Distortions to Agricultural Incentives in Latin America

Kym Anderson and Alberto Valdés

University of Adelaide
kym.anderson@adelaide.edu.au

Pontifical Catholic University of Chile
avaldese@puc.cl

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The vast majority of the world's poorest households depend on farming for their livelihood. In Latin America, because of higher levels of developments, the larger share of the non-farm sector, more urbanization and greater land concentration than in Africa and Asia, poverty tends to be less-heavily concentrated in rural areas, but it is nonetheless prevalent enough to be a concern. In the past farm earnings were often depressed by pro-urban and anti-agricultural biases of their own country's policies. True, progress has been made over the past two decades by numerous developing countries in reducing those policy biases, but many trade-reducing price distortions remain between sectors as well as within the agricultural sector of low- and middle-income countries, including in Latin America.

This study is part of a global research project seeking to understand the extent and effects of the reduction in policy biases, and the reasons behind the reforms in Asia, Africa, Europe's transition economies as well as in Latin American and the Caribbean.[1] That is, the first main purpose is to obtain quantitative indicators of past and recent policy interventions. The second is to understand better the political economy of distortions to agricultural incentives in different national settings. With that better understanding, the study's third purpose is to explore prospects for further reducing distortions to agricultural incentives and likely implications for agricultural competitiveness and trade of the different Latin American countries.

Thus a core element of the project is compiling new annual time series estimates of protection/taxation over the past half century. These are used to help address such questions as the following: Where is there still a policy bias against agricultural production? To what extent has there been 'overshooting' in the sense that some developing country food

[1] The other three regional studies are Anderson and Martin (2008), Anderson and Masters (2008) and Anderson and Swinnen (2008). They, together with comparable studies of high-income countries, form the basis for a global overview volume edited by Anderson (2008).

producers are now being protected from import competition, following the examples of earlier-industrializing Europe and Northeast Asia. What are the political economy forces behind the more-successful reformers, and how do they compare with those in less-successful countries where distortions to agricultural incentives remain? How important have been domestic political forces in bringing about reform during the past two decades, relative to international forces (such as loan conditionality, GATT rounds of multilateral trade negotiations, regional integration agreements, WTO accession, and globalization of supermarkets and other firms along the value chain), compared with the forces operating in earlier decades? What explains the pattern of distortions within each country's agricultural sector? What policy lessons and trade implications can be drawn for these and less-developed/still-distorted countries from those differing experiences, with a view to ensuring better growth-enhancing and poverty reducing outcomes from own-country reforms in the future, including less 'over-shooting' to a protectionist regime?

Now is especially timely for such a study as countries seek to achieve their UN-encouraged Millennium Development Goals by 2015, and to position themselves in preferential and multilateral trade negotiations in the wake of other forces of globalization such as the information, communication and agricultural bio-technology revolutions.

This Latin American study is based on a sample of eight countries, comprising the Dominican Republic as the largest Caribbean economy, Nicaragua as the poorest country in Central America, Colombia and Ecuador as two of the poorest South America tropical countries, and the big four economies of Argentina, Brazil, Chile and Mexico. Together these countries in 2000-04 accounted for 78 percent of the region's population, 80 percent of its agricultural value added, and 84 percent of total GDP in Latin America.

Key characteristics of those economies – which account for only 4.5 percent of global GDP but 7.7 percent of agricultural value added and more than 10 percent of agricultural and food exports – are shown in Table 1.1. They reveal the considerable diversity within the region in terms of stages of development, relative resource endowments, comparative advantages and hence trade specialization, and in the incidence poverty and income inequality. This makes the set of countries chosen a rich sample for comparative study. Nicaragua's per capita income is only one-seventh the global average and those for Ecuador and Colombia are only one-third, while Argentina's and Chile's are one-eighth below and Mexico's is one-eighth above the global average. Only Argentina, Brazil and Nicaragua have well above the global average endowment of agricultural land per capita, the Dominican

Republic and Ecuador have well below the global average, and Chile, Colombia and Mexico are a little less that one-third above the average. Income inequality is high throughout the region compared with the rest of the world, with the Gini coefficient being near or above 0.5, and averaging 0.52. This is well above that for Asia and Africa. Likewise the Gini coefficient for land is very high in Latin America: 0.58 for Chile but above 0.7 for Argentina, Brazil, Ecuador and Nicaragua compared with an average of less than 0.5 in Asia (World Bank 2007, Table A4). Even so, there is comparatively little absolute poverty except in the poorest tropical parts of the region.

Despite having nearly twice as much agricultural land per capita as the rest of the world, Latin American agriculture can be characterized by concentrated land ownership and a structure of production where commercial medium and large farms contribute the bulk of agricultural output. It is also a region with a high degree of urbanization. These features are important for understanding the forces behind agricultural policies. So too is the fact that, until a few years ago, most countries in the region experienced a high degree of macroeconomic instability and high inflation. The manipulation of food prices for urban consumers, in an attempt to reduce inflation, was (and still is in Argentina) a dominant feature driving farm price policy.

Most Latin American countries went through a process of major economy-wide policy reforms, beginning for some countries approximately in the mid-1980s (or the 1970s for Chile) and for others in the mid-1990s. Reforms centered on macroeconomic stabilization, trade liberalization, deregulation, and some privatization of state agencies. There was a considerable reassessment of the role of the government in guiding economic development. Agricultural policies were an integral part of this reform process, although not the principle motivation of the reforms.

This chapter begins with a brief summary first of economic growth and structural changes in the region since the 1960s, and then of agricultural and other economic policies as they affected agriculture before and after the reforms of the mid-1980s to mid-1990s. It then introduces the methodology used by country authors to estimate the nominal and relative rates of assistance to farmers delivered by national farm and non-farm policies over the past several decades (depending on data availability), as well as the impact of those policies on prices of farm products for consumers. Both farmer assistance and consumer taxation will be negative in periods where there is an anti-agricultural, pro-urban consumer bias in a country's policy regime. A synopsis of the empirical results detailed in the country chapters to follow is then provided. The final section draws out key policy implications.

Growth and structural changes

Before examining policy changes, it is helpful to review the economic growth and intersectoral changes that have taken place in Latin America's economies over the past few decades. Since 1980 the region's real GDP has grown at an average annual rate of 5.4 percent, or 3.6 percent per capita. These rates are somewhat above the averages for other developing countries of 4.1 percent total and 2.3 percent per capita, but somewhat below Asia's averages of 7.1 percent total and 5.5 percent per capita. The region's comparative growth performance was much less rosey in the 1960s and 1970s, however, before the region moved away from an import-substituting industrialization regime.

Among the focus countries of the present study, Chile and Mexico have been the star performers since 1980, while Ecuador and Nicaragua have been the slowest growers. (Nicaragua's civil conflict sent its economy backwards in the 1980s but it grew twice as fast as Ecuador in the 1990s.)

The industrial sector grew much slower than overall GDP during the past 25 years, but agriculture grew even slower, at barely half the rate of the rest of the economy, as the service sector took the lead. Within our sample countries, the economies of Chile and Mexico were the fastest growing and Ecuador's and Argentina's the slowest – apart from Nicaragua, which was disrupted by a prolonged civil conflict during the 1980s (Table 1.2).

As a result of that strong growth in service activities, the services share of GDP rose during the past two decades from barely one-half to two-thirds, while agriculture's share fell from 9 to 6 percent on average in our sample economies. The relative decline of agriculture has been slowest in Argentina, Brazil and Nicaragua and fastest in oil-exporting Ecuador and Mexico and also in Chile. By 2000-04, agriculture's GDP share ranged from 4 percent in Chile and Mexico to twice than in Brazil and Ecuador, three times that in Colombia and the Dominican Republic, and more than four times that in Nicaragua (Table 1.3).

The shares of overall employment accounted for by farming activities have fallen somewhat slower than agriculture's GDP shares, according to FAO statistics (which are not

always consistent with national data because of definitional differences). Those shares remain at much higher levels than the GDP shares, implying relatively low and slow-growing labor productivity on farms. The fastest decline has been in Brazil, where the employment share in agriculture has fallen from one-half to less than one-sixth during the past 40 years (Table 1.4).

Agriculture's share of exports also has declined, on average by about one-third each decade since the latter 1960s. The only exception is Chile, whose share has risen dramatically from one-eighth to one-third over that period. Chile contrasts markedly with the other fast-growing economy in our sample, Mexico, where the share of farm products in all goods exports has fallen from 58 percent to just 6 percent (Table 1.5). The declining relative importance of farm exports has been faster in Latin America than in the rest of the world: its index of 'revealed' comparative advantage in these products (defined as agriculture and processed food's share of national exports as a ratio of their share of global merchandise exports) has fallen by about one-third since the 1960s, as has its index of trade specialization (defined as net exports as a ratio of the sum of imports and exports of farm products). Note, however, that during the past decade there has been a marked upturn in those two indexes not only in Chile but in several other reforming Latin American countries, including Argentina and Brazil. The indexes are now at very high levels in all countries in the sample apart from Mexico, which is the only one with a revealed comparative disadvantage in agriculture (Table 1.6).

Finally before examining the region's policy reforms, note the increases in export orientation in the region. A common indicator is the value of goods and services expressed as a percentage of GDP. Since the early 1990s, that indicator has roughly doubled for the three biggest economies (Argentina, Brazil and Mexico) but it has changed little for the others in our sample apart from Chile where it rose a few years earlier (Table 1.7). Another indicator, reported in Table 1.8, is the share of primary agricultural production that is exported. That has jumped dramatically in the past 20 years – including in Mexico where it is now over 30 percent, as a result of sharply increased specialization within the sector following the agricultural and trade policy reforms began in anticipation of the NAFTA agreements formalized in 1994. It is important to note, though, that import dependence also has grown as a consequence of trade specialization (Table 1.8b). Indeed, 17 of the region's 21 countries for which data are available are net food importers (de Ferranti et al. 2005). And of the eight

countries in our sample, even though all but Mexico are more than 100 percent self sufficient in agricultural products as an aggregate (Table 1.8c), and their share of global exports of agriculture and food has jumped from 6.8 to 9.6 percent between 1990-94 and 2000-04,[2] only Argentina was a net exporter of cereals during 2003-05 (World Bank 2007, Table A4). This is important in the politics of food import policymaking.

Evolution of agricultural and trade policies

Like most other regions, Latin America has a diverse range of policies and political structures and institutions, but there was to some extent a common evolution from the 1960s in the ideology motivating economic policies.

Prior to the reforms of the mid-1980s/early 1990s

Until approximately the mid-1980s, agricultural price interventions were largely a byproduct of a development strategy claiming the best way to grow was by adopting a protectionist policy that encouraged import-substituting industrialization. That policy also raised budgetary resources in the form of import tax revenue, which were supplemented in some countries (such as Argentina) by agricultural export taxes. Both sets of policies harmed the region's most competitive farmers, and were offset only slightly by farm credit and fertilizer subsidies.

Between the1950s and the 1980s there were concerns about high rates of inflation, especially where the urban populations had a strong political influence. Policy makers were under pressure to avoid large increases in food prices, which would potentially impact wage rates and thereby (according to then prevailing theory) accelerate inflation through the so-called "cost push" effect.

In addition to fiscal and inflation objectives that made farm export taxes attractive, there was a widespread belief in the 1950s and 1960s by policy makers and followers of the "structuralist school" associated with Prebisch (1950, 1959, 1964) –notwithstanding the

[2] The biggest increases in the shares of global exports of agriculture and food between 1990-94 and 2000-04 were for Argentina (jumped from 1.6 to 2.2 percent), Brazil (2.3 to 3.4 percent), Chile (0.7 to 1.2 percent) Dominican Republic (0.13 to 0.4 percent) and Mexico (1.0 to 1.5 percent) – see Sandri, Valenzuela and Anderson 2007)

seminar book by Schultz (1964) – that efficiency losses from extracting rents from agriculture were low, and that their main impact would be to reduce land rents and values. Argentina is a prime example of where the view persisted that farmers in Latin America were unresponsive to price incentives. While the belief of farmer unresponsiveness to incentive has largely disappeared now, a few countries –Argentina is one – still tax agricultural exports for fiscal revenues and to lower consumer food prices.

An empirical study of agricultural pricing policies led by Krueger, Schiff and Valdes (1991) included five Latin American countries for the period 1960-1984. Its main findings are fourfold. First, over the period examined and farm products selected, direct interventions affecting importables were positive on average while those on exportables were negative. Second, aggregating over all selected products, the net effect was negative, indicating that the direct tax on exportables dominated protection on importables. Third, the rate of indirect taxation on agriculture (due to industrial protection policy and overvaluation of the real exchange rate) was large, and dominated the rate of direct taxation. Fourth, direct price policies stabilized agricultural prices relative to world prices while indirect policies contributed little if anything to food price stability. The study found direct protection to agricultural importables averaged 13 percent, and for exportables amounted to –6 percent. The indirect taxation rate in the region averaged 21 percent, so the total taxation rate (direct and indirect) averaged 28 percent. The highest direct taxation was found in Argentina and the Dominican Republic (about 18 percent). As a percent of agricultural GDP, net income transfers out of agriculture (direct and indirect) reached 84 percent in Argentina, 56 percent in Chile, 43 percent in the Dominican Republic and 42 percent in Colombia.

Economic reforms from the mid-1980s/early 1990s

By the1980s there was disillusionment with the results of the import substitution strategy, and wider acceptance of theoretical developments regarding the causes of inflation and macroeconomic instability in general. A macroeconomic framework designed for open economies gradually displaced during the 1980s and early 1990s the closed economy approach in most Latn American countries. Governments introduced economy-wide reforms with special emphasis on macroeconomic stabilization, deregulation, unilateral trade liberalization and privatization.

The goal of the reformers was to create a better climate for productivity and private investment in all economic sectors, including agriculture. In most Latin American countries

the major change in trade policy was the partial or total removal of most quantitative restrictions on imports and exports, the elimination of export taxes, and a program of gradual reduction in the levels of import tariffs. This yielded incentives to move resources from import-competing to export-oriented sectors, including in agriculture, which enhanced competitiveness and led to greater integration with the world economy.

By the mid-1990s the exchange rate was recognized as the most important "price" affecting the agricultural economy. At the outset of the reforms, it was expected that trade liberalization and the reduction of the fiscal deficit would lead to a depreciation of the real exchange rate (Krueger, Schiff and Valdés 1988). Yet the reforms were followed by a significant appreciation of the currency associated with the opening of the capital account, greater inward foreign investment, and a major increase in domestic real interest rates. Reforms in the service sector also played a critical role. Deregulation and privatization had a major impact on the availability in the marketplace of more-reliable and lower-cost services used in agriculture such as ports, airlines and shipping transport.

The timing of reforms differed somewhat across countries. Colombia, for example, became a more open economy with export promotion from 1967, adopted a more ambitious trade liberalization in 1990 and then went into a policy reform reversal from 1992. In Chile, controlled markets during 1950 to 1974 were followed by radical economic reforms towards trade liberalization, deregulation, and privatization between 1978 and 1982 before a second phase of reforms began in 1984. Mexico introduced strong policy changes starting in the mid-1980s, before NAFTA, and involving more openness, deregulation and privatization, a reduction of credit subsidies and major changes in the role of government in marketing of farm products.

A wide variety of policy instruments have been applied to influence agricultural prices, even during the post-reform period. Colombia, for example, has had minimum support prices in addition to import tariffs, price compensation schemes, procurement agreements, a monopoly on grain imports by a government agency, export licenses and subsidies, safeguards on imports, and until 1990 all imports of inputs were subject to prior import licenses. Then tariffs and tariff surcharges associated with price bands on more than 100 products were introduced in 1995. Mexico is another leader on interventions, including in the transition from highly government-controlled markets before the mid-1980s to more market-oriented policies. Its policies include price support programs (before the mid-1980s in conjunction with state trading), credit subsidies and input subsidies, and direct income payments to farmers (ProCampo). Argentina has simpler interventions: those agricultural

exportables that are also wage goods have been subjected to export taxes, complemented in some years with export bans.

To capture the net effect of these various interventions on farmer and consumer incentives, a common methodology was adopted by the authors of the country case studies in this volume. A summary follows, and further details can be found in Anderson et al. (2008) which is reproduced as Appendix 1 in this book.

Methodology for measuring rates of assistance/taxation

The nominal rate of assistance (NRA) is defined as the percentage by which government policies have raised gross returns to producers above what they would be without the government's intervention (or lowered them, if NRA<0). If a trade measure is the sole source of government intervention, then the measured NRA will also be the consumer tax equivalent (CTE) rate at that same point in the value chain.

There are several purposes for which NRAs and CTEs can be used, and they affect the choice of methodology. This project seeks to achieve three purposes. One is to generate a comparable set of number across a wide range of countries and over a long time period, so the methodology needs to be both simple and somewhat flexible. Another purpose is to provide a single number to indicate the total extent of transfer to (or from) farmers due to agricultural policies – the NRA; and another number for the extent of transfer to (or from) consumers – the CTE. Both are expressed either as a percentage or in dollar terms. This is what the OECD's PSE and CSE do, both of which can be negative when transfers from exceed transfers to the relevant group. This research project's agricultural NRA and CTE are similar to the OECD's PSE and CSE but with some important differences outlined below. And the third purpose is to enable economic modelers to use the NRAs for individual primary and lightly processed agricultural products as producer price wedges, and the CTEs as consumer price wedges, in single-sector, multi-sector and economy-wide policy simulation models by allocating those wedges to particular policy instruments such as trade taxes or domestic subsidies.

The NRAs are based on estimates of assistance to individual industries. Great care has gone into generating the NRA for each covered agricultural industry, particularly in countries where trade costs are high, pass-through along the value chain is affected by imperfect

competition, and markets for foreign currency have been highly distorted at various times and to varying degrees in the past.

Most distortions to industries producing tradables come from trade measures, such as a tariff imposed on the cif import price or an export subsidy or tax imposed on the fob price at the country's border. Since an ad valorem tariff or export subsidy is the equivalent of a production subsidy and a consumption tax expressed as a percentage of the border price, it is that which is captured in the NRA and CTE at the point in the value chain where the product is first traded. To get the NRA for the farmer, authors of the country studies estimated or guessed the extent of pass-through back to the farm gate. Note that the NRA differs from the OECD's PSE in that the latter is expressed as a percentage of the distorted price and hence will be lower than the NRA which is expressed as a percentage of the undistorted price.

We decided against seeking estimates of the more complex effective rate of assistance (ERA) even though it is, in principle, a better partial equilibrium single measure of distortions to producer incentives than the nominal rate. The reason is that to do so requires knowing each product's value added share of output. Such data are not available for most developing countries even every few years, let alone for every year in the long time series that is the focus of this study.[3] And in most countries distortions to farm inputs are very small compared with distortions to farm output prices. But where there are significant product-specific distortions to input costs, they are captured by estimating their equivalence in terms of a higher output price and including that in the NRA for individual agricultural industries wherever data allow. Any non-product-specific distortions to farm input prices are also added into the estimate for the overall sectoral NRA for agriculture as a whole.

The targeted degree of coverage of products for which agricultural NRA estimates are generated was 70 percent, based on the gross value of farm production at undistorted prices. This degree of coverage is similar to the OECD's PSE coverage. Unlike the OECD, however, this project did not assume that the nominal assistance for covered products would apply equally to non-covered farm products. This is because in developing countries the agricultural policies affecting the non-covered products are often very different from those for covered products. For example, nontradables among non-covered farm goods (often highly perishable or low-valued products relative to their transport cost) are often not subject to direct distortionary policies. The authors of the country case studies were asked to provide three sets of 'guesstimates' of the NRAs for non-covered farm products, one each for the

[3] The longest time series we know of is for agricultural ERAs for eight Latin American countries for the years 1985 to 1995, reported in Valdés (1996).

import-competing, exportable and nontradable sub-sectors. A weighted average for all agricultural products is then generated, using the gross values of production at unassisted prices as weights. For countries that also provide non-product-specific agricultural subsidies or taxes (assumed to be shared on a pro-rata basis between tradables and nontradables), such net subsidies are then added to product-specific assistance to get a NRA for total agriculture, and also for tradable agriculture for use in generating the Relative Rate of Assistance (RRA, defined below).

How best to present regional aggregate NRA and RRA estimates depends on the purpose for which the averages are required. We generate a weighted average *NRA* for covered products for each country, because only then can we add the *NRA* for non-covered products to get the *NRA* for all agriculture. When it comes to averaging across countries, each polity is an observation of interest, so a simple average is meaningful for the purpose of political economy analysis. But if one wants a sense of how distorted is agriculture in a whole region, a weighted average is needed. The weighted average *NRA* for covered primary agriculture can be generated by multiplying each primary industry's share of the gross value of production (valued at the farm-gate equivalent undistorted prices) by its corresponding *NRA* and adding across industries.[4] The overall sectoral rate, which we denote *NRAag* , can be obtained by adding also the actual or assumed information for the non-covered farm commodities and, where it exists, the aggregate value of non-product-specific assistance to agriculture.

A weighted average can be similarly generated for the tradables part of agriculture – including those industries producing products such as milk and sugar that require only light processing before they can be traded – by assuming that its share of non-product-specific assistance equals its weight in the total. Call that $NRAag^t$.

In addition to the mean, it is important to provide also a measure of the dispersion or variability of the NRA estimates across the covered products. The cost of government policy distortions to incentives in terms of resource misallocation tend to be greater the greater the degree of substitution in production (Lloyd 1974). In the case of agriculture which involves the use of farm land that is sector-specific but transferable among farm activities, the greater

[4] Corden (1971) proposed that free-trade volume be used as weights, but since they are not observable (and an economy-wide model is needed to estimate them) the common practice is to compromise by using actual distorted volumes but undistorted unit values or, equivalently, distorted values divided by (1+ *NRA*). If estimates of own-and cross-price elasticities of demand and supply are available, a partial equilibrium estimate of the quantity at undistorted could be generated, but if those estimated elasticities are unreliable this may introduce more error than it seeks to correct.

the variation of *NRAs* across industries within the sector then the higher will be the welfare cost of those market interventions. A simple indicator of dispersion is the standard deviation of the covered industries' *NRAs* .

Each industry is classified either as import-competing, or a producer of exportables, or as producing a nontradable (with its status sometimes changing over the years), so that it is possible to generate for each year the weighted average NRAs for the two different groups of tradables. Those NRAs are used to generate a trade bias index, TBI, defined in percentage terms as:

(2) $$TBI = 100[(1+NRAag_x/100)/(1+NRAag_m/100) - 1]$$

where $NRAag_m$ and $NRAag_x$ are the average percentage NRAs for the import-competing and exportables parts of the agricultural sector. The TBI indicates in a single number the extent to which the typically anti-trade bias (negative TBI) in agricultural policies changes over time.

Farmers are affected not just by prices of their own outputs but also, albeit indirectly via changes to factor market prices and the exchange rate, by the incentives nonagricultural producers face. That is, it is *relative* prices and hence *relative* rates of government assistance that affect producer incentives. More than seventy years ago Lerner (1936) provided his Symmetry Theorem that proved that in a two-sector economy, an import tax has a similar effect on the export sector as an export tax. This carries over to a model that also includes a third sector producing only nontradables, to a model with imperfect competition, and regardless of the economy's size (Vousden 1990, pp. 46-47). If one assumes that there are no distortions in the markets for nontradables and that the value shares of agricultural and non-agricultural nontradable products remain constant, then the economy-wide effect of distortions to agricultural incentives can be captured by the extent to which the tradable parts of agricultural production are assisted or taxed relative to producers of other tradables. By generating estimates of the average NRA for non-agricultural tradables, it is then possible to calculate a Relative Rate of Assistance, RRA, defined in percentage terms as:

(1) $$RRA = 100[(1+NRAag^t/100)/(1+NRAnonag^t/100) - 1]$$

where $NRAag^t$ and $NRAnonag^t$ are the weighted average percentage NRAs for the tradable parts of the agricultural and non-agricultural sectors, respectively. Since the NRA cannot be less than -100 percent if producers are to earn anything, neither can the RRA. And if both of those sectors are equally assisted, the RRA is zero. This measure is useful in that if it is below (above) zero, it provides an internationally comparable indication of the extent to which a country's policy regime has an anti- (pro-)agricultural bias.

In calculating the NRA for producers of agricultural and non-agricultural tradables, the methodology outlined in Appendix 1 sought to include distortions generated by dual or multiple exchange rates. Such direct interventions in the market for foreign currency were common in Latin America in the 1970s and 1980s, but not since the reforms. However, most authors of the focus country studies had difficulty finding an appropriate estimate of the extent of that distortion, so the impact of that on NRAs has not been included for all but Dominican Republic, Ecuador and Nicaragua. Its exclusion for the other five countries means their estimated (typically) positive NRAs for importables and (typically) negative NRAs for exportables are smaller than they should be. In cases where the NRA for importables dominates that for exportables, this omission would lead to an underestimate of the average (positive) NRA for such tradables sectors. That applies to non-agricultural sectors for all the countries studied in this book. In the most common cases in earlier decedes where for the farm sector the estimated NRA for importables is dominated by a negative NRA for exportables, the estimate of the sectoral average NRA for agriculture would be less negative than it should be, and hence so too would be the RRA estimate.[5]

To obtain dollar values of farmer assistance and consumer taxation, Valenzuela, Croser and Anderson (2008) 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 current US dollars of the direct gross subsidy equivalent of assistance to farmers (*GSE*). This is then added up across products for a country and across countries for any or all products to get regional aggregate transfer estimates for the studied countries. An aggregate estimate for the rest of the region is obtained assuming the weighted average *NRA* for non-studied countries is the same as the weighted average *NRA* for the studied countries, and that the non-studied countries' share of the region's gross value of farm production at undistorted prices each year is the same as its share of the region's agricultural GDP measured at distorted prices. These *GSE* values are also expressed on per-farm-worker basis.

To obtain comparable dollar value estimates of the consumer transfer, the *CTE* estimate at the point at which a product is first traded is multiplied by consumption (obtained from the FAO's supply and utilization database) valued at undistorted prices to obtain an estimate in current US dollars of the tax equivalent to consumers of primary farm products

[5] Other reasons for exchange rate misalignment are discussed in some country studies, but they are not quantified. Several country studies document the high instability of real exchange rates, which have important influences on the relative profitability of tradables versus nontradable products. Furthermore in some countries, Brazil in particular, high instability of the nominal exchange rate, due to short-term speculative trading and political uncertainties, can influence producer incentives but, for the purposes of this project and the reasons given in Appendix 1, they are not considered to be policy distortions.

(*TEC*). This too is added up across products for a country, and across countries for any or all products, to get regional aggregate transfer estimates for the studied countries. These *TEC* values are also expressed on per capita basis.

Estimates of Latin American policy indicators

We begin with the nominal rates of assistance to agriculture, then compare that with the nominal rate for non-agriculture, and then express it in terms of dollar equivalents of assistance/taxation to farmers and of taxation or subsidy to food consumers.

Nominal rates of assistance to agriculture

On average (whether simple or weighted), agricultural price and trade policies in Latin America reduced farmers earnings throughout the post-war period right through to the 1980s. The extent (when expressed as a nominal tax equivalent) peaked at more than 20 percent in the 1970s, but was still close to 10 percent in the latter 1980s. The only countries in our sample that received positive assistance from farm policies during that period were Chile and (at least from the late 1970s but only to a minor extent) Mexico. Each of Argentina, Brazil, Dominican Republic and Ecuador had negative rates of assistance that averaged well above 20 percent for at least one 5-year sub-period, and apart from Dominican Republic each had a negative NRA average even for the 1990s, as did Nicaragua. However, by the mid-1990s Brazil and Dominican Republic had joined Chile and Colombia in having a positive NRA average. Meanwhile, Mexico had raised its assistance considerably before engaging in reform following negotiations to join the WTO and NAFTA; and Argentina had all but eliminated its discrimination against its exporters in the 1990s, only to reinstate explicit export taxes again from late 2001 when it abandoned its fixed exchange rate with the US dollar and nominally devalued by two-thirds. The average NRAag for the region in the 1990s and first half of the present decade averaged just under 5 percent (Table 1.9). Its switch from negative to positive occurred in 1992 (Appendix 2, Table A2.9b).

The effect of the policy reforms on NRAs over the past two decades is illustrated in Figure 1.1: for all but Chile the national average NRA is less negative or more positive in 2000-04 than in 1980-84. This is true too for the majority of the commodity NRAs for the

region, although there are several (e.g., milk and poultry) that have seen their assistance cut. That pattern can be seen from Figure 1.2, which also illustrates the diversity of the region's average rates across commodities.

There is also a great deal of diversity across commodities *within* each country's farm sector, and the extent of that diversity (as measured by the standard deviation) has diminished on average by only about one-quarter during 1990-2004 compared with the pre-reform period of 1965-89. This is evident in Table 1.10, which reports the standard deviation of NRAs for covered products (which account for more than two-thirds of the value of agricultural production). It means that there is still a great deal that could be gained in terms of improved resource reallocation within the agricultural sector if differences in rates of assistance for different industries were to be reduced.

One striking feature of the distortion pattern within the farm sector is its strong anti-trade bias. This is shown for agriculture's import-competing and export sub-sectors for the region in Figure 1.3 and for each country in Table 1.12 along with the trade bias index. Those estimates reveal that there has been little dimunition in that bias over the past four decades except in Brazil. Indeed the average NRA for exportable farm products has been negative throughout virtually the whole period analyzed for all but Chile (and Brazil in the past decade and Colombia this present decade), while the regional average NRA for import-competing farm industries has increased from virtually zero in the 1970s to20+ percent in the period since 1990. That is, the region's anti-trade bias persists despite the lower taxation of farm export industries because the average NRA for import-competing farm products has been rising in recent times for several of our studied countries (Table 1.12).

The contributions to the overall NRA for agriculture from covered products, from non-covered products, and from non-product-specific assistance for the region as a whole are summarized in Table 1.11. Non-product-specific assistance added only one or two percentage points during the past four decades. Input price distortions also contributed little on average to the overall regional NRA for agriculture, reducing its negative value slightly in the 1980s and adding slightly to its positive value during the past decade or so (Figure 1.4). Chile was a case where input distortions reduced the positive NRA for the farm sector, due to protection policies raising the price of imported or import-competing farm inputs. That has also been the case in Argentina since the early 1990s, and to a smaller extent in Colombia since the 1960s. There is also very little in the way of domestic producer subsidies/taxes on average in the region, the main exception being positive support measures in Mexico and slightly negative ones in Argentina (Table 1.13).

The dollar value of the positive or negative assistance to farmers due to agricultural price and trade policies has been non-trivial. The anti-agricultural bias peaked for the region in the 1980s and more than US$10 billion per year in current dollar terms (and hence much more than that in 2008 dollars), assuming non-studied Latin American countries had the same NRAs as the studied countries other than Mexico (see bottom row of Table 1.14). That is equivalent to a gross tax of around $250 for each person engaged in agriculture. Nearly two-thirds of that $10 billion was due to Brazil's policies. Thanks to the reforms of the past two decades, such taxation has gradually disappeared in all all studied countries except Argentina and Nicaragua. But the reform does not mean there is no intervention now. Rather, the old policy has been replaced by positive assistance to farmers in those six countries, averaging almost $6 billion per year or around $150 per farm worker over the past decade. That $150 is small compared with per capita income for the region (about 4 percent), but it ranges from more than $500 for Colombia (one-quarter of its per capita GDP in 2000-04) to -$1700 for Argentina (minus one-third of its per capita GDP). The extent of that dramatic transformation for the region as a whole over the past two decades is illustrated in Figure 1.5 for the individual countries and in Figure 1.6 for key products. The latter reveals that, as for most other regions of the world, the lion's share of assistance goes to the rice pudding ingredients (milk, sugar and rice itself).

Assistance to non-farm sectors and relative rates of assistance

The anti-agricultural policy biases of the past were due not just to agricultural policies. Also important to changes in incentives afffecting inter-sectorally mobile resources have been the significant reduction in border protection to the manufacturing sector and its indirect impact on reducing the price of nontradables since the initiation of the reforms, together with the deregulation and privatization of services. The reduction in assistance to non-farm tradable sectors has been as much responsible for the expansion of agricultural exports since the early 1990s as the reduction in direct taxation of those agricultural exports.

Quantifying that distortion to non-farm tradable sectors has not been able to be done as carefully as that for agriculture. Authors have had to rely on applied trade taxes (for exports as well as imports) rather than be able to undertake price comparisons, and hence they do not capture the quantitative restrictions on trade which were important in earlier

decades but decreasingly so through recent times.[6] Nor do they capture distortions in the services sectors, many 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 – and likewise for non-farm exportables, except their NRAs in most cases would have been negative. Of those two elements of under-estimation, the former bias probably dominated, 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 so that its decline is less rapid than it should be.[7]

Despite these methodological limitations, the estimated NRAs for non-farm tradables are very sizeable prior to the 1990s. For Latin America as a whole, their average value has steadily declined throughout the past four decades as policy reforms have spread. This has therefore contributed to a decline in the estimated relative rate of assistance for farmers: the RRA has fallen from more than -30 percent in the 1970s to an average of less than -1 percent in 2000-04 (Table 1.11), and it appears in Figure 1.7 to be as much due to falling positive NRAs for non-farm producers as it is to falling negative NRAs for farmers. The striking extent of the change in RRAs for individual countries over the past two decades is evident in Figure 1.8, particularly for Brazil and Dominican Republic (virtual disappearance of negative RRAs) and for Colombia (a switch from negative to positive RRA). The four-decade trend in RRAs for each country is summarized in Table 1.16.

Comparisons with other regions

The regional upward shift in agricultural NRAs and the RRAs towards zero and even the move to a positive NRA in the past decade are not unique to Latin America. Figure 1.9 shows that even steeper trends have resulted from policy reforms in other developing country regions over the past four decades, suggesting that similar political economy trends might be at work as economies develop. This is despite the fact that farm-nonfarm houeshold income inequality is very different in Latin America than in the rest of the world (Figure 1.10). In the

[6] Also ignored are distortions to the prices of inputs into non-farm goods production, again in contrast to their treatment in estimating agricultural NRAs.

[7] 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 only in the studies for Dominican Republic, Ecuador and Nicaragua, and those economies are too small for their inclusion to affect noticeably the weighted average NRAs and RRAs for the region as a whole. Their impact was greatest in Ecuador, where it made the RRA more negative to the extent of about 2 percenatage points in the 1970s, 6 percentage points in the 1980s and 3 points in the 1990s (see Table 7.5 in Chapter 7 of this volume).

past it has been found that agricultural NRAs and RRAs are positively correlated with per capita income and agricultural comparative disadvantage (Anderson 1995). A glance at Table 1.17 suggests that Latin American countries have been – and continue to be – contributors to that trend. This is confirmed statistically in the simple regressions with country fixed effects shown in Figure 1.11 (apart from RRA and agricultural comparative advantage), and with the multiple regressions with country and time fixed effects shown in Table 1.18.

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 therefore attempt only to ask how much impact policies have on the buyer's price at the level where the farm product is first traded internationally and hence where price comparisons are made (e.g., as wheat, or raw sugar, or beef). And to obtain weights to make it possible to sum up across commodities and countries we calculate the volume of apparent consumption simply as production plus net imports and then value it at undistorted prices.

If there were no farm input distortions and no domestic output price distortions such that the NRA was entirely the result of border measures such as an import or export tax, then the CTE would equal the NRA for each covered product. Since those former distortions are relatively minor in Latin America, and the NRA tends to be positive for import-competing products and negative until recently for exportables, then so too is the CTE. This is evident in the CTE estimates summarized in Tables 1.19. The weighted average CTE for the region is thus negative for most of the period, averaging around -15 percent until the 1990s and marginally above zero thereafter. The variance across products is somewhat less now than before the reforms of the past two decades, but still considerable.

In proportional terms the current transfers from consumers are largest in Colombia and Ecuador, but in dollar terms they are also large in Mexico. At its peak in the 1980s, the transfer from producers to consumers in the region amounted to $7 billion per year at the producer level for products covered in this project, whereas in the present decade the transfer on average is from consumers to producers and amounts to around $3 billion per year (Table 1.20). Among the covered products, the biggest transfers are for milk, poultry, sugar and rice.

But even taking into account assistance to non-covered products,[8] the total transfer from consumers would amount to less than $15 per capita in recent years.

Summary: What have we learned?

The most salient feature of price and trade policies in the Latin American region since the 1960s is the major economic reforms during the latter 1980s/early 1990s in most countries, including significant trade liberalization. Overall levels of non-agricultural protection have declined considerably, most significantly for the industrial sector, and there have been reforms in the service sector (deregulation and privatization). Both changes have worked to improve the competitiveness of the agricultural sector.

More specifically, the following features of the Latin American experience of the past 40+ years are worth highlighting by way of summarizing the key findings of this regional study.

Since the 1970s the region has seen a gradual movement away from taxing farmers relative to non-agricultural producers and the emergence of positive assistance for agriculture from the early 1990s. The gradual fall in the estimated (negative) relative rate of assistance for the region, from as much as -40 percent in the early 1970s to less than -2 percent in the past decade, has been not dissimilar to the trends in Africa and Asia but is nonetheless dramatic. Instead of being efffectively taxed more than $10 billion per year as in the 1980s (or $250 per person working in agriculture), farmers in the region now enjoy support worth more than $5 billion per year or nearly $150 per person employed on farms. An exception is Argentina, where there was a policy reform reversal back to direct export taxation in late 2001 – but that has to be seen in the context of the massive devaluation at that time as the country abandoned its fixed parity with the US dollar. Thanks to that devaluation, Argentina continued to contribute to the rapid growth of Latin America's share of global exports of farm products that was stimulated by the gradual elimination of anti-agricultural policies.

The dispersion across Latin American countries in nominal and relative rates of assistance to farmers has not diminished much despite the reforms in all countries. This result means there is still lots of scope for reducing distortions in the region's use of resources

[8] Since the coverage ratio is around two-thirds of production (see final row of Table 1.10), and the 'guesstimated' distortion for non-covered products is less than for covered products (row 2 of Table 1.11), the value of consumer transfers for non-covered products would add considerably less than half (so less than $2 billion) to the $3.6 billion p.a. of recent years.

in agriculture. That finding also suggests there are political economy forces at work in each country that do not change greatly relative to other countries over time. In particular, the econometric results reported above suggest the NRAag and RRA tend to rise with per capita income and to be higher the lower a country's agricultural comparative advantage.

The dispersion in nominal rates of assistance to farmers within each studied Latin American country also has not diminished much. This result means there is still scope for reducing distortions in resource use within agriculture even in countries with an average NRAag and RRA close to zero. As in other regions, the products in Latin America with the highest rates of distortion and gross subsidy equivalent values are rice, sugar and milk.

In particular, the strong anti-trade bias in assistance rates within the farm sector remains in place. In the 1970s the NRA for import-competing farm industries averaged close to zero in the region. But since then it has increased to an average of around 20 percent, while the NRA for agricultural exportables has only become less negative. The fact that the average NRAs for import-competing and exportable agricultural industries have risen almost in parallel means that the trade bias index has not fallen much. 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 – that total factor productivity growth in agriculture is slower than it would be if remaining interventions were removed.

The most important instruments of farm assistance/taxation continue to be trade-restrictive measures. Domestic taxes and subsidies on farm inputs and outputs, and non-product-specific assistance, have made only minor contributions to the estimates of NRAs for Latin America.

Because agricultural taxation or assistance is mostly due to trade measures, movements in the consumer tax equivalent closely replicate changes in farm support/taxation -- which means that before the reforms food prices were kept artificially low but in recent years they have been above international levels on average. It also means there is considerable variation in consumer tax equivalents across products and across countries in the region. They are highest for milk, rice and sugar but are negative on average for maize, beef and soybean. The current level of taxation of food consumers for the region as a whole is small though, amounting to less than $15 per capita per year.

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 economywide reform programs and not just due to farm policy reforms.

Poverty and policy implications

The assistance trends provided in this chapter are in one sense encouraging for economic policy advisors: the long period of import-substituting industrialization and of taxes on primary exports, that so heavily discriminated against the agricultural sector in Latin America, has largely been relegated to history. However, as the above summary of our findings makes clear, that does not mean there are no longer policies that are distorting agricultural incentives. And if Latin America were to follow the policy path chosen by more-advanced economies, involving increasing agricultural assistance as per capita income rises, there may be even more in the future. This suggests vigilance will still be needed by economic policy advisors in the years to come. Meanwhile, the opposite policy problem remains in Argentina, where explicit export taxation was re-introduced in late 2001 and has been increased a number of times since then.

Neither taxes on agricultural imports to reduce import competition for poor farmers, nor taxes on agricultural exports to lower the cost of food for the urban poor, is the most efficient way to reduce poverty (Winters, McCulloch and McKay 2004). Poverty alleviating objectives are laudible, but trade policy instruments are almost never the first-best way to achieve them. On the contrary, food trade taxes may even worsen poverty, depending on the earning and spending patterns of poor households and on the alternative tax-raising instruments available. Far more preferable would be microeconomic reforms to mitigate deep-seated structural problems affecting the competitiveness of factor and goods markets. This is because the reforms have accentuated differences between commercially oriented farmers and those less prepared to take advantage of the economic liberalization. Nor have there been policies in place to mitigate the human costs of economic adjustment and the aggravation of rural poverty (Spoor 2000; Valdés and Foster 2003). The challenge for the years ahead is to develop more-efficient ways to address these policy concerns so that the process of reducing remaining distortions to agricultural versus non-agricultural incentives can be completed.

References

Anderson, K. (ed.) (2008), *Distortions to Agricultural Incentives: A Global Perspective*, London: Palgrave Macmillan and Washington DC: World Bank (forthcoming).

Anderson, K., M. Kurzweil, W. Martin, D. Sandri and E. Valenzuela (2008), "Methodology for Measuring Distortions to Agricultural Incentives", Agricultural Distortions Working Paper 02, World Bank, Washington DC, revised January. Posted at www.worldbank.org/agdistortions and reproduced as Appendix 1 to this volume.

Anderson, K. and W. Martin (eds.) (2008), *Distortions to Agricultural Incentives in Asia*, Washington DC: World Bank (forthcoming).

Anderson, K. and W. Masters (eds.) (2008), *Distortions to Agricultural Incentives in Africa*, Washington DC: World Bank (forthcoming).

Anderson, K. and J. Swinnen (eds.) (2008), *Distortions to Agricultural Incentives in Europe's Transition Economics*, Washington DC: World Bank (forthcoming).

Bussolo, M., R. De Hoyes and D. Medledev (2008), "Policy Impacts on Global Income Distribution, Inequality and Poverty Using Microsimulation with the Linkage Model", in K. Anderson (ed.), *Distortions to Agricultural Incentives: A Global Perspective*, London: Palgrave Macmillan and Washington DC: World Bank (forthcoming).

Corden, W.M. (1971), *The Theory of Protection*, Oxford: Clarendon Press.

de Ferranti, D., G. Perry, W. Foster, D. Lederman and A. Valdés (2005), *Beyond the City: The Rural Contribution to Development*, Washington DC: World Bank.

Krueger, A.O., M. Schiff and A. Valdés (1988), "Measuring the Impact of Sector-specific and Economy-wide Policies on Agricultural Incentives in LDCs", *World Bank Economic Review* 2(3): 255-272.

Krueger, A., M. Schiff and A. Valdés (1991), *The Political Economy of Agricultural Pricing Policy*, Volume 1: *Latin America*, Baltimore: Johns Hopkins University Press for the World Bank.

Lerner, A. (1936), 'The Symmetry Between Import and Export Taxes', *Economica* 3(11): 306-13, August.

Lloyd, P.J. (1974), 'A More General Theory of Price Distortions in an Open Economy', *Journal of International Economics* 4(4): 365-86, November.

Prebisch, R. (1950), "The Economic Development of Latin America and its Principal Problems", *Economic Bullitin for Latin America* 7.

Prebisch, R. (1959), "Commercial Policy in Underdeveloped Countries", *American Economic Review* 49(2), May.

Prebisch, R. (1964), *Towards a New Trade Policy for Development*, New York: United Nations.

Quiroz, J. and L. Opazo (2000), "The Krueger-Schiff-Valdes Study Ten Years Later: A Latin American Perspective", *Economic Development and Cultural Change* 49 (1): 181–96.

Sandri, D., E. Valenzuela and K. Anderson (2007), "Economic and Trade Indicators for Latin American" Agricultural Distortions Working Paper 19, World Bank, Washington DC, December. Posted at www.worldbank.org/agdistortions

Schultz, T.W. (1964), *Transforming Traditional Agriculture*, New Haven: Yale University Press.

Spoor, M. (2000), "Two Decades of Adjustment and Agricultural Development in Latin America and the Caribbean", Serie Desarrollo Productivo, Santiago de Chile: Comisión Económica para América Latina y el Caribe, November.

Valdés, A. (1996), "Surveillance of Agricultural Price and Trade Policy in Latin America during Major Policy Reforms", World Bank Discussion Paper #349, Washington DC.

Valdés, A. and W. Foster (2007), "The Breadth of Policy Reforms and the Potential Gains from Agricultural Trade Liberalization: An Ex Post Look at Three Latin American Countries", Ch. 10 in A. McCalla and J. Nash (eds.), *Reforming Agricultural Trade for Developing Countries, Vol. 1*, Washington DC: World Bank.

Valenzuela, E., J. Croser and K. Anderson (2008), "Annual Estimates of latin American Distortions to Agricutural Incentives", Appendix 2 to this volume.

Vousden, N. (1990), *The Economics of Trade Protection*, Cambridge: Cambridge University Press.

Winters, L.A., N. McCulloch and A., McKay (2004), 'Trade Liberalization and Poverty: The Empirical Evidence', *Journal of Economic Literature* 62(1): 72-115, March.

World Bank (2001), *Latin America and the Caribbean Region Action Plan for Rural Development*, Report Summary, Washington DC: World Bank.

World Bank (2007), *World Development Report: Agriculture for Development*, Washington DC: World Bank.

Table 1.1: Key economic and trade indicators, Latin America countries, 2000-04

	Share (%) of world:			National rel. to world (world=100)			Agric trade special-ization index[b]	Pov-erty incid-ence[c]	Gini index for per capita income[d]
	Pop'n	Total GDP	Agric GDP	GDP per capita	Ag land per capita	RCA[a] ag & food			
LA studied countries	**6.49**	**4.49**	**7.73**	**69**	**178**	**219**	**0.42**	**7**	**52**
Argentina	0.61	0.54	1.04	89	426	541	0.85	5	51
Brazil	2.88	1.54	3.38	54	184	355	0.66	8	57
Chile	0.25	0.22	0.24	86	120	386	0.63	2	55
Colombia	0.70	0.24	0.77	35	132	264	0.25	7	59
Dominican Republic	0.14	0.06	0.18	41	54	474	0.29	3	52
Ecuador	0.20	0.07	0.16	33	80	487	0.59	16	44
Mexico	1.62	1.82	1.89	112	133	64	-0.17	7	46
Nicaragua	0.08	0.01	0.06	14	169	952	0.26	44	43
Other LA countries	**1.84**	**0.84**	**2.05**	**46**	**148**	**na**	**na**	**na**	**na**
Caribbean	0.20	0.07	0.13	36	23	na	na	na	na
Central America	0.52	0.21	0.78	41	55	504	0.26	na	na
South America	1.12	0.56	1.13	50	213	157	0.16	13	na
All LA	**8.33**	**5.33**	**9.78**	**64**	**171**	**na**	**na**	**na**	**na**

[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 Gini index are for the most recent year available between 2000 and 2004, except for Ecuador where they refer to 1998. The weighted averages for the studied countries use population as the basis for weights.

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

Table 1.2: Growth of real GDP, Latin America countries, 1980 to 2004

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

	Agriculture	Industry	Services	Total GDP	*GDP per capita*
LA Studied					
Countries	**3.1**	**4.0**	**7.0**	**5.7**	***3.9***
Argentina	3.8	2.8	6.1	4.8	*3.5*
Brazil	3.5	3.1	6.2	5.0	*3.2*
Chile	4.1	6.9	7.6	7.2	*5.5*
Colombia	2.7	4.0	6.8	5.4	*3.4*
Dominican Rep.	3.3	6.7	5.7	5.6	*3.8*
Ecuador	2.4	2.0	5.8	4.1	*2.0*
Mexico	2.4	5.3	7.7	6.7	*4.8*
Nicaragua	1.1	1.7	4.0	2.7	*0.4*
Other LA					
Countries	**na**	**na**	**na**	**4.2**	***2.1***
Caribbean	na	na	na	3.5	*2.1*
Central America	3.5	6.8	6.9	6.3	*3.9*
South America	4.4	5.0	7.1	3.7	*1.6*
All LA	**na**	**na**	**na**	**5.4**	***3.6***

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

Table 1.3: Sectoral shares of GDP, Latin America countries, 1965 to 2004

(percent)

	Agriculture				Industry				Services			
	65-69	75-79	85-89	00-04	65-69	75-79	85-89	00-04	65-69	75-79	85-89	00-04
LA Studied Countries	**13**	**11**	**9**	**6**	**35**	**36**	**37**	**28**	**53**	**53**	**54**	**66**
Argentina	10	8	8	7	48	48	39	28	42	45	53	65
Brazil	13	11	9	8	30	35	40	32	57	54	51	61
Chile	8	8	8	4	40	37	38	37	53	55	53	59
Colombia	28	23	17	11	27	30	36	26	45	47	47	63
Domin Rep	21	19	14	11	25	30	24	31	53	50	61	57
Ecuador	26	16	15	8	23	37	37	30	51	47	48	61
Mexico	12	10	8	4	27	31	31	24	62	59	61	72
Nicaragua	24	24	26	17	24	28	28	26	52	48	46	56
Other LA Countries	**na**	**na**	**na**	**9**	**na**	**na**	**na**	**33**	**na**	**na**	**na**	**58**
Caribbean	na	na	na	7	na	na	na	32	na	na	na	61
Central America	na	na	20	13	na	na	22	23	na	na	59	64
South America	na	9	9	7	na	41	42	37	na	50	50	56
All LA	**na**	**na**	**na**	**6**	**na**	**na**	**na**	**29**	**na**	**na**	**na**	**65**

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

Table 1.4: Agriculture's shares of employment, Latin America countries, 1965 to 2004 (percent)

	1965-69	1975-79	1985-89	2000-04
LA Studied Countries	**44**	**36**	**27**	**17**
Argentina	17	14	12	9
Brazil	50	40	27	16
Chile	26	22	19	15
Colombia	47	42	31	20
Dominican Republic	52	37	27	16
Ecuador	54	43	35	25
Mexico	47	39	30	21
Nicaragua	55	43	32	19
Other LA Countries	**49**	**42**	**35**	**28**
Caribbean	61	55	51	44
Central America	59	50	42	32
South America	41	34	29	23
All LA	**45**	**37**	**29**	**19**

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

Table 1.5: Sectoral shares of merchandise exports, Latin America countries, 1965 to 2004 (percent)

	Agriculture and processed food				Other primary				Other goods			
	65-69	75-79	85-89	00-04	65-69	75-79	85-89	00-04	65-69	75-79	85-89	00-04
LA Studied Countries	**na**	**55**	**32**	**20**	**na**	**20**	**29**	**17**	**na**	**24**	**38**	**63**
Argentina	90	74	65	48	1	1	5	20	9	25	29	30
Brazil	83	57	35	32	8	12	14	13	9	30	50	54
Chile	8	21	34	34	89	69	56	48	4	10	9	16
Colombia	77	75	54	24	15	5	25	40	8	19	20	37
Domin Rep	na	76	48	42	na	3	0	18	na	20	51	34
Ecuador	97	44	48	43	1	54	50	46	2	2	2	10
Mexico	58	35	14	6	22	39	46	11	20	26	40	83
Nicaragua	87	83	89	85	4	1	1	2	8	16	9	12
Other LA Countries	**na**	**21**	**25**	**na**	**na**	**na**	**na**	**na**	**na**	**10**	**17**	**na**
Caribbean	na	12	14	na	na	na	na	na	na	21	40	na
Central America	78	75	77	45	5	4	3	5	17	20	19	50
South America	na	10	14	14	na	85	74	71	na	5	12	15
All LA	**na**	**42**	**31**	**na**	**na**	**na**	**na**	**na**	**na**	**18**	**33**	**na**

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

Table 1.6: Indexes of comparative advantage in agriculture and processed food,[a] Latin America countries, 1965 to 2004

(a) Revealed comparative advantage index,[a] world = 1.0

	1965-69	1975-79	1985-89	1995-99	2000-04
LA Studied Countries	**na**	**2.8**	**2.2**	**2.2**	**2.2**
Argentina	3.5	3.8	4.4	4.9	5.4
Brazil	3.3	2.9	2.4	3.2	3.6
Chile	0.3	1.1	2.3	3.4	3.9
Colombia	3.0	3.9	3.6	3.2	2.6
Dominican Republic	na	3.9	3.2	1.2	4.7
Ecuador	3.8	2.3	3.2	5.5	4.9
Mexico	2.3	1.8	0.9	0.7	0.6
Nicaragua	3.4	4.3	6.1	7.4	9.5
Other LA Countries	**na**	**1.1**	**1.7**	**2.5**	**na**
Caribbean	na	0.6	0.9	1.5	na
Central America	3.1	3.8	5.2	5.4	5.0
South America	na	0.5	1.0	1.6	1.6
All Latin America	**na**	**2.1**	**2.1**	**2.2**	**2.2**

(b) Trade specialization index,[b] world = 0.0

	1965-69	1975-79	1985-89	2000-04
LA Studied Countries	**na**	**0.6**	**0.5**	**0.4**
Argentina	0.7	0.8	0.9	0.9
Brazil	0.6	0.6	0.7	0.7
Chile	-0.5	0.0	0.7	0.6
Colombia	0.7	0.7	0.7	0.3
Dominican Republic	na	0.5	0.5	0.3
Ecuador	0.7	0.7	0.7	0.6
Mexico	0.6	0.2	-0.1	-0.2
Nicaragua	0.7	0.8	0.4	0.3
Other LA Countries	**na**	**0.2**	**na**	**na**
Caribbean	na	-0.2	na	na
Central America	0.6	0.7	0.6	0.3
South America	na	-0.2	0.0	0.2
All Latin America	**na**	**0.5**	**na**	**na**

[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.*

Table 1.7: Exports of goods and services as a share of GDP, Latin America countries, 1975 to 2004

(percent)

	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
LA studied countries	**12**	**13**	**14**	**13**	**16**	**22**
Argentina	12	12	10	8	10	18
Brazil	7	10	10	9	8	15
Chile	22	20	32	30	28	35
Colombia	16	12	16	17	13	18
Dominican Republic	21	20	43	48	46	45
Ecuador	24	23	28	27	25	28
Mexico	11	15	20	16	31	29
Nicaragua	35	19	12	21	20	21
Other LA Countries	**27**	**25**	**24**	**25**	**24**	**26**
Caribbean	52	44	37	42	42	42
Central America	32	24	23	25	28	28
South America	24	23	22	23	20	24
All Latin America	**15**	**15**	**15**	**14**	**17**	**23**

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

Table 1.8: Export orientation, import dependence and self-sufficiency in primary agricultural production, Latin America countries, 1965 to 2004

(percent at undistorted prices)

(a) Exports as share of production

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
LA studied countries[c]	**28**	**27**	**24**	**17**	**17**	**16**	**22**	**27**
Argentina	33	22	28	27	28	27	28	28
Brazil[a]	35	40	23	11	12	11	18	26
Chile	1	1	5	23	16	13	13	18
Colombia	21	21	26	25	27	17	18	16
Dominican Rep.	33	35	42	56	22	16	13	9
Ecuador[a]	35	33	30	49	35	35	39	34
Mexico[b]	na	na	na	11	15	16	27	31
Nicaragua	na	na	na	na	na	10	15	14

(b) Imports as share of apparent consumption

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
LA studied countries[c]	**4**	**4**	**5**	**7**	**6**	**10**	**12**	**16**
Argentina	1	1	0	0	0	1	2	1
Brazil[a]	8	7	6	5	3	4	6	5
Chile	7	14	15	13	3	5	7	6
Colombia	2	2	2	3	3	3	6	10
Dominican Rep.	1	1	1	0	1	2	2	1
Ecuador[a]	0	0	1	2	2	2	4	2
Mexico[b]	na	na	na	15	15	25	31	39
Nicaragua	na	na	na	na	na	4	2	2

(c) Self-sufficiency ratio

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
LA studied countries[c]	**133**	**132**	**126**	**110**	**113**	**107**	**112**	**114**
Argentina	152	127	140	142	145	136	136	138
Brazil[a]	142	161	122	109	110	107	114	130
Chile	93	87	89	95	115	109	107	115
Colombia	124	124	134	130	136	117	114	108
Dominican Rep.	149	152	173	143	126	117	113	108
Ecuador[a]	152	150	143	132	153	151	157	148
Mexico[b]	na	na	106	94	99	90	95	89
Nicaragua	na	na	na	na	na	107	115	115

[a] 1965-69 is 1966-69

[b] 1980-84 is 1979-84

[c] Excluding Mexico pre-1979 and Nicaragua pre-1990

Source: Compiled using the project's estimates of total agricultural production valued at undistorted prices and the FAO's total agricultural trade value data

Table 1.9: Nominal rates of assistance to agriculture,[a] Latin America countries, 1965 to 2004 (percent)

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Argentina	-22.7	-22.9	-20.4	-19.3	-15.8	-7.0	-4.0	-14.9
Brazil[c]	-6.1	-27.3	-23.3	-25.7	-21.1	-11.3	8.0	4.1
Chile	16.2	12.0	4.5	7.2	13.0	7.9	8.2	5.8
Colombia	-4.7	-14.8	-13.0	5.0	0.2	8.2	13.2	25.9
Dominican Rep.	5.0	-17.5	-21.2	-30.7	-36.4	-1.0	9.2	2.5
Ecuador[c]	-9.6	-22.4	-15.0	5.9	-1.0	-5.3	-2.0	10.1
Mexico	na	na	na	2.9	3.0	30.8	4.2	11.6
Nicaragua[c]	na	na	na	na	na	-3.2	-11.3	-4.2
LA countries studied:								
Unweighted average[b]	-2.8	-15.5	-14.5	-7.7	-8.3	2.3	3.2	4.9
Weighted. average[a]	-7.2	-21.0	-18.0	-12.5	-10.9	4.2	5.5	4.8
Dispersion of individual country NRAs[d]	13.8	15.4	10.8	17.4	17.1	13.5	8.6	11.9

[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] The unweighted average is the simple average across the eight countries of their national NRA (weighted) averages.

[c] Ecuador and Brazil 1965-69 column refers to 1966-69 data; and Nicaragua 1990-94 column to 1991-94 data.

[d] Dispersion is a simple 5-year average of the annual standard deviation around a weighted mean of the national agricultural sector NRAs each year.

Source: From estimates reported in Chapters 2-9 of this book.

Table 1.10: Dispersion of nominal rates of assistance across covered agricultural products,[a] Latin America countries, 1965 to 2004[b]

(percent)

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Argentina	18.5	17.8	19.9	15.7	12.1	7.1	9.4	12.6
Brazil	28.1	37.2	41.0	35.9	25.5	27.4	8.5	7.6
Chile	33.0	37.2	30.4	17.0	26.1	16.5	14.7	13.3
Colombia	34.8	21.2	29.9	42.5	34.1	27.2	31.0	46.0
Dominican Rep.	86.5	64.0	89.3	83.0	102.3	137.1	92.6	132.8
Ecuador	99.0	88.6	104.8	106.2	48.5	18.8	27.9	29.6
Mexico	na	na	na	71.9	60.1	57.7	30.6	41.1
Nicaragua	na	na	na	na	na	40.1	35.7	27.7
LA countries studies:								
Unweighted average[c]	50.0	44.3	52.5	53.2	44.1	41.5	31.3	38.8
Product coverage[d]	*54*	*65*	*68*	*71*	*68*	*66*	*65*	*69*

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[a] Dispersion for each country is a simple 5-year average of the annual standard deviation around a weighted mean of NRAs across covered products each year.

[c] Ecuador and Brazil 1965-69 column refers to 1966-69 data; and Nicaragua 1990-94 column to 1991-94 data.

[c] The unweighted average is the simple average across the eight countries of their 5-year simple average dispersion measures.

[d] Share of gross value of total agricultural production at undistorted prices accounted for by covered products.

Source: From estimates reported in Chapters 2-9 of this book.

Table 1.11: Nominal rates of assistance to agricultural relative to non-agricultural industries, Latin American region, 1965 to 2004

(a) Unweighted averages for 8 studied countries (percent)

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Covered products[a]	-9.1	-21.8	-17.0	-8.8	-8.9	1.0	1.1	4.4
Non-covered products	-0.5	-9.2	-10.0	-6.5	-7.5	1.4	0.9	0.4
All agricultural products[a]	-5.4	-17.0	-15.0	-8.3	-9.3	0.4	0.7	2.7
Total agricultural NRA (incl. NPS)[b]	**-2.8**	**-15.5**	**-14.5**	**-7.7**	**-8.3**	**2.3**	**3.2**	**4.9**
Trade Bias Index[c]	-0.22	-0.18	-0.31	-0.41	-0.33	-0.26	-0.25	-0.26
Assistance to just tradables:								
All agricultural tradables[b]	-6.0	-19.0	-16.4	-7.2	-8.2	2.6	3.5	5.7
All non-agricultural tradables	16.8	20.6	15.6	14.3	13.4	7.7	7.3	6.5
Relative rate of assistance, RRA[d]	**-19.5**	**-32.9**	**-27.7**	**-18.8**	**-19.1**	**-4.8**	**-3.5**	**-0.8**

(b) Weighted averages for 8 studied countries (percent)

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Covered products[a]	-13.0	-25.1	-19.6	-14.6	-14.3	0.9	0.8	2.7
Non-covered products	-3.3	-15.5	-15.0	-10.9	-13.1	0.7	3.8	2.1
All agricultural products[a]	-8.6	-21.7	-18.1	-13.6	-14.0	0.8	1.7	2.5
Total agricultural NRA (incl. NPS)[b]	**-7.2**	**-21.0**	**-18.0**	**-12.5**	**-10.9**	**4.2**	**5.5**	**4.8**
Trade Bias Index[c]	-0.20	-0.25	-0.26	-0.36	-0.29	-0.25	-0.14	-0.21
Assistance to just tradables:								
All agricultural tradables[b]	-9.3	-23.0	-19.0	-12.9	-11.2	4.4	5.5	4.9
All non-agricultural tradables	15.9	27.8	23.3	18.5	16.8	7.3	6.6	5.5
Relative rate of assistance, RRA[d]	**-21.4**	**-39.8**	**-34.2**	**-26.6**	**-24.0**	**-2.7**	**-1.0**	**-0.6**

[a] NRAs including product-specific input subsidies.

[b] NRAs including non-product-specific (NPS) assistance, that is, the assistance to all primary factors and intermediate inputs as a percentage of the total primary agricultural production valued at undistorted prices.

[c] Trade Bias Index is TBI = $(1+NRAag_x/100)/(1+NRAag_m/100) - 1$, where $NRAag_m$ and $NRAag_x$ are the average percentage NRAs for the import-competing and exportable parts of the agricultural sector. The regional average TBI is calculated from the regional averages of the NRAs for exportable and import-competing parts of the agricultural sector.

[d] RRA is defined as $100*[(100+NRAag^t)/(100+NRAnonag^t)-1]$, where $NRAag^t$ and $NRAnonag^t$ are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

Source: From estimates reported in Chapters 2-9 of this book.

Table 1.12: Nominal rates of assistance to agricultural exportables, import-competing products, and the trade bias index,[a] Latin America countries, 1965 to 2004
(percent)

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Argentina								
NRA agric. exp	-22.7	-22.9	-20.4	-19.3	-15.8	-7.0	-4.0	-14.9
NRA agric. imp-comp	na	na	na	na	na	na	na	na
Trade Bias Index	-0.23	-0.23	-0.20	-0.19	-0.16	-0.07	-0.04	-0.15
Brazil [b]								
NRA agric. exp	-8.4	-33.2	-30.0	-31.5	-29.5	-18.9	0.4	1.2
NRA agric. imp-comp	41.4	26.6	-1.9	-6.8	-22.5	-15.6	7.8	11.6
Trade Bias Index	-0.35	-0.47	-0.27	-0.21	-0.09	-0.04	-0.07	-0.09
Chile								
NRA agric. exp	21.9	35.2	-1.2	-2.0	-1.2	-0.6	-0.5	-0.3
NRA agric. imp-comp	-5.4	-11.3	3.4	10.1	21.3	13.8	12.5	6.3
Trade Bias Index	0.31	0.53	-0.04	-0.11	-0.18	-0.12	-0.12	-0.06
Colombia								
NRA agric. exp	-9.8	-17.7	-17.5	-9.2	-8.8	1.7	-1.7	26.0
NRA agric. imp-comp	8.2	-14.8	-2.8	52.7	26.6	16.7	40.0	46.2
Trade Bias Index	-0.15	0.00	-0.11	-0.40	-0.27	-0.11	-0.29	-0.13
Dominican Rep.								
NRA agric. exp	-10.9	-27.5	-36.1	-51.7	-61.0	-44.6	-13.4	-29.4
NRA agric. imp-comp	40.8	14.7	15.9	20.2	6.7	69.8	48.5	43.7
Trade Bias Index	-0.37	-0.36	-0.44	-0.59	-0.61	-0.67	-0.42	-0.51
Ecuador [b]								
NRA agric. exp	-20.6	-40.0	-43.2	-31.1	-26.1	-11.0	-9.3	-3.2
NRA agric. imp-comp	-1.9	-14.5	26.4	53.8	26.7	-1.0	7.8	22.2
Trade Bias Index	-0.19	-0.28	-0.55	-0.55	-0.38	-0.09	-0.15	-0.20
Mexico								
NRA agric. exp	na	na	na	-35.1	-27.9	4.7	-16.0	-19.9
NRA agric. imp-comp	na	na	na	21.4	19.2	43.1	8.3	21.4
Trade Bias Index	na	na	na	-0.47	-0.39	-0.27	-0.23	-0.34
Nicaragua [b]								
NRA agric. exp	na	na	na	na	na	-14.9	-29.1	-18.1
NRA agric. imp-comp	na	na	na	na	na	12.5	17.5	24.9
Trade Bias Index	na	na	na	na	na	-0.24	-0.39	-0.33
All LA studied countries (unweighted average)[c]								
NRA agric. exp	-7.8	-17.7	-25.0	-25.7	-24.3	-11.4	-9.2	-7.5
NRA agric. imp-comp	17.5	0.1	8.3	25.2	13.0	19.7	20.3	25.1
Trade Bias Index	-0.22	-0.18	-0.31	-0.41	-0.33	-0.26	-0.25	-0.26
All LA studied countries (wted. av.)[c]								
NRA agric. exp	-12.8	-27.0	-25.2	-27.1	-25.0	-10.5	-3.5	-4.6
NRA agric. imp-comp	8.7	-2.8	1.1	13.6	5.1	19.4	12.5	20.6
Trade Bias Index	-0.20	-0.25	-0.26	-0.36	-0.29	-0.25	-0.14	-0.21

[a] Trade Bias Index, TBI = $(1+NRAag_x/100)/(1+NRAag_m/100) - 1$, where $NRAag_x$ and $NRAag_m$ are the average percentage NRAs for the exportable and import-competing parts of the agricultural sector.
[b] Ecuador and Brazil 1965-69 column refers to 1966-69 data; and Nicaragua 1990-94 column to 1991-94 data. For Brazil, NRA import-competing in 1970-74 includes rice only for 1973 and 1974.
[c] Regional averages of the trade bias index are calculated from the regional averages of the NRAs for exportable and import-competing parts of the agricultural sector.
Source: From estimates reported in Chapters 2-9 of this book.

Table 1.13: Nominal rates of assistance for covered farm products, by policy instrument, Latin American region, 1965 to 2004

(percent)

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Argentina								
NRA, agric. inputs	0.0	0.1	0.2	0.5	0.1	-1.0	-4.2	-2.8
NRA, domestic market support	-0.6	-0.8	-0.4	-0.7	-1.5	-1.2	-0.4	-1.4
NRA, border market support	-25.7	-27.1	-24.6	-22.0	-17.2	-6.2	-0.5	-11.6
NRA, agric. total	-26.3	-27.9	-24.7	-22.2	-18.6	-8.3	-5.2	-15.8
Brazil								
NRA, agric. inputs	0.0	0.0	0.0	4.4	2.5	4.7	4.2	2.4
NRA, domestic market support	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NRA, border market support	-6.1	-27.3	-23.3	-32.4	-30.1	-22.7	-2.4	-0.4
NRA, agric. total	-6.1	-27.3	-23.3	-28.0	-27.6	-18.0	1.8	2.0
Chile								
NRA, agric. inputs	-3.7	-3.3	-2.8	-4.4	-5.8	-4.0	-2.1	-1.3
NRA, domestic market support	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NRA, border market support	-2.6	-7.3	5.4	8.5	26.4	17.7	13.4	8.0
NRA, agric. total	-6.3	-10.6	2.5	4.2	20.6	13.7	11.2	6.7
Colombia								
NRA, agric. inputs	-2.1	-1.7	-1.1	-1.6	-2.6	-1.8	-1.5	-1.5
NRA, domestic market support	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NRA, border market support	-4.2	-14.6	-13.5	5.5	1.7	7.9	11.4	30.2
NRA, agric. total	-6.3	-16.4	-14.6	3.9	-0.9	6.1	10.0	28.6
Dominican Rep.								
NRA, agric. inputs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NRA, domestic market support	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
NRA, border market support	5.0	-18.0	-21.2	-30.7	-36.4	-1.0	9.2	2.5
NRA, agric. total	5.0	-17.5	-21.2	-30.7	-36.4	-1.0	9.2	2.5
Ecuador								
NRA, agric. inputs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NRA, domestic market support	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0
NRA, border market support	-14.7	-31.5	-20.8	9.9	-2.2	-6.4	-2.0	12.2
NRA, agric. total	-14.8	-31.5	-20.8	9.9	-0.8	-6.4	-2.0	12.2
Mexico								
NRA, agric. inputs	na	na	3.9	7.7	5.3	5.2	1.6	2.3
NRA, domestic market support	na	na	4.1	5.2	2.9	4.4	1.3	2.8
NRA, border market support	na	na	-11.1	-11.4	-7.1	19.2	-2.8	4.0
NRA, agric. total	na	na	-3.1	1.5	1.1	28.8	0.1	9.2
Nicaragua								
NRA, agric. inputs	na	na	na	na	na	0.0	0.0	0.0
NRA, domestic market support	na	na	na	na	na	-3.2	-2.4	-2.8
NRA, border market support	na	na	na	na	na	0.0	0.0	0.0
NRA, agric. total	na	na	na	na	na	-3.9	-13.9	-7.1

Table 1.13 (cont.): Nominal rates of assistance for covered farm products, by policy instrument, Latin American region, 1965 to 2004

(percent)

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
All LA studied countries (unweighted average)								
NRA, agric. inputs	-1.0	-0.8	-0.5	1.0	-0.1	0.1	-0.5	-0.5
NRA, domestic market support	-0.1	-0.1	0.1	0.6	0.4	0.4	0.1	0.2
NRA, border market support	-7.5	-21.0	-16.4	-10.4	-9.2	0.4	1.5	4.4
NRA, agric. total	-8.6	-21.8	-16.8	-8.8	-8.9	0.9	1.1	4.1
All LA studied countries (weighted average)[a]								
NRA, agric. inputs	-0.9	-0.6	0.0	3.8	1.7	2.8	1.2	0.9
NRA, domestic market support	-0.2	-0.2	0.2	1.3	0.7	1.1	0.3	0.6
NRA, border market support	-11.9	-24.4	-19.8	-19.8	-16.8	-3.0	-0.6	1.2
NRA, agric. total	-13.0	-25.1	-19.6	-14.6	-14.3	0.9	0.8	2.7

[a] Weights are based on gross value of agricultural production at undistorted prices.

Source: See Appendix 2 of this book.

Table 1.14: Gross subsidy equivalents of assistance to farmers, total and per farm worker, Latin American countries,[a] 1965 to 2004

(a) Total (current US$ million)

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Argentina	-406	-815	-996	-1777	-1132	-612	-569	-2609
Brazil	-189	-2531	-3393	-7700	-6778	-2991	2968	1576
Chile	114	108	77	163	286	332	443	303
Colombia	-87	-483	-712	378	-7	802	1488	1906
Dominican Rep.	14	-141	-238	-431	-412	-15	142	37
Ecuador	-47	-146	-187	80	-22	-111	-67	337
Mexico	na	na	na	834	539	6418	995	2861
Nicaragua	na	na	na	na	na	-28	-133	-57
LA countries studied	**-601**	**-4009**	**-5450**	**-8454**	**-7525**	**3797**	**5267**	**4354**
All LA countries[a]	**-742**	**-4949**	**-6728**	**-10437**	**-9290**	**4688**	**6503**	**5376**

(b) Per person engaged in agriculture (current US$)

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Argentina	-261	-550	-698	-1265	-778	-414	-387	-1786
Brazil	-12	-154	-198	-445	-416	-201	214	123
Chile	154	147	99	198	321	350	456	308
Colombia	-29	-150	-200	99	-2	216	399	515
Dominican Rep.	20	-197	-339	-623	-589	-22	225	63
Ecuador	-49	-145	-184	76	-19	-91	-54	270
Mexico	n.a.	n.a.	n.a.	102	64	749	116	336
Nicaragua	n.a.	n.a.	n.a.	n.a.	n.a.	-71	-334	-144
LA countries studied	**-21**	**-130**	**-167**	**-251**	**-227**	**119**	**170**	**147**
All LA countries[a]	**-20**	**-123**	**-159**	**-238**	**-211**	**108**	**150**	**126**

[a] Assumes the rate of assistance in non-studied countries is the same as the average for the studied Latin American countries excluding Mexico, and that their share of the value of Latin American and Caribbean (excluding Mexican) agricultural production at undistorted prices is the same as their average share of the region's agricultural GDP at distorted prices during 1990-2004, which was 23 percent.

Source: See Appendix 2 of this book.

Table 1.15: Gross subsidy equivalents of assistance to farmers in Latin America, by product and sub-sector, 1965 to 2004

(a) by product (at undistorted farmgate prices, $US millions)

	Rice	Wheat	Maize	Other Grains	Soybean	Other oilseeds	Sugar	Cotton
1965-69	24	-17	-92	0	1	0	8	-19
1970-74	-40	-216	-162	-1	-55	0	-1829	-8
1975-79	-230	91	-475	-56	-436	-81	-1619	-159
1980-84	-55	116	-396	53	-428	-110	-3260	-156
1985-89	-55	65	-707	10	-1533	-151	-1980	-380
1990-94	201	395	-17	-5	-386	-92	-988	-158
1995-99	569	79	-373	-151	-279	-256	233	36
2000-04	614	30	-307	-113	-1371	-241	970	78

	Cocoa	Coffee	Fruit & veg	Beef	Pigmeat	Poultry	Egg	Milk	All covered
1965-69	1	-127	-19	-289	1	10	na	2	-516
1970-74	-8	-169	-41	-440	-4	15	na	-29	-2987
1975-79	-32	-815	-163	-404	-53	116	-51	236	-4131
1980-84	-8	-3014	-165	-1027	-565	423	-14	1603	-7003
1985-89	-17	-1738	-623	-327	-504	344	-66	944	-6716
1990-94	-14	30	-610	188	93	533	19	1471	661
1995-99	-10	-536	-977	704	-110	378	-225	1393	476
2000-04	-7	76	-750	-264	111	1048	-285	1915	1504

(b) by sub-sector (at undistorted farmgate prices, US$ billions)

	GSE for just covered farm products[b]	GSE for just non-covered farm products	Total GSE, all direct assistance to farmers[a]			
			TOTAL	Exportables	Import-competing	Non-tradables
1965-69	-0.5	-0.1	-0.6	-0.7	0.1	0.0
1970-74	-3.0	-1.1	-4.0	-3.9	-0.2	0.0
1975-79	-4.0	-1.5	-5.5	-5.5	0.0	0.0
1980-84	-7.0	-2.2	-8.5	-12.1	2.9	0.0
1985-89	-6.7	-3.1	-7.5	-10.7	0.9	0.0
1990-94	0.7	0.4	3.8	-4.6	5.7	0.0
1995-99	0.5	1.2	5.3	-2.3	3.9	0.0
2000-04	1.5	0.6	4.3	-3.3	5.4	0.0

[a] Gross subsidy equivalents including assistance to nontradables and non-product-specific assistance.

[b] Gross subsidy equivalents including product-specific input subsidies.

Sources: See Appendix 2 of this book

Table 1.16: Relative rates of assistance to agriculture[a], Latin America countries, 1965 to 2004 (percent)

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Argentina								
NRA Agriculture	-22.7	-22.9	-20.4	-19.3	-15.8	-7.0	-4.0	-14.9
NRA Non-Agric.	52.3	35.1	21.1	17.7	15.8	11.0	10.5	5.7
RRA	-49.2	-43.0	-34.2	-31.5	-27.4	-16.2	-13.1	-19.7
Brazil [b]								
NRA Agriculture	-6.1	-27.3	-23.3	-25.7	-21.1	-11.3	8.0	4.1
NRA Non-Agric.	na	34.7	35.7	33.6	29.6	8.3	7.8	5.4
RRA	na	-46.1	-43.5	-44.4	-39.1	-17.9	0.2	-1.2
Chile								
NRA Agriculture	3.1	3.5	1.9	6.1	13.6	8.1	7.4	3.5
NRA Non-Agric.	26.1	32.1	11.2	7.2	9.0	5.9	5.3	2.3
RRA	-18.0	-20.0	-8.0	-1.0	4.2	2.2	2.0	1.1
Colombia								
NRA Agriculture	-5.1	-17.8	-15.2	6.2	0.8	10.6	16.6	33.3
NRA Non-Agric.	28.1	24.4	18.9	23.7	23.5	9.6	7.9	7.1
RRA	-25.6	-34.0	-28.7	-14.0	-18.4	1.3	8.1	24.5
Dominican Rep.								
NRA Agriculture	5.3	-18.2	-22.2	-31.4	-37.3	-1.0	9.7	2.8
NRA Non-Agric.	9.1	8.7	10.2	10.4	10.2	9.3	5.8	4.2
RRA	-3.5	-24.8	-29.5	-37.9	-43.0	-9.4	3.6	-1.4
Ecuador [b]								
NRA Agriculture	-14.8	-31.5	-20.8	9.9	-0.8	-6.4	-2.6	11.2
NRA Non-Agric.	1.2	-3.2	4.8	9.4	8.6	2.5	5.8	8.5
RRA	-15.8	-29.3	-24.5	0.3	-8.8	-8.8	-8.1	2.2
Mexico								
NRA Agriculture	na	na	na	3.9	3.0	31.2	4.2	11.8
NRA Non-Agric.	na	na	na	7.2	4.0	5.8	3.2	6.8
RRA	na	na	na	-3.3	-1.1	24.1	1.0	4.7
Nicaragua [b]								
NRA Agriculture	na	na	na	na	na	-3.2	-11.3	-4.2
NRA Non-Agric.	na	na	na	na	na	7.1	6.1	5.7
RRA	na	na	na	na	na	-9.6	-16.4	-9.4
All LA studied countries (unweighted average) [c]								
NRA Agriculture	-6.0	-19.0	-16.4	-7.2	-8.2	2.6	3.5	5.7
NRA Non-Agric.	16.8	20.6	15.6	14.3	13.4	7.7	7.3	6.5
RRA	-19.5	-32.9	-27.7	-18.8	-19.1	-4.8	-3.5	-0.8
All LA studied countries (weighted average) [d]								
NRA Agriculture	-9.3	-23.0	-19.0	-12.9	-11.2	4.4	5.5	4.9
NRA Non-Agric.	15.9	27.8	23.3	18.5	16.8	7.3	6.6	5.5
RRA	-21.4	-39.8	-34.2	-26.6	-24.0	-2.7	-1.0	-0.6
Dispersion of national RRAs[e]	17.0	12.7	13.6	20.6	19.1	14.0	10.3	13.4

[a] The RRA is defined as $100*[(100+NRAag^t)/(100+NRAnonag^t)-1]$, where $NRAag^t$ and $NRAnonag^t$ are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

[b] Ecuador and Brazil 1965-69 column refers to 1966-69 data; and Nicaragua 1990-94 column to 1991-94 data.

[c] Simple averages of the above (weighted) national averages.

[d] Weighted averages of the above national averages, using weights based on gross value of national agricultural production at undistorted prices.

[e] Dispersion is a simple 5-year average of the standard deviation around a weighted mean of the national agricultural sector NRAs each year.

Source: From estimates reported in Chapters 2-9 of this book.

Table 1.17: Relative per capita income,[a] agricultural comparative advantage index,[b] and nominal and relative rates of assistance to tradable agriculture, Latin America countries, 2000-04

	Relative per capita income	Agric comparative advantage[b]	NRA (percent)	RRA (percent)
Argentina	89	541	-14.9	-19.7
Brazil	54	355	4.1	-1.2
Chile	86	386	5.8	1.1
Colombia	35	264	25.9	24.5
Dominican Rep.	41	474	2.5	-1.4
Ecuador	33	487	10.1	2.2
Mexico	112	64	11.6	4.7
Nicaragua	14	952	-4.2	-9.4
LA countries studied (unweighted average)	**69**	**219**	**4.9**	**-0.8**

[a] Income per capita relative to the world average, 2000-04. (World=100)

[b] Agriculture and food's share of national exports as a percentage of agriculture and food's share of global exports, 2000-04

Source: Columns 1 and 2: Sandri, Valenzuela and Anderson (2007); columns 3 and 4: Chapters 2-9 of this book.

Table 1.18: Relationships between nominal rates of assistance and some of its determinants, Latin America countries, 1960 to 2004

Explanatory variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ln GDP per capita	-0.23*	-0.33*	0.11	-0.07	-0.36*	-0.36*	-0.28	0.06	0.02	0.06	-0.22	0.06
	(0.10)	(0.09)	(0.10)	(0.12)	(0.14)	(0.13)	(0.24)	(0.23)	(0.20)	(0.19)	(0.31)	(0.28)
Ln GDP per capita squared	0.02	0.06	-0.07	-0.03	0.16*	0.14*	0.14	0.03	0.06	0.02	0.14	0.01
	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.08)	(0.08)	(0.06)	(0.06)	(0.10)	(0.09)
Importable		0.45*	0.31*	0.37*		0.51*	0.33*	0.40*		0.52*	0.35*	0.42*
		(0.05)	(0.05)	(0.06)		(0.06)	(0.06)	(0.06)		(0.06)	(0.05)	(0.06)
Exportable		-0.01	-0.03	0.00		0.06	-0.00	-0.03		0.07	-0.01	0.04
		(0.06)	(0.05)	(0.06)		(0.06)	(0.06)	(0.06)		(0.06)	(0.06)	(0.06)
Revealed Comparative Advantage[a]				-0.02*				-0.05*				-0.06*
				(0.01)				(0.01)				(0.01)
Trade Specialization Index[b]			-0.04				-0.20*				-0.18*	
			(0.03)				(0.06)				(0.06)	
Constant	0.41*	0.24*	-0.03	0.17	0.29*	0.06	0.10	-0.11	0.00	-0.29*	-0.15	0.17
	(0.06)	(0.07)	(0.08)	(0.11)	(0.09)	(0.10)	(0.18)	(0.17)	(0.08)	(0.09)	(0.32)	(0.17)
R^2	0.02	0.16	0.12	0.13	0.00	0.15	0.09	0.08	0.08	0.19	0.15	0.17
No. of obs.	2564	2564	2314	2314	2564	2564	2314	2414	2564	2564	2314	2414
Country FE	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes

[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 (world=1).

[b] Net exports as a ratio of the sum of exports and imports of agricultural and processed food products (world=1).

Notes: Dependent variable for regressions is NRA by commodity and year. Results are OLS estimates, with standard errors in parentheses and significance levels shown at the 99%(*). The main explanatory variable is ln GDP per capita in $10,000s.

Source: Authors' estimates

Table 1.19: Percentage consumer tax equivalent of policies assisting producers of covered farm products,[a] Latin American countries, 1965 to 2003

(percent, at primary product level)

(a) aggregate CTEs by country

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-03
Argentina	-27.6	-27.2	-25.2	-23.4	-16.6	-5.7	0.0	-9.1
Brazil	2.1	-25.4	-19.8	-25.8	-26.5	-23.1	-2.1	-1.3
Chile	7.1	1.5	2.8	9.0	23.8	18.1	14.2	10.7
Colombia	7.2	-13.4	-5.3	27.4	20.8	16.2	33.9	49.7
Dominican Rep.	12.9	-7.1	-7.7	-27.8	-31.4	7.8	16.6	3.5
Ecuador	-10.5	-25.7	3.9	35.0	17.4	-3.3	4.6	18.5
Mexico	na	na	na	-1.3	0.8	22.3	-1.9	9.9
Nicaragua	na	na	na	na	na	10.5	10.6	9.0
LA countries studied:								
Unweighted average	-0.8	-16.2	-8.8	-1.0	-1.7	4.8	9.5	11.4
Weighted average[b]	-4.7	-22.1	-16.2	-13.4	-12.3	-2.7	1.4	5.1
Dispersion of national CTEs[c]	15.5	13.4	14.5	29.2	26.0	17.4	15.0	18.8

(b) Regional CTEs by product

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-03
Rice	30	8	-10	0	6	6	19	30
Wheat	17	0	32	19	8	22	8	13
Maize	-9	-4	-13	-11	-14	-4	-8	-4
Other grains	0	0	-6	-6	-5	-3	-15	-14
Soybean	4	-5	-15	-13	-19	-10	-5	-9
Other oilseeds	0	0	-24	-22	-22	-10	-8	-17
Sugar	28	-60	-44	-54	-41	-18	8	27
Cotton	-6	-1	-14	-24	-23	-23	-7	7
Coffee	-25	-26	-32	-52	-34	-7	-10	-4
Cocoa	6	-16	-13	-4	-16	-16	-12	-7
Fruit & veg	8	10	-12	1	-30	-16	-22	-17
Beef	-27	-23	-14	-11	-6	-11	4	1
Pigmeat	6	-14	-14	-26	-26	3	-3	4
Poultry	110	132	98	26	18	17	7	21
Egg	na	na	-10	0	-6	2	-16	-17
Milk	5	-3	18	70	54	38	28	44
LA countries studied:								
Weighted average[b]	-4.7	-22.1	-16.2	-13.4	-12.3	-2.7	1.4	5.1
Dispersion of regional product CTEs[d]	35.2	46.4	34.6	30.4	23.5	16.3	13.8	18.6

[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).

[b] Weights are consumption valued at undistorted prices, where consumption (from FAO) is production plus imports net of exports plus change in stocks of the covered products.

[c] Simple 5-year average of the annual standard deviation around a weighted mean of the national average CTE.

[d] Simple 5-year average of the annual standard deviation around a weighted mean of the regional average CTE for the covered products shown above.

Source: See Appendix 2 of this book

Table 1.20: Value of consumer tax equivalent of policies assisting producers of covered farm products, Latin American countries, 1965 to 2003

(US$ million at primary product level)

(a) aggregate CTEs by country

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-03
Argentina	-232	-412	-591	-1060	-665	-263	-3	-781
Brazil	23	-1721	-2014	-5393	-5032	-5183	-641	-297
Chile	26	-7	22	83	170	220	233	151
Colombia	47	-228	-106	715	518	571	1380	1469
Dominican Rep.	13	-34	-49	-165	-158	33	87	21
Ecuador	-24	-64	20	199	98	-26	74	370
Mexico	na	na	na	-103	104	3483	-370	1934
Nicaragua	na	na	na	na	na	35	51	50
LA countries studied	**-146**	**-2490**	**-2713**	**-5726**	**-4960**	**-1140**	**812**	**2920**
All LA countries[a]	**-180**	**-3074**	**-3349**	**-7069**	**-6123**	**-1408**	**1003**	**3605**

(b) Regional CTEs by product[b]

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-03
Rice	27	-29	-232	-168	71	135	508	576
Wheat	81	-122	409	561	171	654	264	407
Maize	-64	-80	-450	-824	-919	-322	-749	-377
Other grains	0	-1	-57	-80	-75	-47	-239	-240
Soybean	1	-36	-343	-463	-936	-431	-387	-882
Other oilseeds	0	0	-67	-100	-115	-62	-87	-113
Sugar	23	-1895	-1684	-3485	-2066	-975	387	1149
Cotton	-13	-3	-151	-260	-228	-259	-56	55
Coffee	-19	-28	-116	-942	-365	-40	-82	-26
Cocoa	0	-1	-3	-1	-2	-2	-1	-1
Fruit & veg	11	23	-84	-81	-484	-424	-646	-420
Beef	-217	-313	-336	-881	-443	-1332	588	70
Pigmeat	1	-4	-60	-715	-636	105	-143	116
Poultry	10	17	101	308	255	383	306	982
Egg	na	na	-52	-14	-66	20	-226	-313
Milk	13	-18	246	1421	875	1455	1374	1941
LA countries studied:	**-146**	**-2491**	**-2879**	**-5724**	**-4962**	**-1142**	**813**	**2924**

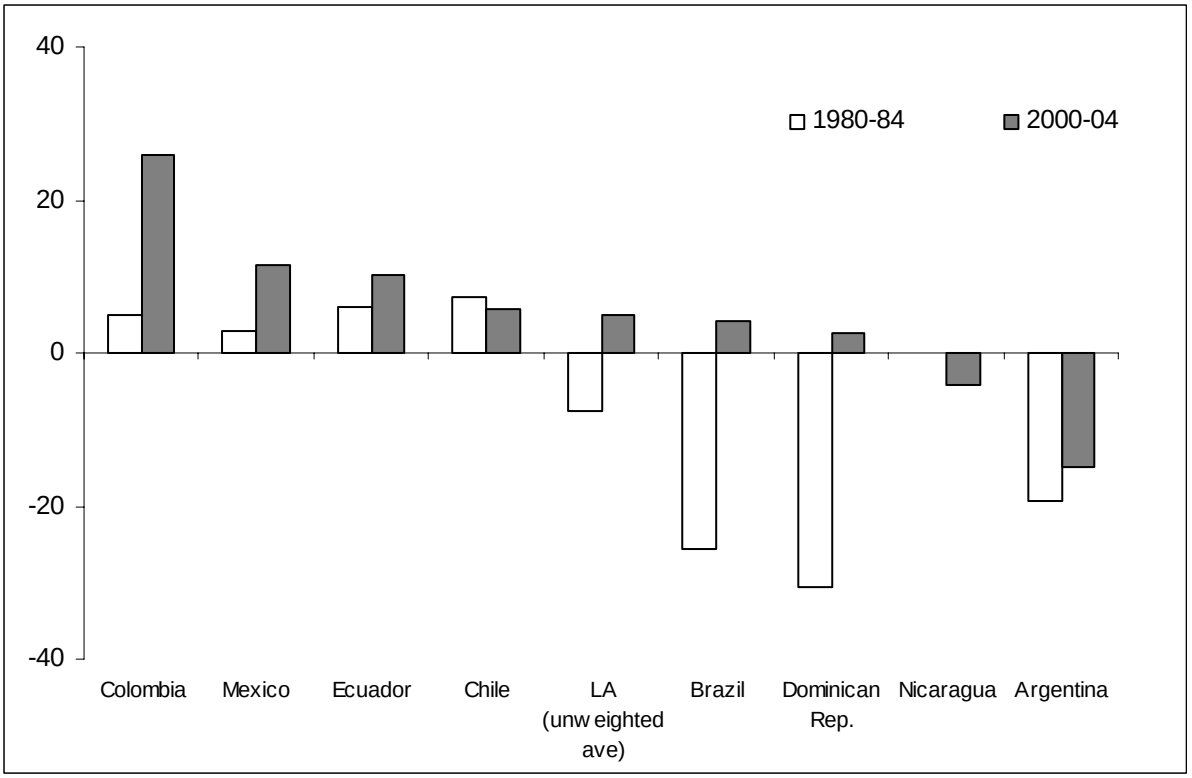
[a] Assumes the rate of assistance to covered products in non-studied countries is the same as the average for the studied Latin American countries excluding Mexico, and that their share of the value of Latin American and Caribbean (excluding Mexican) agricultural production at undistorted prices is the same as their average share of the region's agricultural GDP at distorted prices during 1990-2004, which was 23 percent. These dollar amounts do not include non-covered farm products, which amount to almost one-third of agricultural output (see last row of Table 1.10), nor any mark-up that might be applied along the value chain.

[b] Mexico is included in the 5-year product averages for 1975-79: thus, the LA countries total is higher in absolute number than the LA countries total in part (a), which excludes Mexico in this period.

Source: See Appendix 2 of this book

Figure 1.1: Nominal rates of assistance to agriculture, individual Latin American countries[a] and unweighted regional average, 1980-84 and 2000-04

(percent)



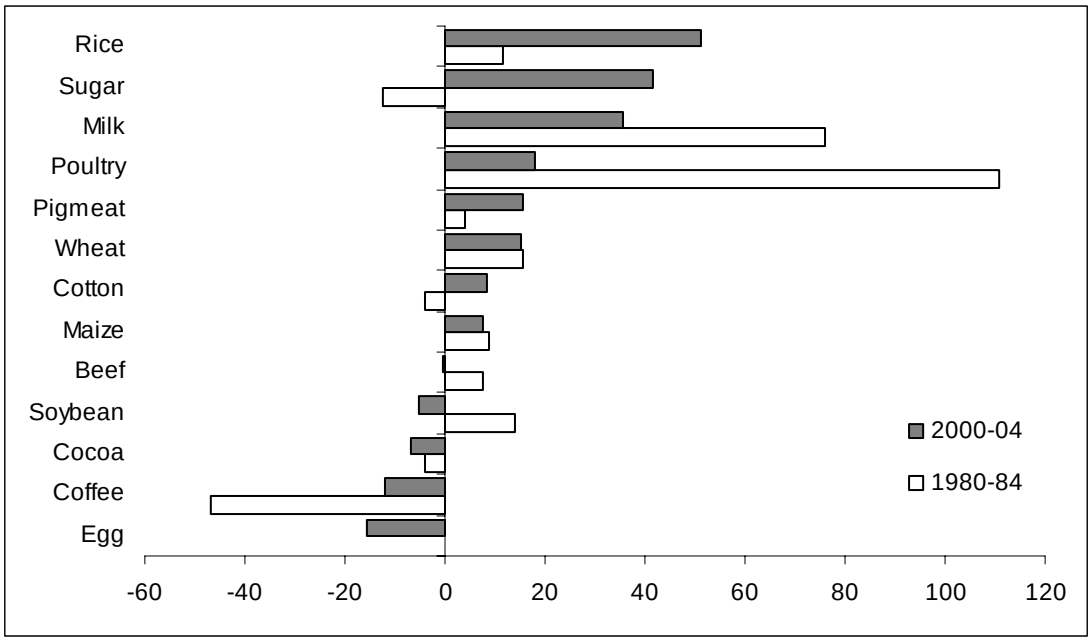
[a] There are no estimates for Nicaragua in 1980-84.

Source: From estimates reported in Chapters 2-9 of this book.

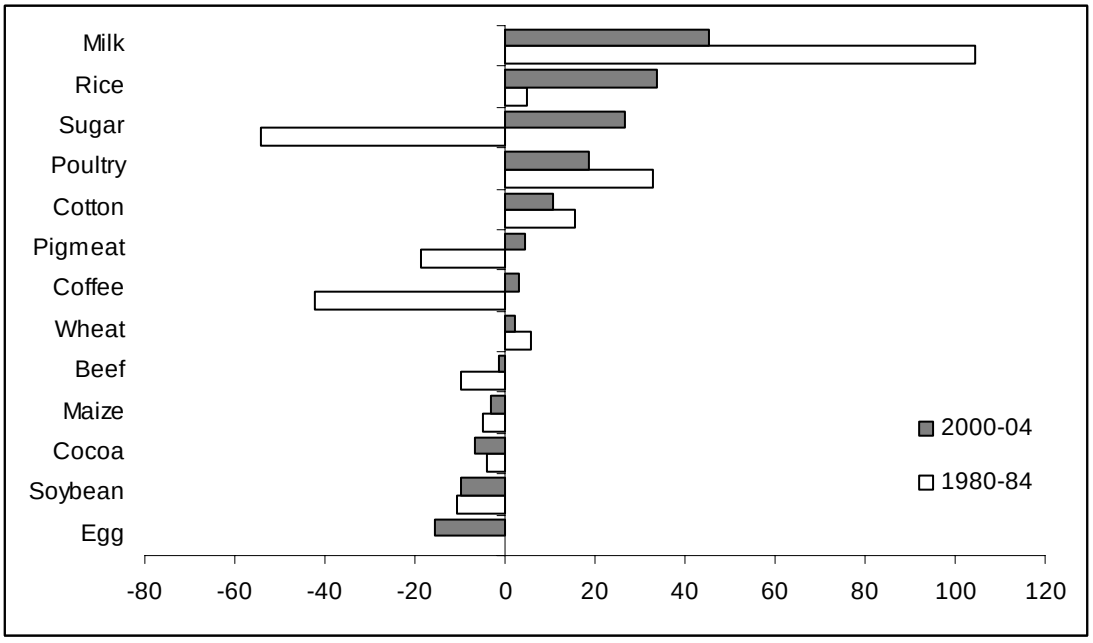
Figure 1.2: Nominal rates of assistance, by product, Latin America countries, 1980-84 and 2000-04

(percent)

(a) unweighted average across countries



(b) weighted[a] average across countries



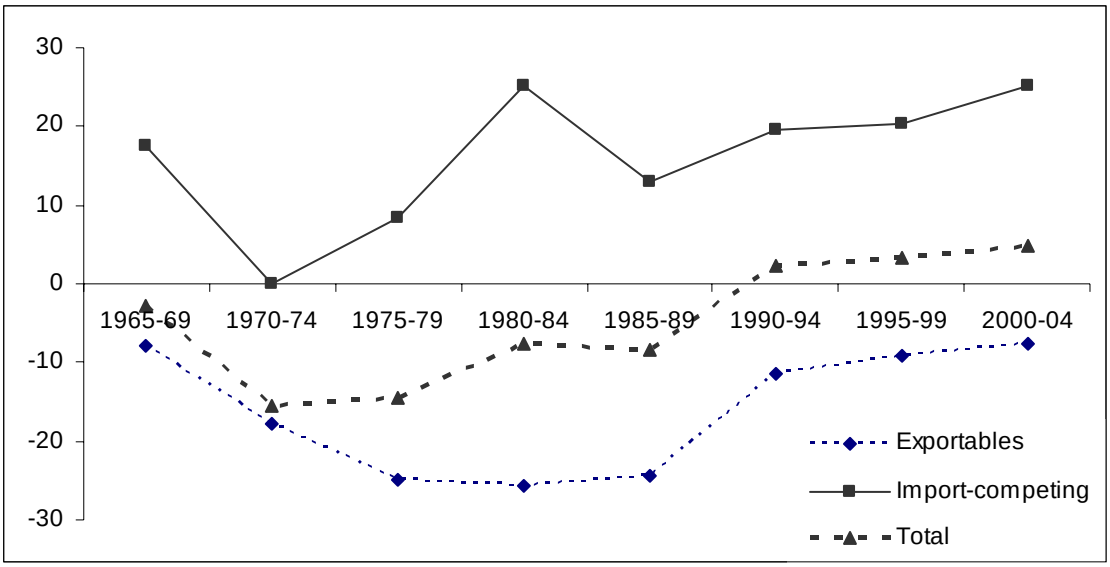
[a] Weights based on gross value of agricultural production at undistorted prices [each NRA (by country, by product) is weighted by the country's value of production of that commodity in a given year]. Products with less than 1 percent of the gross value of regional production are excluded. These include: apples, cassava, cocoa, garlic, onions, palm oil, peanuts and sesame.

Source: From estimates reported in Chapters 2-9 of this book.

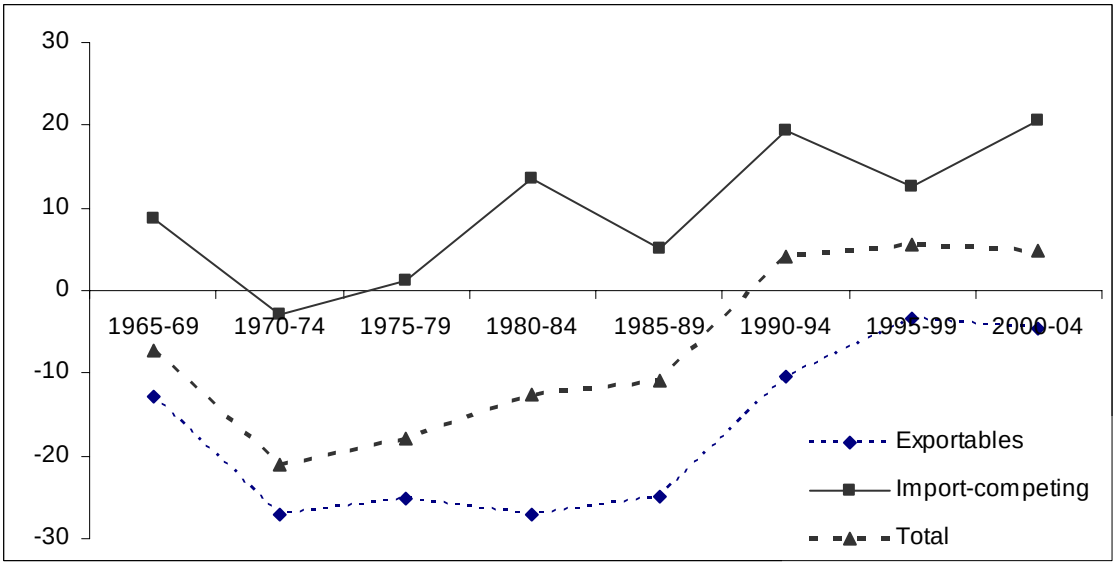
Figure 1.3: Nominal rates of assistance to exportable, import-competing and all[a] agricultural products, Latin America region, 1965 to 2004

(percent)

(a) unweighted averages across eight countries



(b) weighted averages across eight countries

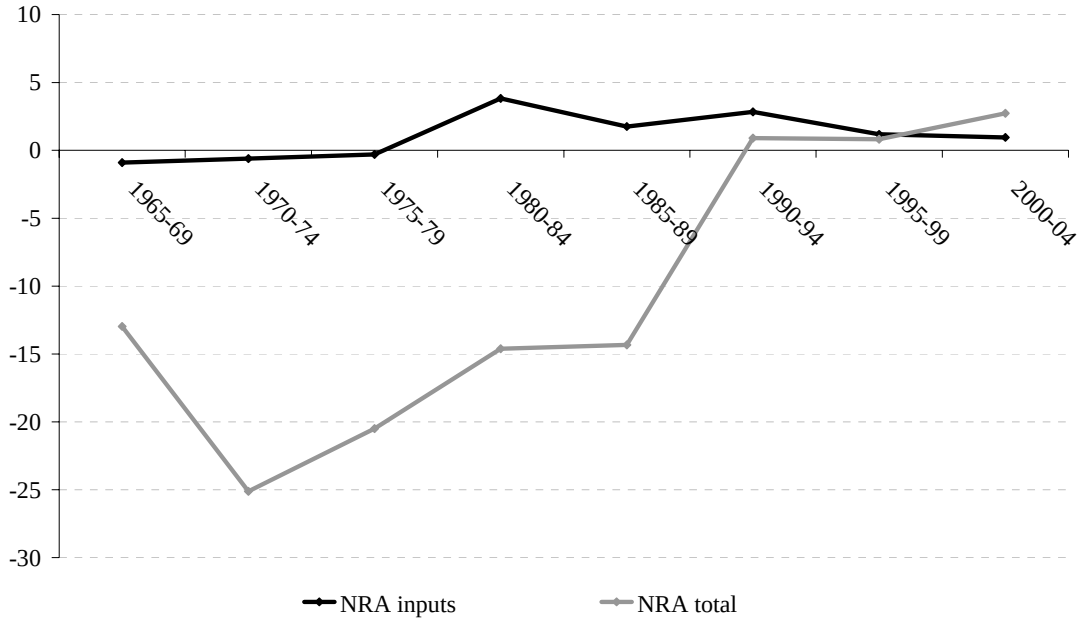


[a] The total NRA can be above or below the exportable and importable averages because assistance to nontradables and non-product specific assistance is also included.

Source: From estimates reported in Chapters 2-9 of this volume.

Figure 1.4: Nominal rates of assistance for covered farm products in total and from input price distortions,[a] Latin American region, 1965 to 2004

(percent)

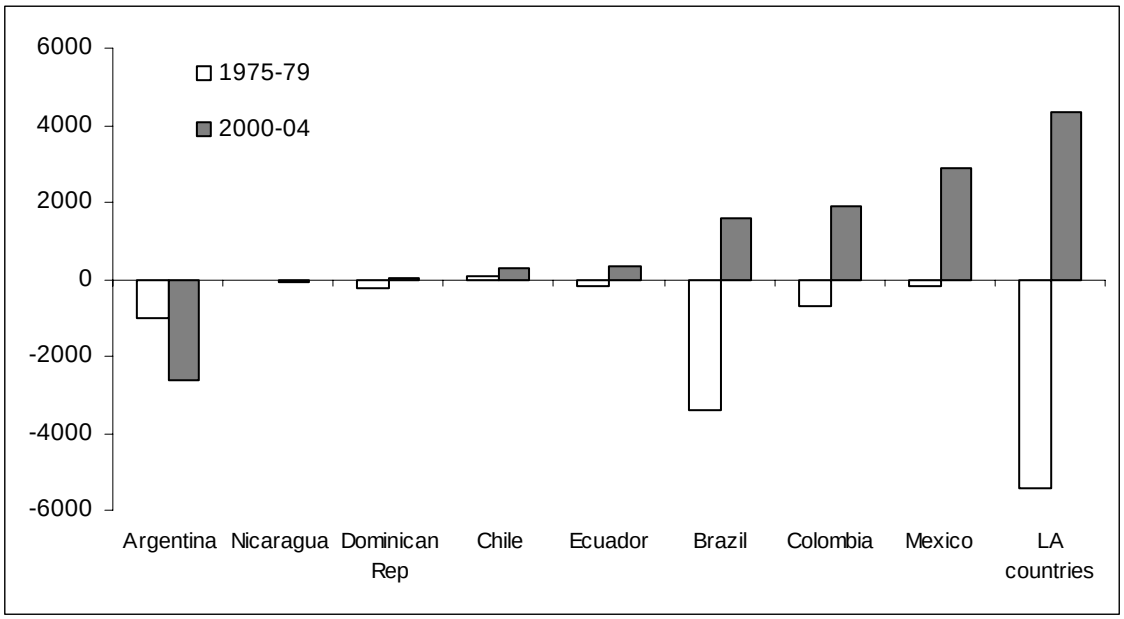


[a] The total *NRA* for covered products is the sum of that due to output assistance, NRA_o, and that due to measures affecting purchased farm inputs, NRA_i, such that NRA_o is the difference between the two curves shown.

Source: From estimates reported in Appendix 2 of this volume.

Figure 1.5: Gross subsidy equivalents of assistance to farmers, Latin American countries,[a] 1975-79 and 2000-04

(US$ million)

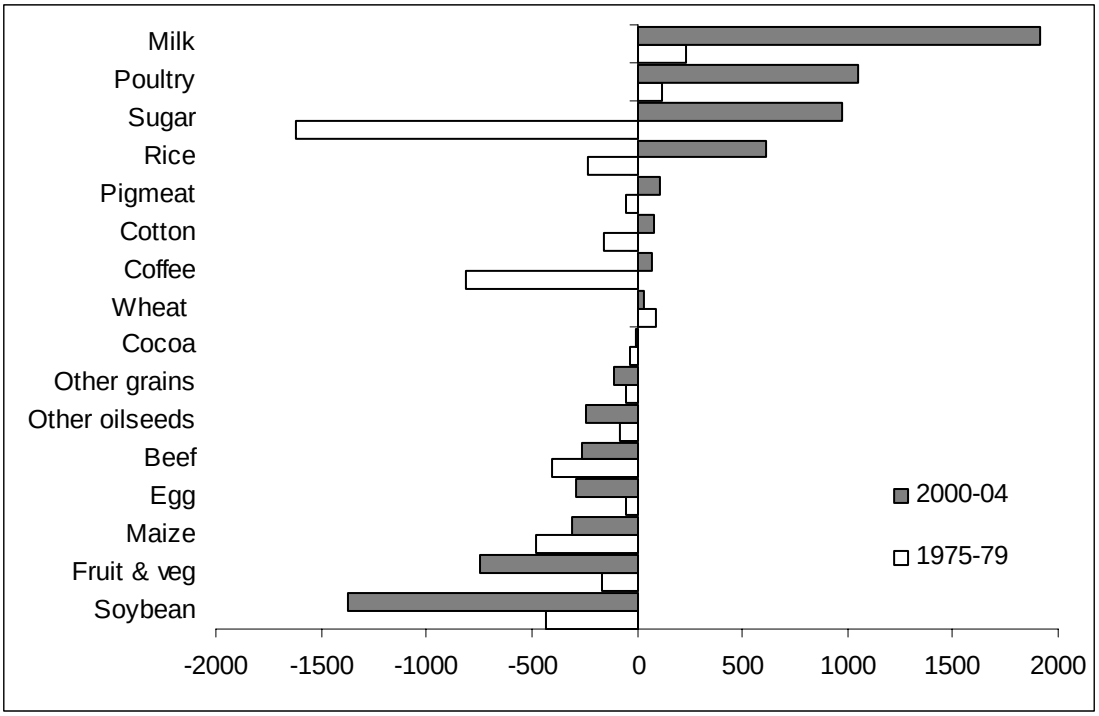


[a] There are no estimates for Nicaragua in 1975-79, and Mexico's estimates in that period are for 1979 alone.

Source: See Appendix 2 of this book

Figure 1.6: Gross subsidy equivalents of assistance to farmers in Latin America, by product, 1975-79 and 2000-04

(US$ million)

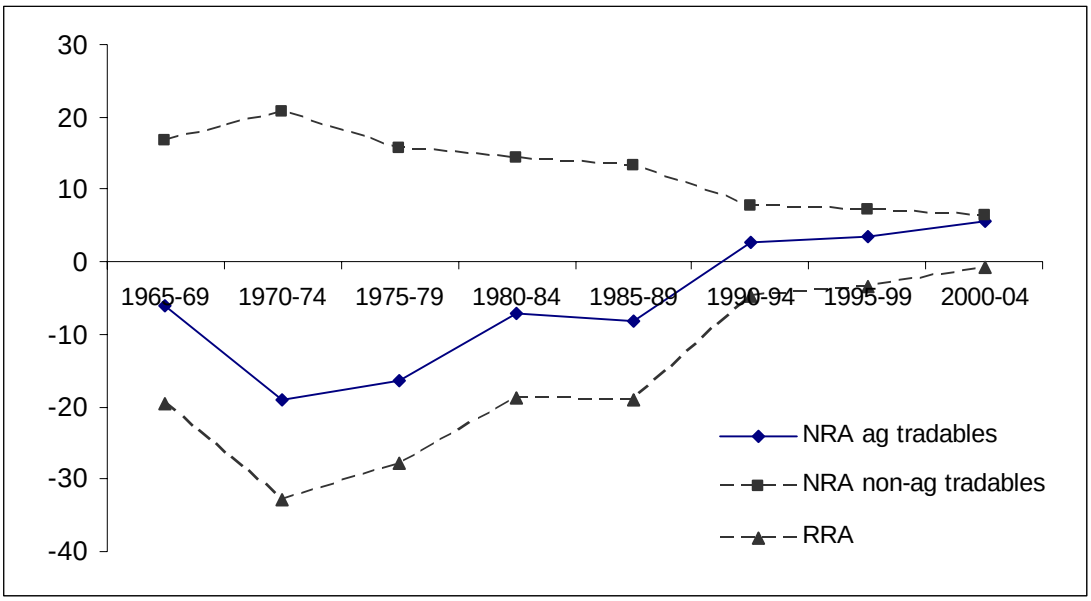


Source: See Appendix 2 of this book

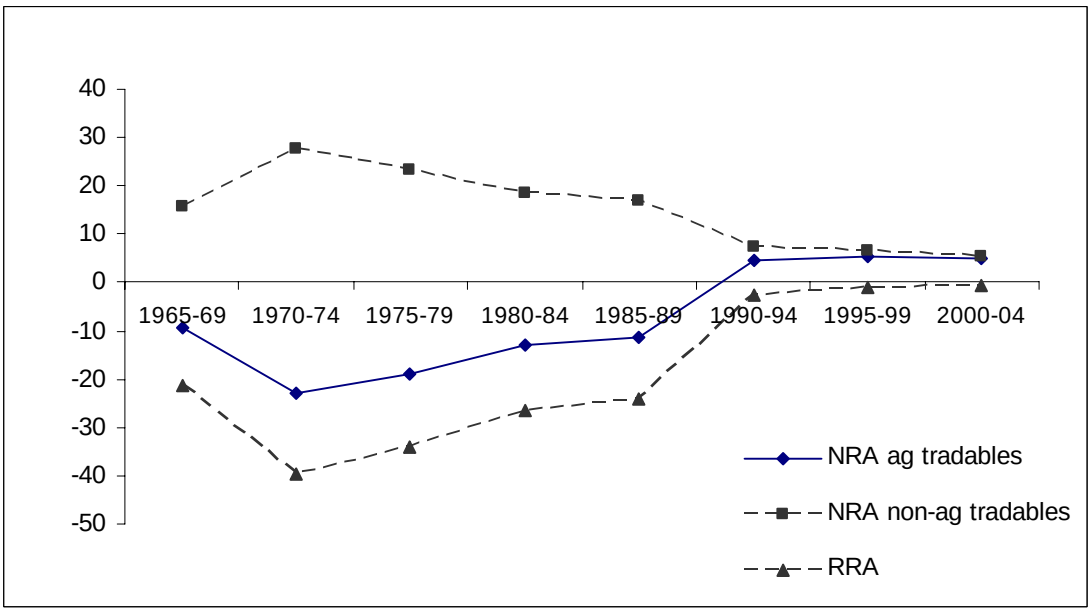
Figure 1.7: Nominal rates of assistance to agricultural and non-agricultural tradable products and relative rate of assistance,[a] Latin America region, 1965 to 2004

(percent)

(a) unweighted averages across eight countries



(b) weighted averages across eight countries

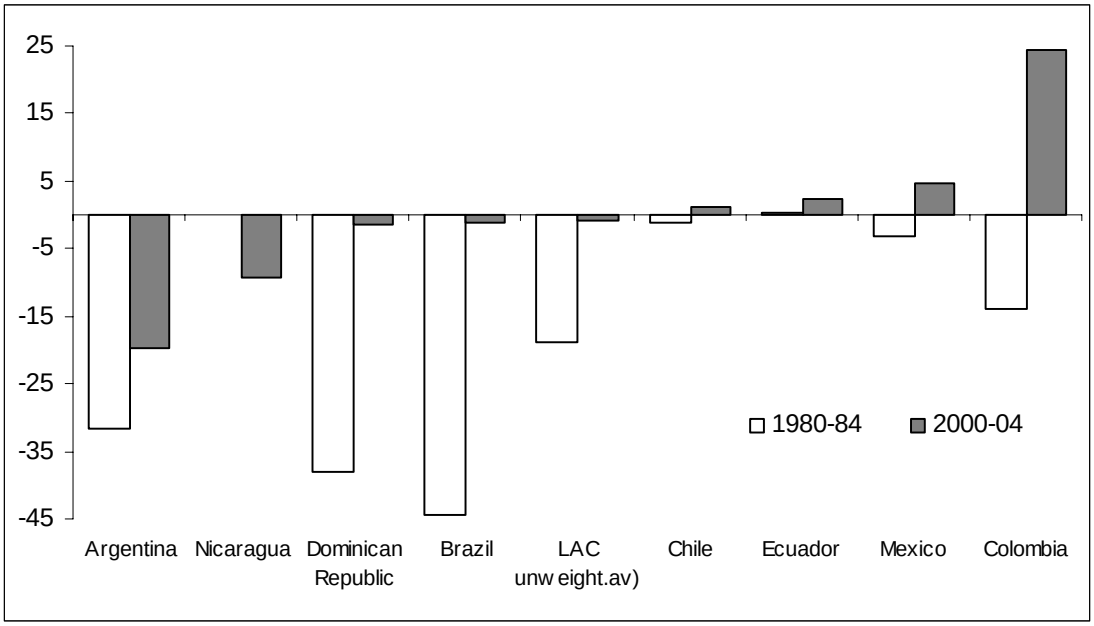


[a] The RRA is defined as 100*[(100+NRAag^{t})/(100+NRAnonag^{t})-1], where NRAag^{t} and NRAnonag^{t} are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

Source: From estimates reported in Chapters 2-9 of this volume.

Figure 1.8: Relative rates of assistance to agriculture,[a] Latin America countries and unweighted regional average, 1980-84 and 2000-04

(percent)



[a] The RRA is defined as $100*[(100+NRAag^t)/(100+NRAnonag^t)-1]$, where $NRAag^t$ and $NRAnonag^t$ are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

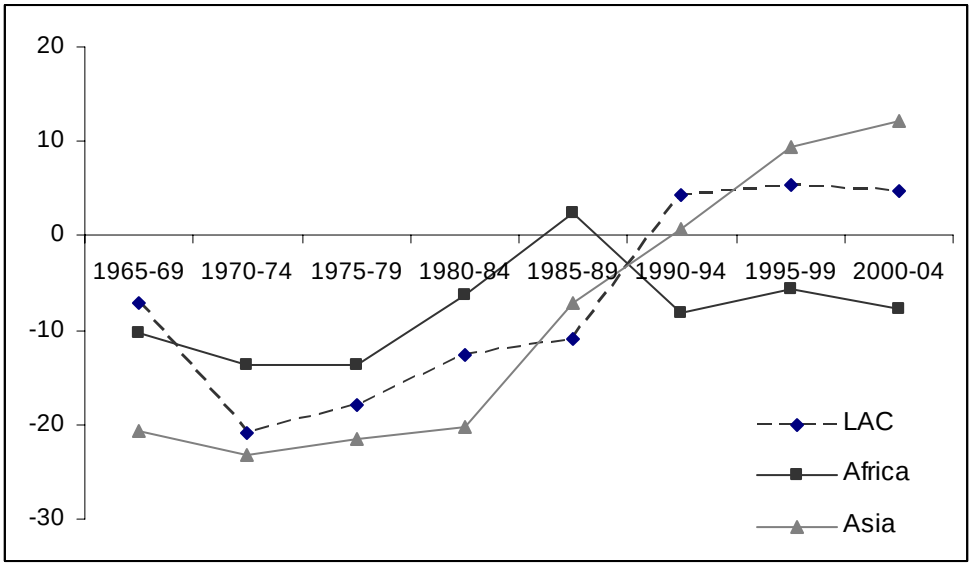
No data for Nicaragua in 1980-84.

Source: From estimates reported in Chapters 2-9 of this book.

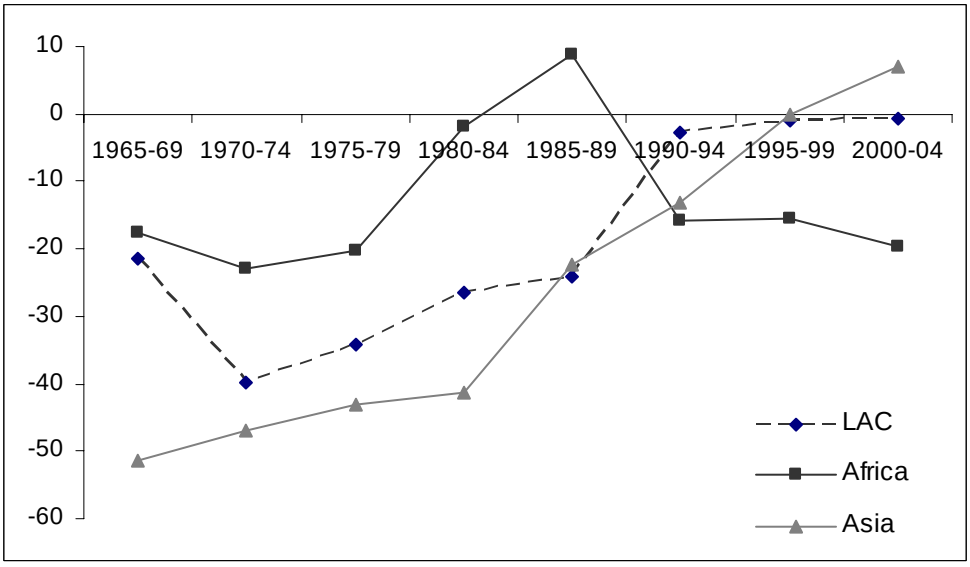
Figure 1.9: Nominal and relative rates of assistance,[a] Asia, Africa and Latin America,[b] 1965 to 2004

(percent)

(a) NRA



(b) RRA

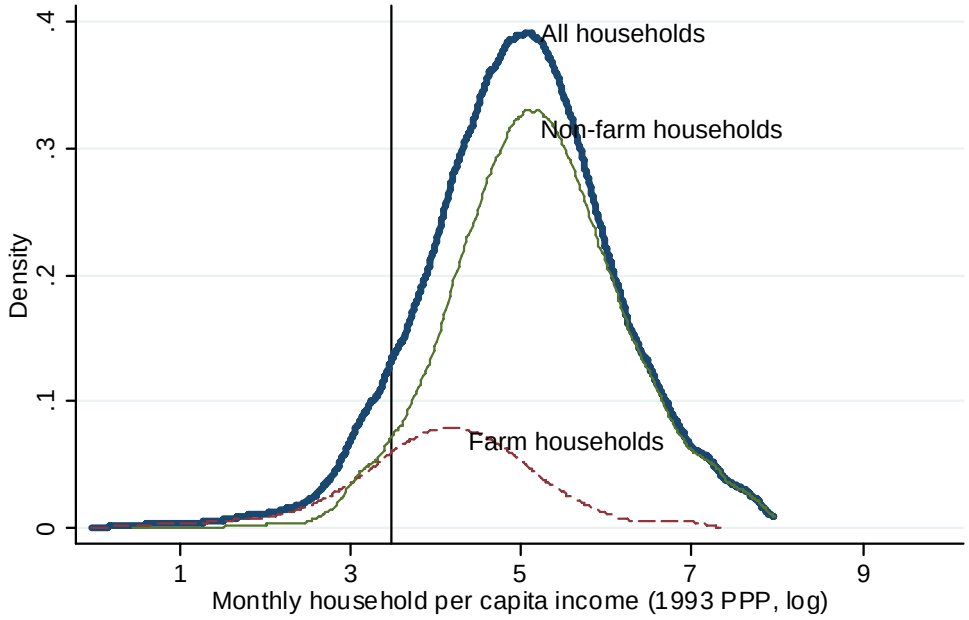


[a] 5-year weighted averages with value of production at undistorted prices as weights.
[b] NRAs (for 1965-80) and RRAs (for 1965-81) for China have been extrapolated back assuming they were the same as the average for years 1982-89.

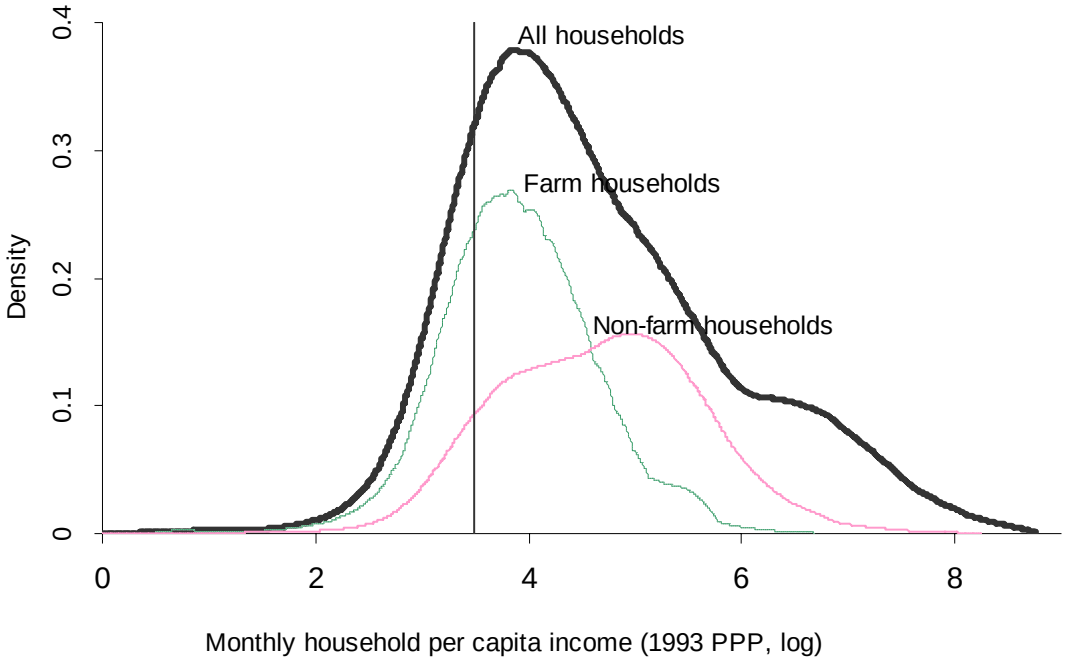
Source: Chapters 2-9 of this volume and Chapter 1 of Anderson (2008)

Figure 1.10: Income distribution, Latin America region and the world, 2000

(a) Latin America region



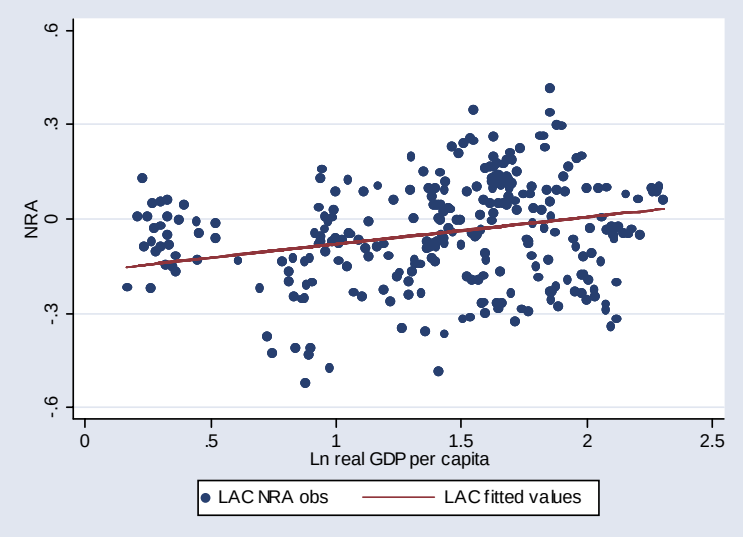
(b) World



Source: Bussolo, De Hoyes and Medledev (2008).

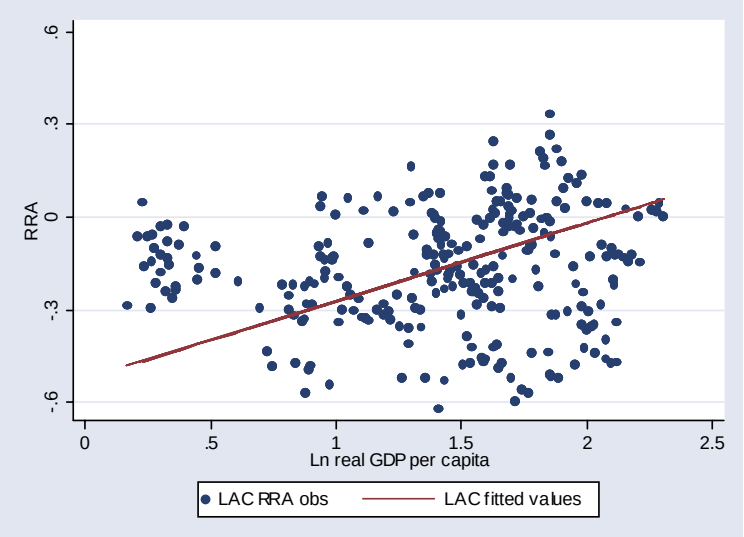
Figure 1.11: Relationships between real GDP per capita, comparative advantage, and agricultural NRA and RRA,[a] Latin America countries, 1955 to 2005

(a) Regression of ln real GDP per capita on NRA, with country fixed effects



Coefficient	Standard error	R^2
0.08	0.04	0.03

(b) Regression of ln real GDP per capita on RRA, with country fixed effects

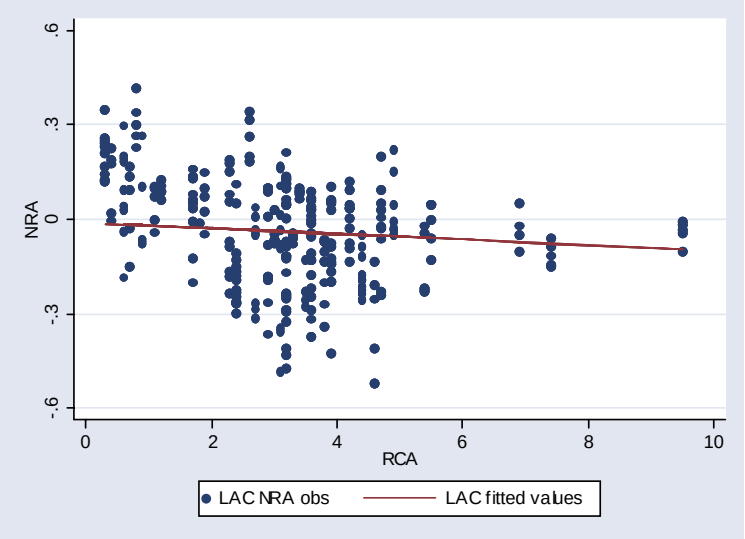


Coefficient	Standard error	R^2
0.19	0.04	0.01

Notes: Dependent variable for regressions is NRA or RRA by country and year, expressed as a fraction. Results are OLS estimates. The explanatory variable is the natural log of real GDP per capita expressed in $10,000.

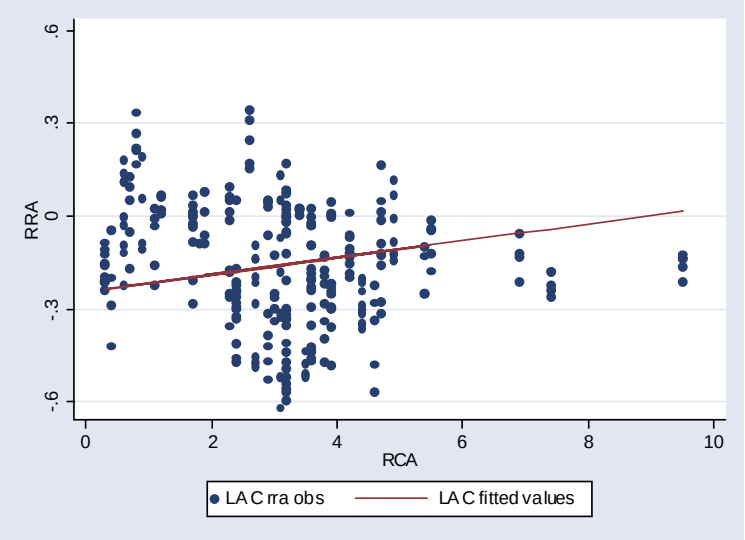
Figure 1.11 (cont.): Relationships between real GDP per capita, comparative advantage, and agricultural NRA and RRA,[a] Latin America countries, 1955 to 2005

(c) Regression of revealed comparative advantage on NRA, with country fixed effects



Coefficient	Standard error	R^2
-0.01	0.01	0.10

(d) Regression of revealed comparative advantage on RRA, with country fixed effects



Coefficient	Standard error	R^2
0.03	0.01	0.04

[a] Dependent variable for regressions is NRA or RRA by country and year, expressed as a fraction. Results are OLS estimates. The explanatory variable revealed comparative advantage, which is the share of agriculture and processed food in national exports as a ratio of that sector's share of global exports.
Source: Based on NRA estimates in authors' spreadsheets cited in Chapters 2-9 of this volume and on economic data in Sandri, Valenzuela and Anderson (2007).