2005	na	na	2	9	na	162	12

Appendix Table 15 (continued): Annual distortion estimates, **Vietnam**, 1986 to 2005
 (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 NRA	
Covered products		Non-covered products	All products (incl NPS)	Export-ables	Import-competing	All			
Inputs	Outputs								
1986	0	-11	-16	-13	-19	50	-15	7	-21
1987	0	-29	-24	-27	-32	53	-31	6	-35
1988	0	-3	-11	-6	-8	44	-7	7	-13
1989	0	-11	-7	-9	-10	2	-10	-2	-8
1990	0	-36	-35	-36	-37	17	-37	-15	-26
1991	0	-23	-19	-22	-24	21	-23	-8	-17
1992	0	-34	-33	-34	-36	18	-35	-16	-22
1993	0	-23	-23	-23	-25	31	-24	-11	-15
1994	0	-11	-15	-12	-14	41	-13	-7	-7
1995	0	-4	-7	-4	-6	41	-6	-8	3
1996	0	0	-6	-2	-3	50	-3	-8	5
1997	0	-6	0	-5	-8	52	-5	3	-8
1998	0	-8	-8	-8	-10	66	-7	-2	-6
1999	0	21	22	21	17	119	21	23	-1
2000	0	14	19	15	12	50	14	16	-2
2001	0	20	33	24	19	54	21	27	-4
2002	0	14	5	11	11	70	13	8	5
2003	0	31	33	32	28	79	31	31	1
2004	0	24	22	23	19	84	23	22	1
2005	0	12	9	11	8	56	11	11	1

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 15 (continued): Annual distortion estimates, **Vietnam**, 1986 to 2005
(c) Value shares of primary production of covered^a and non-covered products,
(percent)

	Coffee	Pigmeat	Poultry	Rice	Rubber	Sugar	Non-covered
1986	1	14	na	43	na	na	42
1987	1	22	na	47	na	na	29
1988	1	10	na	57	na	na	32
1989	1	14	na	56	na	na	29
1990	1	14	2	56	1	2	24
1991	1	13	3	53	1	2	28
1992	1	12	3	44	1	1	39
1993	2	13	3	45	1	1	35
1994	2	11	3	45	1	2	36
1995	5	12	3	54	1	2	23
1996	4	11	3	55	1	2	24
1997	5	18	3	46	2	2	24
1998	4	13	3	55	1	2	22
1999	5	14	3	49	1	1	26
2000	6	14	4	42	2	2	31
2001	4	16	4	37	1	3	34
2002	2	12	4	47	2	1	33
2003	2	na	5	43	4	1	45
2004	na	na	4	47	4	1	44
2005	na	na	3	49	na	1	47

^a At farmgate undistorted prices

Appendix Table 15 (continued): Annual distortion estimates, **Vietnam**, 1986 to 2005
 (d) Trade status^a of covered products

	Coffee	Pigmeat	Poultry	Rice	Rubber	Sugar
1986	X	X	na	X	na	na
1987	X	X	na	X	na	na
1988	X	X	na	X	na	na
1989	X	X	na	X	na	na
1990	X	X	X	X	X	M
1991	X	X	X	X	X	M
1992	X	X	X	X	X	M
1993	X	X	X	X	X	M
1994	X	X	X	X	X	M
1995	X	X	X	X	X	M
1996	X	X	X	X	X	M
1997	X	X	X	X	X	M
1998	X	X	X	X	X	M
1999	X	X	X	X	X	M
2000	X	X	X	X	X	M
2001	X	X	X	X	X	M
2002	X	X	X	X	X	M
2003	X	na	X	X	X	M
2004	na	na	X	X	X	M
2005	na	na	X	X	na	M

^a Exportable (X), import-competing (M) and nontradables (H).

Source: Anderson and Valenzuela (2008), based on Athukorala, Huon and Thanh (2007)

Appendix Table 16: Shares of the global value of production and consumption of key covered agricultural products, China and Southeast Asia,^a 2000-04 (percent)

		China	Indonesia	Malaysia	Philippines	Thailand	Vietnam	World
Grains	Q	18.5	4.3	0.1	1.2	1.4	1.3	100
	C	18.8	4.8	0.2	1.4	0.7	0.9	100
Rice	Q	32.1	13.1	0.3	3.5	3.6	4.2	100
	C	30.0	13.6	0.7	3.6	1.8	3.0	100
Wheat	Q	17.5						100
	C	18.0						100
Maize	Q	19.9	1.9		0.9	0.7		100
	C	24.9	2.8		1.2	0.9		100
Cassava	Q					2.0		100
	C					0.1		100
Oilseeds	Q	4.9	3.8	6.3		0.5		100
	C	11.8	2.1	0.3		0.7		100
Soybean	Q	10.0	0.6			0.1		100
	C	21.7	1.6			0.7		100
Groundnut	Q							100
	C							100
Palmoil	Q		28.1	49.3		3.1		100
	C		7.8	1.7		1.9		100
Tropical crops	Q	5.7	10.9	1.4	1.9	4.2	0.9	100
	C	5.2	9.7	0.7	1.6	0.4	0.2	100
Sugar	Q	7.8	9.0		2.1	3.4	0.6	100
	C	6.6	15.0		2.3	1.0	0.6	100
Cotton	Q	13.6						100
	C	13.2						100
Coconut	Q		45.6		10.6			100
	C		42.3		8.8			100
Coffee	Q		7.3				4.6	100
	C		3.0				0.1	100
Rubber	Q		21.0	14.8		33.4	3.3	100
	C		1.9	8.7		0.7	0.1	100
Tea	Q		2.9					100
	C		1.4					100
Cocoa	Q			0.4				100
	C			0.1				100
Livestock products	Q	12.4	0.1		0.5	0.3	0.3	100
	C	16.5	0.2		0.7	0.4	0.4	100
Pigmeat	Q	43.9			1.9	0.7	1.0	100
	C	48.7			2.1	0.7	1.2	100
Milk	Q	2.5						100
	C	3.1						100
Beef	Q				0.6			100
	C				1.2			100
Poultry	Q	23.0	1.1		0.2	1.6	0.5	100
	C	31.6	1.4		0.3	1.4	0.6	100
Total of above products	Q	13.2	2.4	0.6	0.8	0.9	0.6	100
	C	15.9	2.7	0.2	1.0	0.5	0.5	100
Production only								100
All covered	Q	21.2	2.5	0.6	0.9	1.0	0.6	100
Non-covered	Q	23.1	3.9	1.0	0.5	0.6	0.7	100
All agriculture	Q	21.8	2.9	0.8	0.8	0.8	0.6	100

Source: Authors' calculations using Project data and FAO Production and Commodity Balance Data.

a. There are no Taiwan data in the FAO database.

Appendix Table 17: Shares of the global value of exports and imports of key covered agricultural products, China and Southeast Asia,^a 2000-03
(percent)

		China	Indonesia	Malaysia	Philippines	Thailand	Vietnam	World
Grains	X	4.7	0.0	0.0	0.0	5.8	1.9	100.0
	M	2.6	1.1	0.3	0.5	0.0	0.0	100.0
Rice	X	6.7	0.0	0.0	0.0	24.5	10.0	100.0
	M	1.7	4.0	2.0	2.3	0.0	0.0	100.0
Wheat	X	0.6						100.0
	M	1.9						100.0
Maize	X	11.9	0.1		0.0	0.3		100.0
	M	5.7	1.3		0.4	0.1		100.0
Cassava	X					72.6		100.0
	M					0.0		100.0
Oilseeds	X	0.4	9.9	20.7		0.2		100.0
	M	6.9	1.1	0.5		1.2		100.0
Soybean	X	1.1	0.0			0.0		100.0
	M	17.4	2.7			3.1		100.0
Groundnut	X							100.0
	M							100.0
Palmoil	X		27.0	56.8		0.6		100.0
	M		0.0	1.3		0.0		100.0
		China	Indonesia	Malaysia	Philippines	Thailand	Vietnam	World
Tropical crops	X	0.6	3.0	1.4	0.3	6.4	2.7	100.0
	M	2.4	1.0	1.1	0.2	0.0	0.0	100.0
Sugar	X	0.7	0.0		0.4	7.4	0.2	100.0
	M	2.8	2.5		0.4	0.0	0.1	100.0
Cotton	X	2.5						100.0
	M	9.4						100.0
Coconut	X		15.0		30.3			100.0
	M		0.1		0.0			100.0
Coffee	X		3.2				11.2	100.0
	M		0.1				0.0	100.0
Rubber	X		23.7	15.6		41.6	11.7	100.0
	M		0.2	6.3		0.0	0.1	100.0
Tea	X		3.7					100.0
	M		0.1					100.0
Cocoa	X			0.6				100.0
	M			4.3				100.0
Livestock products	X	1.7	0.0		0.0	1.3	0.1	100.0
	M	1.4	0.0		0.2	0.0	0.0	100.0
Pigmeat	X	2.2			0.0	0.1	0.4	100.0
	M	0.6			0.2	0.0	0.0	100.0
Milk	X	0.2						100.0
	M	1.7						100.0
Beef	X				0.0			100.0
	M				0.6			100.0
Poultry	X	7.9	0.0		0.0	8.6	0.0	100.0
	M	4.5	0.0		0.1	0.0	0.0	100.0
Total of above	X	2.1	1.6	2.5	0.1	3.1	0.9	100.0
	M	2.5	0.6	0.3	0.2	0.2	0.0	100.0
All exports	X	3.2	1.3	1.6	0.4	1.8	0.5	100.0
	M	3.8	0.9	0.9	0.6	0.6	0.3	100.0

Source: Authors' derivation using production, trade value data at FAOSTAT.

a. There are no Taiwan data in the FAO database.

Appendix Table 18: Shares of production exported, and of consumption imported and produced domestically, key covered products, China and Southeast Asia, 2000-03

		China	Indonesia	Malaysia	Philippines	Thailand	Vietnam
Grains	X/Q	4	0	2	0	42	16
	M/C	2	5	26	9	1	0
	Q/C	99	95	73	95	293	137
Rice	X/Q	2	0	2	0	43	16
	M/C	1	4	26	10	0	0
	Q/C	99	96	73	95	196	137
Wheat	X/Q	2					
	M/C	2					
	Q/C	96					
Maize	X/Q	10	0		0	5	
	M/C	5	11		8	2	
	Q/C	101	89		95	103	
Cassava	X/Q					75	
	M/C					0	
	Q/C					1181	
Oilseeds	X/Q	2	66	98		24	
	M/C	52	27	61		71	
	Q/C	50	331	2804		136	
Soybean	X/Q	2	0			2	
	M/C	52	61			119	
	Q/C	50	39			22	
		China	Indonesia	Malaysia	Philippines	Thailand	Vietnam
Groundnut	X/Q						
	M/C						
	Q/C						
Palmoil	X/Q		71	98		28	
	M/C		1	61		13	
	Q/C		355	2804		157	
Tropical crops	X/Q	3	22	105	9	92	75
	M/C	9	18	110	6	1	5
	Q/C	97	270	192	107	3855	4171
Sugar	X/Q	6	2		6	68	5
	M/C	16	39		12	1	4
	Q/C	97	62		93	328	102
Cotton	X/Q	1					
	M/C	4					
	Q/C	97					
Coconut	X/Q		5		12		
	M/C		0		0		
	Q/C		106		114		
Coffee	X/Q		50				101
	M/C		3				0
	Q/C		196				5130
Rubber	X/Q		90	99		101	94
	M/C		14	97		3	47
	Q/C		1189	162		5137	6069
Tea	X/Q		64				
	M/C		6				
	Q/C		263				
Cocoa	X/Q			448			
	M/C			2434			
	Q/C			1009			
		China	Indonesia	Malaysia	Philippines	Thailand	Vietnam
Livestock	X/Q	3	0		0	22	
	M/C	4	1		9	0	
	Q/C	99	100		92	133	
Pigmeat	X/Q	1			0	3	na
	M/C	1			3	0	na

	Q/C	100			97	103	na
Milk	X/Q	2					
	M/C	7					
	Q/C	95					
Beef	X/Q				0		
	M/C				26		
	Q/C				74		
Poultry	X/Q	9	0		0	35	na
	M/C	12	1		3	0	na
	Q/C	96	100		97	153	na
Total of above	X/Q	3	15	94	2	51	25
	M/C	6	10	63	9	7	0
	Q/C	97	181	2256	96	1234	762

Source: Authors' derivation using production, trade and domestic supply data in the FAO Commodity Balances at FAOSTAT.

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