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Distortions to Agricultural Incentives in Africa

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Agricultural Distortions Working Paper 56, December 2007

This is a product of a research project on Distortions to Agricultural Incentives, under the leadership of Kym Anderson of the World Bank's Development Research Group. It appears as Ch. 1 in Anderson, K. and W.A. Masters (eds.) *Distortions to Agricultural Incentives in Africa*, Washington DC: World Bank, forthcoming December 2008. Revised versions of the country case studies (Agricultural Distortions Working Paper Nos. 36-47 and 50-55) also appear as chapters in that volume.

The authors are grateful for the distortions estimates provided by authors of the focus country case studies, for assistance with spreadsheets by Johanna Croser, Esteban Jara, Marianne Kurzweil, Signe Nelgen, Francesca de Nicola, Damiano Sandri and Ernesto Valenzuela, and for funding from World Bank Trust Funds provided by the governments of Ireland, the Netherlands (BNPP) and the United Kingdom (DfID). This Working Paper series is designed to promptly disseminate the findings of work in progress for comment before they are finalized. The views expressed are the authors' alone and not necessarily those of the World Bank and its Executive Directors, nor the countries they represent, nor of the institutions providing funds for this research project.

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Kym Anderson and William A. Masters

In the 1960s and 1970s, many African governments had macroeconomic, sectoral and trade policies that increasingly favored urban employees at the expense of farm households, and favored the production of importable goods at the expense of exportables (Krueger, Schiff and Valdes 1988, 1991; Thiele 2004). Similar biases were also prevalent elsewhere, but rarely to the same extent as in Africa. The magnitude of pro-urban (anti-agricultural) and also pro-self-sufficiency (anti-trade) intervention matters greatly for economic development, because agriculture is the main employer for the poor and in Africa is often a key export sector. Changes in the magnitude of these biases could help explain Africa's development experience, including the continent's slow pace of poverty alleviation and economic growth. Indeed, since the 1980s much progress has been made in reducing the anti-agricultural and anti-trade biases of policy in Africa, and these changes have been associated with faster economic growth and poverty alleviation. However, many price distortions remain. With 60 percent of Sub-Saharan Africa's workforce still employed in agriculture and more than 80 percent of the region's poorest households depending directly or indirectly on farming for their livelihoods (World Bank 2007, Chen and Ravallion 2007), agricultural and trade policies remain key influences on the pace and direction of change in Africa.

This volume summarizes a set of case studies measuring distortions within and across countries over time. It is part of a global research project seeking to improve our understanding of agricultural policy interventions and reforms in Asia, Europe's transition economies, and Latin America and the Caribbean as well as Africa.¹ We make no attempt to summarize the voluminous literature on policy and economic growth in Africa (the most recent major continental study being Ndulu et al. 2008), let alone the literature dealing with public investment or economic growth strategies more broadly (addressed recently by Spence et al. 2008). Our goals are more narrowly defined. One purpose of the project is simply to compare quantitative indicators of past and recent agricultural price policies. A second

¹ The other three regional studies are Anderson and Martin (2008), Anderson and Swinnen (2008), and Anderson and Valdés (2008). Together with the present volume and comparable studies of high-income countries, they form the basis for a global overview volume (Anderson 2009a).

objective is to help describe the political economy behind these interventions in different national settings. Our third purpose is to use this evidence to explore the prospects for further policy reforms and their potential effects.

The foundation of this project is a new set of annual time series estimates for protection and taxation of farmers over the past half century. Comparisons over time, across commodities and among countries 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 producers who were taxed are now being protected from import competition, along the lines of such policy transitions seen earlier in Europe and Northeast Asia?

Beyond the data themselves, we ask what political and economic circumstances can help explain the policies chosen by governments? What explains the pattern of distortions within the agricultural sector of each country? What are the political economy forces behind reform, and how do successful reformers differ from other countries? In particular, how important are domestic political factors relative to international forces, such as loan conditionality, multilateral trade agreements through the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO), regional integration agreements, and the globalization of supermarkets or other trading firms? How has the balance of forces shifted over time?

Looking forward, our goal is to draw appropriate lessons from past experience, so as to facilitate the adoption of more growth-enhancing and poverty-reducing policies in Africa and elsewhere. The study is timely for at least four reasons. One immediate use for the findings is in trade negotiations. African and other developing countries have been more engaged in the WTO's Doha round of multilateral trade negotiations than in any previous GATT round, and the resulting diversity of interests has made it more difficult for WTO members to reach consensus. More information on agricultural and trade policies in these countries can inform dialogue between members. More information can also assist African countries seeking to position themselves favorably in preferential trade negotiations, notably the new Economic Partnership Agreements with the European Union. Another immediate need is for policies to respond to changing technologies, such as the information, communication, agricultural-biotechnology and supermarket revolutions. A third source of urgency is to meet the United Nations-encouraged Millennium Development Goals by 2015, with agricultural policy being central to the alleviation of hunger and poverty. And last but not least, the study is timely because world food prices spiked in 2007-08 at very high levels

and governments in some developing countries, in their panic to deal with the inevitable protests from consumers, have reacted in far from optimal ways. Such spikes have occurred in the past, most notably in 1973-74, and lessons as to what policy responses work better than others can be drawn from that set of experiences.

Including Africa in this study is crucial for several reasons. First, the continent is home to many of the world's poorest people. In 2006 Sub-Saharan Africa accounted for less than 2 percent of global gross domestic product (GDP) and exports and just 4 percent of agricultural GDP, but it also accounted for 12 percent of the world's farmers, 16 percent of agricultural land, and 28 percent of those living on less than US\$1 a day (World Bank 2008). Second, it is the region where agricultural growth has been slowest over the past half-century, especially on a per capita basis. And third, it is where sectoral and macro (including exchange rate) policies have been most heavily interventionist and slowest to reform, dampening the contribution of market incentives to economic growth. There is thus much to be learned from examining the policy history of the region, and there is great potential for poverty alleviation if market-friendly, growth-enhancing policies were to be adopted and the recent large increase in development assistance funds were to be used wisely to complement and strengthen market forces.

The African part of this study is based on a sample of 21 developing countries. It includes Egypt, the largest and poorest country in north Africa, plus five countries of eastern Africa (Ethiopia, Kenya, Sudan, Tanzania and Uganda), five countries in southern Africa (Madagascar, Mozambique, South Africa, Zambia and Zimbabwe), five large economies in west Africa (Cameroon, Cote d'Ivoire, Ghana, Nigeria and Senegal), and five smaller economies of west and central Africa for which cotton is a crucial export (Benin, Burkina Faso, Chad, Mali and Togo, for which we estimate price distortions for just cotton and four nontraded food staples). In 2000–04 these economies (leaving aside Egypt) together accounted for around 90 percent of the agricultural value added, farm households, total population and total GDP of Sub-Saharan Africa. Estimates of distortions are provided for as many years and products as data permit over the past five decades (an average of 43 years), and for an average of 9 crop and livestock products per country which in aggregate amounts to about 70 percent of the value of their agricultural production. The time series, product and country coverage greatly exceed that of the earlier study by Krueger, Schiff and Valdes (1991), which focused on just 3-5 crops during the 1960-84 period in only 2 North African and 2 Sub-Saharan African countries (Egypt and Morocco, and Ghana and Zambia).

Our 21 focus economies in Africa accounted for only 1.3 percent of worldwide GDP but 11 percent of the world's farmers in 2000-04. These and related shares are detailed in table 1.1, which reveals the considerable diversity within the region in terms of stages of economic development, resource endowments, trade specialization, poverty incidence and income inequality. The countries are also very diverse in political and social development terms, and thus provide a rich sample for comparative study.

The extent of poverty decline in Sub-Saharan Africa (SSA) since 1981 has been disappointing relative to other developing country regions. The number of SSA people living on less than \$1/day (in 1993 PPP terms) grew from 168 million in 1981 to 252 million by 1993 and 298 million by 2004. As a percent of the population, the number of people in such extreme poverty has declined over the past decade from its peak of 48 percent in 1996 to 41 percent by 2004 – but that is only marginally below the 42 percent level of 1981. More than two-thirds of that decline in poverty incidence over the past decade or so has been in rural areas, while most of the rest is explained by the rural poor moving to urban centers (where many are still very poor). The African experience contrasts strongly with that of Asia, where even in South Asia the proportion of the population living on less than \$1 a day has fallen from one-half to less than one-third (table 1.2).

Policy choices have played an important role in the rates of economic growth, structural change and poverty alleviation observed in Africa. Many countries had increasingly severe anti-agricultural and anti-trade biases in the 1960s and 1970s, with subsequent reforms that varied widely in terms of starting date, speed and extent of policy change. The switch to policies that are less biased against farmers and trade began in some countries by the late 1970s but in many others only in the 1980s or even later – and the transition is still on-going, often with periods of stalling and even reversals (the most notable recent example being Zimbabwe). Agricultural price distortions are not the only target of policy reform of course, but they are a key aspect of economic policy in most African countries.

This chapter begins with a brief summary of economic growth and structural changes in the region since the 1950s and of agricultural and other economic policy developments as they affected the farm sector at the time of and in various stages after independence from colonial powers. It then introduces the methodology used by the authors of the individual case studies to estimate the nominal rate of assistance (NRA), the corresponding consumer tax equivalent (CTE) facing the buyers of agricultural products, the relative rate of assistance (RRA) between the farm and nonfarm sectors, and the international trade bias index (TBI). The chapter subsequently provides a synopsis of the empirical results detailed in the country

studies in this volume, without attempting to also survey the myriad policy changes that are discussed in more detail in the following chapters. The final sections summarize what we have learned and draw out implications of the findings, including for poverty and inequality and for possible future directions of policies affecting agricultural incentives in Africa.

Growth and structural changes in Africa

The recent report of the Commission on Growth and Development (Spence 2008) notes that 13 economies have had sustained growth in real per capita income of more than 7 percent for at least 25 consecutive years since World War II. Nine of those are East Asian and only one is African, namely tiny Botswana (population: 2 million). Between 1980 and 2004, per capita GDP for our 21 focus countries of Africa grew at just 0.7 percent per year, half the global average of 1.4 percent and a small fraction of Asia's 5.5 percent, so per capita incomes in Africa have been diverging away from those of richer countries, especially those in Asia. Agricultural GDP growth was faster in Africa than for the world as a whole (3.2 compared with 2.0 percent per year), but only marginally so when expressed on a per capita basis (0.6 compared with 0.5 percent). In the earlier 1965-84 period, Africa's agricultural GDP growth rate had been just 1.5 percent (World Bank 1986).

Within Africa, economic growth and structural change experiences across countries are quite diverse (table 1.3). Over time, Africa's export volumes grew at relatively slow rates compared with the global average of 6.1 percent (last column of table 1.3), causing the region's share of global exports to halve. However, as economies have gradually opened up, the share of exports in GDP has reversed its decline and begun rising in several African countries (table 1.4).

Slow economic growth has allowed only modest restructuring of Africa's economies away from agriculture and towards other activities. In nearly three-quarters of our focus countries the farm sector's share of GDP is still above 25 percent, the same number as in the latter 1980s (table 1.5). The share of overall employment accounted for by farming activities has fallen but generally remains above 50 percent (table 1.6), much higher than the GDP shares. These data underscore the relatively low incomes of farmers, and hence the continued importance of agricultural prices for social welfare.

Agriculture's share of merchandise exports (table 1.7) has declined at least a little in virtually all African countries. This is partly because of rises in other primary exports such as petroleum in Sudan, partly because of growth in exports of manufactured goods as for example in Kenya, Madagascar and Senegal, and partly because production is increasingly consumed locally. The declining relative importance of farm exports has been less rapid in Africa than in the rest of the world, however, as the index of revealed agricultural comparative advantage (defined as the share of agriculture and processed food in national exports as a ratio of the share of such products in worldwide merchandise exports) has risen in most of our focus countries (table 1.8). The exceptions have newly exploited mineral or energy deposits. The overall trend is a slight decline in the export orientation of primary farm production. In the 1960s the region was 120 percent self-sufficient in farm products, but since then that indicator has declined to around 105 percent. The share of farm production exported has fallen from nearly 20 percent to just 8 percent, and the share of imports in domestic consumption of farm products has doubled, from 2 to 4 percent (table 1.9).

The trends in growth and development described above are closely linked to the agricultural policies pursued by African governments. To measure these policies in a comparable way, a common methodology was adopted by the authors of the country case studies in this volume (and its companion volumes listed in note 1). A summary of that methodology follows, and further details can be found in Anderson et al. (2008) which is reproduced as Appendix A in this book.

Methodology for measuring rates of assistance and taxation

The nominal rate of assistance (NRA) is defined as the percentage by which government policies have raised gross returns to farmers above what they would be without the government's intervention. Similarly, the consumer tax equivalent (CTE) is the percentage by which policies have raised prices paid by consumers of agricultural outputs. Negative values imply net taxation of farmers, or subsidies to consumers. The NRA and CTE will be identical if the sole source of government intervention is a trade measure and the two are measured at

the same point in the value chain, but in general there will also be some domestic producer or consumer taxes or subsidies to differentiate them.²

The intended use of NRAs and CTEs influences the methodology needed to estimate them. This project uses NRAs and CTEs for three purposes. One is simply to compare the net effect of policies on prices and incentives across a wide range of commodities, countries and years. For this purpose, the methodology needs to be both simple and flexible. Another purpose is to allow aggregation to indicate the total extent of transfer to (or from) farmers and consumers due to agricultural price policies, for which appropriate weights and denominators are needed. This function is similar in spirit to the OECD (2007) producer and consumer support estimates (PSE and CSE), but with important differences in implementation as outlined below. And the third purpose is to enable economic modelers to use the NRAs and CTEs in policy simulation models, which requires allocating each distortion to a particular policy instrument such as import tariffs, export taxes, or domestic producer or consumer taxes or subsidies.

Estimating the NRA or CTE for an individual industry requires specialist knowledge of that sector, 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 distorted at various times and to varying degrees in the past. Specialist knowledge is also needed as to how policy is actually implemented. Most distortions in markets for tradable goods come from trade measures, such as a tariff (or occasionally a subsidy) imposed on the c.i.f. import price or an export tax imposed on the f.o.b. price at the country's border, or quantitative restrictions on trade. These are captured in the NRA and CTE at the point in the value chain where the product is first traded. To estimate the NRA for a typical farmer, authors of the country studies estimated or guessed the extent of pass-through back to the farm gate, and added any domestic farm output subsidies. To obtain the CTE for a typical consumer, they also added any product-specific domestic consumer taxes or subsidies to the distortion from border prices. Note that the NRA and CTE differs from the OECD's PSE and CSE in that the latter are expressed as a percentage of the distorted price and hence will be

² Our definition of a policy-induced price distortion follows Bhagwati (1971) and Corden (1997) and includes any policy measure at a country's border (such as a trade tax or subsidy, a quantitative restriction on trade, or a dual or multiple foreign exchange rate system, assuming the country is small enough to have no monopoly power in international markets), or any domestic producer or consumer tax/subsidy/restraint on output, intermediate inputs or primary factors of production (except where needed to directly overcome an externality, or where it is set optimally across all products or factors, for example as a value added tax to raise government revenue).

lower (for positive protection rates) than the former which are expressed as percentages of the undistorted price.³

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 and various intermediate input shares 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. 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 (as is also done as part of the calculation by the OECD of its PSE). Any non-product-specific distortions, including distortions to farm input prices, are also added into the estimate for the overall sectoral NRA for agriculture as a whole.

NRA and CTE estimates were made for each of the country's major farm products, in an attempt to cover at least 70 percent of the total gross value of farm production at undistorted prices. This target degree of coverage is similar to that for the OECD's PSEs. Unlike the OECD, however, in this project we do not routinely 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 the chosen 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 import-competing, exportable and nontradable sub-sectors. Weighted averages for all agricultural products were 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) or assistance decoupled from production, such net assistance is then added to product-specific assistance to get an NRA for total agriculture,

³ Some analytics and empirical evidence regarding the appropriate choice of denominator are provided in Masters (1993).

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, by multiplying each NRA by that product's share of the gross value of production, valued at the farm-gate equivalent undistorted prices.⁴ To get the NRA for all agriculture, we then add the NRA for non-covered products and any non-product-specific assistance to farmers. 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. For other purposes, however, a value-weighted average is appropriate. Finally, we compute and use a weighted average that includes only 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. We denote this measure for tradable agriculture as NRA_{ag}^t .

In addition to these average NRAs, it is important to provide also a measure of its dispersion or variability across products. The welfare cost of a distortion varies exponentially with its size, so that a set of dispersed tariffs is more costly than a uniform tariff at the same average level. The cost of dispersion is even larger when there is a greater degree of substitution in production (Lloyd 1974). Land and labor is often specific to agriculture but highly transferable among farm activities, so we expect variation of NRAs across farm products to be quite costly. A simple indicator of this kind of dispersion is the standard deviation of the NRA among covered products.

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 as:

$$(1) \quad TBI = (1 + NRA_{ag_x}/100) / (1 + NRA_{ag_m}/100) - 1$$

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.

where NRA_{ag_m} and NRA_{ag_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) proved his Symmetry Theorem that in a two-sector economy, an import tax has the same effect as an export tax. This carries over to a model that also includes a third sector producing 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:

$$(2) \quad RRA = 100[(1+NRA_{ag^t}/100)/(1+NRA_{nonag^t}/100) - 1]$$

where NRA_{ag^t} and NRA_{nonag^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 (assuming NRA_{nonag^t} is positive). 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.

Exchange rate distortions generated by dual or multiple exchange-rate regimes are considered when calculating NRAs and CTEs, following the methodology outlined in Appendix A. These have been important in many African countries, particularly during the 1970s and 1980s, making their estimated (typically) positive NRAs for importables and (typically) negative NRAs for exportables larger than they otherwise would have been.

Dollar values of farmer assistance and consumer taxation are obtained from multiplying the NRA estimates 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 economies. These GSE values are calculated in constant dollars, and are also expressed on a 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 constant US dollars of the tax equivalent to consumers of primary farm products (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 covered farm products of our focus countries.

Estimates of policy-induced distortions in Africa

We begin with the nominal rates of assistance to agriculture, then compare them with the nominal rates for non-agricultural tradables by calculating the relative rates of assistance. Dollar equivalents of assistance/taxation to farmers are also presented, and so too are the consumer tax equivalents of policies as they affect buyers of farm products in each country (which includes domestic processors).

Nominal rates of assistance to agriculture

Agricultural price, trade and exchange rate policies have reduced the earnings of African farmers quite substantially.⁵ The average rate of taxation as measured by our weighted average NRA was less than 10 percent at the time many Africa countries achieved independence in the early 1960s, but then rose sharply during the 1960s and 1970s as interventions became more severe. Reforms have since reduced the average extent of taxation to below its level of the early 1960s, including a brief period in the late 1980s when a combination of policy reforms and low international commodity prices brought the weighted average NRA to near zero (table 1.10). Such averages hide considerable diversity within the

⁵ Recall that our sample covers around 90 percent of Sub-Saharan Africa's economy. For North Africa, the sample includes only Egypt, which accounts for almost half the population of North Africa but only 37 percent of its GDP.

region, however. A visual impression of the variation across countries and the extent of reforms between 1975-79 and 2000-04 is provided in figure 1.1, showing clearly the major reduction in taxing of farmers in such countries as Ghana, Uganda, Tanzania, Cameroon, Senegal and Madagascar. That figure also shows the transition from taxation to support of farmers in Mozambique and Kenya, as well as the transition from slight support to slight taxation in Nigeria, and the continuing heavy degree of taxation still in Cote'd'Ivoire, Zambia and Zimbabwe.

One important type of variation in distortions is the within-country dispersion of product NRAs, as measured in table 1.11 by their standard deviation around the weighted mean NRA for covered agricultural products in each period. This dispersion was highest in the middle of our 50-year period, when the NRAs were most distorting, but even after the recent reforms it is no lower than it was at the beginning of the period. The dispersion of NRAs within African countries is an important target for reform, whatever the level of average NRA.

Variation among products has a somewhat similar pattern across countries. Figure 1.2 shows the pattern of dispersion in the region-wide average NRA among the key farm commodities in the late 1970s and a quarter-century later, both unweighted and weighted by value of production. As in other regions of the world, assistance is among the highest for the rice pudding ingredients of sugar, rice and milk, and is most negative for tropical cash crops such as coffee, cotton, cocoa and tobacco. The dispersion over a wider range of products and the full time period is summarized in table 1.12.

A third type of variation is cross-country diversity of national average NRAs. This is evident from the bottom of table 1.10: NRA averages for the agricultural sector became more similar between the latter 1950s and the early 1970s, then less similar through to the latter 1980s, and then more similar again so that by 2000-04 this type of dispersion was back to what it had been in the early 1960s.

The fourth important type of variation is differential treatment of import-competing and exportable products, in a way that often favors self-sufficiency. The extent of anti-trade bias is shown in figure 1.3, as the gap between the average NRAs for import-competing and exportable products. This gap grew from the 1950s through to the 1980s. It has since narrowed again, due mainly to changes in taxation of exportables, but the gap is still sizeable. This is summarized in the Trade Bias Index (TBI) reported for Africa as a whole in the middle row of table 1.13, and for individual countries in table 1.14.

Decomposing the NRA into components reveals a subtle but important influence on the aggregate average. The final ‘exportable share’ row of table 1.14 shows that, since the late 1970s, the share of tradable farm products that are exportables has fallen from two-thirds to just over one-half (from 67 to 54 percent). Many governments tax trade in both directions, with negative NRAs for exportables and positive NRAs for importables, so the changing composition of African agriculture from exportable to importable helps drive the aggregate NRA towards zero. This compositional effect adds to the changes within the exportables and import-competing subsectors illustrated in figure 1.3.

Another important decomposition of the average NRA is provided in table 1.15, showing the contribution of domestic input subsidies, output taxes or subsidies, and border measures. In the African context, product-specific input price distortions contributed very little to the sectoral NRA estimates, so that in many cases the case-study authors reported no values at all. Interventions in domestic markets also contributed relatively little. Most of the region’s measured NRA is due to border measures, largely trade taxes, quantitative trade restrictions and the operations of parastatal trading companies.

In aggregate, the total value of taxes on farming has been substantial. Africa’s anti-agricultural bias in NRA terms peaked in the late 1970s, but the sector has grown and so in constant (2000) US dollars the total value of annual transfers from farmers has risen from around \$2 billion in the early 1960s (taking account of the fact that NRAs were available for only four-fifths as much agricultural production then as from 1980) to \$10 billion in the 1970s, and back to around \$6 billion in the 1980s (ignoring the mid-1980s period when international prices were at record lows), 1990s and 2000-04 (see bottom row of table 1.16(a)). The distribution across countries is shown in figure 1.4, where it is clear that the major transfers in recent years have been from farmers in Ethiopia and Sudan in the east, Zimbabwe in the south, and Cote d’Ivoire and Nigeria in the west. What is also clear from that figure is how much decline there has been since the latter 1970s in such transfers, particularly in Egypt and Tanzania but also in many smaller African economies. For Africa as a whole, the latest estimate is equivalent to a gross tax of \$40 per year for each person engaged in agriculture, down from more than three times that amount in the 1970s (bottom row of table 1.16(b)), but still larger than government investment or foreign aid targeted to agriculture (Masters 2008, Figure 9). As shown in table 1.17 and figure 1.5, the burden of taxation was imposed mainly through the three major export cash crops (cocoa, coffee and cotton) plus groundnuts, beef, rice, and sugar in the 1970s. Three decades later those cash

crops are still the main source of transfer from agriculture, while sugar and milk have become positively assisted.

In summary, the level and dispersion of agricultural NRAs confirm that there has been substantial reform towards less distortion of incentives. However, they also suggest that there are still many opportunities for policy changes that would be both pro-poor and pro-growth, raising income for low-income farmers and improving resource allocation within and between countries.

Assistance to non-farm sectors and relative rates of assistance

The anti-farm policy biases of the past were due not just to agricultural policies, but also to policies affecting mobile resources engaged in other sectors. For example, to the extent that protection to manufacturing also has declined over time, the relative burden on agriculture has diminished even more than the agricultural NRA suggests.

The results of this study aim to capture inter-sectoral effects through using the NRA also on non-agricultural products to generate the relative rate of assistance (RRA) between farm and nonfarm activities. The case studies were far more focused on agricultural policy, and their NRAs for the nonfarm sector typically were measured using data on applied trade taxes rather than price comparisons. As a result, unlike for farm NRAs the estimated nonfarm NRAs usually do not include the effects of quantitative trade restrictions which were important in earlier decades but have been relaxed in recent times. The nonfarm NRAs also do not capture distortions in the services sectors, some of which now produce tradables or use resources that are mobile between sectors. We can therefore be confident that the estimated NRAs for non-farm activities are smaller and decline less rapidly than in fact was the case, and that our RRA estimates understate the past level of anti-farm bias.

Even though the estimates of the NRA for non-farm tradables should be considered lower-bound estimates, they turn out to be nonetheless quite large. Their unweighted average among the African focus countries rose from around 12 percent in the 1960s to 27 percent during 1975-84 before declining to around 15 percent during the most recent decade or so. As a result, the unweighted RRA is lower and dips even more (to -42 percent) in the middle of the studied period than does the NRA for agriculture, before returning at the end of the period to around the -20 percent it was in the early 1960s (figure 1.6(a)).

The ten half-decade RRAs and their two component NRAs for each country are summarized in table 1.18. A visual picture of RRA changes in our focus countries since the

latter 1970s is provided by figure 1.7. Even after the reforms since the 1980s only three of those countries had a set of incentives in 2000-04 that was neutral as between agriculture and other tradable sectors, namely South Africa, Mozambique and Kenya. But none other than Zimbabwe has a worse set of intersectoral distortions now than in the 1970s.

Comparisons across regions and countries

Trends in agricultural NRAs and in intersectoral RRAs for Africa, Asia and Latin America are summarized in figure 1.8, showing that other regions have had similar – but even steeper – trends over most of the past four decades. These similarities suggest that common political economy forces might be at work. Indeed, the tendency for agricultural NRAs and RRAs to be positively correlated with per capita income and revealed comparative advantage in trade (see Anderson 1995) is confirmed statistically even in Africa (but less so than in Asia and Latin America – see Ch. 1 of Anderson and Martin 2008 and Anderson and Valdés 2008) in the simple regressions with country fixed effects shown in figure 1.9, and with the multiple regressions with country and time fixed effects shown in table 1.19.

Looking across countries, we can ask whether policy changes have helped make the international location of production more or less efficient over the past five decades? To answer that question well, these NRA data should be analyzed using a global computable general equilibrium model. Until then, a crude approach is to examine the standard deviation of RRAs across the economies of the region over time. That indicator suggests distortions became more dispersed across African countries up to the 1980s, but less so thereafter: it averaged around 30 percent during 1955-79, nearly 45 percent during the 1980s, but has since gradually fallen to 20 per cent during 2000-04 (final row of table 1.18).

Consumer tax equivalents of agricultural policies

The extent to which farm policies alter the retail prices of food, livestock feed or inputs into processing industries depends on various intervening factors, including the extent of competition along the value chain. For simplicity, like the OECD (2007), we ask only how policies affect buyers at the point on the value chain where the farm product is first traded internationally, where comparisons can most directly be made between domestic and international prices (e.g., as milled rice, or raw sugar). Then, to sum up CTEs across commodities and countries, we use consumption values from national sources or from the

FAO food balance sheets. In the case of minor products, we proceed indirectly by using FAO value of trade data and assuming the undistorted value of consumption is production valued at undistorted prices plus imports minus exports.

If there were no farm input distortions and no domestic output price distortions so that the NRA was entirely the result of border measures such as an import or export tax or restriction, and there were no domestic consumption taxes or subsidies in place, then the CTE would equal the NRA for each covered product. But such domestic distortions are present in several African countries. Also, the value of consumption weights used in getting the CTEs are quite different from the value of production weights used for getting weighted average NRAs (both measured at undistorted prices). Hence the average CTEs are quite different from the average NRAs for numerous countries, particularly those exporting cash crops in order to import staple foods. This can be seen by comparing the country and product CTEs in table 1.20 with the corresponding NRAs in tables 1.10 and 1.12. Nonetheless, the weighted average CTE for the region has moved much like the NRA: starting at around -10 percent at the time of independence, falling to -17 percent (that is, a 17 percent consumer subsidy equivalent) by the early 1970s, and then gradually lessening and eventually reaching close to zero (with a blip in the latter 1980s when Egypt overshot in its reform efforts to reduce the suppression of domestic food prices just when the international price of food fell to record low levels). The variance in both national CTEs within countries and in product CTEs across countries also rose before the reforms and fell after the latter 1980s (see table 1.20(a) and (b) including the bottom row of each).

In dollar terms the subsidies to consumers of farm products in Africa are largest in Sudan and Ethiopia while the tax on consumers historically has been largest in Nigeria and South Africa. Egypt prior to its reforms in the 1980s was also a huge subsidizer of food consumers. The transfer on average from producers to consumers in the region amounted in 2000-04 to around \$1.7 billion per year, which is only one-third (when expressed in 2000 US dollars) the annual average transfer in the 1970s (table 1.21(a)). Among the covered products, the diversity in measures across the continent means that there are no obvious stand-out products (table 1.21(b)), unlike in other regions where the biggest transfers are from consumers to producers of milk, rice and sugar.

The link between anti-farm and anti-trade policies

A visual picture of the overall finding – that distortions have been reduced substantially since the 1970s – is provided in figure 1.10. That figure shows values of agriculture’s trade bias index (TBI) on the horizontal axis and relative rate of assistance (RRA) on the vertical axis. An economy with no anti-agricultural bias ($RRA = 0$) and no anti-trade bias within the farm sector ($TBI = 0$) would be located at the intersection of the two axes in the upper right-hand corner. In 1975-79, South Africa was the only economy anywhere near that point, and most other Sub-Saharan African economies were far to the southwest of it. In 2000-04, by contrast, Kenya and Nigeria were also close to that neutrality point, and all the other countries shown were far closer than they were in the 1970s. This is not to say there are few distortions left within the agricultural sector though, because RRA and TBI values in the ranges -20 to -40 and -0.2 to -0.4, respectively, are not small – and because within most countries’ agricultural sector there is still a wide dispersion of product NRAs. Note also from Figure 1.10 that the 2000-04 values fit roughly along a 45-degree line, as the tax burden on agriculture in these countries consists primarily of taxes on trade.

International spillovers and multilateral agreements

Our distortion estimates take each country’s border prices as given, but in reality each country’s policies do have some small effect on other country’s prices. An import restriction that raises domestic prices will lower prices elsewhere, and an export tax that lowers domestic prices will raise them elsewhere. In addition, attempts by one country to stabilize its domestic prices over time will reduce the stability of international prices. As a result, each country’s openness to trade contributes to an international public good, offering other countries more favorable and often more stable border prices. This is a classic collective action problem, calling for a multilateral agreement to lock in freer trade policies.

Collective action to stabilize world prices is precisely what was sought during the GATT’s Uruguay Round Agreement on Agriculture, via tariff bindings and disciplines on administered domestic prices. Tariff bindings can reduce the extent of spillovers by restricting the range over which tariffs can increase in response to low prices. But WTO bindings are now so far above applied import tariffs that this discipline on food-importing members in years of low international prices is very weak. The most recent stage of the Doha round of WTO-sponsored multilateral trade negotiations broke down in mid-2008 because many developing countries were calling for policy space in the form of a Special Safeguard Mechanism which would have allowed even more scope for limiting imports – something

richer members including the United States were not willing to sanction in a new agreement. Moreover, there is no corresponding GATT/WTO discipline on food export restrictions, which – as 2008 has starkly revealed – can be the problem in years of high international prices.

Africa's share of world trade is so small that its policies contribute relatively little to the collective-action problem described above, except to the extent that African governments have sided with such countries as Indonesia and India in demanding special safeguards and thereby delayed or prevented the emergence of a new WTO agreement. As the victim rather than perpetrator of international agricultural-policy spillovers, however, Africa could benefit greatly from a more effective system of multilateral trade rules. International agreements may also help African governments undertake reforms that would not otherwise be possible, allowing them to make commitments and assemble coalitions that cannot otherwise be sustained. The details of WTO and other international agreements are outside the scope of this book, but generally our results regarding national policies suggest that multilateral agreements can help each government deliver more favorable market conditions for agricultural development at the very least by limiting the rise of import restrictions in other countries. In addition, following the imposition by numerous food-exporting developing countries in 2008 of export restrictions that harmed food importers, perhaps WTO members may eventually agree to limit export restrictions as well.

Summary: What have we learned?

Each of the case studies presented in this volume provides detailed insights into Africa's wide variety of country experiences. Aggregating their results to characterize all of Africa necessarily obscures as much as it reveals. Making generalizations is sometimes useful, however, if only to allow comparison with other regions, and to detect common trends that cannot be seen in individual cases. Averaging over the 21 African countries considered in this study, our principal findings are the following.

African governments have removed much of their earlier anti-farm and anti-trade policy biases. Government policy biases against agriculture had worsened in the late 1960s and 1970s, primarily through increased taxation of exportable products. Reforms of the 1980s and 1990s reversed that trend, and average rates of agricultural taxation are now back to or below the levels of the early 1960s.

Substantial distortions remain, and still impose a large tax burden on Africa's poor.

In constant (2000) US dollar terms, the transfers paid by farmers in our 21 focus countries peaked in the late 1970s, at over \$10 billion per year or \$134 per farm worker. In 2000-04 the burden of taxation averaged \$6 billion per year, or \$41 per person working in agriculture. However, even this lower amount is appreciably larger than public investment or foreign aid into the sector. This continuing taxation in Africa contrasts with both Asia and Latin America, where the average agricultural NRAs and RRAs had risen all the way to zero by the early 21st century, and from lower levels than in Africa (although, like Africa, those other regions still have a wide dispersion of NRAs across products and countries within their regions).

African farmers have become less taxed in part because of the changing trade orientation of African agriculture. Reduced taxation of farmers has occurred in part because of a decline in the share of output that is exportable and a corresponding rise in the share from import-competing agricultural industries. That sub-sector's rate of protection from imports has fluctuated but remains positive.

Trade restrictions continue to be Africa's most important instruments of agricultural intervention. Domestic taxes and subsidies on farm inputs and outputs, and non-product-specific assistance, are a small share of total distortions to farmer incentives in Africa. As a result, policy incidence on consumers tends to mirror the incidence on producers, with fiscal expenditures playing a much smaller role than in more-affluent regions.

Differences in NRAs and RRAs across commodities and countries are still substantial. Dispersion rates, as measured by the standard deviation in NRAs and RRAs across commodities and countries, rose and then fell with the average degree of intervention in the decades each side of the 1970s. Looking forward, whatever the overall level of taxation or assistance, moving towards more uniform rates within the farm sector and between countries within the region could still yield substantial increases in efficiency of resource use.

Where to from here?

Every reader of this volume will draw their own conclusions as to what these findings imply about the future of agricultural policy in Africa, and wide variations in NRAs among countries will no doubt continue. We hope that, despite difficult conditions, many African

governments will continue to reduce taxation of agricultural exports, improve market institutions and invest in rural public goods, and will see producers respond in ways that generate faster economic growth and sustained poverty alleviation. That has been the pattern in other regions, and African countries have shown their willingness and ability to begin these changes.

Our hopes are tempered by experience, however, including particularly the experience of agricultural policy transition in other regions. A fundamental concern in agricultural policy over time as economies join the middle-income group is ‘overshooting’. In response to rural poverty and inequality, many countries start protecting agriculture soon after they stop taxing it.⁶ This imposes large costs on consumers, and slows national economic growth. Countries that lock in relatively efficient and equitable policies as soon as they are attained can therefore enjoy a high payoff relative to those that allow farm support policies to become increasingly costly over time. In particular, policies that raise the prices of staple foods impose serious costs on the urban poor and on rural net buyers of these products, as has been demonstrated by recent increases in their prices for other reasons (Ivanic and Martin 2008).

Rural-urban poverty gaps can be addressed in far more efficient ways than by subsidizing production or raising food prices. For example, rural poverty can and has been alleviated in parts of Africa and Asia by the mobility of some members of farm households who work full- or part-time off the farm and repatriate part of their higher earnings back to those remaining on the farm (Otsuka and Yamano 2006, World Bank 2007). Concerted government interventions through targeted social policy measures can also be an efficient and effective way to reduce gaps between rural and urban incomes and raise national incomes overall (Winters, McCulloch and McKay 2004). Efficient ways of assisting the left-behind groups of poor (nonfarm as well as farm) households include public investment measures that have high social payoffs such as basic education and health, rural infrastructure and agricultural research and extension.

The rest of this volume contains a collection of analytical narratives of the policy experiences of 21 African countries over the past half-century, each illustrated by detailed quantitative estimates of the extent of distortions to farmer incentives. While they bring new empirical evidence to bear on many common concerns, they inevitably also raise new questions. Among the most important are: What impact have past and recent policies had on economic welfare, agricultural prices, income inequality and poverty? Why did governments

⁶ Details on this and other patterns in agricultural distortions data are provided in Anderson (2009b).

intervene in the ways they did, especially when some of those means were grossly inefficient and inequitable? More in-depth empirical analysis is now possible, thanks to the provision of the distortion estimates reported here and in the three companion volumes cited in note 1. Some early findings from such analyses will appear in the project's forthcoming books. For example, Anderson, Valenzuela and van der Mensbrugge (2009) provide results from a global economy-wide model of the impacts on agricultural markets, national economic welfare and net farm incomes of distortions to the world's goods markets as of 2004. How those distortions – both own-country and rest-of world's – impact on the extent of poverty and inequality are explored in a series of country case studies in Anderson, Cockburn and Martin (2009), using global and national economy-wide models that are enhanced with detailed earning and spending information of numerous types of urban and rural households. And in Anderson (2009b) a broad range of theoretical and econometric analyses are brought together in an attempt to shed more light on the political economy forces that generated the evolving pattern of inter- and intra-sectoral distortions to farmer and food consumer incentives over the past half-century. Our hope is that the results from these studies will spawn many more such analyses in the years to come. We hope too that these comparative analyses will help African governments to adopt more successful policies, allowing African countries to achieve faster economic growth, poverty alleviation and improved living conditions for all.

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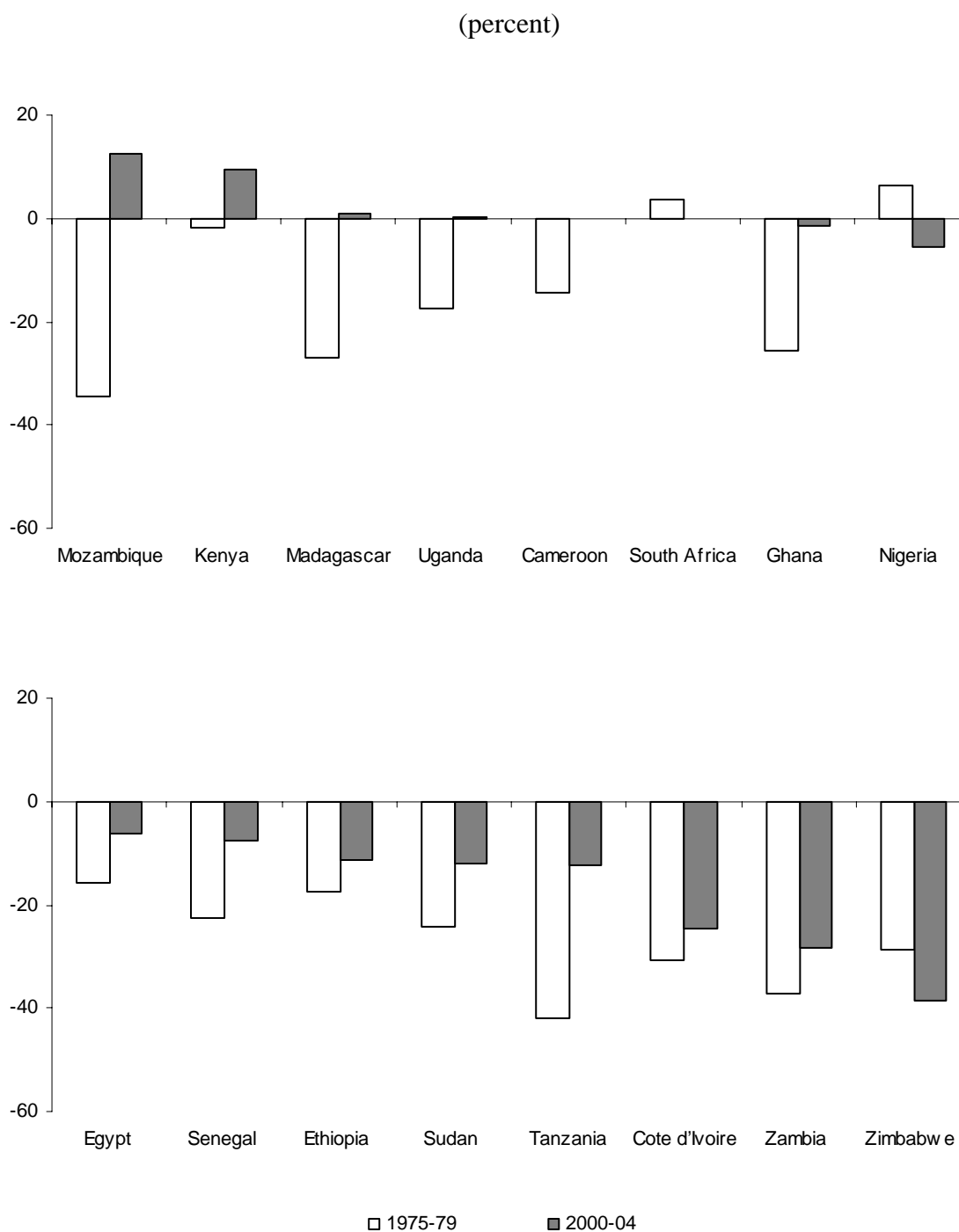
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Figure 1.1: Nominal rates of assistance to agriculture, individual African focus countries and unweighted regional average, 1975-79 and 2000-04^a



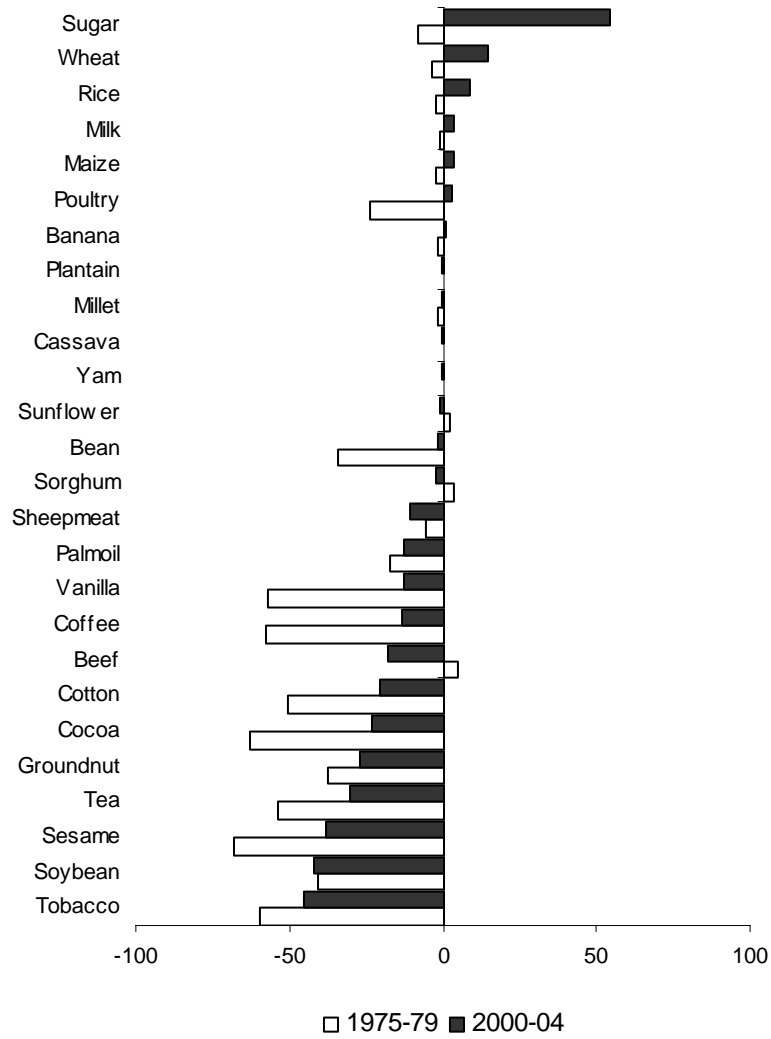
Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

^a Ethiopia data for the first period refer to 1981-84 as 1975-79 data are unavailable.

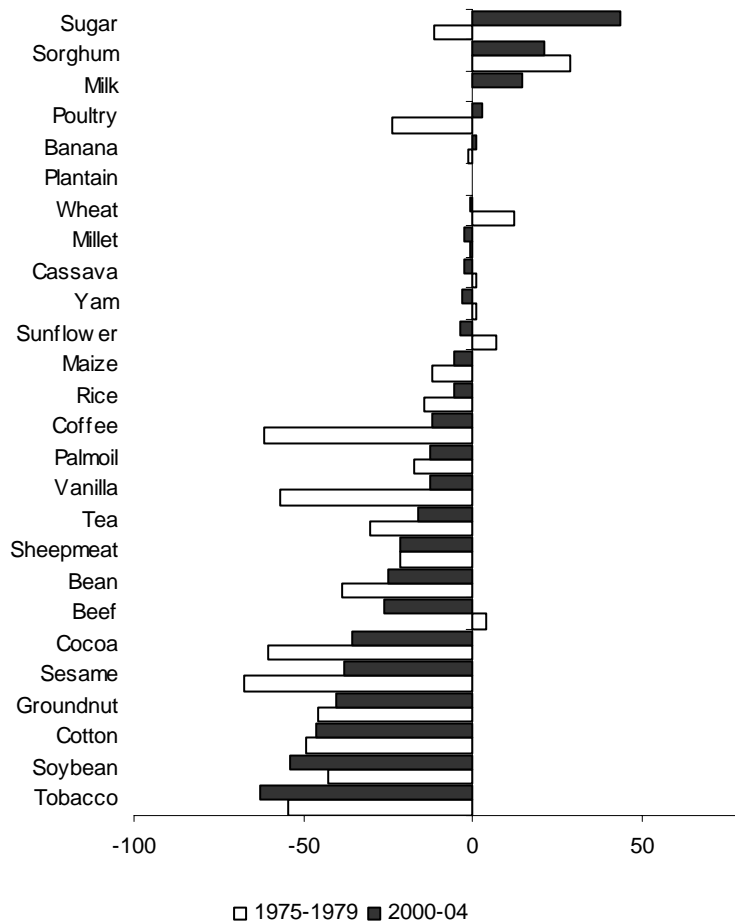
Figure 1.2: Nominal rates of assistance, key covered product, African focus countries, 1975-79 and 2000-04

(percent)

(a) unweighted average across 21 countries



(b) weighted^a average across 21 countries



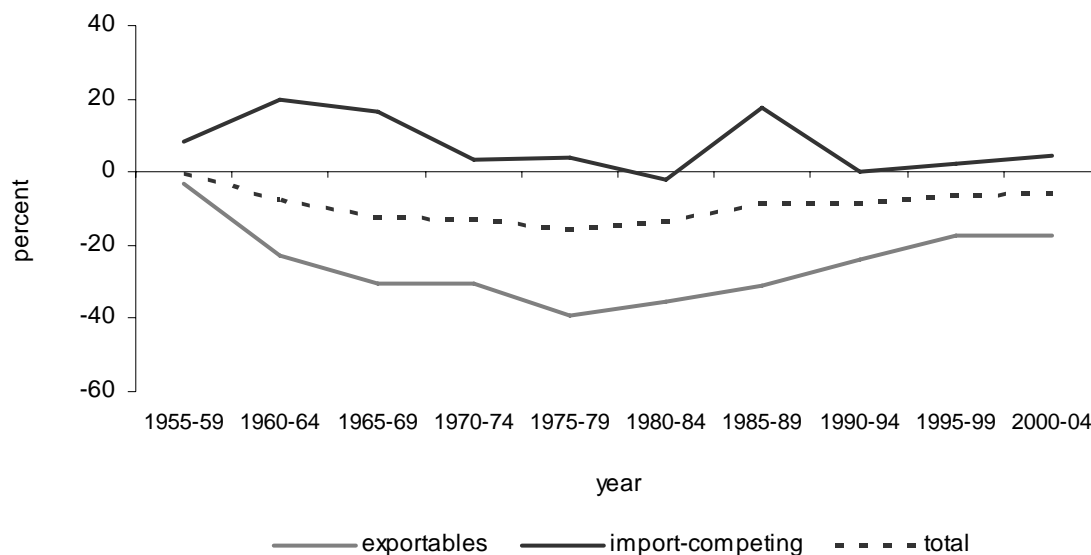
Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

a. Weights based on gross value of agricultural production at undistorted prices, with each NRA (by country, by product) is weighted by the country's value of production of that commodity in a given year.

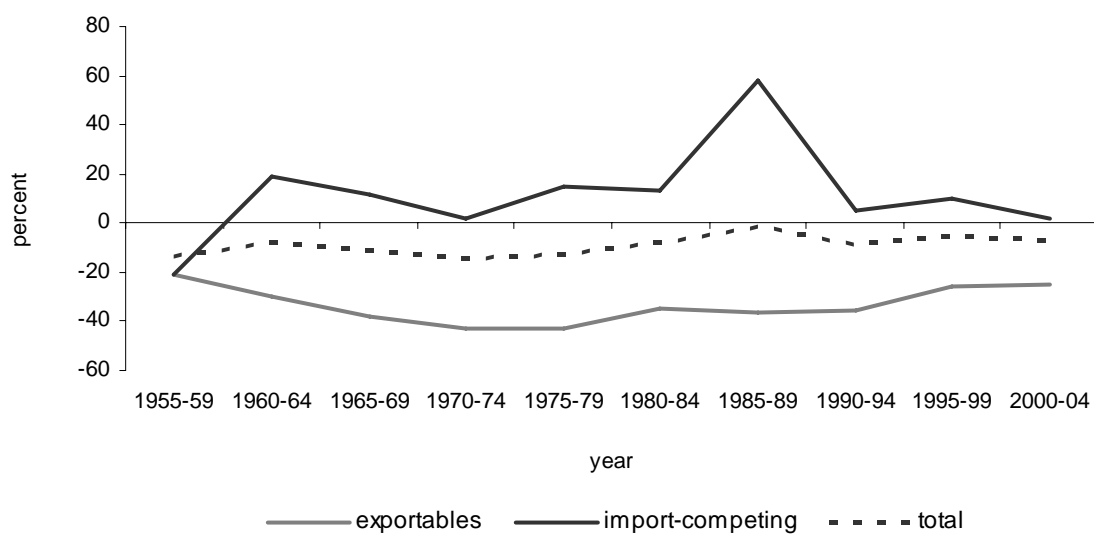
Figure 1.3: Nominal rates of assistance to exportable, import-competing and all^a agricultural products, African region, 1955 to 2004

(percent)

(a) unweighted averages across 16 countries



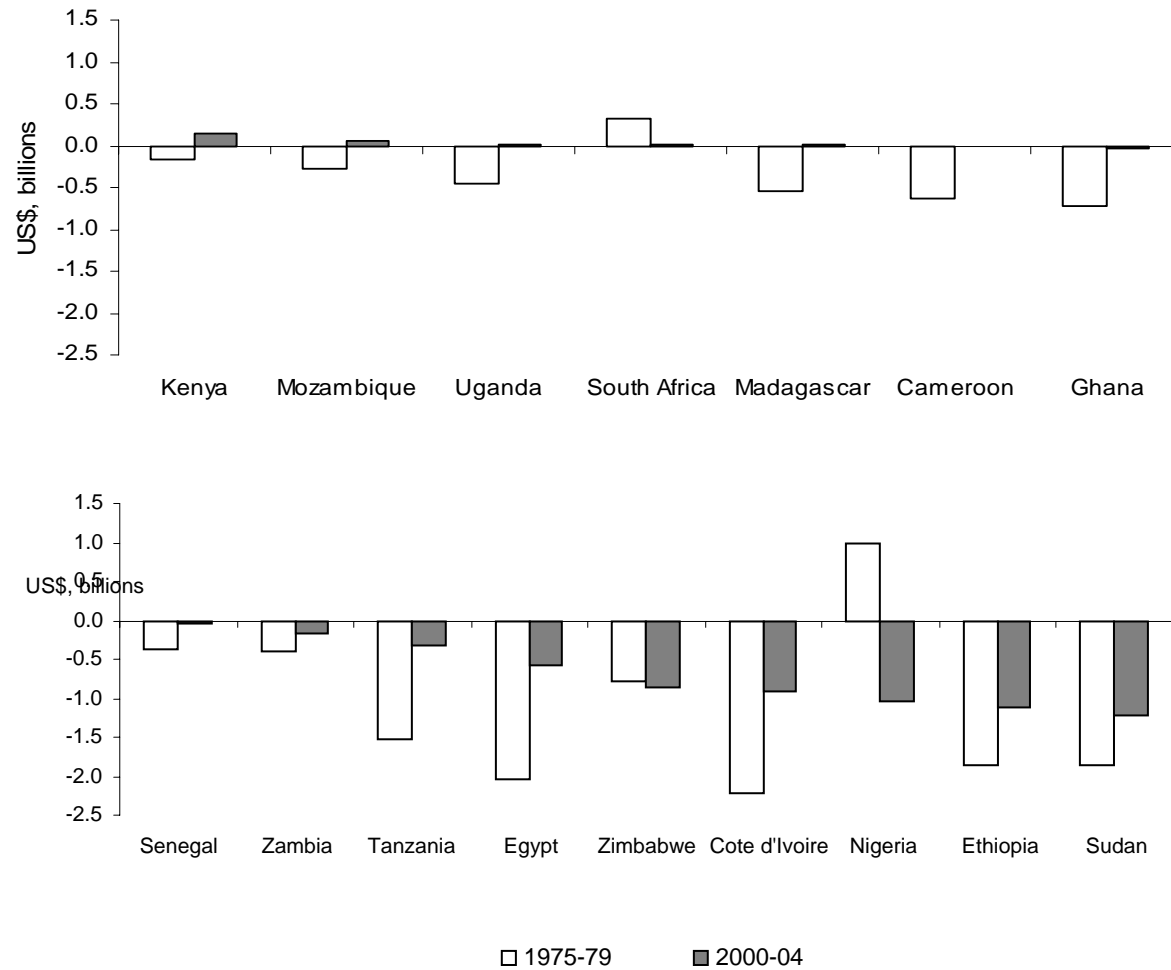
(b) weighted averages across 16 countries



Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

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.

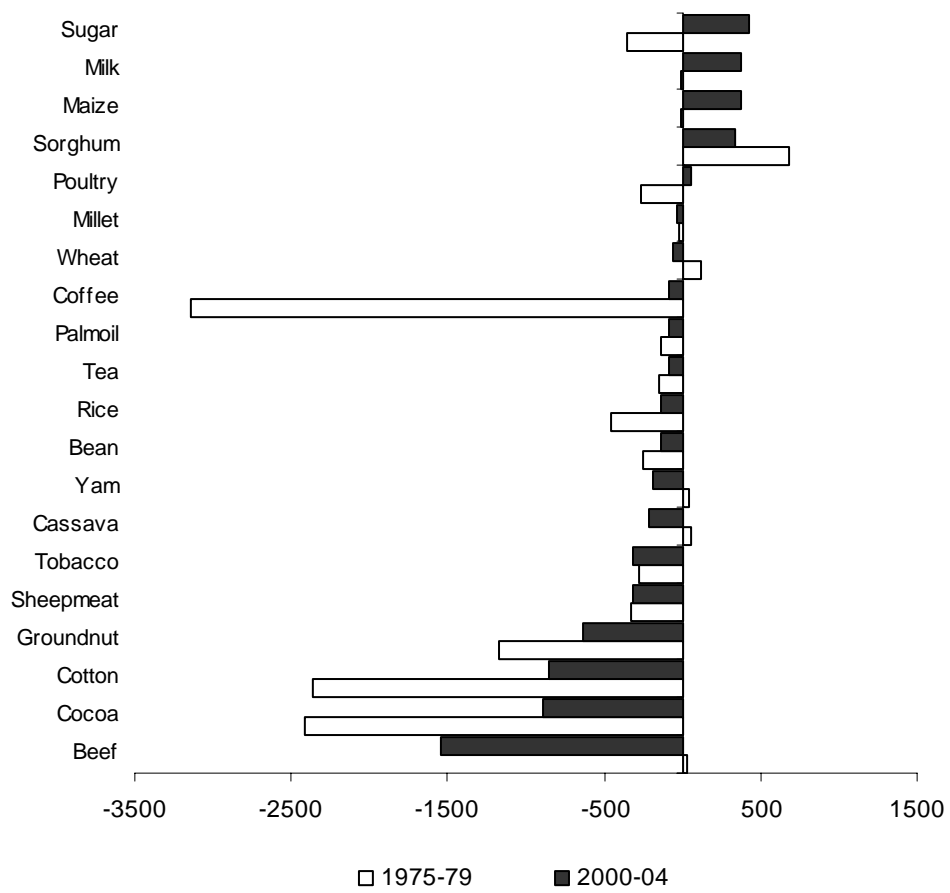
Figure 1.4: Gross subsidy equivalents of assistance to farmers, African focus countries,^a 1975-79 and 2000-04
(constant 2000 US\$ billions)



Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.
a. Tanzania data for 1975-79 are 1976-79.

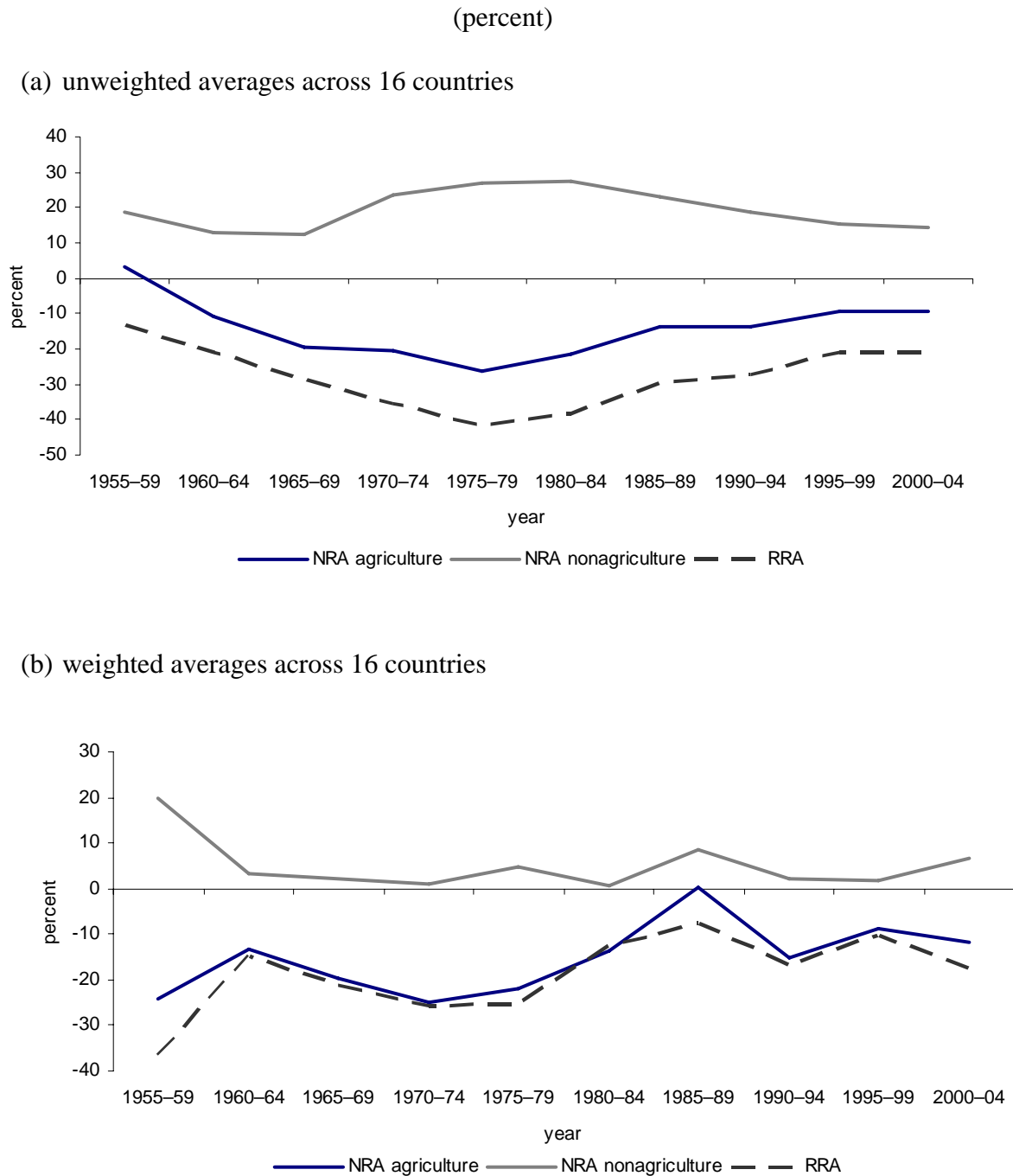
Figure 1.5: Gross subsidy equivalents of assistance to farmers in Africa, by product, 1975-79 and 2000-04

(constant 2000 US\$ million)



Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

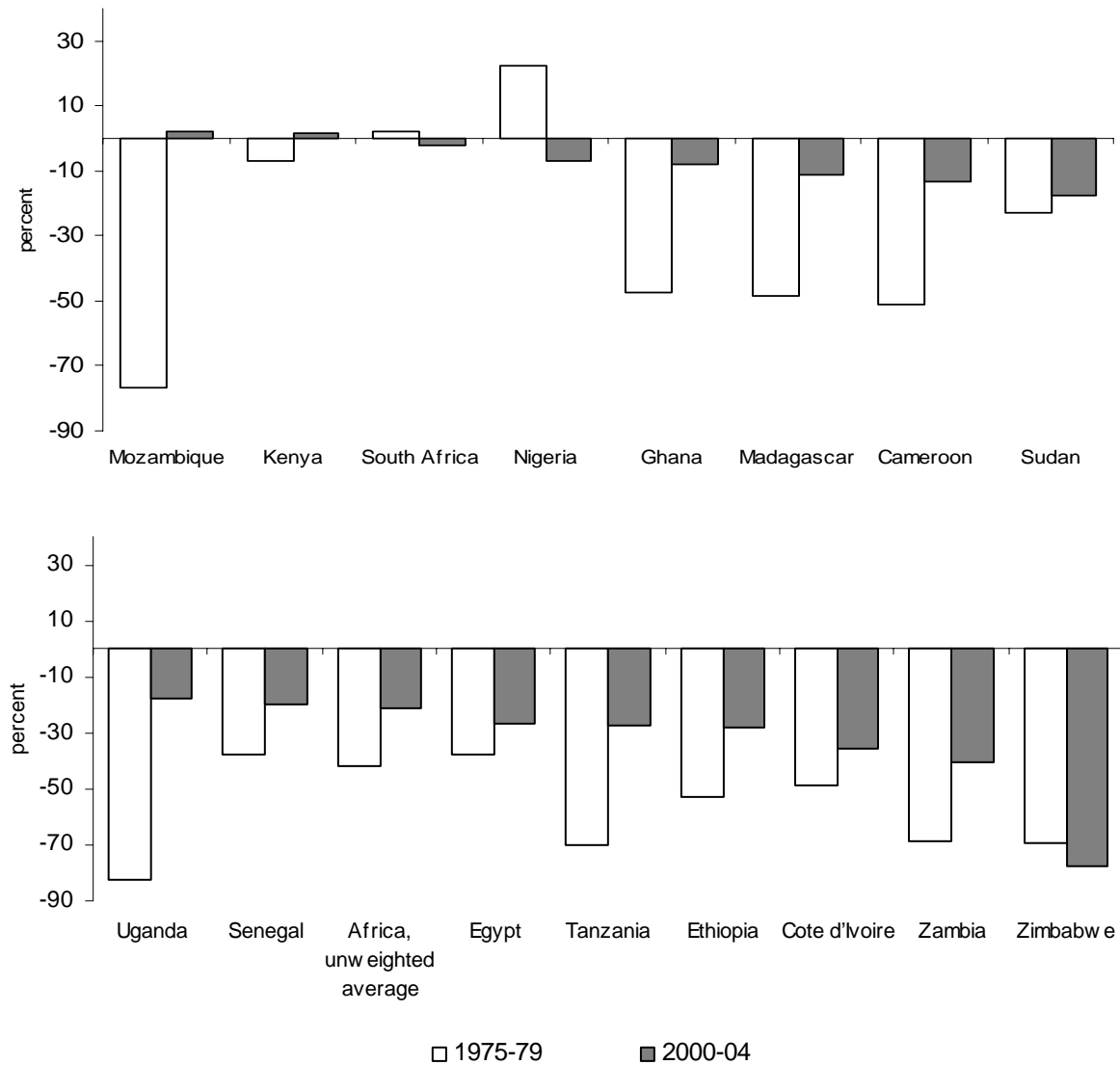
Figure 1.6: Nominal rates of assistance to agricultural and non-agricultural tradable products and relative rate of assistance,^a Africa region, 1955 to 2004



Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

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

Figure 1.7: Relative rates of assistance to agriculture,^a African focus countries^b and unweighted regional average, 1975-79 and 2000-04 (percent)

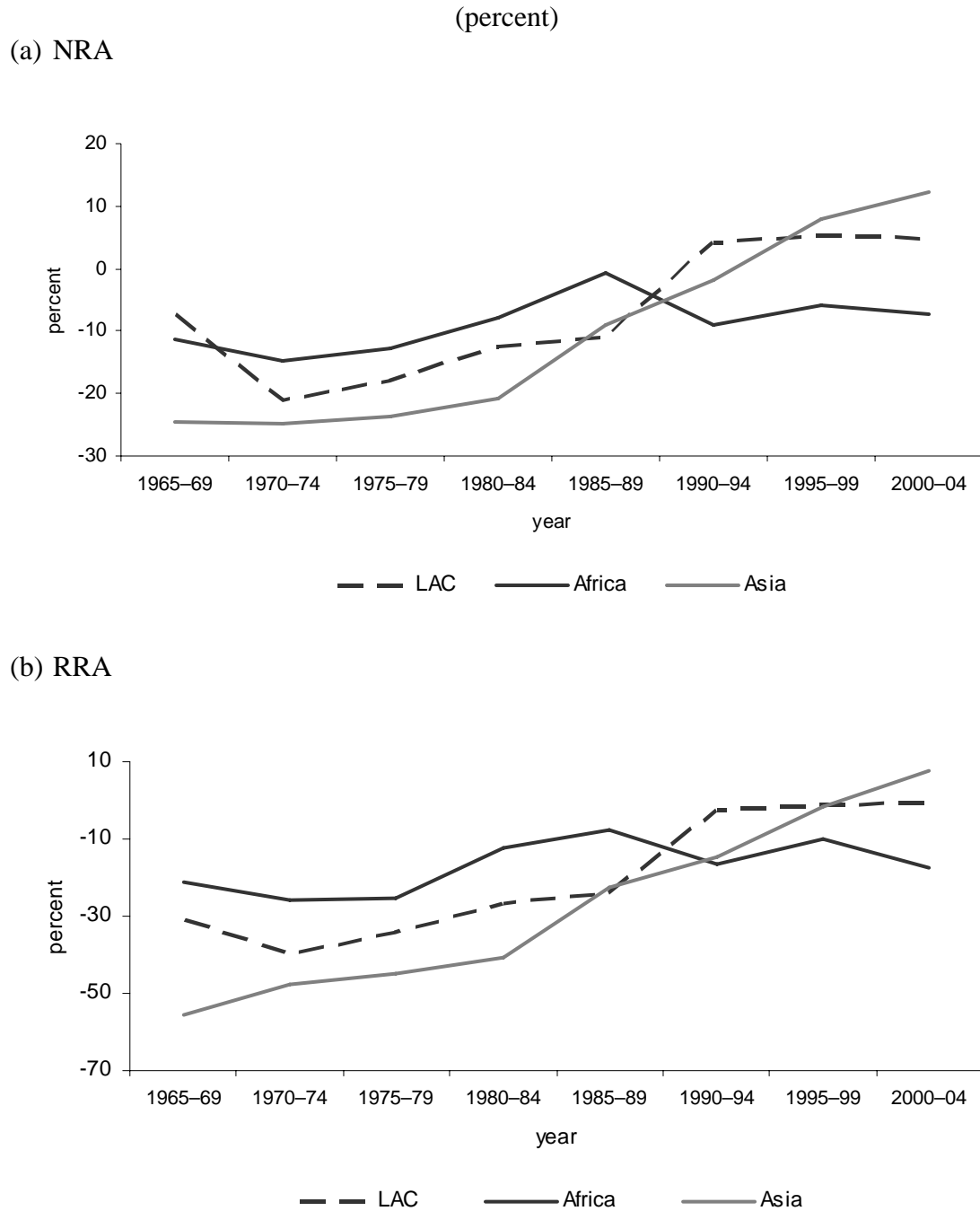


Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

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

b. Ethiopia data for the first period are 1981-84.

Figure 1.8: Nominal and relative rates of assistance,^a Asia, Africa and Latin America,^b 1965 to 2004



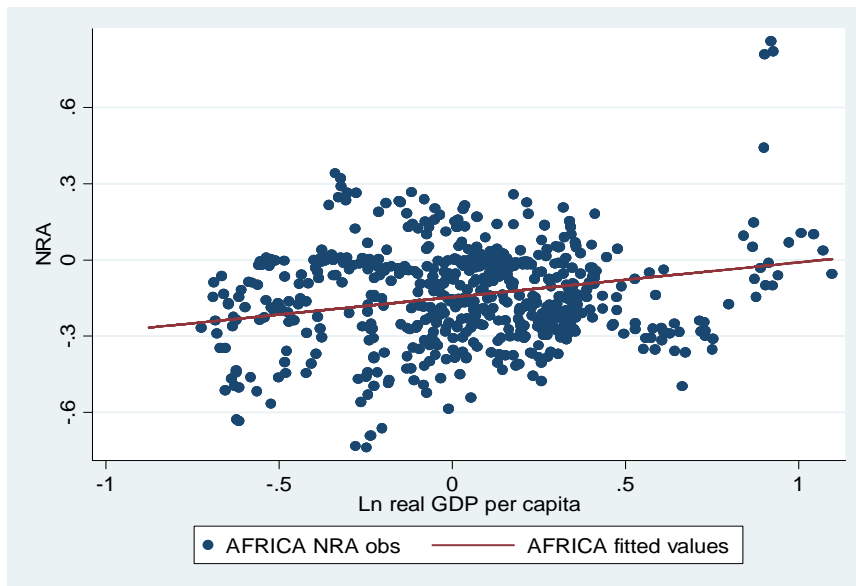
Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

a. 5-year weighted averages with value of production at undistorted prices as weights.

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

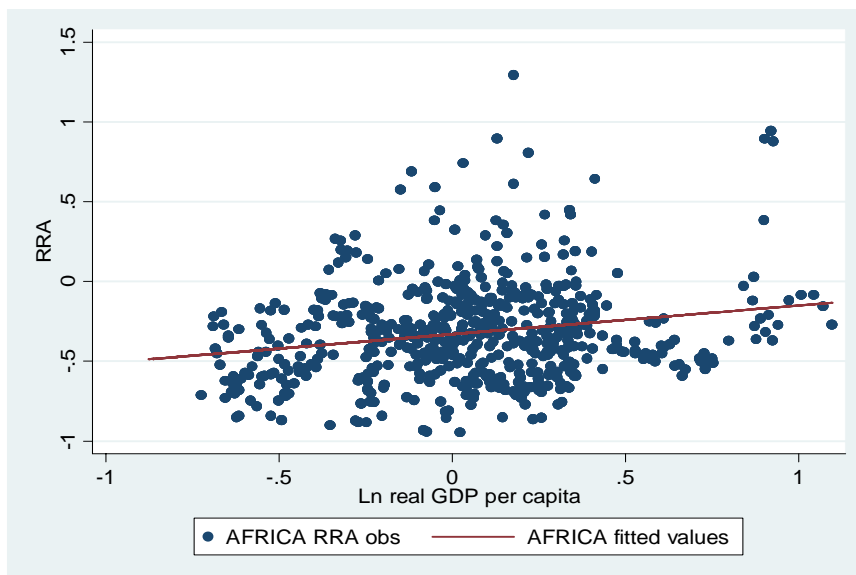
Figure 1.9: Relationships between real GDP per capita, comparative advantage, and agricultural NRA and RRA,^a African focus countries, 1955 to 2005

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



Coefficient	Standard error	R^2
0.13	0.04	0.03

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

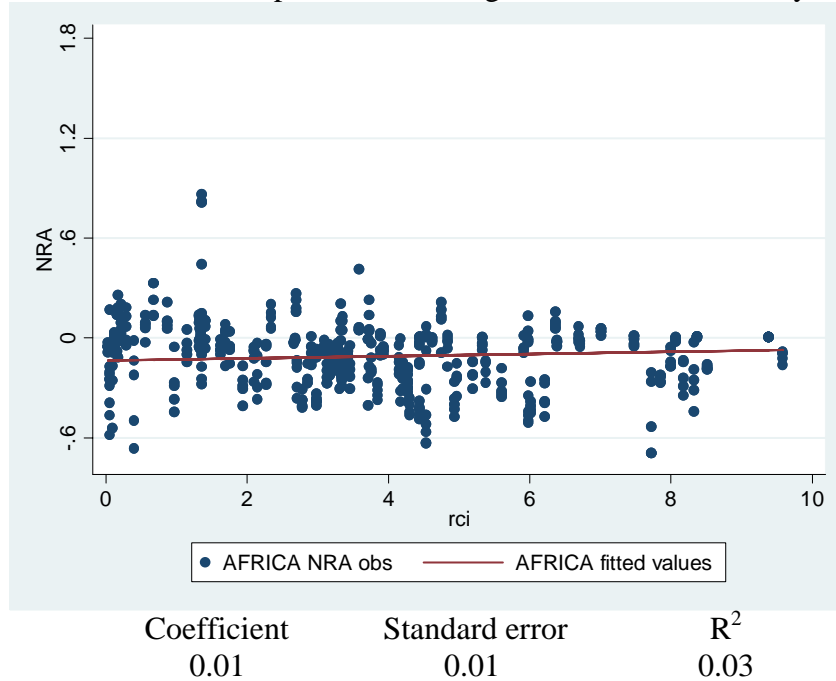


Coefficient	Standard error	R^2
0.18	0.05	0.04

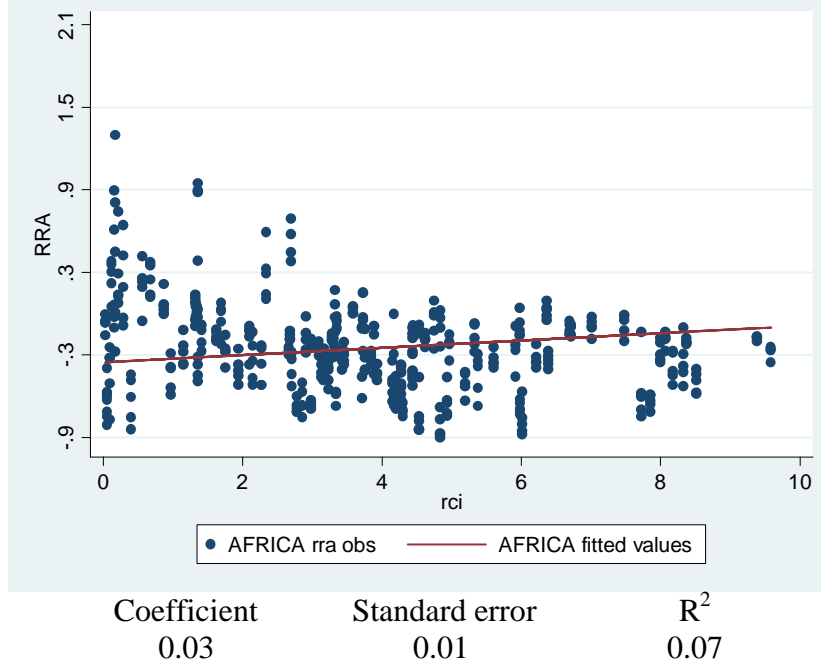
a. Dependent variable for regressions is NRA or RRA by country and year, expressed as a fraction. Results are OLS estimates. The explanatory variable is the natural log of real GDP per capita expressed in \$10,000.

Figure 1.9 (cont.): Relationships between real GDP per capita, comparative advantage, and agricultural NRA and RRA,^a African countries, 1960 to 2004

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



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

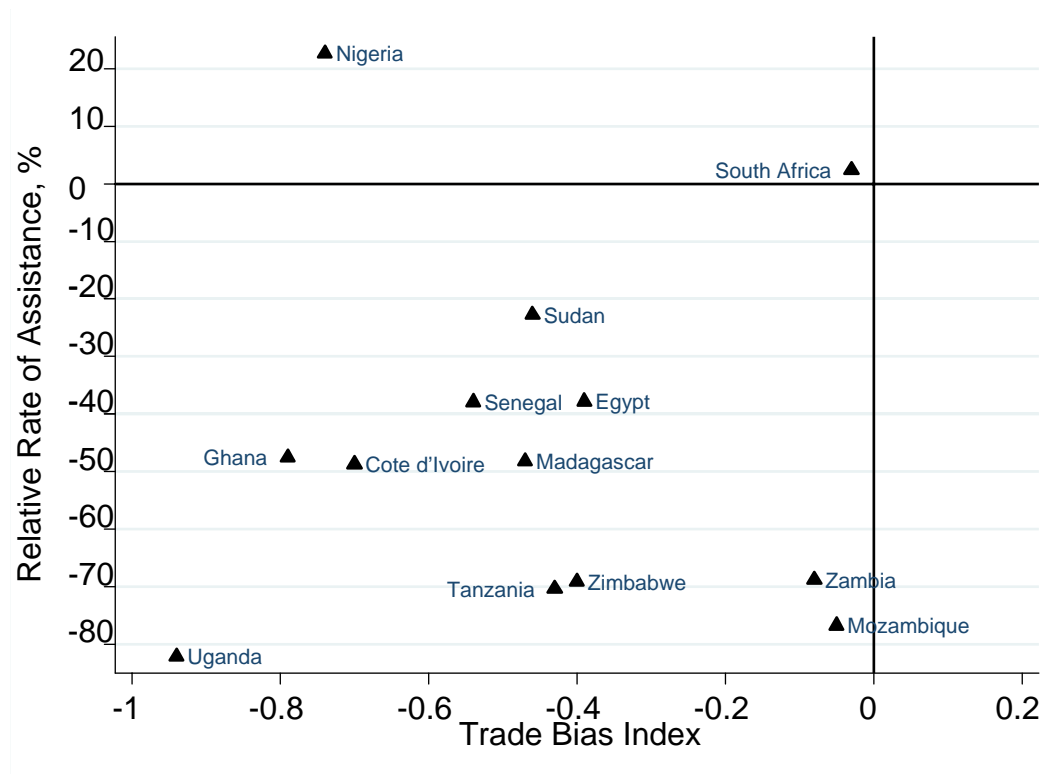


Sources: Based on data in Anderson and Valenzuela (2008) (which draws on estimates reported in Chapters 2-17 of this book) and in Sandri, Valenzuela and Anderson (2007).
a. Dependent variable for regressions is NRA or RRA by country and year, expressed as a fraction. Results are OLS estimates. The explanatory 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.

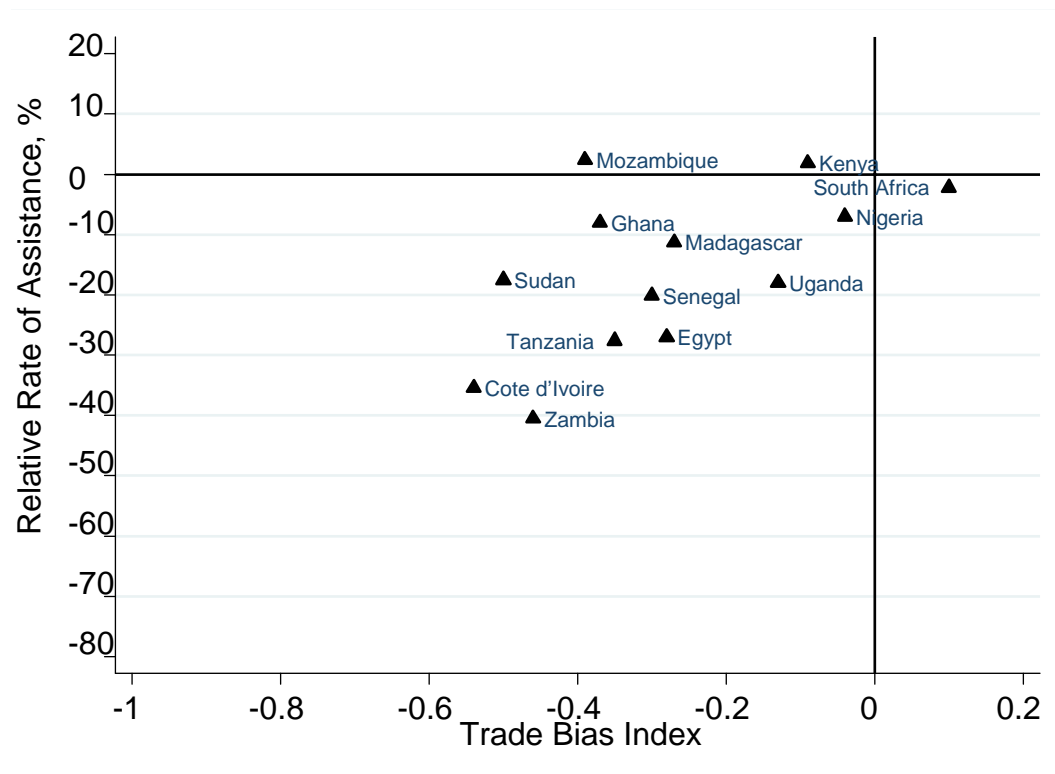
b. Using 5-year average data for revealed comparative advantage.

Figure 1.10: Relationship between RRA and the trade bias index for agriculture, African focus countries, 1975–79 and 2000–04

a. 1975–79



b. 2000–04



Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

Table 1.1: Key economic and trade indicators, African focus countries, 2000-04

	Share (%) of world:			National rel. to world (=100)			TSI ^b	Pov ^c 2004	Gini Index ^d
	Pop'n	Total GDP	Agri ^c GDP	GDP per capita	Ag land per capita	RCA ^a ag & food			
Benin	0.12	0.01	0.09	7	55	1034	na	31	39
Burkina Faso	0.19	0.01	0.09	5	111	953	na	29	40
Cameroon	0.25	0.03	0.38	13	74	445	na	15	45
Chad	0.14	0.01	0.07	5	695	na	na	na	na
Cote d'Ivoire	0.28	0.04	0.21	12	139	722	na	18	48
Egypt	1.13	0.26	1.11	23	6	175	na	2	34
Ethiopia	1.08	0.02	0.23	2	58	958	na	12	30
Ghana	0.33	0.02	0.2	6	88	748	na	17	41
Kenya	0.52	0.04	0.29	8	103	636	na	12	43
Madagascar	0.28	0.01	0.1	5	202	670	0.94	63	47
Mali	0.2	0.01	0.1	5	353	624	na	39	40
Mozambique	0.3	0.01	0.08	4	324	359	-0.03	30	47
Nigeria	1.98	0.15	1.09	8	73	3	na	71	44
Senegal	0.17	0.02	0.09	10	94	444	na	13	41
South Africa	0.73	0.42	0.39	59	275	134	0.52	9	58
Sudan	0.55	0.05	0.5	8	490	209	na	na	na
Tanzania	0.58	0.03	0.33	5	166	800	0.73	56	35
Togo	0.09	0	0.05	5	80	407	na	na	na
Uganda	0.42	0.02	0.15	4	60	938	0.8	83	46
Zambia	0.18	0.01	0.07	7	398	194	0.35	60	51
Zimbabwe	0.21	0.04	0.14	18	200	602	0.83	62	50
African focus countries	9.73	1.21	5.74	13	145	na	na	na	na
All Sub-Saharan Africa	9.37	0.98	4.93	10	164	na	0.55	41	na
All North Africa	2.34	0.70	2.81	30	84	na	-0.78	na	na
All Africa	11.7	1.67	7.74	14	148	na	0.20	32	na

Source: Sandri, Valenzuela and Anderson (2008), compiled mainly from World Bank's *World Development Indicators*.

a. Revealed Comparative Advantage = share of agriculture and processed food in national exports as a ratio of that sector's share of global exports

b. Primary Agriculture Trade Specialization = $(X-M)/(X+M)$, 2000-02 (world av =0). c. Percentage of population living on <US\$1/day, from Chen and Ravallion (2007).

d. Gini Indices for the most recent year available between 2000 and 2004 in the World Bank's *World Development Indicators*.

Table 1.2: Poverty in Africa, Asia and the world, 1981 to 2004

	1981	1990	1996	2004
No. of people (million):				
Sub-Saharan Africa	168	240	286	298
East Asia	796	476	279	169
South Asia	455	479	453	446
WORLD	1470	1248	1109	969
% of population				
Sub-Saharan Africa	42	47	48	41
East Asia	58	30	16	9
South Asia	50	43	36	31
WORLD	40	29	23	18

Source: Chen and Ravallion (2007)

Table 1.3: Growth of real GDP and exports, African focus countries, 1980 to 2004

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

	Agriculture	Industry	Services	Total GDP	GDP per capita	Export volume ^a
Benin	5.4	4.3	2.6	3.7	0.3	0.6
Burkina Faso	3.8	2.5	4.0	3.7	0.8	1.2
Cameroon	3.4	0.4	-0.2	1.2	-1.4	2.5
Chad	3.7	4.3	3.2	3.9	0.9	3.5
Egypt	3	4.7	5.1	4.6	2.4	5.0
Ethiopia	1.8	1.3	4.5	2.9	0.2	4.7
Ghana	2.6	3.6	6.6	4.1	1.3	7.0
Kenya	2.3	2.5	3.5	3.0	-0.1	4.1
Madagascar	2.1	1.6	1.3	1.6	-1.4	2.1
Mali	3.3	5.6	2.5	3.3	0.6	8.1
Mozambique	4.2	7.7	6.4	4.4	2.3	7.7
Nigeria	3.7	1.6	5.6	3.1	0.4	3.0
Senegal	2.1	4	2.9	2.9	0.2	4.5
South Africa	1.4	0.5	2.3	1.7	-0.5	3.7
Sudan	4.9	4.6	3.5	4.3	1.9	4.3
Tanzania	3.6	5.0	4.0	3.8	1.1	6.2
Togo	3.9	1.7	1.2	2.1	-1.1	0.3
Uganda	3.6	9.3	6.9	5.9	2.4	8.9
Zambia	2.5	-0.4	1.4	1.0	-1.6	1.1
Zimbabwe	2.3	0.3	2.3	1.9	-0.6	6.0
African focus countries	3.2	2.6	3.5	3.1	0.7	4.4
All Sub-Saharan Africa	3.6	1.7	2.9	2.7	0.1	na
All North Africa	na	na	na	3.9	1.8	na
All Africa	na	na	na	3.7	na	na

Source: Sandri, Valenzuela and Anderson (2008), compiled from World Bank's *World Development Indicators*.

Table 1.4: Exports of goods and services as a percentage of GDP, African focus countries, 1975 to 2004

	(percent)					
	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Benin	8	21	21	27	27	22
Burkina Faso	6	7	7	6	na	9
Cameroon	25	13	13	20	25	na
Chad	11	14	14	13	na	na
Egypt	22	22	22	24	16	18
Ethiopia	na	9	9	7	14	18
Ghana	32	19	19	19	28	40
Kenya	28	23	23	31	24	24
Madagascar	15	15	15	17	22	24
Mali	12	15	15	18	24	29
Mozambique	na	5	5	13	15	26
Nigeria	35	37	37	46	42	42
Senegal	33	24	24	22	30	29
South Africa	31	23	23	22	23	27
Sudan	9	5	5	5	7	15
Tanzania	na	9	9	14	17	17
Togo	27	29	29	25	33	35
Uganda	na	7	7	7	11	13
Zambia	40	36	36	31	32	24
Zimbabwe	22	23	23	26	na	na
African focus countries	na	21	21	23	na	na
All Sub-Saharan Africa	na	21	21	23	na	na
All North Africa	38	23	23	28	na	na
All Africa	na	22	22	25	na	na

Source: Sandri, Valenzuela and Anderson (2008), compiled from World Bank's *World Development Indicators*.

Table 1.5: Sectoral shares of GDP, African focus 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
Benin	42	33	34	36	11	14	13	14	48	53	52	50
Burkina Faso	34	29	28	32	21	23	21	18	45	48	51	50
Cameroon	32	31	23	43	20	19	30	17	49	51	46	40
Chad	38	37	33	40	13	13	14	14	49	49	53	46
Egypt	25	24	19	15	24	27	27	32	51	49	54	53
Ethiopia	na	na	47	41	na	na	13	9	na	na	40	50
Ghana	43	56	48	36	19	16	17	25	38	29	35	39
Kenya	33	32	27	26	17	17	16	15	50	51	57	59
Madagascar	22	29	31	27	13	15	12	14	65	57	57	59
Mali	59	55	42	34	10	10	15	24	32	36	43	42
Mozambique	na	na	44	21	na	na	18	26	na	na	39	52
Nigeria	49	29	36	25	12	33	32	48	39	38	32	27
Senegal	25	26	21	18	12	15	18	20	63	59	61	62
South Africa	9	6	5	3	36	40	38	29	55	54	57	68
Sudan	36	34	33	39	14	12	16	20	50	54	52	41
Tanzania	na	na	na	41	na	na	na	15	na	na	na	44
Togo	44	29	33	39	22	23	22	20	34	49	45	41
Uganda	46	71	53	31	12	6	10	19	41	22	37	50
Zambia	12	15	15	20	57	40	44	24	31	45	41	57
Zimbabwe	20	16	15	14	28	31	29	19	52	53	55	67
African focus countries	na	na	na	17	na	na	na	29	na	na	na	54
All Sub-Saharan Africa	na	na	na	18	na	na	na	28	na	na	na	54
All North Africa	18	12	13	na	36	46	39	na	47	42	49	na
All Africa	na	na	na	na	na	na	na	na	na	na	na	na

Source: Sandri, Valenzuela and Anderson (2008), compiled from World Bank's *World Development Indicators*.

Table 1.6: Agriculture's shares of employment, African focus countries, 1965 to 2004
(percent)

	1965-69	1975-79	1985-89	2000-04
Benin	82	71	65	52
Burkina Faso	92	92	92	92
Cameroon	86	77	71	58
Chad	93	89	85	74
Egypt	63	58	45	33
Ethiopia	na	na	na	82
Ghana	61	61	60	56
Kenya	86	83	80	75
Madagascar	85	82	79	74
Mali	93	90	87	80
Mozambique	87	85	84	81
Nigeria	72	59	46	32
Senegal	83	81	78	73
South Africa	33	21	15	9
Sudan	81	74	70	60
Tanzania	91	87	85	80
Togo	76	70	66	59
Uganda	91	88	85	79
Zambia	81	77	75	68
Zimbabwe	78	74	69	62
Africa focus countries	na	na	na	56
All Sub-Saharan Africa	na	na	na	61
All North Africa	62	54	41	30
All Africa	na	na	na	56

Source: Sandri, Valenzuela and Anderson (2008), compiled from FAOSTAT.

Table 1.7: Sectoral shares of merchandise exports, African focus 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
Benin	88	84	na	92	4	2	na	0	8	11	na	8
Burkina Faso	95	92	na	85	1	0	na	2	4	8	na	13
Cameroon	80	81	57	40	14	13	26	55	6	6	16	5
Chad	96	83	na	na	2	9	na	na	1	8	na	na
Egypt	71	44	20	16	6	30	50	45	24	26	30	33
Ethiopia	na	na	na	86	na	na	na	2	na	na	na	12
Ghana	80	83	na	67	17	14	na	18	1	2	na	15
Kenya	na	65	71	57	na	20	16	21	na	15	13	23
Madagascar	87	83	80	60	6	10	9	6	7	7	10	33
Mali	97	91	99	55	1	0	na	8	2	9	1	36
Mozambique	na	na	na	32	na	na	na	62	na	na	na	5
Nigeria	60	6	3	0	37	94	96	98	2	0	0	2
Senegal	83	61	49	40	9	28	26	23	8	12	25	36
South Africa	na	26	na	12	na	20	na	25	na	35	na	58
Sudan	98	96	93	19	1	3	1	77	1	1	6	3
Tanzania	na	83	91	71	na	4	na	10	na	13	8	18
Togo	57	37	41	36	36	55	50	16	7	7	8	48
Uganda	na	97	na	84	na	3	na	7	na	0	na	10
Zambia	3	1	na	17	97	98	na	69	1	1	na	14
Zimbabwe	na	na	51	53	na	na	19	19	na	na	29	28

Source: Sandri, Valenzuela and Anderson (2008), compiled from World Bank's *World Development Indicators*.

Table 1.8: Index of revealed comparative advantage (RCA Index) in agriculture and processed food,^a African focus countries, 1965 to 2004
(world = 1.0)

	1965-69	1975-79	1985-89	2000-04
Benin	3.5	4.5	na	10.3
Burkina Faso	3.8	4.7	na	9.5
Cameroon	3.2	4.2	3.9	4.5
Chad	3.8	4.1	na	na
Egypt	2.8	2.3	1.4	1.8
Ethiopia	na	na	na	9.6
Ghana	3.2	4.3	na	7.5
Kenya	na	3.4	4.8	6.4
Madagascar	3.4	4.3	5.4	6.7
Mali	3.8	4.7	6.9	6.2
Mozambique	na	na	na	3.6
Nigeria	2.3	0.3	0.2	0
Senegal	3.3	3.1	3.3	4.4
South Africa	na	1.3	na	1.3
Sudan	3.8	5	6.2	2.1
Tanzania	na	4.3	6	8
Togo	2.2	1.9	2.8	4.1
Uganda	na	4.8	na	9.4
Zambia	0.1	0.1	na	1.9
Zimbabwe	na	na	3.3	6

Source: Sandri, Valenzuela and Anderson (2008), compiled from World Bank's *World Development Indicators*.

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

Table 1.9: Export orientation, import dependence and self-sufficiency in primary agricultural production, African focus countries, 1965 to 2004
(percent at undistorted prices)

(a) Exports as share of production

	1961-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Cameroon	11	14	16	23	29	33	20	21	17
Cote d'Ivoire	48	44	42	39	50	61	55	60	59
Ghana	46	42	43	45	27	31	17	16	18
Nigeria	10	12	7	6	2	2	1	1	1
Senegal	24	18	4	7	5	2	5	6	4
Ethiopia	na	na	na	na	na	na	1	3	2
Kenya	35	40	44	46	43	50	44	49	45
Sudan	24	22	21	15	9	7	5	6	3
Tanzania	na	na	na	18	18	16	16	11	7
Uganda	29	33	29	24	21	27	8	10	3
South Africa	15	14	16	27	26	20	11	6	10
Madagascar	na	na	Na	14	7	3	13	7	30
Mozambique	8	8	10	11	8	7	6	7	8
Zambia	11	13	7	3	2	4	4	6	14
Zimbabwe	63	36	43	37	43	41	52	53	43
Egypt	17	15	15	9	7	5	2	2	3
African focus countries	19	18	17	17	12	11	8	8	8

(b) Imports as share of apparent consumption

	1961-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Cameroon	0	0	0	0	0	0	0	0	0
Cote d'Ivoire	3	0	0	0	0	0	1	1	1
Ghana	3	3	0	1	1	0	0	0	0
Nigeria	0	0	0	0	1	1	0	0	1
Senegal	2	2	3	0	0	0	0	1	0
Ethiopia	na	na	na	na	na	na	1	1	2
Kenya	13	10	11	4	6	6	10	10	12
Sudan	4	2	5	4	4	3	2	1	3
Tanzania	na	na	na	1	4	1	1	4	4
Uganda	0	0	0	0	1	1	1	1	1
South Africa	0	0	0	0	0	0	0	1	1
Madagascar	na	na	na	5	6	14	35	11	28
Mozambique	1	2	1	1	1	3	4	4	3
Zambia	2	2	7	2	8	5	11	9	5
Zimbabwe	2	1	1	0	2	0	12	6	9
Egypt	6	6	6	14	22	20	15	16	14
African focus countries	2	2	2	4	5	4	4	4	4

Table 1.9 cont.

(c) Self-sufficiency ratio

	1961-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Cameroon	113	117	119	130	141	150	125	126	120
Cote d'Ivoire	186	178	173	166	206	268	223	251	253
Ghana	182	172	181	181	138	146	120	120	122
Nigeria	111	113	107	106	101	101	101	101	101
Senegal	129	121	100	108	105	102	105	106	104
Ethiopia	na	na	na	na	100	100	101	102	100
Kenya	135	153	162	182	166	192	165	178	163
Sudan	128	125	121	114	106	105	103	104	100
Tanzania	na	na	na	121	118	119	117	108	103
Uganda	140	149	142	133	126	138	108	110	103
South Africa	107	107	110	111	107	105	102	103	105
Madagascar	118	117	119	137	135	125	112	106	110
Mozambique	na	na	na	114	101	89	74	95	141
Zambia	110	113	101	101	94	99	92	97	113
Zimbabwe	264	161	176	160	174	170	301	204	169
Egypt	113	110	110	94	84	85	87	86	89
African focus countries	120	119	117	116	107	108	104	105	105

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 1.10: Nominal rates of assistance to agriculture,^a African focus countries, 1955 to 2004^c
(percent)

	Region	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Cameroon	W	na	-2.9	-6.0	-7.4	-14.4	-11.2	-2.4	-1.1	-1.3	-0.1
Cote d'Ivoire	W	na	-23.5	-29.3	-28.1	-30.8	-32.2	-24.3	-19.5	-20.0	-24.5
Egypt	N	-23.2	-33.9	-37.7	-37.5	-15.9	-9.2	56.6	-6.1	4.0	-6.1
Ethiopia	E	na	na	na	na	na	-17.5	-22.3	-24.4	-17.8	-11.2
Ghana	W	-4.4	-9.0	-19.8	-14.9	-25.6	-21.2	-6.3	-1.7	-3.0	-1.4
Kenya	E	26.6	23.0	9.7	-11.8	-1.7	-18.6	10.5	-5.8	2.4	9.3
Madagascar	S	0.2	-5.9	-11.1	-13.5	-27.1	-38.8	-18.2	-5.4	-2.9	1.0
Mozambique	S	na	na	na	na	-34.5	-25.2	-32.0	-2.7	3.9	12.4
Nigeria	W	na	20.7	11.9	6.7	6.3	9.4	8.2	3.9	0.4	-5.4
Senegal	W	na	-9.3	-7.2	-22.4	-22.7	-20.5	4.7	5.6	-6.1	-7.5
South Africa	S	na	4.1	9.4	-0.7	3.8	22.9	11.7	10.8	5.7	-0.1
Sudan	E	-11.7	-20.4	-31.8	-43.4	-24.3	-29.3	-35.4	-47.8	-24.5	-11.9
Tanzania	E	na	na	na	na	-41.8	-56.3	-45.3	-25.2	-23.2	-12.4
Uganda	E	na	-1.8	-3.1	-7.8	-17.6	-6.2	-6.8	-0.6	0.5	0.4
Zambia	S	na	na	-22.4	-15.8	-37.3	-2.7	-58.9	-30.8	-28.6	-28.5
Zimbabwe	S	16.9	-27.2	-25.5	-26.0	-28.6	-24.0	-24.1	-24.9	-20.8	-38.7
African focus countries:											
Unweighted average ^b		-0.3	-7.8	-12.5	-12.9	-15.5	-13.7	-8.9	-8.7	-6.6	-6.0
Weighted. average ^a		-13.6	-7.7	-11.3	-14.7	-12.7	-7.9	-1.0	-8.9	-5.7	-7.3
Dispersion of individual country NRAs ^c		20.8	13.4	15.1	14.3	17.1	21.2	29.5	16.1	12.3	13.5

Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

a. Weighted average for each country, including product-specific output and 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.

Cameroon, Cote D'Ivoire, Nigeria, Senegal, Uganda and Zambia data under 1960-64 are 1961-64; Tanzania data under 1975-79 are 1976-79; and Ethiopia data under 1980-84 are 1981-84.

b. The unweighted average is the simple average across the 16 countries of their national NRA (weighted) average NRAs.

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

Table 1.11: Dispersion of nominal rates of assistance across covered agricultural products, ^a African focus countries, 1955 to 2004
(percent)

	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Cameroon	na	13.5	18.0	21.8	29.0	20.6	17.2	16.1	13.0	7.5
Cote d'Ivoire	na	25.1	28.0	33.1	46.2	33.3	33.1	26.2	23.4	33.1
Egypt	21.9	14.7	17.1	21.3	32.2	31.9	89.6	33.0	28.7	22.1
Ethiopia	na	na	na	na	na	26.4	28.2	28.0	29.1	23.6
Ghana	9.8	17.2	29.9	29.0	47.9	69.6	56.3	26.2	17.2	25.5
Kenya	33.2	26.0	30.7	20.5	26.5	22.3	23.6	23.4	24.7	25.6
Madagascar	na	31.3	24.7	24.6	37.5	39.2	42.0	39.1	30.3	22.5
Mozambique	na	na	na	na	34.8	36.0	40.3	28.6	33.4	37.9
Nigeria	na	112.9	95.4	94.2	89.9	92.0	94.4	83.2	72.7	53.2
Senegal	na	20.3	16.1	33.5	44.5	38.2	58.8	67.1	14.3	18.6
South Africa	25.7	17.9	19.1	25.3	31.6	42.7	35.0	31.8	20.3	20.3
Sudan	34.2	34.9	34.1	36.2	40.0	31.7	54.4	75.3	41.2	63.2
Tanzania	na	na	na	na	38.6	39.1	41.3	46.5	47.3	51.9
Uganda	na	7.8	11.6	28.5	47.0	39.3	40.5	7.8	6.6	6.9
Zambia	na	14.5	29.6	26.6	36.1	34.8	35.4	39.2	36.1	38.1
Zimbabwe	74.6	71.0	47.3	36.9	27.7	28.1	24.4	25.2	25.3	33.9
African focus countries:										
Unweighted average ^b	33.2	31.3	30.9	33.2	40.6	39.1	44.7	37.3	29.0	30.2
<i>Product coverage</i> ^c	68	73	72	72	70	67	66	66	66	68

Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

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. Cameroon, Cote D'Ivoire, Nigeria, Senegal, Uganda and Zambia data under 1960-64 are 1961-64; Tanzania data under 1975-79 are 1976-79; and Ethiopia data under 1980-84 are 1981-84.

b. The unweighted average is the simple average across the 16 countries of their 5-year simple average dispersion measures.

c. Share of gross value of total agricultural production, valued at undistorted prices, accounted for by covered products.

Table 1.12: Nominal rates of assistance, key covered farm products, all African focus countries,^a 1955 to 2004

(percent)

	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Banana	na	-2	-4	0	-2	-1	-1	3	5	1
Bean	na	6	2	-3	-39	-53	-66	-25	-24	-25
Beef	-13	-21	-29	-37	4	11	23	-38	-1	-26
Cassava	0	0	0	0	1	2	1	-1	-3	-3
Cocoa	-14	-27	-54	-48	-60	-52	-36	-35	-32	-36
Coffee	-11	-27	-36	-44	-62	-53	-42	-37	-21	-12
Cotton	-16	-41	-53	-54	-49	-43	-31	-54	-38	-46
Groundnut	-29	-27	-38	-51	-46	-44	-17	-30	-36	-40
Maize	-4	12	3	-7	-12	1	38	8	2	-5
Milk	-35	-22	-32	-42	-1	-22	67	-27	-8	15
Millet	-77	-19	-6	-4	-1	1	0	1	-3	-2
Palmoil	na	-25	-31	-44	-17	-25	-12	108	41	-13
Plantain	0	0	0	0	0	0	0	0	0	0
Poultry	na	-13	-13	-16	-24	18	-3	6	13	3
Rice	-62	-38	-39	-22	-14	-14	29	0	-8	-5
Sesame	-40	-53	-64	-65	-68	-60	-48	-48	-50	-38
Sheepmeat	-12	-14	-18	-22	-21	-20	-37	-49	-45	-21
Sorghum	-35	62	87	49	28	17	41	37	23	21
Soybean	na	na	-14	-30	-43	-43	-40	-53	-50	-54
Sugar	-22	-6	11	-24	-11	-1	42	2	7	44
Sunflower	na	15	17	6	7	16	7	6	-6	-4
Tea	3	9	-7	-20	-30	-34	-29	-40	-28	-16
Tobacco	na	-42	-38	-45	-54	-47	-48	-38	-34	-63
Vanilla	na	-62	-53	-39	-57	-76	-85	-78	-28	-13
Wheat	-13	-27	-13	-6	12	-5	19	4	1	-1
Yam	0	0	0	0	1	1	0	-1	-4	-3
All covered products	-19.9	-13	-17.8	-22.1	-20.3	-12.1	0.9	-12.4	-6.6	-8.9

Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

Table 1.13: Nominal rates of assistance to agricultural relative to non-agricultural industries, African region, 1955 to 2004
(percent)

(a) (percent, unweighted averages)	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Covered products	0.0	-14.5	-19.3	-20.2	-24.8	-20.5	-11.6	-13.3	-9.1	-8.9
Non-covered products	0.6	1.0	-0.4	-0.8	-1.3	-1.5	-3.8	-3.5	-3.0	-2.9
All agricultural products	-1.8	-10.0	-14.2	-14.7	-17.0	-15.4	-10.1	-10.7	-7.1	-6.5
Total agricultural NRA (incl. NPS) ^b	-0.3	-7.8	-12.5	-12.9	-15.5	-13.7	-8.9	-8.7	-6.6	-6.0
Trade Bias Index ^c	-0.11	-0.35	-0.40	-0.33	-0.41	-0.34	-0.41	-0.24	-0.19	-0.21
Assistance to just tradables:										
All agricultural tradables ^b	3.1	-10.9	-19.7	-20.6	-26.2	-21.5	-13.9	-13.9	-9.3	-9.4
All non-agricultural tradables	18.8	13.1	12.6	23.5	27.0	27.3	23.0	18.8	15.2	14.5
Relative rate of assistance, RRA ^a	-13.2	-21.2	-28.7	-35.5	-41.8	-38.2	-29.7	-27.5	-21.2	-20.9
MEMO, ignoring exchange rate distortions:										
Total agricultural NRA	7.0	-6.1	-8.4	-13.0	-13.6	-13.1	-7.6	-9.8	-8.5	-8.6
Trade bias index, all agric.	0.00	-0.16	-0.13	-0.03	0.11	0.29	0.45	-0.03	-0.03	1.31
Relative rate of assistance, RRA ^a	-8.3	-17.1	-21.5	-27.8	-31.3	-28.7	-18.8	-23.8	-20.7	-19.6
(b) (percent, weighted averages)										
Covered products	-19.9	-13.0	-17.8	-22.1	-20.3	-12.1	0.9	-12.4	-6.6	-8.9
Non-covered products	0.5	3.6	1.8	-0.2	-0.3	-3.3	-7.6	-4.8	-5.1	-5.2
All agricultural products	-14.0	-8.4	-12.2	-15.6	-13.8	-9.5	-2.0	-10.0	-6.1	-7.7
Total agricultural NRA (incl. NPS) ^b	-13.6	-7.7	-11.3	-14.7	-12.7	-7.9	-1.0	-8.9	-5.7	-7.3
Trade Bias Index ^c	0.00	-0.41	-0.45	-0.44	-0.50	-0.43	-0.60	-0.39	-0.33	-0.26
Assistance to just tradables:										
All agricultural tradables ^b	-24.1	-13.3	-19.6	-25.0	-22.1	-13.5	-0.3	-15.4	-8.7	-12.0
All non-agricultural tradables	19.5	3.7	2.7	1.5	5.7	1.6	9.2	2.7	2.0	7.3
Relative rate of assistance, RRA ^a	-36.5	-15.2	-21.4	-26.0	-25.9	-13.1	-8.3	-17.1	-10.4	-18.0
MEMO, ignoring exchange rate distortions:										
Total agricultural NRA	-10.3	-5.2	-7.3	-11.6	-8.9	-3.7	5.6	-6.7	-5.6	-6.2
Trade bias index, all agric.	0.03	-0.14	-0.17	-0.16	-0.29	-0.05	-0.26	-0.01	0.30	0.20
Relative rate of assistance, RRA ^a	-26.7	-9.7	-13.4	-17.7	-17.0	-2.7	5.9	-12.7	-11.8	-16.1

Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

- a. RRA is defined as $100 * [(100 + \text{NRA}_{\text{ag}^t}) / (100 + \text{NRA}_{\text{nonag}^t}) - 1]$, where NRA_{ag^t} and $\text{NRA}_{\text{nonag}^t}$ are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.
- b. 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 $\text{TBI} = (1 + \text{NRA}_{\text{ag}_x} / 100) / (1 + \text{NRA}_{\text{ag}_m} / 100) - 1$, where NRA_{ag_m} and NRA_{ag_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.

Table 1.14: Nominal rates of assistance to agricultural exportables, import-competing products, and the trade bias index,^a African focus countries, 1955 to 2004
(percent)

	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Cameroon										
NRA agriculture exportables	na	-16.4	-26.0	-28.9	-38.5	-28.5	-7.4	-4.7	-4.7	-1.1
NRA agriculture import-competing	na	na	na	na	na	na	na	na	na	na
Trade Bias Index	na	na	na	na	na	na	na	na	na	na
Exportables Share	na	100	100	100	100	100	100	100	100	100
Cote d'Ivoire										
NRA agriculture exportables	na	-47.2	-50.3	-48.7	-57.3	-57.9	-44.2	-47.9	-41.8	-46.3
NRA agriculture import-competing	na	13.7	-0.1	15.7	42.6	18.9	22.6	15.2	14.8	16.6
Trade Bias Index	na	-0.5	-0.50	-0.55	-0.70	-0.64	-0.54	-0.55	-0.49	-0.54
Exportables Share	na	77	76	78	82	81	84	76	75	78
Egypt										
NRA agriculture exportables	-31.5	-52.4	-62.4	-62.2	-43.4	-34.0	5.0	-30.9	-17.8	-29.7
NRA agriculture import-competing	-34.3	-44.0	-44.6	-44.4	-5.5	-2.5	138.2	2.4	16.9	-0.8
Trade Bias Index	0.05	-0.15	-0.32	-0.31	-0.39	-0.28	-0.55	-0.31	-0.29	-0.28
Exportables Share	48	49	51	47	46	35	38	34	32	28
Ethiopia										
NRA agriculture exportables	na	na	na	na	na	-33.8	-44.9	-48.0	-40.0	-20.4
NRA agriculture import-competing	na	na	na	na	na	na	na	na	na	na
Trade Bias Index	na	na	na	na	na	na	na	na	na	na
Exportables Share	na	na	na	na	na	100	100	100	100	100
Ghana										
NRA agriculture exportables	-14.9	-23.9	-54.5	-46.6	-74.4	-76.3	-53.3	-33.1	-19.4	-19.6
NRA agriculture import-competing	9.8	15.4	10.8	11.7	27.2	44.6	53.4	26.7	17.5	28.3
Trade Bias Index	-0.22	-0.34	-0.59	-0.53	-0.79	-0.84	-0.69	-0.47	-0.31	-0.37
Exportables Share	77	81	76	69	76	72	66	53	73	68
Kenya										
NRA agriculture exportables	25.5	16.8	3.3	-16.3	-2.3	-13.0	-14.0	-26.1	-10.1	-0.5
NRA agriculture import-competing	12.3	2.4	4.2	-46.0	-25.3	-40.5	16.1	-35.4	2.9	9.3
Trade Bias Index	0.1	0.2	0.09	0.64	0.48	0.57	-0.24	0.31	-0.12	-0.09
Exportables Share	88	75	72	77	88	76	87	54	57	55
Madagascar										
NRA agriculture exportables	0.0	-16.7	-22.5	-16.9	-60.1	-73.0	-62.2	-32.5	-18.0	-20.7
NRA agriculture import-competing	17.7	20.4	13.0	-18.3	-19.6	-41.2	3.1	3.6	4.5	8.3
Trade Bias Index	-0.15	-0.31	-0.27	0.14	-0.47	-0.53	-0.62	-0.34	-0.21	-0.27
Exportables Share	92	98	63	34	49	48	48	36	28	26

Table 1.14 (continued)

	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Mozambique										
NRA agriculture exportables	na	na	na	na	-73.3	-68.6	-76.4	-25.5	-3.1	-3.9
NRA agriculture import-competing	na	na	na	na	-67.7	-63.6	-72.2	-5.2	29.5	57.7
Trade Bias Index	na	na	na	na	-0.05	0.08	0.38	-0.20	-0.25	-0.39
Exportables Share	na	na	na	na	69	60	47	50	40	49
Nigeria										
NRA agriculture exportables	na	-34.3	-49.3	-57.2	-51.5	-43.0	-53.4	-24.3	-19.5	-18.5
NRA agriculture import-competing	na	216.4	176.8	152.4	87.8	67.2	92.8	39.7	28.9	-9.1
Trade Bias Index	na	-0.8	-0.82	-0.81	-0.74	-0.66	-0.70	-0.45	-0.36	-0.04
Exportables Share	na	65	65	58	54	41	42	28	31	24
Senegal										
NRA agriculture exportables	na	-18.7	-16.6	-39.5	-42.5	-39.7	-9.1	-6.7	-13.5	-19.5
NRA agriculture import-competing	na	19.9	15.0	14.1	24.4	14.1	56.3	61.1	8.5	15.3
Trade Bias Index	na	-0.3	-0.27	-0.47	-0.54	-0.47	-0.42	-0.42	-0.20	-0.30
Exportables Share	na	84	80	84	84	79	73	76	75	76
South Africa										
NRA agriculture exportables	39.9	2.7	8.2	-10.0	2.5	34.6	40.5	32.9	16.0	5.3
NRA agriculture import-competing	10.1	2.7	8.6	5.1	7.7	26.3	1.1	0.1	2.8	-2.8
Trade Bias Index	0.6	0.01	0.00	-0.14	-0.03	0.07	0.40	0.33	0.13	0.10
Exportables Share	34	51	42	56	55	42	35	30	31	35
Sudan										
NRA agriculture exportables	-21.9	-35.0	-43.1	-50.9	-37.5	-38.3	-57.8	-64.7	-41.4	-33.8
NRA agriculture import-competing	19.6	19.6	-10.5	-34.6	23.8	-8.6	65.0	-20.4	-6.5	35.5
Trade Bias Index	-0.3	-0.45	-0.36	-0.24	-0.46	-0.26	-0.74	-0.48	-0.35	-0.50
Exportables Share	83	81	79	81	84	81	85	75	63	71
Tanzania										
NRA agriculture exportables	na	na	na	na	-68.8	-77.4	-75.4	-57.0	-43.8	-36.4
NRA agriculture import-competing	na	na	na	na	-40.2	-50.4	-12.0	5.7	-12.2	2.4
Trade Bias Index	na	na	na	na	-0.43	-0.55	-0.71	-0.58	-0.29	-0.35
Exportables Share	na	na	na	na	64	66	68	61	58	56
Uganda										
NRA agriculture exportables	na	-8.4	-15.1	-43.4	-89.7	-66.2	-64.8	-9.4	-1.2	-0.2
NRA agriculture import-competing	na	15.2	20.6	42.2	79.9	54.8	58.2	15.1	13.9	14.8
Trade Bias Index	na	-0.20	-0.30	-0.58	-0.94	-0.77	-0.77	-0.21	-0.13	-0.13
Exportables Share	na	84	82	78	90	69	67	78	66	76

Table 1.14 (continued)

	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Zambia										
NRA agriculture exportables	na	-23.4	-29.8	-46.4	-58.2	-47.7	-77.0	-57.7	-45.9	-51.4
NRA agriculture import-competing	na	-2.3	-21.6	-41.8	-55.0	-23.0	-67.8	-53.7	-27.0	-10.1
Trade Bias Index	na	-0.21	0.08	-0.06	-0.08	-0.30	-0.28	-0.08	-0.22	-0.46
Exportables Share	na	49	55	54	71	18	22	26	37	68
Zimbabwe										
NRA agriculture exportables	23.9	-39.4	-36.8	-45.4	-55.8	-50.0	-44.2	-44.3	-34.8	-66.7
NRA agriculture import-competing	26.8	-1.6	26.2	1.9	-24.6	-25.2	-17.0	-48.5	-52.5	-78.2
Trade Bias Index	-0.01	-0.37	-0.50	-0.44	-0.40	-0.33	-0.31	0.13	0.45	0.83
Exportables Share	100	98	99	97	95	85	95	83	82	69
All studied Africa, unweighted averages^b										
NRA agriculture exportables	-3.1	-22.7	-30.4	-30.5	-39.0	-35.2	-31.0	-24.1	-17.5	-17.6
NRA agriculture import-competing	8.5	19.7	16.5	3.4	4.1	-2.1	17.8	0.3	2.2	4.6
Trade Bias Index	-0.11	-0.35	-0.40	-0.33	-0.41	-0.34	-0.41	-0.24	-0.19	-0.21
All studied Africa, weighted averages^b										
NRA agriculture exportables	-20.6	-30.1	-38.4	-42.6	-42.6	-35.0	-36.7	-35.8	-26.1	-24.6
NRA agriculture import-competing	-20.6	18.6	11.8	1.9	14.5	13.2	58.3	5.2	9.8	1.6
Trade Bias Index	0.00	-0.41	-0.45	-0.44	-0.50	-0.43	-0.60	-0.39	-0.33	-0.26
Exportables Share	61	66	64	63	67	61	63	54	54	54

Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

a. Trade Bias Index, $TBI = (1+NRA_{ag_x}/100)/(1+NRA_{ag_m}/100) - 1$, where NRA_{ag_x} and NRA_{ag_m} are the average percentage NRAs for the exportable and import-competing parts of the agricultural sector. The exportables share refers to the share of the gross value of production of tradables at undistorted prices that is due to the exportable sub-sector of agriculture. Cameroon, Cote D'Ivoire, Nigeria, Senegal, Uganda and Zambia data under 1960-64 are 1961-64; Tanzania data under 1975-79 are 1976-79; and Ethiopia data under 1980-84 are 1981-84.

b. 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.

Table 1.15: Nominal rates of assistance for covered farm products, by policy instrument, all African focus countries,^a 1955 to 2004

(percent)

	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Unweighted averages										
NRA, agric.inputs	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
NRA, domestic market support	-1.3	-0.6	-0.7	-0.7	-1.1	-1.4	-0.8	-1.1	-1.2	-1.2
NRA, border market support	1.3	-13.9	-18.7	-19.5	-23.8	-19.2	-10.8	-12.2	-7.9	-7.7
NRA, agric. total	0.0	-14.5	-19.3	-20.2	-24.8	-20.5	-11.6	-13.3	-9.1	-8.9
Weighted averages^b										
NRA, agric. inputs	0.0	0.1	0.1	0.1	0.3	0.6	0.2	0.1	0.1	0.2
NRA, domestic market support	-2.1	-0.9	-0.7	-1.0	-1.6	-1.9	-2.1	-1.6	-2.8	-3.0
NRA, border market support	-17.8	-12.2	-17.2	-21.3	-19.0	-10.9	2.8	-10.8	-3.9	-6.0
NRA, agric. total	-19.9	-13.0	-17.8	-22.1	-20.3	-12.1	0.9	-12.4	-6.6	-8.9

Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

a. Cameroon, Cote D'Ivoire, Nigeria, Senegal, Uganda and Zambia data under 1960-64 are 1961-64; Tanzania data under 1975-79 are 1976-79; and Ethiopia data under 1980-84 are 1981-84.

b. Weights are based on gross value of agricultural production at undistorted prices.

Table 1.16: Gross subsidy equivalents of assistance to farmers, total and per farm worker, African focus countries,^a 1955 to 2004

(a) Total (constant 2000 US\$ million)

	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Benin	na	na	na	-8	-4	-5	-3	-13	-17	-4
Burkina Faso	na	na	na	-5	-11	-12	-5	-10	-13	0
Cameroon	na	-83	-174	-263	-636	-274	-48	-33	-39	-4
Chad	na	na	na	-20	-25	-15	-2	-7	-8	-1
Cote d'Ivoire	na	-406	-603	-742	-2223	-1535	-1047	-752	-878	-911
Egypt	-1561	-2472	-3348	-4153	-2046	-1204	5348	-582	354	-571
Ethiopia	na	na	na	na	na	-1863	-2392	-2188	-2096	-1113
Ghana	-103	-188	-350	-334	-727	-404	-91	-28	-78	-34
Kenya	137	162	75	-134	-157	-408	168	-77	35	140
Madagascar	2	-84	-185	-358	-555	-579	-239	-73	-39	10
Mali	na	na	na	-12	-28	-22	-11	-18	-31	2
Mozambique	na	na	na	na	-280	-198	-120	-20	51	55
Nigeria	na	2193	1176	867	986	2198	1402	794	96	-1034
Senegal	na	-76	-54	-234	-377	-220	45	37	-31	-42
South Africa	na	186	500	-300	330	2067	853	841	456	14
Sudan	-344	-686	-1200	-2547	-1861	-2373	-2984	-3633	-1848	-1210
Tanzania	na	na	na	na	-1525	-1062	-665	-322	-576	-330
Togo	na	na	na	-1	-2	-6	-4	-7	-7	-3
Uganda	na	-36	-64	-199	-462	-144	-111	-12	18	14
Zambia	na	na	-149	-112	-388	-31	-396	-178	-197	-158
Zimbabwe	39	-347	-305	-475	-779	-602	-533	-536	-467	-851
African focus countries	-1829	-1838	-4682	-9030	-10770	-6691	-834	-6817	-5314	-6031

Table 1.16 continued

(b) Per person engaged in agriculture (constant 2000 US\$)

	1961- 64	1965- 69	1970- 74	1975- 79	1980- 84	1985- 89	1990- 94	1995- 99	2000- 04
Benin	na	na	-8	-4	-4	-2	-9	-11	-3
Burkina Faso	na	na	-2	-3	-3	-1	-2	-3	0
Cameroon	-35	-71	-102	-241	-99	-16	-10	-11	-1
Chad	na	na	-12	-14	-7	-1	-3	-3	0
Cote d'Ivoire	-275	-368	-402	-1072	-644	-382	-250	-280	-292
Egypt	-363	-459	-535	-250	-144	672	-75	43	-67
Ethiopia	na	na	na	na	na	na	-107	-94	-45
Ghana	-86	-149	-130	-248	-120	-23	-6	-15	-6
Kenya	41	17	-27	-27	na	na	-8	3	11
Madagascar	-34	-67	-116	-162	-151	-56	-15	-7	2
Mali	na	na	-4	-9	-6	-3	-5	-7	0
Mozambique	na	na	na	-53	-34	-21	-3	7	7
Nigeria	174	86	60	69	153	96	54	6	-68
Senegal	-55	-35	-137	-196	-103	19	14	-11	-13
South Africa	75	197	-122	156	1097	442	440	250	8
Sudan	-176	-292	-574	-381	-432	-482	-539	-255	-156
Tanzania	na	na	na	-196	-121	-65	-27	-43	-22
Togo	na	na	-2	-3	-7	-4	-7	-7	-2
Uganda	-10	-15	-42	-88	-24	-16	-2	2	2
Zambia	na	-106	-71	-215	-15	-164	-65	-67	-52
Zimbabwe	-225	-180	-249	-363	-244	-182	-161	-132	-237
African focus countries	-29	-68	-120	-134	-77	-9	-55	-39	-41

Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

a. Cameroon, Cote D'Ivoire, Nigeria, Senegal, Uganda and Zambia data under 1960-64 are 1961-64; Tanzania data under 1975-79 are 1976-79; and Ethiopia data under 1980-84 are 1981-84.

Table 1.17: Gross subsidy equivalents of assistance to farmers in Africa, key covered products, 1955 to 2004

(a) by product (constant 2000 \$US millions)

	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Banana	na	-1	-1	0	-1	0	-1	7	10	1
Bean	na	1	1	-3	-258	-232	-217	-58	-137	-134
Beef	-152	-422	-813	-1512	26	425	1236	-2235	-43	-1549
Cassava	na	4	5	10	49	182	43	-35	-307	-209
Cocoa	-110	-421	-882	-1033	-2419	-1257	-833	-532	-731	-890
Coffee	-12	-290	-496	-837	-3139	-1574	-1053	-452	-346	-82
Cotton	-364	-1203	-1767	-2254	-2362	-1424	-947	-1569	-850	-858
Groundnut	-27	-271	-501	-979	-1176	-881	-204	-385	-545	-640
Maize	-28	306	65	-500	-723	49	1913	498	171	-417
Milk	-337	-218	-350	-609	-10	-451	1019	-522	-254	374
Millet	-106	-89	-95	-81	-25	17	-3	12	-66	-40
Palmoil	na	-117	-132	-154	-132	-96	-80	373	182	-89
Plantain	na	na	na	na	na	0	0	-2	-4	-2
Poultry	na	-21	-35	-87	-267	190	-19	77	185	52
Rice	-327	-379	-652	-884	-460	-333	549	0	-236	-133
Sesame	-63	-98	-112	-243	-298	-210	-109	-80	-145	-73
Sheepmeat	-75	-94	-148	-279	-323	-338	-490	-647	-595	-319
Sorghum	-136	1113	1186	1008	685	409	704	613	496	330
Soybean	na	na	-1	-2	-14	-22	-20	-20	-23	-19
Sugar	-30	-31	70	-480	-356	-254	403	6	70	429
Sunflower	na	8	6	1	11	23	6	8	-11	-5
Tea	2	8	-10	-37	-154	-160	-134	-212	-179	-92
Tobacco	na	-306	-148	-143	-271	-215	-219	-223	-211	-315
Vanilla	na	-13	-13	-12	-17	-49	-80	-43	-9	-17
Wheat	-80	-236	-91	-160	117	-132	632	166	49	-60
Yam	na	2	4	14	37	79	13	-32	-262	-182

Table 1.17 continued
 (b) by sub-sector (constant 2000 US\$ billions)

	GSE for just covered farm products	GSE for just non-covered farm products	Total GSE, all direct assistance to farmers ^a			
			TOTAL	Exportables	Import-competing	Non-tradables
1955-95	-1.9	0.0	-1.9	-1.1	-0.7	0.0
1960-64	-2.9	0.4	-2.2	-4.0	1.5	0.0
1965-69	-5.2	0.2	-4.7	-6.1	1.0	0.0
1970-74	-9.5	0.0	-9.0	-9.6	0.1	0.0
1975-79	-11.8	0.0	-10.5	-13.9	2.3	-0.2
1980-84	-6.9	-0.8	-6.3	-9.5	2.1	-0.3
1985-89	0.4	-1.8	-0.7	-9.5	8.6	-0.6
1990-94	-6.4	-1.2	-6.8	-7.7	0.8	-0.7
1995-99	-4.1	-1.6	-5.3	-6.3	2.0	-1.3
2000-04	-5.0	-1.4	-6.0	-5.7	0.3	-1.0

Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

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

Table 1.18: Relative rates of assistance (RRA) to agriculture,^a African focus countries,^c 1955 to 2004
(percent)

	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Cameroon										
NRA agriculture	na	-14.2	-24.7	-27.0	-36.9	-27.3	-5.2	-3.7	-4.2	-0.5
NRA nonagriculture	na	18.4	22.8	25.9	29.8	29.4	24.7	19.1	18.3	14.9
RRA	na	-27.6	-38.5	-41.9	-51.0	-43.6	-23.1	-18.8	-19.0	-13.4
Cote d'Ivoire										
NRA agriculture	na	-32.9	-38.1	-35.0	-38.6	-42.9	-33.3	-32.7	-27.5	-32.5
NRA nonagriculture	na	15.9	11.7	9.6	20.2	14.7	17.2	11.2	7.5	4.4
RRA	na	-42.1	-44.6	-40.7	-48.7	-50.2	-43.1	-39.5	-32.6	-35.4
Egypt										
NRA agriculture	-33.1	-48.1	-53.6	-53.0	-23.2	-13.3	87.3	-9.1	5.9	-9.2
NRA nonagriculture	31.2	42.3	44.2	40.3	23.5	17.4	20.9	25.5	25.2	24.5
RRA	-49.0	-63.4	-67.8	-66.5	-37.8	-26.3	55.6	-27.3	-15.5	-27.0
Ethiopia										
NRA agriculture	na	na	na	na	na	-33.8	-44.9	-48.0	-40.0	-20.4
NRA nonagriculture	na	na	na	na	na	40.2	51.3	44.5	20.8	10.5
RRA	na	na	na	na	na	-52.6	-63.4	-63.8	-49.8	-27.9
Ghana										
NRA agriculture	-9.3	-16.6	-38.8	-28.9	-50.2	-39.9	-17.3	-5.7	-8.8	-3.3
NRA nonagriculture	3.7	1.5	-0.3	2.7	-5.5	-0.1	1.0	3.8	3.4	5.2
RRA	-12.5	-18.0	-38.4	-30.8	-47.5	-39.3	-18.7	-9.2	-11.7	-8.0
Kenya										
NRA agriculture	41.5	37.7	15.7	-13.3	11.8	-6.5	20.3	-4.3	3.1	12.3
NRA nonagriculture	20.0	21.9	29.2	24.5	20.0	33.2	28.3	18.0	13.8	10.3
RRA	17.9	12.7	-10.4	-30.2	-6.9	-29.9	-6.1	-18.7	-9.3	1.9
Madagascar										
NRA agriculture	1.4	-15.8	-24.4	-21.3	-41.6	-57.5	-38.1	-16.8	-8.3	1.5
NRA nonagriculture	na	11.3	12.4	8.7	13.3	20.0	12.7	11.5	10.2	14.4
RRA	na	-26.0	-32.8	-27.6	-48.2	-64.2	-44.8	-25.4	-16.7	-11.3
Mozambique										
NRA agriculture	na	na	na	na	-70.1	-67.3	-75.1	-15.4	16.3	26.0
NRA nonagriculture	na	na	na	na	28.0	28.0	28.0	28.0	28.2	23.1
RRA	na	na	na	na	-76.7	-74.4	-80.6	-33.9	-9.4	2.4

Continued over

Table 1.18 (cont.)

Nigeria										
NRA agriculture	na	54.4	30.5	18.7	19.2	41.8	24.8	20.7	14.9	-7.5
NRA nonagriculture	na	1.4	1.1	-1.7	-2.9	-2.9	-2.2	-6.2	-9.0	-0.5
RRA	na	52.3	29.0	20.8	22.6	45.6	27.4	28.8	26.2	-7.0
Senegal										
NRA agriculture	na	-12.7	-10.5	-30.9	-31.1	-28.0	8.2	9.7	-8.1	-10.9
NRA nonagriculture	8.4	11.1	11.6	10.3	11.1	9.1	12.4	10.9	9.8	11.4
RRA	na	-21.4	-19.8	-37.4	-37.9	-34.1	-3.6	-1.0	-16.3	-20.1
South Africa										
NRA agriculture	na	5.2	11.9	-0.7	5.2	31.7	17.5	14.6	7.9	0.4
NRA nonagriculture	na	3.6	3.2	2.5	2.6	5.8	5.5	7.0	4.0	2.6
RRA	na	1.5	8.4	-3.1	2.4	24.4	11.3	7.2	3.7	-2.2
Sudan										
NRA agriculture	na	-25.8	-36.4	-48.1	-28.0	-32.6	-38.5	-53.6	-28.8	-14.2
NRA nonagriculture	0.9	-2.4	-5.6	-4.7	-6.7	1.5	-8.5	7.1	8.8	4.2
RRA	na	-23.4	-32.7	-45.6	-22.7	-33.5	-32.9	-55.4	-34.7	-17.5
Tanzania										
NRA agriculture	na	na	na	na	-59.6	-68.2	-55.4	-32.3	-31.7	-20.1
NRA nonagriculture	na	na	na	na	35.5	69.9	39.8	16.6	11.9	10.3
RRA	na	na	na	na	-70.3	-81.3	-68.1	-41.3	-38.9	-27.6
Uganda										
NRA agriculture	na	-4.6	-8.6	-24.3	-70.6	-22.8	-25.1	-1.3	4.0	3.6
NRA nonagriculture	na	9.6	19.4	34.9	68.1	53.6	52.9	21.6	31.0	26.1
RRA	na	-13.0	-23.1	-43.1	-82.1	-49.5	-50.6	-18.8	-20.6	-18.0
Zambia										
NRA agriculture	na	-22.4	-33.3	-44.4	-58.4	-27.6	-69.7	-55.2	-36.2	-36.7
NRA nonagriculture	13.8	16.1	20.0	27.6	34.5	24.1	24.2	21.2	13.5	6.4
RRA	na	-33.2	-43.8	-56.2	-68.8	-41.4	-75.2	-62.6	-43.8	-40.5
Zimbabwe										
NRA agriculture	23.9	-38.5	-45.6	-44.2	-54.5	-46.7	-42.9	-45.2	-40.0	-72.9
NRA nonagriculture	26.0	29.1	30.8	37.8	48.1	46.9	42.2	35.9	20.9	20.2
RRA	-1.7	-52.3	-58.3	-59.5	-69.1	-63.4	-59.8	-59.5	-50.6	-77.3

Continued over

Table 1.18 (cont.)

All African countries, unweighted averages^b										
NRA agriculture	3.1	-10.9	-19.7	-20.6	-26.2	-21.5	-13.9	-13.9	-9.3	-9.4
NRA nonagriculture	18.8	13.1	12.6	23.5	27.0	27.3	23.0	18.8	15.2	14.5
RRA	-13.2	-21.2	-28.7	-35.5	-41.8	-38.2	-29.7	-27.5	-21.2	-20.9
All African countries, weighted averages^c										
NRA agriculture	-24.1	-13.3	-19.5	-24.9	-22.0	-13.5	0.1	-15.3	-8.7	-11.9
NRA nonagriculture	19.9	3.2	2.3	0.9	4.8	0.8	8.6	2.2	1.6	6.6
RRA	-36.8	-14.8	-21.1	-25.6	-25.2	-12.5	-7.5	-16.6	-10.1	-17.4
Dispersion of RRA ^d	40.7	24.0	24.3	22.7	35.6	42.4	45.2	28.6	23.3	20.0

Sources: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

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

b. Simple averages of the above (weighted) national averages.

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

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

e. Cameroon, Cote D'Ivoire, Nigeria, Senegal, Uganda and Zambia data under 1960-64 are 1961-64; Tanzania data under 1975-79 are 1976-79; and Ethiopia data under 1980-84 are 1981-84.

Table 1.19: Relationships between nominal rates of assistance and some of its determinants,^c African focus countries, 1960 to 2004

Explanatory variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ln GDP per capita	0.14* (0.02)	0.10* (0.02)	0.15* (0.02)	0.20* (0.02)	0.02 (0.04)	0.02 (0.04)	0.04 (0.05)	0.15* (0.05)	0.13* (0.04)	0.14* (0.04)	0.18* (0.06)	0.17* (0.06)
Ln GDP per capita squared	0.15* (0.04)	0.09* (0.03)	0.01 (0.04)	0.04 (0.04)	0.57* (0.05)	0.57* (0.05)	0.69* (0.07)	0.62* (0.07)	0.49* (0.06)	0.51* (0.05)	0.50* (0.08)	0.54* (0.08)
Importable		0.04* (0.02)	0.09* (0.02)	0.09* (0.02)		0.08* (0.02)	0.15* (0.02)	0.12* (0.02)		0.08* (0.02)	0.15* (0.02)	0.13* (0.02)
Exportable		-0.35* (0.01)	-0.35* (0.02)	-0.35* (0.02)		-0.31* (0.01)	-0.30* (0.02)	-0.31* (0.02)		-0.33* (0.01)	-0.30* (0.02)	-0.31* (0.02)
Revealed Comparative Advantage ^a				0.01 (0.00)				0.03* (0.01)				0.02* (0.01)
Trade Specialization Index ^b			-0.05 (0.02)			0.01 (0.03)					0.09* (0.04)	
Constant	-0.16* (0.01)	-0.01 (0.01)	0.02 (0.02)	-0.03 (0.02)	-0.22* (0.01)	-0.10* (0.01)	-0.12* (0.02)	-0.24* (0.03)	-0.14* (0.04)	-0.38* (0.04)	-0.42* (0.05)	-0.40* (0.08)
R ²	0.02	0.18	0.20	0.19	0.03	0.18	0.18	0.18	0.13	0.27	0.28	0.28
No. of obs.	5372	5372	3788	3838	5372	5372	3788	3838	5372	5372	3788	3838
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

Source: Authors' estimates

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).

c. Dependent variable for regressions is NRA by commodity, country 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.

Table 1.20: Percentage consumer tax equivalent of policies assisting producers of covered farm products,^a African focus countries, 1960 to 2004
(percent, at primary product level)

(a) aggregate CTEs by country, percent^c

	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Benin	na	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burkina Faso	na	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cameroon	-0.4	-0.7	-1.3	-3.7	-3.7	-1.1	-0.4	-0.2	0.0
Chad	na	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cote d'Ivoire	-9.4	-20.1	-8.4	3.8	-10.8	-3.9	-4.6	-4.3	-3.8
Egypt	-47.1	-49.5	-49.6	-20.8	-12.3	109.5	-2.7	13.9	-2.8
Ethiopia	na	na	na	na	-15.2	-17.6	-20.3	-12.1	-10.0
Ghana	-2.1	-4.4	-2.5	-4.6	1.7	10.2	4.0	0.8	2.8
Kenya	26.1	21.3	-12.8	20.7	26.0	14.8	-14.6	12.0	18.7
Madagascar	-15.9	-22.1	-19.2	-26.2	-42.4	-13.4	-1.2	-1.9	4.0
Mali	na	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mozambique	na	na	na	-50.5	-39.6	-53.4	-3.6	5.5	31.1
Nigeria	31.2	23.1	14.0	9.0	4.3	15.2	5.6	7.4	0.9
Senegal	-10.8	-10.3	-30.2	-25.2	-18.3	32.0	31.9	-6.0	-7.0
South Africa	4.0	10.2	-0.2	6.7	29.8	14.7	8.6	6.6	-0.6
Sudan	-15.2	-28.9	-41.8	-16.8	-24.2	-30.1	-47.7	-21.2	-5.2
Tanzania	na	na	na	-42.0	-53.7	-41.3	-17.5	-23.1	-8.8
Togo	na	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uganda	-1.0	-1.8	-1.1	-1.3	1.0	-0.9	0.3	1.7	1.3
Zambia	-26.7	-38.5	-46.3	-54.3	-20.8	-68.0	-54.4	-30.5	-31.3
Zimbabwe	-28.7	-35.4	-40.1	-53.7	-39.4	-37.1	-42.4	-36.6	-63.7
African focus countries:									
Unweighted average	-7.4	-12.1	-13.3	-12.7	-10.4	-3.3	-7.6	-4.2	-3.6
Weighted average ^b	-7.8	-11.8	-16.6	-8.7	-6.1	15.5	-8.2	-0.5	-3.2
Dispersion of national CTEs ^c	21.3	22.8	19.8	22.7	21.6	40.6	19.9	13.9	17.9

Table 1.20 (continued): Percentage consumer tax equivalent of policies assisting producers of covered farm products,^a African focus countries, 1955 to 2004
(b) Regional CTEs by product, percent

	1961-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Banana	-2	-4	0	-2	-1	-1	3	5	2
Bean	6	2	-3	-37	-48	-64	-25	-24	-19
Beef	-21	-28	-36	7	18	48	-32	6	-21
Cassava	0	0	0	-1	-3	-1	1	3	3
Cocoa	-31	-46	-43	-60	-48	-34	-20	-22	-34
Coffee	-35	-41	-43	-59	-50	-46	-47	-37	-14
Cotton	-46	-54	-55	-50	-43	-31	-55	-40	-58
Groundnut	-22	-36	-47	-41	-39	-12	-26	-32	-36
Maize	15	3	-3	1	10	48	10	4	-2
Milk	-23	-32	-42	-1	-22	67	-27	-8	19
Millet	-3	-4	-2	0	2	3	4	6	6
Palmoil	-25	-31	-45	-19	-29	-13	107	41	-17
Plantain	0	0	0	0	0	0	0	0	0
Poultry	-11	-11	-12	-24	18	-3	6	13	-2
Rice	-27	-33	-16	-10	-9	41	9	2	10
Sesame	-45	-56	-58	-61	-51	-38	-38	-40	-38
Sheepmeat	-7	-13	-17	-14	-12	-32	-47	-36	-18
Sorghum	102	94	73	56	34	69	68	38	40
Soybean	na	-14	-32	-43	-43	-41	-53	-51	-56
Sugar	-2	11	-16	-10	-6	54	-2	6	45
Sunflower	19	17	6	8	19	13	13	0	1
Tea	10	-6	-22	-46	-32	-27	-41	-40	-36
Tobacco	-39	-38	-49	-57	-50	-50	-34	-37	-46
Vanilla	na	na	na	na	na	na	na	na	na
Wheat	-36	-22	-19	-2	-14	34	8	3	-1
Yam	0	0	0	-1	-1	0	1	3	3
All African focus countries:									
Weighted average ^b	-8	-12	-17	-9	-6	16	-8	0	-3
Dispersion of region's product CTEs ^d	30.3	30.4	28.0	30.3	27.9	41.9	36.9	26.4	27.4

Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

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.

e. Cameroon, Cote D'Ivoire, Nigeria, Senegal, Uganda and Zambia data under 1960-64 are 1961-64; Tanzania data under 1975-79 are 1976-79; and Ethiopia data under 1980-84 are 1981-84.

Table 1.21: Value of consumer tax equivalent of policies assisting producers of covered farm products, African focus countries,^a 1965 to 2004

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

(a) by country (constant 2000 US\$ million)

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Benin	na	0	0	0	0	0	0	0
Burkina Faso	na	0	0	0	0	0	0	0
Cameroon	-12	-24	-57	-30	-8	-5	-3	0
Chad	na	0	0	0	0	0	0	0
Cote d'Ivoire	-139	-65	39	-151	-54	-76	-63	-42
Egypt	-2950	-3891	-2196	-1631	9315	-224	1087	-221
Ethiopia	na	na	na	-1014	-1435	-1427	-944	-759
Ghana	-31	-33	-44	78	116	59	18	61
Kenya	19	-71	282	241	75	-143	91	134
Madagascar	-137	-321	-282	-386	-93	-9	-16	34
Mali	na	0	0	0	0	0	0	0
Mozambique	na	na	-206	-183	-152	-19	58	164
Nigeria	1338	1011	947	769	1495	755	1209	111
Senegal	-51	-226	-334	-177	253	190	-32	-38
South Africa	310	-145	323	1534	627	440	346	-14
Sudan	-792	-1874	-898	-1557	-2136	-3073	-1265	-442
Tanzania	na	na	-993	-730	-393	-139	-397	-165
Togo	na	0	0	0	0	0	0	0
Uganda	-24	-20	-25	46	-17	7	49	37
Zambia	-160	-188	-310	-128	-214	-191	-136	-180
Zimbabwe	-125	-216	-482	-321	-239	-270	-217	-408
African focus countries^b	-2754	-6063	-4038	-3450	7138	-4126	-215	-1729

Table 1.21 (continued): Value of consumer tax equivalent of policies assisting producers of covered farm products, African focus countries, 1965 to 2004

(b) by product (constant 2000 US\$ million)

	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Banana	-1	0	-1	0	-1	6	8	0
Bean	1	-3	-231	-211	-189	-54	-132	-127
Beef	-787	-1415	176	908	2861	-2087	264	-1247
Cassava	-5	-10	-50	-189	-43	33	293	200
Cocoa	-15	-24	-118	-47	-38	-44	-82	-138
Coffee	-68	-83	-111	-175	-223	-151	-146	-30
Cotton	-1170	-1658	-2126	-1212	-742	-1401	-654	-756
Groundnut	-360	-759	-889	-698	-135	-345	-486	-595
Maize	67	-262	76	576	2497	627	306	-246
Milk	-350	-609	-10	-451	1019	-522	-258	375
Millet	-53	-33	6	26	40	58	89	80
Palmoil	-116	-156	-148	-146	-95	387	185	-112
Plantain	0	0	0	0	0	2	4	2
Poultry	-30	-70	-259	185	-17	83	206	61
Rice	-506	-756	-347	-352	955	219	45	206
Sesame	-45	-119	-155	-110	-47	-35	-42	-22
Sheepmeat	-105	-232	-212	-187	-424	-662	-499	-106
Sorghum	1223	1138	940	599	864	706	615	430
Soybean	0	-1	-10	-24	-19	-22	-26	-23
Sugar	52	-355	-345	-392	571	-32	60	521
Sunflower	6	1	12	26	12	16	0	6
Tea	-1	-4	-24	-24	-16	-20	-18	-15
Tobacco	-65	-27	-74	-35	-39	-38	-14	-41
Vanilla	na	0	-5	-8	-38	-9	-2	-17
Wheat	-341	-528	-96	-837	2120	463	209	-49
Yam	-4	-14	-37	-81	-13	30	249	179
All covered products^{b,c}	-2754	-6063	-4038	-3450	7138	-4126	-215	-1729

Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-17 of this book.

a. Cameroon, Cote D'Ivoire, Nigeria, Senegal, Uganda and Zambia data under 1960-64 are 1961-64; Tanzania data under 1975-79 are 1976-79; and Ethiopia data under 1980-84 are 1981-84. Because of this, the totals in Tables (a) and (b) in these three time periods might not match exactly.

b. These dollar amounts do not include non-covered farm products, which amount to almost one-third of agricultural output (see last row of Table 1.11), nor any mark-up that might be applied along the value chain.

c. Includes also all the minor covered products not shown above.