Distortions to Agricultural Incentives in Sub-Saharan and North Africa

Kym Anderson and William A. Masters

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

Purdue University
wmasters@purdue.edu

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Distortions to Agricultural Incentives in Sub-Saharan and North Africa

Kym Anderson and William A. Masters[1]

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). 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 is often a key export sector. Changes in these biases could help explain Africa's development experience, including the continent's slow pace of poverty alleviation and economic growth especially in the 1970s and 1980s, and its subsequent recovery since then.

Much progress has been made in recent years to reduce the anti-agricultural and anti-trade biases of policy in Africa, and these changes have been associated with faster economic growth and poverty alleviation. Many price distortions remain, however, and 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 are still key influences on the pace and direction of change in Africa.

This chapter summarizes a set of case studies measuring distortions within and across countries over time. 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). This chapter also makes no attempt to summarize the literature dealing with public investment or economic growth strategies more broadly, which was addressed recently by Spence et al. (2008). Our goal is more narrowly defined, simply to compare quantitative indicators of past and recent agricultural price policies.

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

Including Africa in this global 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 output and income 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 among the most heavily interventionist, dampening the contribution of market incentives to 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 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, amounting to an average of 43 years and 9 crop or livestock products per country. The covered products account for more than two-thirds of the value of most countries' agricultural production.

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, 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 and thus offer important opportunities for comparative study. Our averages all include South Africa, whose per-capita national income is more than four times larger

than the other focus countries, but whose income inequality is among the highest in the world.

The extent of poverty decline in Sub-Saharan Africa (SSA) has been disappointing relative to other developing country regions. Over the 1981-2004 period, the number of SSA people living on less than $1/day (in 1993 PPP terms) grew from 168 million to 298 million. As a percent of the population, the number of people in such extreme poverty rose to 47 percent in 1990, then stabilized and eventually declined to 41 percent by 2004, marginally below the 42 percent level of 1981 (Appendix table 1). 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 their incomes may rise above the dollar-a-day threshold but many remain 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 (Chen and Ravallion 2007).

Policy choices have played an important role in observed rates of economic growth, structural change and poverty alleviation. Many African countries had increasingly severe anti-agricultural and anti-trade biases in the 1960s and 1970s, contributing to farmers' poverty especially in the 1970s. Subsequent reforms 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. The chapter then summarizes estimates of the nominal rate of assistance (NRA) and the relative rate of assistance (RRA) to farmers delivered by national farm and nonfarm policies over the past several decades, as well as the impact of these policies on the consumer prices of farm products, using the project's methodology (Anderson et al. 2008). The final sections point to 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 Change[2]

Between 1980 and 2004, per capita GDP for our 21 focus countries of Africa grew at just 0.7 percent per year (Appendix table 2). This was 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 fallen well below the income levels of other countries, especially those in Asia. The difference is due mainly to non-farm growth, since agricultural GDP growth per capita was about the same in Africa as in other regions (0.6 percent in Africa compared with 0.5 percent for the world as a whole).

The aggregate, long-term experience hides large variation over time and across countries. Most notably, Africa experienced a sharp decline in agricultural output per capita from the early 1970s through the late 1980s, followed soon thereafter by a decline in total national income per capita, both of which were then stabilized and reversed in the 1990s. Most recently, during the 2000-06 period, per capita GDP growth averaged 4.7 percent in Sub-Saharan Africa compared with 3.0 percent for the world as a whole (World Bank 2007, page 341).

Trends in GDP are closely linked to changes in Africa's export volumes. These grew at relatively slow rates compared with the global average of 6.1 percent (last column of Appendix table 2), 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.

African economies are slowly recovering from their decline during the 1970s and 1980s, but only a few countries have achieved substantial restructuring away from agriculture and towards other activities. In fact, about one-quarter of our focus countries have seen their share of agriculture in GDP actually increase over the entire 1965-69 to 2000-04 period (Appendix table 4). Agriculture's share of GDP is above 25 percent in nearly three-quarters of our focus countries, and is above 40 percent in Cameroon, Chad and Ethiopia. The share of overall employment accounted for by farming activities has fallen in all focus countries but generally remains above 50 percent (Appendix table 5), which is much higher than farmers'

[2] The economic indicators quoted in this section are from the first ten tables in the Appendix, based predominately on the compilation of data from the World Bank's *World Development Indicators* and the UN's FAOSTAT databases by Sandri, Valenzuela and Anderson (2007).

share of GDP. These data underscore the relatively low incomes of farm households, and hence the continued importance of agricultural prices for social welfare.

Agriculture is particularly important as a source of exports, accounting for over 70 percent of merchandize exports in Benin, Burkina Faso, Ethiopia, Tanzania and Uganda during the 2000-04 period (Appendix table 6). Agriculture's share of merchandise exports has actually risen in three of our focus African countries (Benin, Zimbabwe and Zambia), and has declined elsewhere partly because of rises in other primary exports such as petroleum in Sudan, and partly because of growth in exports of manufactured goods as for example in Kenya, Madagascar and Senegal. Such nonfarm exports have grown even faster in other regions, however, so 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 (Appendix table 7). The exceptions are Nigeria and Sudan, which have newly exploited mineral or energy deposits.

While most African countries have an increasing level of revealed comparative advantage in agricultural exports, there is also rising domestic demand for farm output. During colonial times, production was heavily export oriented. At the start of the independence period in 1961-64, the total value of agricultural output was about 120 percent of consumption, and that ratio has since declined to around 105 percent. The share of farm production that is 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 (Appendix table 8).

The Evolution of Agricultural Trade Policies

The trends in growth and development described above are closely linked to economic policies pursued by African governments. Before independence, most of Africa had been ruled since the 19th century by foreign powers whose explicit objective was to control trade, for political reasons and to extract revenue. Interventions were typically managed through licensed monopolies and marketing boards, as well as restrictions on Africans' labor mobility, property ownership and market participation. The few countries not ruled by a foreign power were controlled by a local aristocracy or immigrant minority whose economic

policies were similarly repressive, as in Ethiopia, South Africa and Zimbabwe among our focus countries.

Majority rule came to Africa much later than any other major region of the world, and it arrived in the 1960s at a time when central planning was widely seen as a promising strategy for economic development. The newly independent, elected governments typically kept the marketing boards and other instruments for intervention that had been developed by previous administrations, and simply expanded their mandate to cover more people and larger regions of the country. Their stated goals were to be more inclusive and serve a larger fraction of the African population than the exclusive licensing and limited mandates of colonial institutions. The new governments also adopted new criteria for public employment, with staffing priorities that reflected electoral politics instead of colonial interests. Both changes led to large increases in the public payroll and fiscal expenditure. These steps were often underwritten by foreign donors, including the former colonial powers plus other industrialized countries and oil exporters. Project aid and budget support grew rapidly, especially in the 1970s when loans were available at zero or negative real interest rates. These capital inflows covered growing fiscal deficits, current-account imbalances and increasingly overvalued foreign exchange rates. Inflation was usually kept low, as governments chose to ration credit and foreign exchange rather than expand the money supply, although a few countries such as Ghana and Zimbabwe have experienced hyperinflation.

African governments' use of externally funded, state-controlled development strategies seemed promising at the time. Many countries around the world were adopting similar approaches. Western aid to support economic interventions also helped counter the growing influence of the Soviet Union, which had supported African liberation movements against colonialism. In retrospect, we can say that the communist powers helped Africans pursue political freedoms they denied to their own people, while the aid donors and lenders helped Africans maintain economic controls they would never have tolerated at home. The net result was a substantial rise in the degree of African governments' economic intervention during the 1960s and 1970s, from the severe but targeted controls of colonial administrations to the more generalized attempts at state-led development of independent elected governments.

The growth of African government intervention during the 1960s and 1970s had two major consequences. First, it fueled political instability, offering the incentives and the means for incumbents and their rivals to seize power and exploit government institutions. Some elected leaders were overthrown by force, while others became increasingly despotic and

only a few allowed peaceful transitions. Political opportunism among both elected and self-appointed leaders compounded the second consequence of economic intervention, which was to weaken market institutions, distort economic incentives and slow the pace of poverty alleviation. We do not know how fast African economies might have grown under different economic policies in the 1960s and 1970s, but the nature and extent of historical interventions was clearly associated with some degree of reduced growth and worsening poverty.[3]

In the 1980s, African governments faced mounting pressures for public-sector reform. The need to reform was triggered by a sudden rise in world real interest rates, combined with global recession that worsened Africa's terms of trade. Domestic political concerns intensified, and governments found it increasingly difficult to finance the growing fiscal deficits associated with intervention. Lenders of last resort were the World Bank, IMF, USAID and others who made their aid conditional on devaluation, deregulation, privatization and retrenchment. The three big Washington-based institutions used similar criteria for their clients around the developing world, following the "Washington consensus" reform agenda described by Williamson (1990).

Trade policy reforms in the 1980s and 1990s were heavily influenced by structural adjustment programs sponsored by the World Bank and the IMF. Loan conditions were widely debated and often blamed for the economic stresses which accompanied them, but the actual implementation of reforms was typically slow and often subject to reversal or offsetting policy changes. Senegal, for example, took out the first World Bank Structural Adjustment Loan (SAL) in 1980 and received its last such loan in 1992 before switching to other instruments, such as a "Private Sector Adjustment Credit" received in 2004. The last African loan to have the term "structural adjustment" in its title was made to Mali in 2005.[4] By then, the focus of World Bank-IMF conditionality had shifted to national Poverty Reduction Strategy Papers (PRSPs), a mechanism designed to involve a broader range of stakeholders and a wider variety of government activities than had been involved in the SALs. The process was initiated in 1999, and as of mid-2008 a total of 33 African countries

[3] Recent studies attempting to measure the magnitude of various constraints on growth have addressed the direct effects of exogenous factors such as unfavorable demographic conditions and transport opportunities (Bloom and Sachs 1998), unfavorable temperature conditions and economic scale (Masters and McMillan 2001) and declining rainfall during the mid-1960s through the late 1980s (Barrios, Bertinelli and Strobl 2009), as well as choice variables such as institutions (Rodrik, Subramanian and Trebbi 2004), policies (Glaeser et al. 2004), and inequality (Easterly 2007). A synthesis approach allows for simultaneous determination of government choices and economic outcomes, in models that link exogenous conditions to an equilibrium level of tax rates and public investment which in turn drives growth (e.g. McMillan and Masters 2003).

[4] A detailed listing of World Bank projects is available at http://go.worldbank.org/0FRO32VEI0.

had some sort of PRSP on record with the World Bank and the IMF.[5] Of our 21 focus economies, the only countries without one are Egypt, Sudan and Zimbabwe.

Africa is a large and diverse continent, divided into over 50 sovereign nations with widely varying circumstances. Some of the smaller countries have had very distinctive policy and growth experiences. For example, Botswana, Lesotho, and Swaziland had no choice but to maintain free trade in a customs union with their much richer and more powerful neighbor South Africa. This enforced openness probably facilitated convergence towards South Africa's income level, helping them achieve Africa's fastest rates of poverty alleviation through the 1970s and 1980s. Other small countries such as Cape Verde and Mauritius enjoyed high levels of migration, remittances or capital flows and experienced rapid economic growth. Africa's larger countries, including all of our 21 focus economies, have had relatively interventionist governments and slow poverty alleviation in this period, followed by reform and a degree of recovery. Studies of African economies customarily emphasize the diversity among them, which is extremely important. There are also striking patterns across countries, as found in previous studies such as Ndulu et al. (2008). The new data presented below reveals both diversity and clear trends in policy choices.

Measuring Rates of Assistance and Taxation

The magnitude of government interventions affecting farmers and food consumers is quantified here using the common methodology (Anderson et al. 2008) that has been adopted by the authors of this volume and the four preceding regional volumes. After a brief description of that methodology, a summary of results follows.[6]

Methodology

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

[5] A detailed listing of countries' PRSP documents is available at http://www.imf.org/external/np/prsp/prsp.asp.
[6] Annual estimates and additional details may be found in the appendix.

of the NRA and CTE imply net taxation of farmers or net 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. The NRAs are based on estimates of assistance to individual industries at the farmgate. The targeted degree of coverage of the products for which agricultural NRA estimates are generated is 70 percent of the gross value of farm production at undistorted prices. The authors of the country case studies also provided guesstimates of the NRAs for noncovered farm products. For countries with non-product-specific agricultural subsidies or taxes, such net subsidies are then added to product-specific assistance to obtain NRAs for total agriculture and also for tradable agriculture for use in generating a relative rate of assistance (RRA) as defined below.

Farmers are affected not only by the prices of their own outputs, but also—albeit indirectly because of the changes to factor market prices and the exchange rate—by the incentives nonagricultural producers face. In other words, not just absolute but relative prices and, hence, relative rates of government assistance affect producer incentives. If one assumes that there are no distortions in the markets for nontradables and that the value shares of agricultural and nonagricultural nontradable products remain constant, then the economy-wide effect of distortions to agricultural incentives may be captured by the extent to which the tradable parts of agricultural production are assisted or taxed relative to producers of other tradables (Vousden 1990, pp. 46-47, following Lerner 1936). By generating estimates of the average NRA for nonagricultural tradables, it is then possible to calculate an RRA, which is defined in percentage terms as: $RRA = 100[(1+NRAag^t/100)/(1+NRAnonag^t/100) - 1]$, where $NRAag^t$ and $NRAnonag^t$ are the weighted average percentage NRAs for the tradable parts of the agricultural and nonagricultural sectors, respectively. Since the NRA cannot be less than −100 percent if producers are to earn anything, neither can the RRA. And, if both these sectors are equally assisted, the RRA is zero. This measure is useful in that, if it is below (or above) zero, it provides an internationally comparable indication of the extent to which a country's policy regime has an anti- (or pro-) agricultural bias.

In calculating the NRA for producers of agricultural and nonagricultural tradables, the methodology seeks to include distortions generated by dual or multiple exchange rates. 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 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 NRAs in agriculture

Agricultural price, trade and exchange rate policies have reduced the earnings of African farmers quite substantially.[7] The average rate of taxation on all agricultural production, as measured by our weighted average NRA, was less than 8 percent at the time many African countries achieved independence in the early 1960s, and then almost doubled to a peak around 15 percent in the 1970s as interventions became more severe (table 2). 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. Such averages hide considerable diversity within the region, including particularly South Africa whose trend of rising net protection of farmers during the 1970s and early 1980s, followed by declining support, was opposite to trends in the Africa-wide average .

A visual impression of the variation across countries and the extent of reforms between 1975-79 and 2000-04 is provided in figure 1, showing clearly the major reduction in taxation rates facing farmers in such countries as Ghana,Uganda, Tanzania, Cameroon, Senegal and Madagascar. That figure also shows the transition from taxation to support of

[7] 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.

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 3 by their standard deviation around the weighted mean NRA for covered agricultural products in each period. This dispersion was highest in 1985-89 when many reforms were only partly completed, 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 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. As in other regions of the world, assistance is among the highest for sugar 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 4.

A third type of variation is cross-country diversity of national average NRAs. This is evident from the bottom of table 2: 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 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 5.

Decomposing the NRA into components reveals a subtle but important influence on the aggregate average. 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 3.

In the African context, product-specific input price distortions contributed very little to the sectoral NRA estimates, and 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 (see Appendix table 12), which are largely trade taxes, quantitative trade restrictions and the operations of parastatal trading companies.

In absolute terms, 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 6(a)). The distribution across countries is shown in figure 4(a), 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 6(b)), but still larger than government investment or foreign aid targeted to agriculture (Masters 2008, Figure 9). As shown in table 7 and figure 4(b), the burden of taxation was imposed mainly through the three major export cash crops (cocoa, coffee and cotton) plus groundnuts, beef, rice, and sugarin 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.

This study aims 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 focused mainly on agricultural policy, and their NRAs for the nonfarm sector typically were measured simply 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 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 5(a)).

Consumer tax equivalents of agricultural policies

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 diferent 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 7 with the corresponding NRAs in table 2. 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 national CTEs within countries also rose before the reforms and fell after the latter 1980s (see table 7 including the bottom row).

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 (Appendix Table 16(a)). Among the covered products, the diversity in measures across the continent means that there are no obvious stand-out products (Appendix Table 16(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 6. 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 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. Most of this gain has come from reduced taxation of farm exports.

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. Even this lower amount is appreciably larger than public investment or foreign aid into the sector. The continuing taxation in Africa contrasts with both Asia and Latin America, where the average agricultural NRAs and RRAs reached zero by the early 21st century, although like Africa those regions still have a wide dispersion of NRAs across products and countries.

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 that is import-competing. The rate of protection from imports for these products has fluctuated but remains positive. This helps only the few farmers who are net sellers of the protected products, however, and does so in a way that is less efficient and less equitable than many other possible interventions.

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 over time. 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. We expect that the policy choices of African governments will continue to vary, but we hope that the overall trend towards reform will continue. Despite difficult conditions, many African governments will continue to reduce taxation of agricultural exports, improve market institutions, and invest in rural public goods. In response, we expect that producers will continue to 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. 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.

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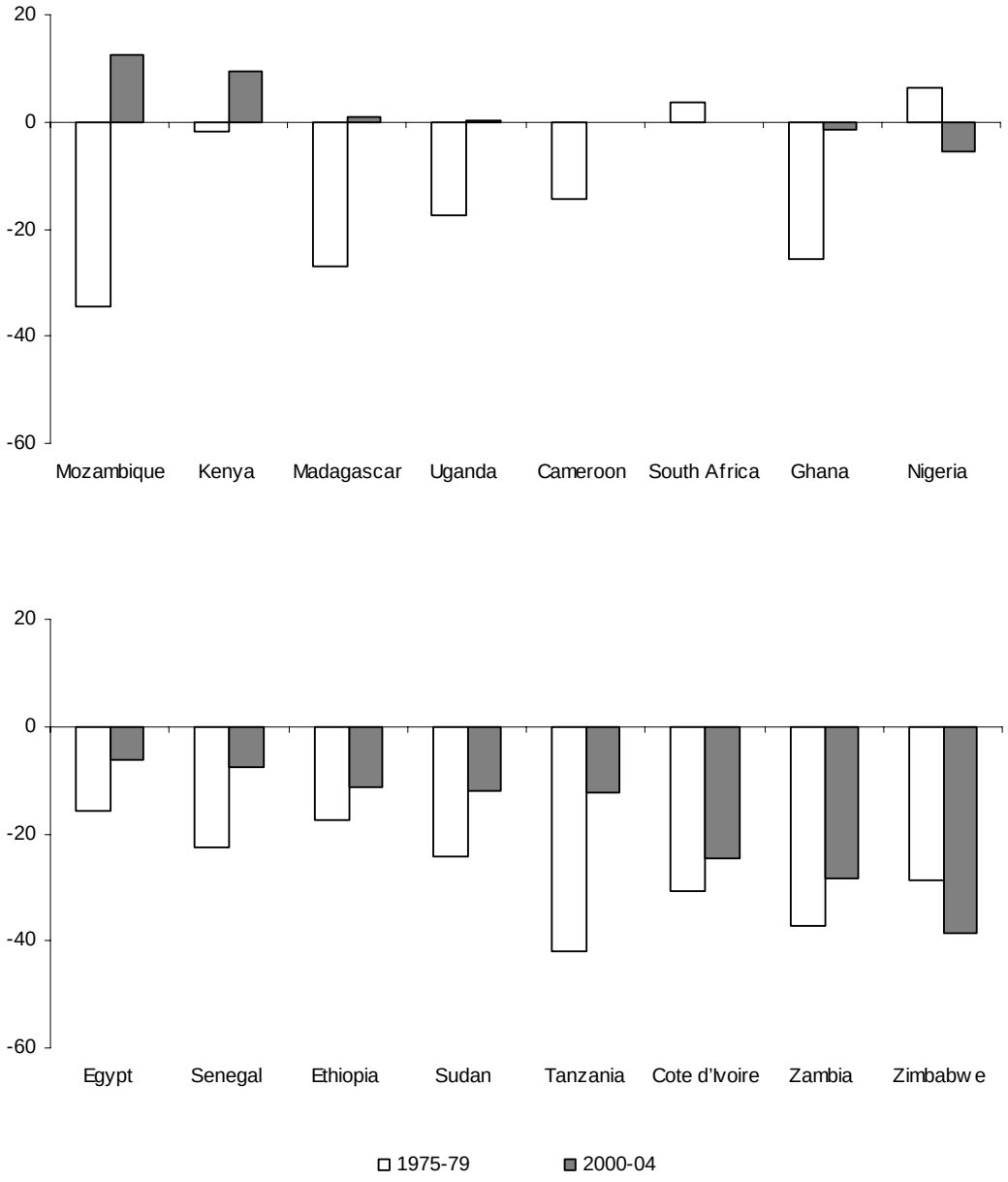
Figure 1: Nominal rates of assistance to agriculture, individual African focus countries and unweighted regional average, 1975-79 and 2000-04[a]

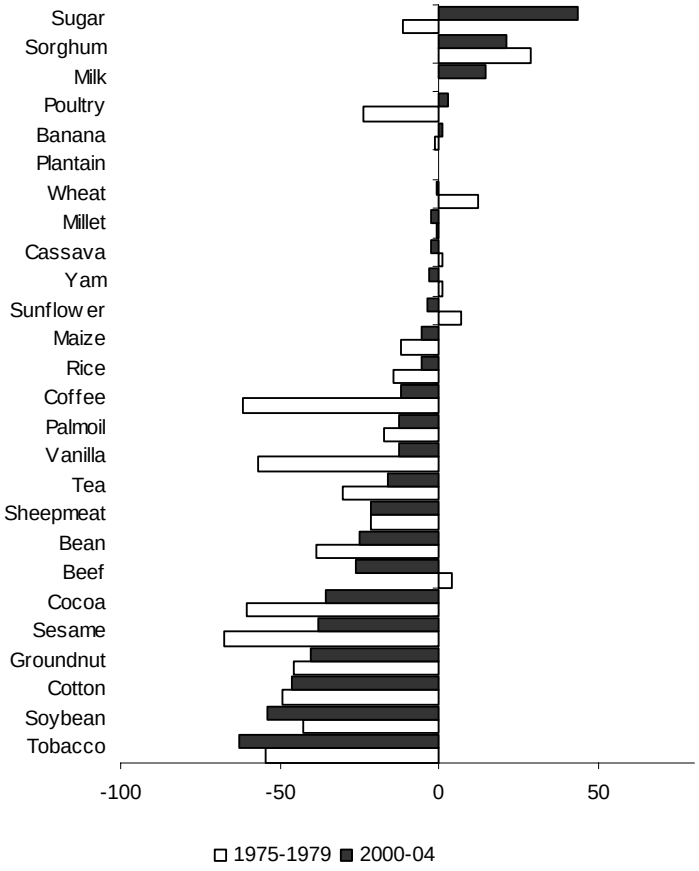
(percent)



Source: Anderson and Valenzuela (2008) based on estimates reported in the Appendix and in Anderson and Masters (2008).
a Ethiopia data for the first period refer to 1981-84 as 1975-79 data are unavailable.

Figure 2: Nominal rates of assistance, key covered product, African focus countries, 1975-79 and 2000-04

(percent, weighted[a] average across 21 countries)

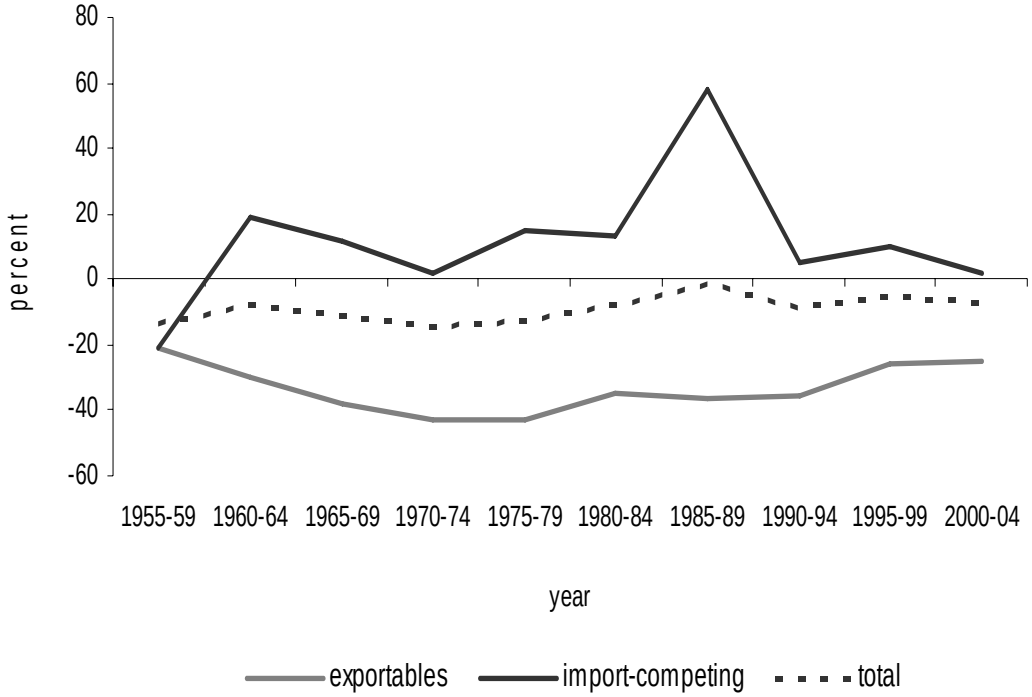


Source: Anderson and Valenzuela (2008) based on estimates reported in the Appendix and in Anderson and Masters (2008).

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

Figure 3: Nominal rates of assistance to exportable, import-competing and all[a] agricultural products, African region, 1955 to 2004

(percent, weighted averages across 16 countries)



Source: Anderson and Valenzuela (2008) based on estimates reported in the Appendix and in Anderson and Masters (2008).
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 4: Gross subsidy equivalents of assistance to farmers, African focus countries,[a] 1975-79 and 2000-04

(constant 2000 US$ billions)

(a) Total per country

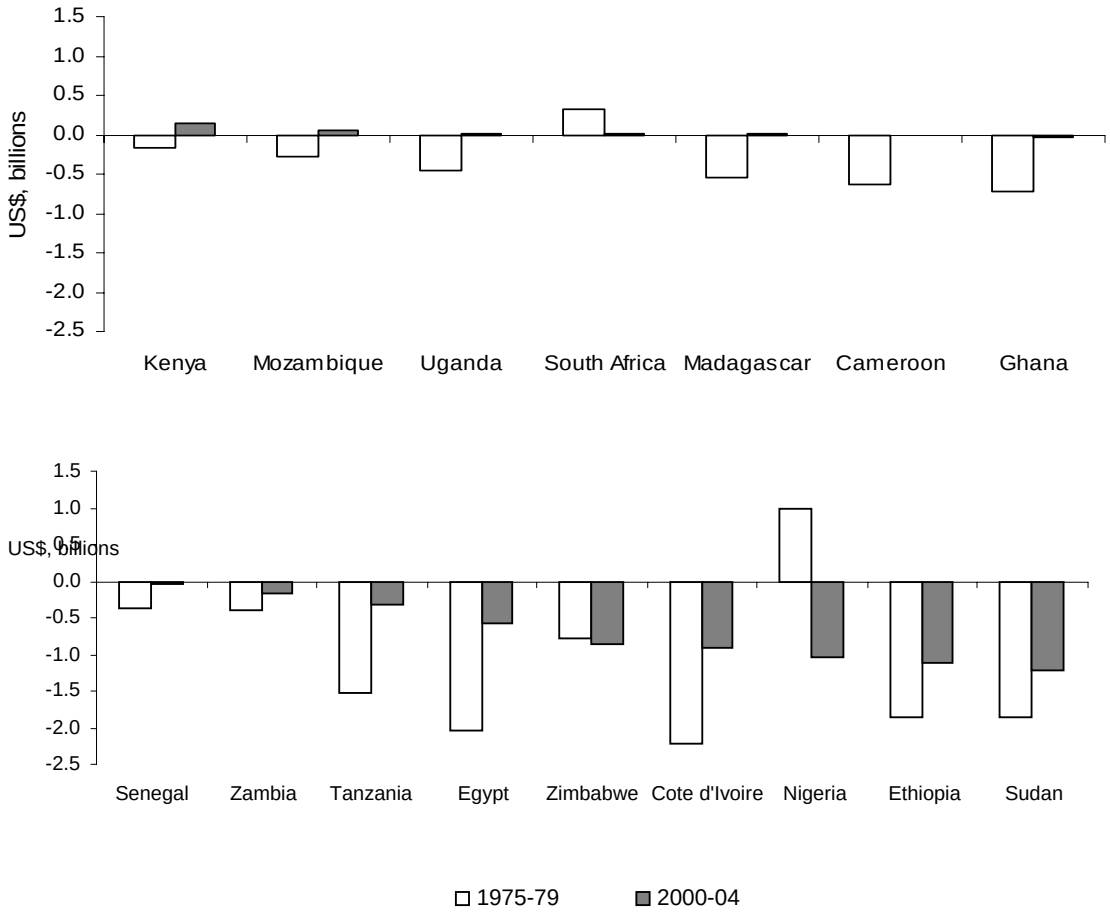
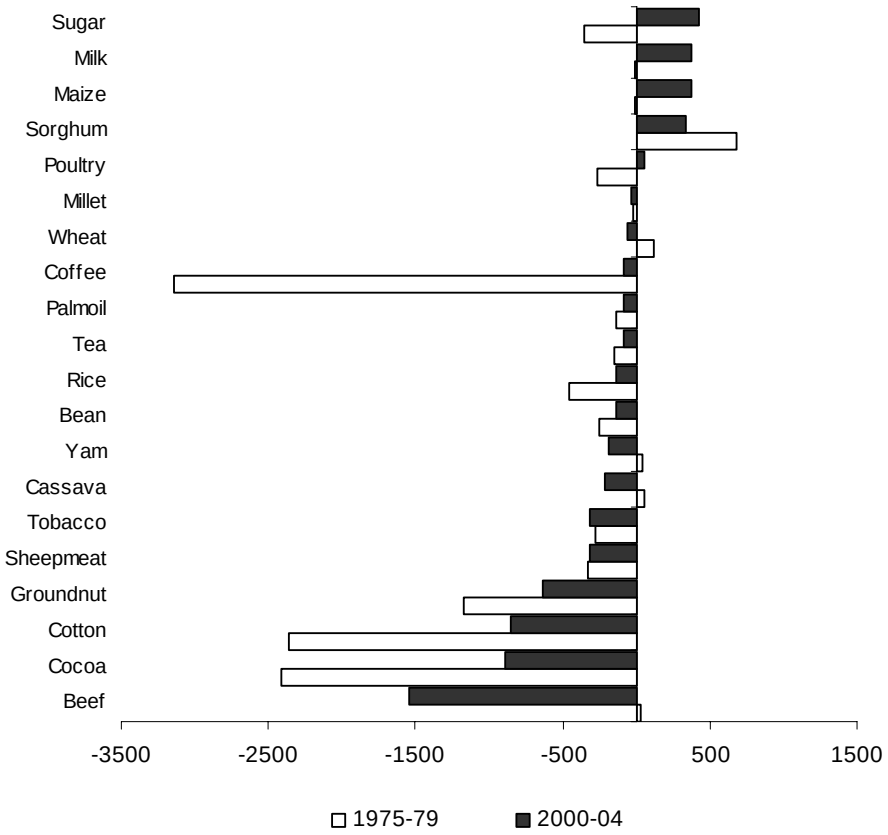


Figure 4 (continued): Gross subsidy equivalents of assistance to farmers, African focus countries,[a] 1975-79 and 2000-04

(constant 2000 US$ billions)

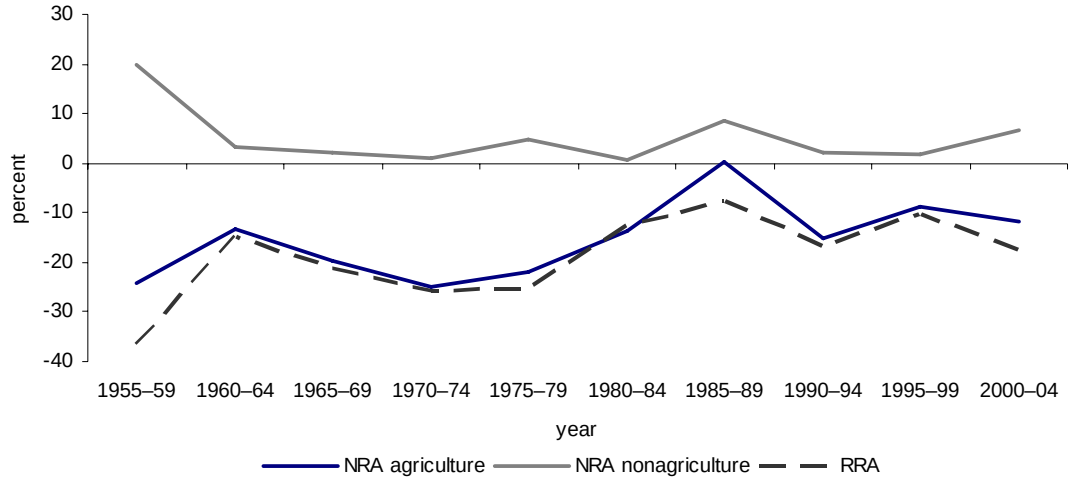
(b) Total per product



Source: Anderson and Valenzuela (2008) based on estimates reported in the Appendix and in Anderson and Masters (2008).

Figure 5: Nominal rates of assistance to agricultural and non-agricultural tradable products and relative rate of assistance,[a] Africa region, 1955 to 2004

(percent, weighted averages across 16 countries)[a]

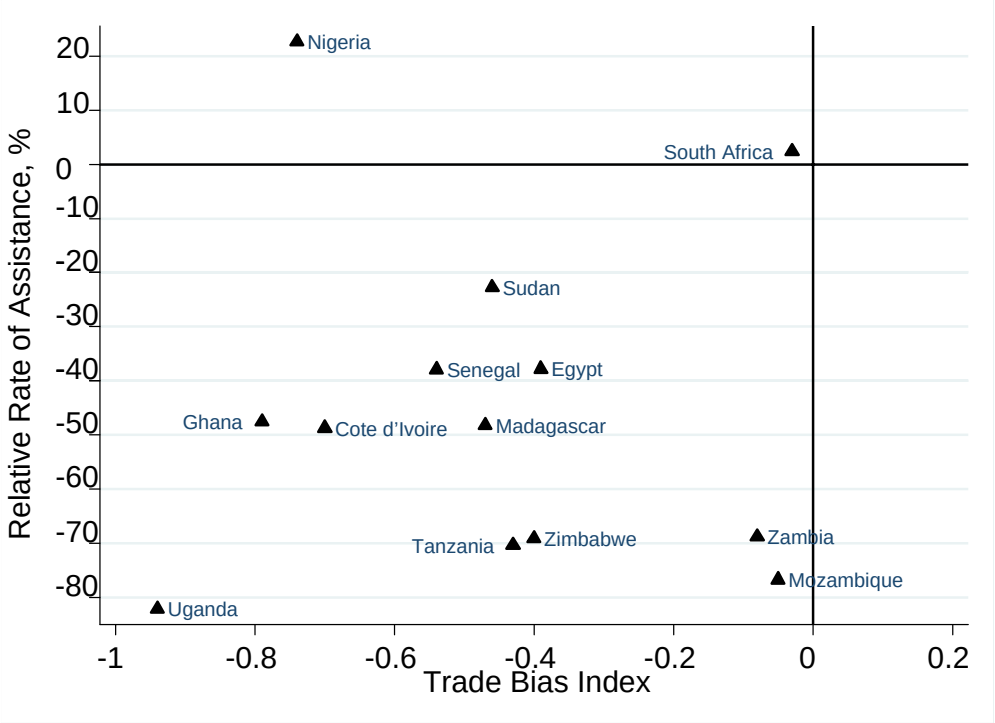


Source: Anderson and Valenzuela (2008) based on estimates reported in the Appendix and in Anderson and Masters (2008).

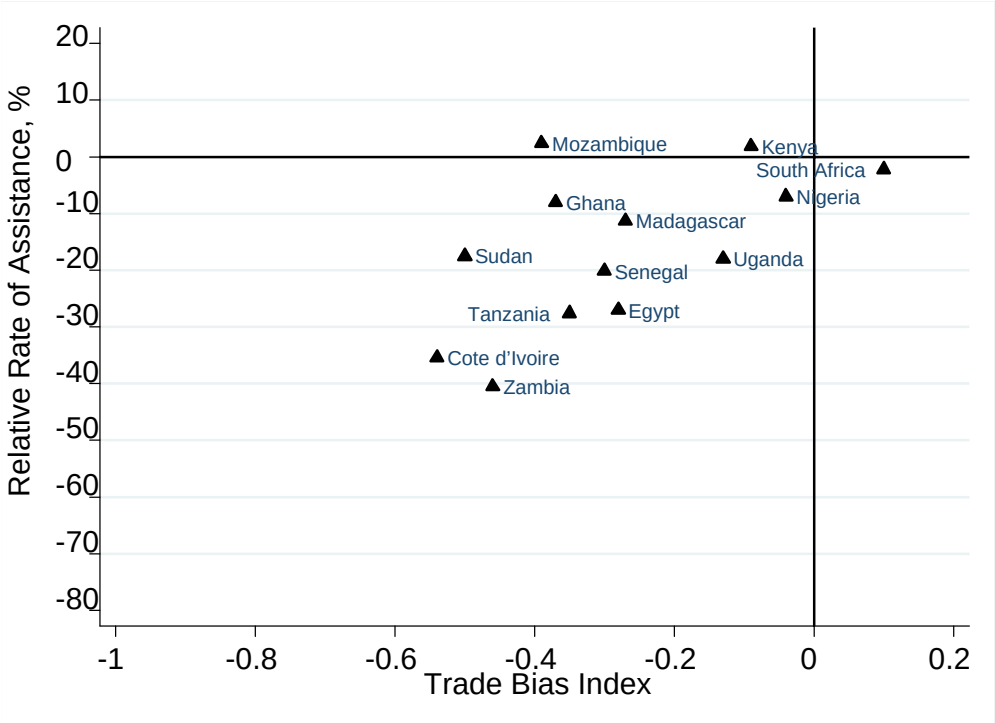
a. The RRA is defined as $100*[(100+NRAag^t)/(100+NRAnonag^t)-1]$, where $NRAag^t$ and $NRAnonag^t$ are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively. The 5 small cotton-exporting countries of West and Central Africa are not included here.

Figure 6: Relationship between RRA and the trade bias index for agriculture, African focus countries, 1975–79 and 2000–04

a. 1975–79



b. 2000–04



Source: Anderson and Valenzuela (2008) based on estimates reported in the Appendix and in Anderson and Masters (2008).

Table 1: Key economic and trade indicators, African focus countries, 2000-04

	Share (%) of world:			National rel. to world (=100)			TSI[b]	Pov[c]	Gini Index[d]
	Pop'n	Total GDP	Agric GDP	GDP per capita	Ag land per capita	RCA[a] ag & food		2004	
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	**11.71**	**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 2: 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

Source: Anderson and Valenzuela (2008) based on estimates reported in the Appendix and in Anderson and Masters (2008).
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 3: 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
Product coverage [c]	68	73	72	72	70	67	66	66	66	68

Source: Anderson and Valenzuela (2008) based on estimates reported in the Appendix and in Anderson and Masters (2008).
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 4: 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**

Source: Anderson and Valenzuela (2008) based on estimates reported in the Appendix and in Anderson and Masters (2008).

Table 5: 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

Source: Anderson and Valenzuela (2008) based on estimates reported in the Appendix and in Anderson and Masters (2008).
a. RRA is defined as $100*[(100+NRAag^t)/(100+NRAnonag^t)-1]$, where $NRAag^t$ and $NRAnonag^t$ are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.
b. NRAs including non-product-specific (NPS) assistance, that is, the assistance to all primary factors and intermediate inputs as a percentage of the total primary agricultural production valued at undistorted prices.
c. Trade Bias Index is $TBI = (1+NRAag_x/100)/(1+NRAag_m/100) - 1$, where $NRAag_m$ and $NRAag_x$ are the average percentage NRAs for the import-competing and exportable parts of the agricultural sector. The regional average TBI is calculated from the regional averages of the NRAs for exportable and import-competing parts of the agricultural sector.

Table 6: 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 6 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**

Source: Anderson and Valenzuela (2008) based on estimates reported in the Appendix and in Anderson and Masters (2008).
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. Farmer numbers are from FAOSTAT which may differ from national statistics.

Table 7: Percentage consumer tax equivalent of policies assisting producers of covered farm products,[a] African focus countries,[d] 1961 to 2004

(percent, at primary product level)

	1961-64	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

Source: Anderson and Valenzuela (2008) based on estimates reported in the Appendix and in Anderson and Masters (2008).

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. 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.

Appendix: Economic Indicators and Details of Estimates of Distortions to Agricultural Incentives for Africa

(compiled with the assistance of Johanna Croser, Esteban Jara, Marianne Kurzweil, Signe Nelgen, Francesca de Nicola, Damiano Sandri and Ernesto Valenzuela)

This Appendix summarizes key economic and trade indicators and estimates, for the focus countries of Africa, of distortion indicators defined in Anderson et al. (2008). Some of them appear also in Appendix B in Anderson and Masters (2008), while a fuller version of these tables appears as Valenzuela et al. (2007). That fuller version includes four tables of annual estimates for each country: (a) the Nominal Rate of Assistance to individual farm products covered in the study and their weighted average, using as weights production valued at undistorted prices; (b) the Relative Rate of Assistance to producers of agricultural (relative to non-agricultural) tradables, again using as weights production valued at undistorted prices, and the component parts of the RRA calculation; (c) the weights themselves for individual covered farm products and for the residual non-covered group of products, shown as percentages and so they sum to 100 percent; and (d) the trade status (exportable, import-competing or nontradable) of each covered product each year.

The Nominal Rate of Assistance (NRA) in the case of a product having just its output price distorted by government policies is the percentage by which the domestic producer price exceeds the price that would prevail under free markets, that is, the border price appropriately adjusted to account for differences in product quality, transport costs, processing costs, etc. A negative value indicates the domestic price is below that comparable border price. If producers of that product also are affected by distortions to product-specific input prices, their ad valorem equivalent is accounted for by subtracting the ad valorem input price distortion times its input-output coefficient from the farm industry's output NRA to get the total nominal rate of assistance to production of that farm product.

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

The sources of these tables are the Working Paper versions of the chapters in Anderson and Masters (2008), each of which is downloadable in the Working Paper section of the project's website, www.worldbank.org/agdistortions. Also available at that website is

the complete global distortions database (Anderson and Valenzuela 2008). The references are provided below.

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Appendix Table 1: 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).

Appendix Table 2: 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.*

Appendix Table 3: 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.*

Appendix Table 4: 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.*

Appendix Table 5: 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.

Appendix Table 6: 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.*

Appendix Table 7: 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

Appendix Table 8: 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**

Appendix Table 8 (continued)

(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: Valenzuela et al. (2008), compiled using the project's estimates of total agricultural production valued at undistorted prices and the FAO's total agricultural trade value data

Appendix Table 9: Shares of the global value of production and consumption of key covered agricultural products, African focus countries, 2000-04

(percent)

		Camer oon	Cote d'Ivoir e	Egypt	Ethiop ia	Ghana	Kenya	Mada gascar	Moza mbiqu e	Nigeri a	RSA	Seneg al	Sudan	Tanza nia	Ugand a	Zambi a	Zimba bwe	Regio nal	Worl d
Grains	**Q**	**0.2**	**0.3**	**1.0**	**2.0**	**0.5**	**0.2**	**0.3**	**0.2**	**4.2**	**0.4**	**0.1**	**0.3**	**0.3**	**0.7**	**0.1**	**0.2**	**10.8**	**100**
	C	**0.2**	**0.3**	**1.4**	**2.8**	**0.6**	**0.2**	**0.3**	**0.2**	**4.3**	**0.4**	**0.1**	**0.3**	**0.4**	**0.7**	**0.2**	**0.2**	**12.6**	**100**
Rice	Q		0.2	1.4		0.1		0.6	0.0	0.5		0.0		0.1	0.1	0.0		3.0	100
	C		0.3	0.9		0.2		0.7	0.0	0.9		0.3		0.2	0.1	0.0		3.5	100
Wheat	Q			1.4	3.7		0.1				0.5		0.1	0.0		0.0	0.1	5.8	100
	C			2.3	6.2		0.2				0.6		0.4	0.0		0.1	0.1	9.9	100
Maize	Q	0.2		1.2	4.5	0.2	0.6	0.0	0.1	0.6	1.2			0.6	0.3	0.4	0.8	10.7	100
	C	0.3		2.8	5.8	0.2	1.0	0.0	0.1	0.8	1.5			0.8	0.4	0.9	0.7	15.4	100
Cassava	Q	0.9	1.1			3.0		0.9	2.4	24.0				1.2	5.4			38.9	100
	C	0.7	0.8			2.6		0.8	2.1	19.7				1.0	4.7			32.5	100
Barley	Q																		100
	C																		100
Sorghum	Q	1.6							0.4	7.2			6.7	1.4	0.8	0.1	0.0	18.2	100
	C	2.1							0.5	9.5			6.6	1.9	1.1	0.1	0.1	21.7	100
Yam	Q		5.0			8.7		0.7	0.1	58.3				0.7	3.6			77.0	100
	C		3.4			5.9		0.4	0.0	37.4				0.4	2.4			50.0	100
Millet	Q	0.3							0.1	18.8		2.3	2.8	0.5	3.4	0.1		28.3	100
	C	0.3							0.1	19.2		2.3	2.3	0.6	3.7	0.1		28.7	100
Oat	Q																		100
	C																		100
Chickpea	Q																		100
	C																		100
Oilseeds	**Q**					**0.2**			**0.0**	**2.2**	**0.2**	**0.3**	**0.8**		**0.1**	**0.1**	**0.1**	**4.0**	**100**
	C					**0.3**			**0.1**	**2.9**	**0.3**	**0.5**	**0.6**		**0.1**	**0.1**	**0.1**	**4.8**	**100**
Soybean	Q															0.0	0.1	0.1	100
	C															0.1	0.1	0.1	100
Groundnut	Q					1.5			0.3	8.0		2.1	3.3		0.6	0.4	0.4	16.6	100
	C					1.4			0.3	8.2		2.6	2.3		0.6	0.4	0.4	16.3	100
Palmoil	Q									8.2								8.2	100
	C									9.6								9.6	100
Rapeseed	Q																		100
	C																		100

Sunflower	Q										2.7					0.0	0.0	2.7	100
	C										2.8					0.0	0.0	2.9	100
Sesame	Q												8.2					8.2	100
	C												4.2					4.2	100
Tropical crops	**Q**	**0.3**	**2.7**	**1.4**	**0.4**	**0.7**	**1.0**	**0.1**	**0.1**	**1.5**	**0.5**	**0.0**	**0.4**	**0.4**	**0.3**	**0.0**	**0.2**	**10.1**	**100**
	C	**0.0**	**0.4**	**1.4**	**0.2**	**0.1**	**0.2**	**0.1**	**0.2**	**1.0**	**0.2**	**0.0**	**0.3**	**0.2**	**0.2**	**0.0**	**0.2**	**4.7**	**100**
Sugar	Q			1.4			0.4	0.2	0.1		1.4		0.8	0.1	0.4			4.8	100
	C			2.1			0.4	0.3	0.6		0.8		0.8	0.1	0.5			5.5	100
Cotton	Q	0.2	0.8	4.2					0.1	3.5		0.0	0.5	0.6	0.1	0.2	1.0	11.2	100
	C	0.1	0.3	3.1					0.0	3.0		0.0	0.3	0.5	0.1	0.1	0.6	8.2	100
Coconut	Q																		100
	C																		100
Coffee	Q	0.9	1.7		4.0		1.6	0.5						1.3	1.4			11.4	100
	C	0.1	0.3		1.7		0.2	0.3						0.1	0.3			2.9	100
Rubber	Q																		100
	C																		100
Tea	Q						8.6							2.0	0.2			10.8	100
	C						0.7							0.4	0.1			1.1	100
Cocoa	Q	3.7	40.6			12.2		0.2		11.5								68.1	100
	C	0.1	3.1			0.7		0.1		3.1								7.1	100
Livestock products	**Q**			**0.5**							**0.5**		**1.3**					**2.3**	**100**
	C			**0.8**							**0.7**		**1.5**					**3.0**	**100**
Pigmeat	Q																		100
	C																		100
Milk	Q			0.8									2.1					2.9	100
	C			0.9									2.4					3.4	100
Beef	Q			2.0							1.0		3.4					6.4	100
	C			4.0							1.6		4.7					10.2	100
Poultry	Q										2.1							2.1	100
	C										3.0							3.0	100
Egg	Q																		100
	C																		100
Sheepmeat	Q										0.8		4.2					5.1	100
	C										1.4		4.8					6.2	100
Wool	Q																		100
	C																		100
Total of above products	**Q**	**0.1**	**0.3**	**0.7**	**0.6**	**0.2**	**0.1**	**0.1**	**0.1**	**1.5**	**0.4**	**0.0**	**0.9**	**0.1**	**0.2**	**0.0**	**0.1**	**5.5**	**100**

	C	0.1	0.1	1.0	0.9	0.2	0.1	0.1	0.1	1.7	0.5	0.1	0.9	0.1	0.3	0.1	0.1	6.5	100
Production only																			
All covered	Q	0.2	0.3	0.8	0.7	0.3	0.1	0.1	0.1	1.6	0.6	0.0	1.0	0.2	0.4	0.0	0.1	6.6	100
Non-covered	Q	0.4	0.3	0.8	1.0	0.1	0.1	0.1	0.1	1.4	0.6	0.0	0.4	0.2	0.2	0.0	0.3	6.0	100
All agriculture	Q	0.2	0.3	0.8	0.8	0.2	0.1	0.1	0.1	1.6	0.6	0.0	0.8	0.2	0.3	0.0	0.2	6.4	100

Source: Valenzuela et al. (2008), compiled using Project data and FAO Production and Commodity Balance Data.

Appendix Table 10: Shares of production exported, and of consumption imported and produced domestically, key covered products, African focus countries, 2000-03

		Cameroon	Cote d'Ivoire	Egypt	Ethiopia	Ghana	Kenya	Madagascar	Mozambique	Nigeria	RSA	Senegal	Sudan	Tanzania	Uganda	Zambia	Zimbabwe	Regional	World
Grains	**X**	**0.0**	**0.0**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.9**	**100**
	M	**0.0**	**0.3**	**3.1**	**0.5**	**0.2**	**0.3**	**0.1**	**0.2**	**0.7**	**0.3**	**0.4**	**0.4**	**0.3**	**0.0**	**0.1**	**0.2**	**7.1**	**100**
Rice	X		0.0	1.8		0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0		2.0	100
	M		1.8	0.2		1.0		0.5	0.3	3.9		2.2		0.5	0.2	0.1		10.6	100
Wheat	X			0.0	0.0		0.0				0.2		0.0	0.1		0.0	0.0	0.3	100
	M			4.1	1.1		0.5				0.5		1.0	0.4		0.1	0.0	7.8	100
Maize	X	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1			0.1	0.1	0.0	0.0	1.4	100
	M	0.0		5.0	0.0	0.0	0.3	0.0	0.4	0.0	0.5			0.1	0.1	0.2	0.5	7.1	100
Cassava	X	0.0				0.1		0.0		0.0				0.0	0.0			0.1	100
	M	0.0				0.0		0.0		0.0				0.0	0.0			0.0	100
Barley	X																		100
	M																		100
Sorghum	X	0.0								0.0			0.4	0.0	0.0	0.0	0.0	0.4	100
	M	0.0								0.0			0.4	0.0	0.0	0.1	0.3	0.9	100
Yam	X					20.4				1.0								21.5	100
	M					0.0				0.0									100
Millet	X	0.0								2.9		0.0	0.1	0.1	0.2	0.0		3.2	100
	M	0.0								0.0		0.0	0.0	0.0	0.0	0.0		0.0	100
Oat	X																		100
	M																		100
Chickpea	X																		100
	M																		100
Oilseeds	**X**					**0.0**			**0.0**	**0.0**	**0.0**	**0.0**	**0.6**		**0.0**	**0.0**	**0.0**	**0.6**	**100**
	M					**0.0**			**0.0**	**0.8**	**0.1**		**0.0**		**0.0**	**0.0**	**0.0**	**0.9**	**100**
Soybean	X															0.0	0.0	0.0	100
	M															0.0	0.0	0.0	100
Groundnut	X					0.2			0.0	0.0		0.1	0.5		0.0	0.0	0.1	1.0	100
	M					0.0			0.1	0.3		0.0	0.0		0.0	0.0	0.1	0.5	100
Palmoil	X									0.1								0.1	100
	M									2.3								2.3	100
Rapeseed	X																		100
	M																		100
Sunflower	X										0.5					0.0	0.0	0.5	100

	M										0.9					0.1	0.1	1.1	100
		Cameroon	Cote d'Ivoire	Egypt	Ethiopia	Ghana	Kenya	Madagascar	Mozambique	Nigeria	RSA	Senegal	Sudan	Tanzania	Uganda	Zambia	Zimbabwe	Regional	World
Sesame	X												19.0					19.0	100
	M												0.0					0.0	100
Tropical crops	**X**	**0.9**	**6.3**	**0.5**	**0.4**	**1.9**	**1.7**	**0.0**	**0.1**	**1.1**	**1.0**	**0.0**	**0.2**	**0.4**	**0.3**	**0.0**	**0.2**	**14.9**	**100**
	M	**0.0**	**0.0**	**0.4**	**0.0**	**0.0**	**0.2**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**1.0**	**100**
Sugar	X			0.1			0.1	0.0	0.1		2.5		0.2	0.1	0.0			3.2	100
	M			0.9			0.5	0.1	0.3		0.0		0.1	0.3	0.1			2.5	100
Cotton	X	1.3	4.2	3.6					0.2	0.2		0.2	0.9	0.5	0.1	0.2	1.7	13.1	100
	M	0.0	0.0	0.2					0.0	0.1		0.0	0.0	0.0	0.0	0.0	0.0	0.4	100
Coconut	X																		100
	M																		100
Coffee	X	1.0	3.4		2.4		1.2	0.0						0.8	1.0			9.8	100
	M	0.0	0.0		0.0		0.0	0.0						0.0	0.0			0.0	100
Rubber	X																		100
	M																		100
Tea	X						13.7							1.1	0.8			15.6	100
	M						0.2							0.0	0.0			0.2	100
Cocoa	X	4.3	41.0			15.2		0.1		8.5								69.1	100
	M	0.0	0.0			0.0		0.0		0.0								0.0	100
Livestock products	**X**			**0.0**							**0.0**		**0.0**					**0.0**	**100**
	M			**0.4**							**0.1**		**0.0**					**0.5**	**100**
Pigmeat	X																		100
	M																		100
Milk	X			0.0									0.0					0.0	100
	M			0.5									0.1					0.6	100
Beef	X			0.0							0.1		0.0					0.1	100
	M			1.2							0.0		0.0					1.2	100
Poultry	X										0.1							0.1	100
	M										0.4							0.4	100
Egg	X																		100
	M																		100
Sheepmeat	X										0.0							0.0	100
	M										0.5		0.0					0.5	100
Wool	X																		100
	M																		100

Total of above products	**X**	**0.1**	**1.1**	**0.2**	**0.1**	**0.3**	**0.3**	**0.0**	**0.0**	**0.2**	**0.3**	**0.0**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**2.8**	**100**
	M	**0.0**	**0.1**	**1.0**	**0.1**	**0.0**	**0.1**	**0.0**	**0.1**	**0.3**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**2.3**	**100**
All exports	**X**	**0.1**	**0.6**	**0.2**	**0.1**	**0.2**	**0.2**	**0.0**	**0.0**	**0.1**	**0.5**	**0.0**	**0.1**	**0.1**	**0.0**	**0.0**	**0.2**	**2.4**	**100**
	M	**0.1**	**0.1**	**0.7**	**0.1**	**0.1**	**0.1**	**0.0**	**0.1**	**0.4**	**0.3**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**2.4**	**100**

Source: Valenzuela et al. (2008), compiled using production, trade and domestic supply data in the FAO Commodity Balances at FAOSTAT.

Appendix Table 11: 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

Appendix Table 11 (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

Appendix Table 11 (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

Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-18 of Anderson and Masters (2008).

a. Trade Bias Index, TBI = $(1+NRAag_x/100)/(1+NRAag_m/100) - 1$, where $NRAag_x$ and $NRAag_m$ are the average percentage NRAs for the exportable and import-competing parts of the agricultural sector. 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.

Appendix Table 12: 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

Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-18 of Anderson and Masters (2008).
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.

Appendix Table 13: 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

Appendix Table 13 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

Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-18 of Anderson and Masters (2008).
a. Gross subsidy equivalents including assistance to nontradables and non-product-specific assistance.

Appendix Table 14: Relative rates of assistance (RRA) to agriculture,[a] African focus countries,[e] 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

Appendix Table 14 (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

Appendix Table 14 (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

Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-18 of Anderson and Masters (2008).

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

b. 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.

Appendix Table 15: Percentage consumer tax equivalent of policies assisting producers of covered farm products,[a] African focus countries, 1961 to 2004

(percent, at primary product level)

	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[c]	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 2-18 of Anderson and Masters (2008).

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). 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 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 regional average CTE for the covered products shown above.

Appendix Table 16: 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**

Appendix Table 16 (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 2-18 of Anderson and Masters (2008).

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 11), nor any mark-up that might be applied along the value chain.

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

Appendix Table 17: Annual distortion estimates for **Africa**, 1955 to 2005
(a) Nominal rates of assistance to covered products
(percent)

	apple	banana	bean	beef	camel	cashew	cassava	chat	clove	cocoa	coffee
1955	na	na	na	-16	-2	na	0	na	na	-6	na
1956	na	na	na	-11	7	na	0	na	na	-5	-13
1957	na	na	na	-11	14	na	0	na	na	-6	-17
1958	0	na	na	-16	40	na	0	na	na	-32	-4
1959	0	na	na	-10	-32	na	0	na	na	-23	-10
1960	0	na	na	-23	-29	na	0	na	na	-15	-6
1961	-4	-3	-1	-25	-31	na	0	na	na	-16	-37
1962	-4	-1	26	-13	-36	na	0	na	na	-27	-30
1963	-13	-4	0	-16	-48	na	0	na	na	-39	-27
1964	0	-2	-2	-30	-51	na	0	na	na	-36	-37
1965	-5	-4	28	-28	-58	na	0	na	na	-43	-38
1966	1	-4	-2	-31	-65	na	0	na	-57	-47	-38
1967	-22	-3	-10	-21	-66	na	0	na	-54	-55	-31
1968	5	-2	-9	-26	-60	na	0	na	-59	-59	-38
1969	4	-8	0	-37	-59	na	0	na	-8	-64	-38
1970	-2	0	-16	-41	-69	na	0	na	8	-58	-42
1971	-11	0	0	-38	-53	na	0	na	18	-36	-43
1972	33	0	0	-38	1	na	1	na	26	-41	-43
1973	-1	0	0	-49	-28	na	1	na	-69	-50	-42
1974	-9	0	0	-20	-23	na	0	na	-74	-53	-49
1975	-15	1	0	20	5	-88	1	na	-74	-39	-46
1976	-24	0	-45	4	22	-73	1	na	-84	-61	-75
1977	19	0	-46	10	19	-82	1	na	-82	-74	-64
1978	0	-8	-60	11	48	-78	1	na	-85	-68	-69
1979	-18	-1	-41	-26	54	-78	2	na	-78	-60	-56
1980	-11	1	-51	-19	-18	-88	2	na	-85	-50	-57
1981	-36	0	-49	8	48	-88	3	-51	-91	-47	-45
1982	3	-2	-38	11	32	-69	4	-52	-95	-50	-54
1983	-10	-4	-63	13	-2	-77	3	-53	-96	-53	-60
1984	-12	-1	-62	42	-56	-80	0	-53	-93	-61	-51
1985	14	1	-70	-18	-30	-80	2	-51	-79	-59	-55
1986	16	1	-81	28	-57	-93	1	-50	-80	-51	-45
1987	24	-2	-64	41	-84	-91	0	-37	-89	-39	-43
1988	-14	-1	-60	48	-81	-78	0	-46	-91	-26	-40
1989	-6	-3	-54	16	-94	-72	0	-43	-86	-3	-29
1990	6	-2	-49	-17	-75	-58	1	-44	-86	-34	-31
1991	3	-1	-37	-30	-79	-52	0	-45	-82	-31	-29
1992	-5	-1	-29	-50	-85	-47	0	-45	-68	-35	-43
1993	-1	-1	2	-50	-93	-52	0	-45	-45	-43	-49
1994	25	20	-12	-42	-95	-59	-3	-46	-32	-31	-33
1995	-2	9	-15	-5	4	-14	-3	-43	-56	-29	-20
1996	6	6	-10	-6	-48	-6	-3	-45	-61	-34	-19
1997	-3	7	-19	0	67	-16	-3	-44	-74	-31	-24
1998	-1	2	-40	-6	29	-5	-3	-43	31	-34	-20
1999	-21	-1	-39	12	66	-6	-3	-41	24	-34	-20
2000	1	5	-24	-21	76	0	-3	-41	-3	-38	-13
2001	-6	3	-10	-46	56	-2	-2	-43	-55	-33	-7
2002	4	1	-12	-17	66	-19	-3	-47	2	-33	-13
2003	1	-1	-30	-24	62	-7	-3	-26	na	-42	-15
2004	1	-1	-49	-23	178	-21	-3	-41	na	-34	-12
2005	2	na	na	-3	na	na	0	na	na	-58	-20

Continued over

Appendix Table 17(a) (cont.)

	cotton	fruit& veg	grape	groun dnut	gumar abic	hides &skin	maize	milk	millet	oilsee d	orang e
1955	-15	na	na	-22	-46	na	-26	-56	-80	na	na
1956	-17	na	na	-28	-41	na	-5	-47	-78	na	na
1957	-18	na	na	-26	-41	na	3	-34	-77	na	na
1958	-18	na	0	-30	1	na	4	-18	-75	na	0
1959	-13	na	0	-37	-39	na	3	-23	-74	na	0
1960	-28	na	0	-43	-43	na	3	-18	-73	na	0
1961	-46	0	-22	-20	-35	na	16	-34	-5	na	-2
1962	-36	0	-28	-18	-13	na	17	-22	-4	na	-2
1963	-44	0	-9	-30	-35	na	9	-18	-7	na	1
1964	-51	0	-17	-26	-41	na	15	-17	-9	na	-19
1965	-56	-1	-24	-33	-30	na	-13	-29	-7	na	-17
1966	-51	-2	-28	-32	-25	na	5	-16	-6	na	-4
1967	-48	-3	-23	-34	-48	na	5	-36	-7	na	-9
1968	-49	-2	-11	-40	-56	na	12	-40	-7	na	-8
1969	-59	-4	-8	-52	-52	na	3	-37	-5	na	-24
1970	-55	-6	-6	-52	-47	na	5	-34	-4	na	-31
1971	-50	-5	-20	-49	-57	na	-1	-42	-8	na	-27
1972	-45	-7	17	-49	-55	na	3	-51	-7	na	-40
1973	-58	-8	15	-54	-57	na	-10	-51	-1	na	-31
1974	-62	-4	5	-52	-76	na	-31	-34	0	na	-15
1975	-54	-1	17	-47	-42	na	-17	-20	-1	na	-21
1976	-46	-3	5	-43	-54	na	-8	5	-1	na	-9
1977	-55	-1	-8	-44	-53	na	-18	20	-2	na	-39
1978	-38	-3	15	-48	-45	na	-12	3	0	na	-11
1979	-53	-4	-29	-47	-43	na	-7	-10	-2	na	-27
1980	-53	-6	-19	-53	-63	na	7	-26	0	na	10
1981	-44	-6	-37	-57	-59	-46	0	-27	7	-52	-24
1982	-33	-7	-36	-18	-52	-47	-3	-51	-2	-48	-21
1983	-41	-5	-32	-57	-69	-47	5	-24	0	-29	-6
1984	-45	-5	-20	-37	-62	-48	-5	21	-2	-44	-17
1985	-51	-1	0	-32	-66	-46	-5	38	0	-45	-29
1986	-27	-2	33	-24	-80	-46	48	37	-6	-39	-7
1987	-16	-5	23	1	-67	-53	85	93	2	-46	-13
1988	-35	-3	13	3	-51	-52	29	95	2	-65	-28
1989	-27	-1	-7	-33	-69	-52	31	69	2	-46	2
1990	-59	0	-6	-39	-49	-52	12	10	1	-49	-4
1991	-53	-3	-4	17	-78	-49	21	-21	4	-55	-5
1992	-64	-9	39	-35	-85	-52	-4	-55	-1	-63	2
1993	-47	-12	-9	-51	-29	-51	2	-58	0	-66	-9
1994	-46	0	-7	-41	-45	-53	10	-10	-2	-52	0
1995	-31	0	3	-41	-36	-50	6	-28	4	-55	-3
1996	-43	-1	0	-41	-70	-52	-4	-32	1	-62	15
1997	-30	-1	10	-29	-50	-51	9	-18	-5	-52	3
1998	-39	-3	13	-34	-70	-47	4	20	-5	-50	-12
1999	-47	0	12	-33	-73	-45	-3	19	-10	-44	6
2000	-46	0	-5	-40	-73	-50	8	36	-3	-46	20
2001	-51	0	44	-43	-67	-50	-11	16	-2	-40	-12
2002	-56	0	2	-40	-56	-49	-3	-1	-3	-32	19
2003	-46	0	-2	-39	-60	-47	-8	25	-2	na	7
2004	-32	0	-2	-40	-80	-46	-13	-2	-1	na	8
2005	-16	na	-1	46	na	na	6	-5	0	na	17

Continued over

Appendix Table 17(a) (cont.)

	otherroots&tubers	palmoil	pepper	plantain	potato	poultry	pulse	pyrethrum	rice	sesame	sheepmeat
1955	na	na	na	0	na	na	na	na	-68	-37	-6
1956	na	na	na	0	na	na	na	na	-65	-31	1
1957	na	na	na	0	na	na	na	na	-62	-30	-14
1958	na	na	na	0	na	na	na	na	-58	-54	-25
1959	na	na	na	0	na	na	na	na	-56	-49	-17
1960	na	na	na	0	na	-13	na	na	-54	-46	-22
1961	0	-18	na	0	na	-13	na	na	-31	-51	-21
1962	0	-13	na	0	na	-13	na	na	-31	-57	-5
1963	0	-35	na	0	na	-13	na	na	-37	-56	-12
1964	0	-34	na	0	na	-13	na	na	-38	-53	-11
1965	0	-43	na	0	na	-13	na	na	-37	-55	-16
1966	0	-34	-62	0	na	-13	na	na	-34	-59	-18
1967	0	-42	-48	0	na	-13	na	na	-35	-65	-18
1968	0	-10	-41	0	na	-13	na	na	-47	-69	-19
1969	0	-26	16	0	na	-13	na	na	-41	-70	-19
1970	0	-57	-9	0	na	-31	na	na	-11	-60	-28
1971	0	-51	-19	0	na	-15	na	na	5	-67	-6
1972	0	-25	6	0	na	-16	na	na	-2	-64	-11
1973	0	-47	6	0	na	-10	na	na	-39	-64	-27
1974	0	-42	-5	0	na	-7	na	na	-64	-72	-37
1975	0	-8	-24	0	na	-21	na	na	-40	-67	-13
1976	0	20	-47	0	0	-34	na	-87	-18	-63	-3
1977	0	-58	-35	0	0	-29	na	-92	12	-68	-35
1978	0	-27	-57	0	0	-22	na	-76	-14	-68	-25
1979	0	-13	-34	0	0	-12	na	-74	-10	-73	-30
1980	0	1	-19	0	0	20	na	-80	-17	-64	-17
1981	0	1	-38	0	0	23	-35	-69	-27	-59	-7
1982	0	-4	-57	0	0	6	-34	-62	-16	-59	-26
1983	0	-62	-54	0	0	31	-36	-70	-20	-51	-17
1984	0	-63	-65	0	0	12	-25	-77	11	-64	-34
1985	0	-43	-73	0	0	-21	-54	-71	21	-29	-46
1986	0	-19	-77	0	0	-13	-58	-85	11	-63	-31
1987	0	-27	-88	0	0	9	-55	-77	28	-57	-40
1988	0	80	-83	0	0	18	-57	-80	45	-39	-27
1989	0	-50	-78	0	0	-7	-57	-55	38	-54	-42
1990	0	-49	-71	0	0	-3	-44	-17	3	-58	-45
1991	0	95	-27	0	0	-4	-44	-17	16	-2	-40
1992	0	97	-16	0	0	5	-62	-25	-4	-61	-48
1993	0	-10	-22	0	0	20	-56	-52	-3	-66	-54
1994	0	405	-15	0	0	14	-54	-74	-9	-54	-56
1995	0	191	-50	0	0	15	-36	-68	-16	-30	-60
1996	0	27	-49	0	0	20	-43	-67	-13	-63	-62
1997	0	7	-78	0	0	21	-36	-71	-8	-59	-35
1998	0	3	-70	0	0	4	-32	-72	-5	-47	-42
1999	0	-22	-63	0	0	5	-29	-61	1	-50	-27
2000	0	-24	20	0	0	-2	-31	-49	-11	-55	-23
2001	0	-17	6	0	0	-15	-17	-43	-1	-53	-38
2002	0	-13	-56	0	0	-10	-14	-41	-13	-53	-37
2003	0	-9	na	0	0	20	na	-48	3	-32	-27
2004	0	0	na	0	0	20	na	-57	-5	2	18
2005	na	na	na	0	na	22	na	na	-12	na	6

Continued over

Appendix Table 17(a) (cont.)

	sisal	sorghum	soybean	sugar	sunflower	tea	teff	tobacco	vanilla	wheat	yam
1955	na	-35	na	-29	na	na	na	na	na	-16	0
1956	na	-20	na	-25	na	na	na	na	na	-16	0
1957	na	-40	na	-23	na	2	na	na	na	-11	0
1958	na	-34	na	-18	na	2	na	na	na	-13	0
1959	na	-47	na	-14	na	6	na	na	na	-8	0
1960	na	-51	na	-24	0	6	na	-56	-66	-15	0
1961	na	100	na	13	9	13	na	-38	-62	-24	0
1962	na	109	na	15	23	16	na	-32	-61	-35	0
1963	na	72	na	-17	24	7	na	-37	-66	-32	0
1964	na	78	na	-16	19	6	na	-45	-53	-31	0
1965	na	89	na	-23	12	3	na	-31	-55	-24	0
1966	na	107	na	7	10	-2	na	-21	-42	-23	0
1967	na	88	na	30	22	-6	na	-40	-57	-6	0
1968	na	72	0	27	19	-15	na	-45	-52	-4	0
1969	na	77	-29	16	22	-13	na	-52	-57	-5	0
1970	na	41	-43	0	13	-15	na	-58	-43	3	0
1971	na	44	-40	-18	8	-14	na	-55	-35	-6	0
1972	na	52	-41	-27	14	-24	na	-48	-34	19	0
1973	na	61	-15	-19	6	-25	na	-39	-37	-15	0
1974	na	47	-10	-57	-10	-22	na	-24	-46	-33	0
1975	na	29	-37	-51	0	-15	na	-55	-46	-13	1
1976	na	47	-51	-27	7	-48	na	-62	-68	0	1
1977	na	26	-59	8	8	-30	na	-56	-47	29	0
1978	na	36	-25	5	14	-28	na	-49	-75	32	0
1979	-39	5	-43	8	5	-31	na	-50	-49	13	1
1980	-37	7	-54	-41	25	-37	na	-55	-57	-14	2
1981	-20	39	-56	-35	20	-32	-2	-24	-67	-10	2
1982	-31	9	-23	4	15	-42	-4	-43	-87	0	2
1983	-55	-4	-56	38	19	-41	-2	-65	-86	2	1
1984	-60	32	-26	29	1	-15	-11	-49	-85	-3	0
1985	-49	56	-28	25	-2	-18	-10	-46	-83	-11	1
1986	-27	-3	-27	36	14	-15	-7	-50	-81	13	0
1987	-49	72	-38	78	18	-28	-9	-58	-91	38	0
1988	-25	44	-55	45	2	-46	-6	-34	-87	28	0
1989	5	37	-54	27	2	-38	-6	-51	-85	28	0
1990	-4	52	-46	-9	7	-30	-9	-29	-84	5	0
1991	-12	83	-65	-1	17	-34	-11	-34	-89	17	0
1992	-23	20	-58	-5	12	-67	-9	-53	-73	-5	0
1993	9	-1	-52	5	1	-43	-6	-43	-73	0	0
1994	-36	32	-44	18	-5	-28	-7	-31	-71	3	-3
1995	-3	21	-35	1	-5	-33	-5	-25	-69	-5	-4
1996	0	0	-41	-9	-6	-33	-1	-22	-49	-4	-4
1997	0	31	-56	11	-8	-35	-5	-40	9	7	-4
1998	0	24	-64	1	-14	-25	-4	-42	-5	4	-3
1999	0	38	-55	30	1	-14	-8	-42	-29	4	-3
2000	0	64	-43	51	-1	-19	-9	-57	-9	4	-3
2001	0	21	-75	35	-14	-9	-2	-60	6	1	-3
2002	0	9	-67	27	-7	-20	-8	-74	-35	-11	-3
2003	0	5	-38	54	0	-17	-12	-77	na	-2	-3
2004	0	4	-49	51	4	-17	-5	-48	na	2	-3
2005	na	0	4	12	1	na	na	na	na	7	0

Appendix Table 17 (continued): Annual distortion estimates for **Africa**, 1955 to 2005
(b) Nominal and relative rates of assistance to all[a] agricultural products, to exportable[b] and import-competing[b] agricultural industries, and relative[c] to non-agricultural industries
(percent)

	Total ag NRA				Ag tradables NRA				
	Covered products		Non-covered products	All products (incl NPS)	Export-ables	Import-competing	All	Non-ag tradables NRA	RRA
	Inputs	Outputs							
1955	0	-22	1	-17	-21	-31	-30	17	-41
1956	0	-18	1	-13	-17	-26	-25	17	-35
1957	0	-16	0	-13	-17	-22	-23	20	-36
1958	0	-17	1	-13	-25	-12	-22	23	-37
1959	0	-15	1	-13	-23	-11	-20	23	-35
1960	0	-23	1	-18	-32	-15	-30	22	-42
1961	0	-8	5	-4	-27	25	-7	-2	-6
1962	0	-4	6	-1	-25	42	-2	-2	0
1963	0	-11	3	-7	-32	23	-13	1	-13
1964	0	-14	4	-9	-35	18	-15	-3	-13
1965	0	-18	3	-12	-40	10	-22	1	-22
1966	0	-13	5	-8	-35	23	-14	-5	-10
1967	0	-15	1	-10	-33	12	-16	6	-21
1968	0	-17	2	-11	-37	10	-19	4	-22
1969	0	-23	0	-16	-46	5	-26	5	-30
1970	0	-20	-3	-15	-43	7	-25	6	-29
1971	0	-16	0	-11	-40	9	-20	1	-21
1972	0	-16	3	-10	-34	6	-18	0	-18
1973	0	-24	0	-17	-45	-6	-28	0	-28
1974	0	-29	0	-21	-50	-5	-33	-2	-32
1975	0	-19	2	-12	-41	12	-21	-3	-18
1976	0	-20	2	-12	-44	24	-21	-5	-17
1977	0	-20	-2	-15	-47	25	-25	11	-32
1978	0	-16	-3	-11	-43	19	-21	12	-29
1979	0	-20	0	-13	-38	-4	-23	9	-29
1980	1	-18	2	-11	-36	-2	-18	3	-21
1981	1	-10	1	-5	-28	8	-10	-10	0
1982	1	-9	2	-4	-29	18	-7	-15	10
1983	0	-11	-13	-11	-41	13	-19	17	-30
1984	0	-7	-9	-9	-42	29	-13	9	-21
1985	0	-12	-14	-12	-48	26	-21	12	-29
1986	0	1	-11	-3	-40	61	-5	12	-15
1987	0	13	-2	8	-31	98	17	1	15
1988	0	9	-6	4	-30	65	9	12	-2
1989	0	2	-5	-1	-35	47	0	7	-6
1990	0	-8	-6	-8	-36	12	-13	8	-19
1991	0	-3	-3	-4	-29	24	-5	1	-6
1992	0	-17	-7	-12	-42	-12	-23	6	-27
1993	0	-19	-7	-15	-41	-15	-27	4	-29
1994	0	-7	-1	-6	-31	18	-9	-8	-1
1995	0	-4	-4	-5	-27	10	-8	0	-8
1996	0	-10	-7	-10	-32	0	-17	3	-19
1997	0	-2	-6	-5	-27	17	-7	0	-7
1998	0	-3	-4	-5	-25	13	-8	0	-7
1999	0	0	-5	-4	-19	10	-5	5	-9
2000	0	-2	-7	-5	-19	4	-8	9	-15
2001	0	-10	-5	-9	-36	6	-17	3	-19
2002	0	-7	-5	-8	-22	-6	-13	6	-18
2003	0	-5	-5	-7	-25	4	-11	8	-18
2004	0	-5	-5	-6	-21	-1	-11	6	-16
2005	0	-1	-2	-2	-11	7	-2	14	-14

a. NRAs including assistance to nontradables and non-product specific assistance.
b. NRAs including products specific input subsidies.
c. The Relative Rate of Assistance (RRA) is defined as $100*[(100+NRAag^t)/(100+NRAnonag^t)-1]$, where $NRAag^t$ and $NRAnonag^t$ are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

Appendix Table 17 (continued): Annual distortion estimates for **Africa**, 1955 to 2005
(c) Value shares of primary production of covered[a] and non-covered products, (percent)

	bean	beef	camel	cassava	cocoa	coffee	cotton	groundnut	maize
1955	na	9	1	1	5	na	15	1	5
1956	na	9	1	1	5	1	15	1	6
1957	na	8	1	1	4	1	18	1	5
1958	na	8	1	1	6	1	15	1	5
1959	na	8	1	1	6	1	17	1	5
1960	na	8	1	1	5	1	17	1	4
1961	0	6	0	6	4	3	8	4	7
1962	0	5	0	7	4	2	8	4	7
1963	0	5	0	6	4	3	8	4	7
1964	0	6	0	6	5	4	7	4	6
1965	0	6	1	5	3	3	9	5	8
1966	0	7	1	8	3	4	7	4	7
1967	0	7	1	5	4	3	7	4	9
1968	0	7	1	4	4	4	7	3	7
1969	0	7	1	3	5	3	10	3	7
1970	0	7	1	4	5	4	8	3	6
1971	0	7	1	6	4	3	7	3	8
1972	0	8	0	5	3	4	7	3	7
1973	0	9	0	4	4	4	7	3	6
1974	0	5	0	3	3	2	7	4	9
1975	0	4	0	5	3	3	6	4	9
1976	0	5	0	6	4	8	6	3	7
1977	1	4	0	7	6	8	7	2	7
1978	1	5	0	8	5	6	5	3	6
1979	1	7	0	7	6	5	5	3	5
1980	1	7	0	7	4	4	5	3	7
1981	0	5	0	12	3	3	3	3	8
1982	0	5	0	10	2	4	3	1	8
1983	1	7	0	5	2	4	4	2	8
1984	1	5	1	8	4	3	4	2	8
1985	1	6	0	7	3	4	4	1	11
1986	0	7	1	7	3	5	4	2	7
1987	0	7	2	10	3	3	4	1	6
1988	0	7	2	8	3	3	5	1	9
1989	0	8	5	6	2	2	4	2	8
1990	0	6	1	8	2	2	4	2	9
1991	0	7	1	11	2	1	4	1	7
1992	0	8	0	10	2	1	5	1	7
1993	0	9	2	9	2	1	3	2	8
1994	0	8	1	9	2	3	2	1	9
1995	1	4	0	9	2	2	2	2	8
1996	0	4	0	9	3	2	3	2	8
1997	1	4	0	11	2	2	3	2	8
1998	1	4	0	11	3	2	2	2	8
1999	1	4	0	10	2	1	2	2	10
2000	1	6	0	10	2	1	2	2	8
2001	1	9	0	11	3	1	3	2	7
2002	0	5	0	10	3	1	2	2	8
2003	1	7	0	9	3	1	2	2	10
2004	1	7	0	9	3	1	2	2	10
2005	na	8	na	2	4	1	3	0	13

Continued over

Appendix Table 17(c) (cont.)

	milk	millet	orange	otherroots&tubers	palmoil	plantain	poultry	pulse	rice
1955	7	1	na	na	na	1	na	na	4
1956	7	1	na	na	na	1	na	na	4
1957	6	1	na	na	na	1	na	na	4
1958	6	1	0	na	na	1	na	na	4
1959	7	1	0	na	na	1	na	na	4
1960	6	1	0	na	na	1	1	na	3
1961	3	4	0	1	1	2	0	na	2
1962	2	4	0	1	1	2	0	na	3
1963	2	4	0	2	1	2	0	na	3
1964	2	3	0	1	1	2	0	na	3
1965	3	4	0	1	1	2	1	na	3
1966	2	3	0	1	1	2	1	na	3
1967	3	4	0	1	1	2	1	na	4
1968	3	4	0	2	1	2	1	na	6
1969	2	3	1	1	1	2	1	na	4
1970	2	4	1	1	1	2	1	na	2
1971	2	4	0	1	1	2	1	na	2
1972	3	4	1	1	0	2	1	na	2
1973	3	4	0	1	0	2	2	na	4
1974	2	3	0	1	1	1	1	na	6
1975	2	3	0	1	1	2	1	na	5
1976	2	3	0	1	0	2	1	na	4
1977	2	2	0	1	1	2	1	na	2
1978	2	2	0	0	1	2	1	na	3
1979	2	3	0	0	1	2	1	na	3
1980	2	2	0	0	1	2	1	na	3
1981	2	2	0	0	1	1	1	0	3
1982	3	3	0	0	0	1	1	1	3
1983	3	2	0	0	0	2	1	1	3
1984	2	2	0	0	1	2	1	1	2
1985	2	2	0	0	1	1	1	0	2
1986	2	3	0	0	0	1	1	1	3
1987	2	3	0	0	1	1	2	0	3
1988	2	2	0	0	0	2	2	0	2
1989	2	2	0	0	0	2	1	0	3
1990	2	2	0	0	0	2	2	1	3
1991	2	2	0	0	0	1	2	1	2
1992	2	2	0	0	0	2	2	0	3
1993	3	2	0	0	1	2	2	0	3
1994	3	2	0	0	0	3	2	0	3
1995	3	2	0	0	0	4	2	0	3
1996	3	2	0	0	1	2	2	0	3
1997	3	2	0	0	1	2	1	0	3
1998	3	3	0	0	1	2	1	0	3
1999	3	2	0	0	1	2	1	0	3
2000	3	2	0	0	1	3	2	0	3
2001	3	2	0	0	1	2	2	0	3
2002	4	2	0	0	1	2	2	0	3
2003	3	2	0	0	1	2	2	na	3
2004	4	2	0	0	1	2	2	na	3
2005	2	1	1	na	na	1	4	na	5

Appendix Table 17(c) (cont.)

	sesame	sheepmeat	sorghum	sugar	tea	teff	tobacco	wheat	yam
1955	1	1	2	1	na	na	na	4	5
1956	1	1	1	1	na	na	na	5	4
1957	1	4	3	1	0	na	na	5	4
1958	1	5	3	1	0	na	na	4	4
1959	1	4	3	1	0	na	na	4	4
1960	1	4	2	1	0	na	5	4	3
1961	0	2	4	2	0	na	2	2	7
1962	1	2	5	2	0	na	2	2	7
1963	0	2	4	2	0	na	2	2	7
1964	0	2	4	2	0	na	2	2	7
1965	0	2	4	2	0	na	1	2	5
1966	0	2	3	2	0	na	1	2	7
1967	0	2	3	1	0	na	1	2	5
1968	0	2	3	1	0	na	1	2	5
1969	0	2	3	2	0	na	1	2	5
1970	0	2	4	1	0	na	1	2	6
1971	1	2	4	2	0	na	1	2	8
1972	1	2	3	2	0	na	1	2	6
1973	1	2	3	2	0	na	1	2	6
1974	1	2	4	4	0	na	0	3	8
1975	1	2	3	4	0	na	1	2	7
1976	1	1	3	2	0	na	1	2	6
1977	0	2	3	2	1	na	0	1	6
1978	1	2	3	2	1	na	1	1	7
1979	1	2	3	2	1	na	1	2	7
1980	1	2	3	3	1	na	1	2	7
1981	0	2	3	2	0	0	0	4	7
1982	0	2	4	2	1	1	1	5	7
1983	0	2	3	1	1	0	1	6	4
1984	0	2	3	1	1	1	1	4	6
1985	0	2	2	1	1	1	1	4	5
1986	0	1	3	1	1	0	1	5	4
1987	0	2	3	1	1	0	1	4	5
1988	0	2	2	2	1	0	1	4	5
1989	0	2	2	2	1	0	1	5	5
1990	0	2	2	2	1	0	1	3	6
1991	0	1	2	2	1	1	1	5	8
1992	0	1	3	1	1	0	1	4	8
1993	0	2	3	1	1	0	1	4	7
1994	0	2	2	1	1	0	1	4	8
1995	0	2	2	1	1	0	1	4	9
1996	0	1	3	2	1	0	1	4	7
1997	0	1	2	1	1	0	1	4	8
1998	0	1	3	2	1	0	1	5	8
1999	0	1	2	1	1	1	1	5	8
2000	0	1	2	1	1	1	1	4	8
2001	0	2	2	1	1	0	1	5	7
2002	0	2	3	1	1	0	1	6	7
2003	0	2	3	1	1	0	1	5	7
2004	0	2	3	1	1	0	0	5	7
2005	na	1	2	2	na	na	na	11	2

* Apple, banana, cashew, chat, clove, fruit and vegetables, grape, gum arabic, hides and skins, oilseed, pepper, potato, pyrethrum, sisal and soybean are omitted due to low shares (less than 0.5 percent of the gross value of regional production each year).

a. At farmgate undistorted prices

Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-18 of Anderson and Masters (2008).

Appendix Table 18: Gross subsidy equivalents of assistance to farmers, African countries, 1955 to 2004[a] (constant 2000 US$ million)

	Benin	Burkina Faso	Cameroon	Chad	Cote d'Ivoire	Egypt	Ethio-pia	Ghana	Kenya	Madagascar	Mali
	BJ	BF	CM	TD	CI	EG	ET	GH	KE	MG	ML
1955	na	na	na	na	na	-1748	na	-33	na	2	na
1956	na	na	na	na	na	-1673	na	-16	119	2	na
1957	na	na	na	na	na	-1602	na	-36	142	2	na
1958	na	na	na	na	na	-1442	na	-239	168	2	na
1959	na	na	na	na	na	-1337	na	-190	121	2	na
1960	na	na	na	na	na	-1831	na	-130	142	-12	na
1961	na	na	-81	na	-388	-2364	na	16	29	-116	na
1962	na	na	-74	na	-253	-2268	na	-174	157	-68	na
1963	na	na	-102	na	-376	-2757	na	-284	255	-100	na
1964	na	na	-76	na	-606	-3142	na	-369	227	-123	na
1965	na	na	-101	na	-424	-3821	na	-231	-41	-111	na
1966	na	na	-126	na	-638	-3205	na	-312	-64	-201	na
1967	na	na	-164	na	-470	-2431	na	-393	180	-146	na
1968	na	na	-203	na	-726	-3250	na	-360	189	-309	na
1969	na	na	-278	na	-755	-4035	na	-455	112	-157	na
1970	-3	-1	-238	-8	-735	-2937	na	-341	-94	-14	-6
1971	-6	-3	-179	-14	-562	-3065	na	-70	-246	-13	-10
1972	-7	-4	-183	-15	-632	-2902	na	-204	-32	-18	-11
1973	-20	-11	-309	-50	-800	-4773	na	-427	-110	-515	-24
1974	-5	-4	-406	-15	-982	-7087	na	-626	-188	-1229	-10
1975	-5	-9	-172	-30	-516	-4085	na	-480	65	-405	-25
1976	-6	-18	-469	-44	-3819	-1926	na	-679	193	-621	-46
1977	-2	-4	-1110	-15	-2792	-558	na	-874	-858	-633	-17
1978	-4	-10	-793	-23	-2026	-444	na	-730	-436	-756	-28
1979	-5	-12	-636	-14	-1962	-3216	na	-874	252	-362	-24
1980	-3	-12	-342	-14	-1735	-2979	na	-499	-634	-553	-23
1981	-1	-7	-183	-8	-1864	-3432	-1509	-611	-382	-706	-13
1982	-4	-12	-224	-14	-1147	-1936	-1917	-493	-666	-566	-23
1983	-8	-17	-208	-30	-1639	902	-1985	na	-266	-516	-30
1984	-9	-11	-414	-8	-1291	1426	-2039	-13	-91	-554	-19
1985	2	1	-192	2	-1690	-941	-3524	-204	183	-213	-1
1986	1	0	-184	2	-1215	4212	-2203	-217	248	-230	-5
1987	-3	-6	26	-1	-1082	7063	-1969	1	309	-315	-10
1988	-2	-4	67	1	-774	7758	-2277	-3	-179	-244	-9
1989	-12	-16	45	-12	-473	8648	-1986	-31	281	-195	-32
1990	-11	-14	-42	-8	-852	-1073	-2360	-41	31	-101	-23
1991	-5	-4	-34	-2	-652	511	-2920	44	-117	-110	-8
1992	4	2	-3	3	-669	-1388	-2270	3	130	-80	9
1993	-9	-3	-42	-3	-709	-674	-1380	-37	-441	-94	-8
1994	-43	-32	-45	-25	-879	-287	-2008	-107	11	20	-60
1995	-33	-17	-10	-16	-844	-117	-2080	-94	-35	-103	-46
1996	-22	-17	4	-14	-955	-728	-1785	-121	-16	-42	-43
1997	-25	-26	-47	-12	-909	679	-2301	-64	81	-60	-43
1998	2	-5	-93	0	-942	954	-2039	-63	-63	9	-7
1999	-4	-2	-46	1	-737	980	-2276	-47	210	3	-14
2000	-12	-11	6	-6	-643	338	-1513	-105	88	30	-11
2001	3	6	5	0	-700	-523	-699	41	237	-16	8
2002	-7	-7	-29	-3	-1025	-1426	-1227	27	92	-37	-5
2003	-10	-16	-21	-4	-1048	-437	-1183	-112	133	-1	-10
2004	7	27	19	8	-1139	-808	-945	-22	153	75	27

Continued over

Appendix Table 18 (continued)

	Mozambique	Nigeria	RSA	Senegal	Sudan	Tanzania	Togo	Uganda	Zambia	Zimbabwe
	MZ	NG	ZA	SN	SD	TZ	TG	UG	ZM	ZW
1955	na	na	na	na	-347	na	na	na	na	40
1956	na	na	na	na	-260	na	na	na	na	39
1957	na	na	na	na	-298	na	na	na	na	58
1958	na	na	na	na	-338	na	na	na	na	26
1959	na	na	na	na	-478	na	na	na	na	30
1960	na	na	na	na	-545	na	na	na	na	-478
1961	na	2272	96	-96	-509	na	na	-12	na	-298
1962	na	2827	441	-70	-594	na	na	-5	na	-211
1963	na	1647	177	-76	-712	na	na	-45	na	-326
1964	na	2029	29	-61	-1070	na	na	-83	na	-420
1965	na	1417	119	-60	-996	na	na	-34	-21	-564
1966	na	2298	406	-55	-1064	na	na	-47	-74	-206
1967	na	605	596	-45	-1313	na	na	-81	-34	-277
1968	na	1057	748	-22	-1250	na	na	-62	-103	-204
1969	na	502	630	-88	-1374	na	na	-96	-514	-275
1970	na	-298	181	-77	-1910	na	0	-116	54	-267
1971	na	907	332	-105	-1945	na	-1	-107	-182	-373
1972	na	1332	540	-111	-2019	na	-1	-140	-122	-481
1973	na	1162	-205	-265	-2901	na	-3	-185	-150	-441
1974	na	1234	-2349	-612	-3960	na	-1	-445	-161	-811
1975	na	2116	-676	-593	-2545	na	-2	-462	-407	-809
1976	-299	2915	-68	-327	-1588	-1085	-3	na	-192	-1083
1977	-301	-776	873	-126	-1875	-1529	-1	na	-790	-794
1978	-367	-330	935	-419	-1269	-1601	-3	na	-451	-613
1979	-154	1004	587	-421	-2027	-1886	-4	na	-101	-594
1980	-344	2281	1520	-289	-2653	-1477	-5	na	-198	-762
1981	-247	5179	2797	-612	-1967	-1066	-3	22	91	-748
1982	-161	5293	2749	-26	-2981	-651	-6	-133	70	-377
1983	-137	-1615	2302	-61	-2536	-986	-7	-260	18	-524
1984	-101	-147	966	-113	-1728	-1130	-9	-206	-134	-598
1985	-106	474	-208	-70	-1548	-567	0	-165	-203	-534
1986	-131	770	912	46	-2580	-792	-1	-149	-216	-480
1987	-148	3733	2196	172	-2874	-645	-4	-134	-377	-384
1988	-124	1278	956	87	-1882	-697	-4	-43	-733	-574
1989	-91	753	406	-13	-6035	-623	-10	-61	-451	-691
1990	-28	456	788	45	-1481	-630	-8	10	-422	-512
1991	-20	2825	866	34	-1826	-458	-2	-41	-259	-806
1992	-17	-488	401	97	-4395	-278	1	-11	-4	-490
1993	-13	-1285	578	83	-5904	-95	-3	-4	-82	-614
1994	-22	2464	1569	-71	-4561	-148	-24	-16	-123	-257
1995	13	858	979	-35	-2351	-566	-11	-4	-22	-272
1996	41	-1622	759	-16	-3375	-294	-12	1	-352	-396
1997	48	158	1020	-38	-1928	-393	-11	35	-140	-470
1998	72	615	-371	-5	-1423	-739	-2	34	-272	-393
1999	82	474	-108	-63	-161	-889	0	23	-201	-805
2000	52	-1118	309	-111	-412	-437	-4	14	-237	-504
2001	45	-539	-406	-74	-2923	-396	1	14	-127	-1432
2002	58	-959	-283	-16	-653	-170	-4	13	-128	-782
2003	71	-1612	293	3	-1236	-155	-8	13	-96	-562
2004	49	-942	156	-13	-825	-492	1	16	-205	-975

Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-18 of Anderson and Masters (2008).

Appendix Table 19: Share of regional value of agricultural production[a], Africa countries, 1955 to 2005 (percent)

	CM	CI	EG	ET	GH	KE	MG	MZ	NG	ZA	SN	SD	TZ	UG	ZM	ZW	CC[b]
1955	na	na	50	na	17	na	9	na	na	2	na	21	na	na	na	1	na
1956	na	na	47	na	17	4	8	na	na	2	na	21	na	na	na	1	na
1957	na	na	47	na	14	4	7	na	na	4	na	22	na	na	na	1	na
1958	na	na	49	na	17	4	7	na	na	4	na	19	na	na	na	1	na
1959	na	na	48	na	16	3	7	na	na	4	na	21	na	na	na	1	na
1960	na	na	45	na	15	3	6	na	na	5	na	20	na	na	na	6	na
1961	7	4	18	na	6	2	4	na	27	13	2	8	na	5	1	2	na
1962	8	4	18	na	5	2	4	na	29	12	2	10	na	5	1	2	na
1963	8	4	19	na	5	2	4	na	27	13	2	9	na	5	1	2	na
1964	7	5	20	na	5	2	4	na	27	12	2	8	na	5	1	2	na
1965	7	4	23	na	4	3	4	na	23	11	2	9	na	6	1	3	na
1966	7	5	20	na	4	3	4	na	27	12	2	9	na	5	1	2	na
1967	7	5	20	na	5	2	4	na	23	16	2	9	na	5	1	2	na
1968	8	6	22	na	4	2	5	na	22	13	2	10	na	5	1	2	na
1969	7	5	23	na	5	2	4	na	22	13	1	9	na	6	2	2	na
1970	7	5	17	na	4	2	3	na	24	13	1	10	na	6	1	1	6
1971	6	4	16	na	4	2	3	na	24	14	1	10	na	7	1	2	5
1972	7	5	18	na	4	2	3	na	20	14	1	11	na	5	1	2	5
1973	7	5	20	na	4	2	4	na	22	14	2	11	na	4	1	2	5
1974	5	4	22	na	3	2	4	na	24	16	2	9	na	3	1	2	3
1975	5	5	20	na	4	2	3	0	22	15	3	10	na	4	1	2	4
1976	5	10	17	na	3	2	2	1	21	11	2	9	4	4	1	2	4
1977	6	9	13	na	3	5	3	1	20	10	1	9	4	7	1	2	6
1978	5	8	13	na	4	3	2	1	24	10	2	9	4	7	1	2	5
1979	5	10	14	na	3	2	2	1	18	13	2	10	5	6	1	2	7
1980	5	7	15	na	4	3	2	2	18	14	1	10	3	7	1	2	6
1981	3	5	12	10	2	2	2	1	28	12	2	10	2	2	1	2	4
1982	3	5	14	13	2	3	1	1	25	10	1	10	2	3	0	2	5
1983	3	7	14	17	na	2	2	1	20	10	1	11	2	4	1	1	5
1984	3	6	13	14	3	3	2	0	25	10	1	9	2	3	1	2	4
1985	2	6	12	20	2	2	2	0	25	8	1	8	2	2	0	2	4
1986	4	6	14	16	2	3	2	0	22	9	1	9	2	2	1	2	5
1987	3	6	12	12	3	2	2	1	26	10	1	11	2	2	0	2	6
1988	4	6	13	13	2	3	2	1	21	11	1	10	2	3	1	2	6
1989	3	4	13	12	2	2	2	1	22	10	1	16	2	3	1	2	5
1990	4	5	13	13	2	2	2	1	26	10	1	9	2	3	0	2	6
1991	3	4	12	14	3	2	2	1	25	10	1	9	1	2	0	2	7
1992	4	5	12	11	3	2	2	1	26	10	1	8	2	3	0	1	8
1993	4	5	13	8	3	2	2	1	22	11	1	12	2	4	1	2	7
1994	5	6	11	12	2	3	2	1	23	10	1	11	2	5	1	1	5
1995	4	5	11	12	3	2	2	1	28	8	1	8	3	6	0	1	5
1996	4	5	13	10	2	2	1	1	29	9	0	8	2	3	1	2	6
1997	3	5	11	13	3	2	1	1	29	8	1	8	3	4	0	2	5
1998	3	5	10	14	4	2	2	1	27	8	0	8	3	4	1	1	6
1999	3	4	11	15	3	2	2	2	28	8	1	7	3	4	1	2	5
2000	3	5	12	12	3	2	2	1	27	8	1	10	3	5	1	2	5
2001	4	4	12	10	3	2	2	1	23	8	1	14	3	5	0	3	6
2002	4	5	11	13	3	2	2	1	24	8	0	10	3	4	1	2	7
2003	3	4	10	14	4	2	1	1	22	9	1	12	3	5	1	1	7
2004	3	4	12	13	4	2	1	0	21	10	1	12	3	5	1	2	6

Continued over

Appendix Table 19 (continued)
Five year averages

	CM	CI	EG	ET	GH	KE	MG	MZ	NG	ZA	SN	SD	TZ	UG	ZM	CC[b]
1955-59	na	na	48	na	16	4	8	na	na	3	na	21	na	na	na	na
1960-64	7	4	24	na	7	2	4	na	27	11	2	11	na	5	1	na
1965-69	7	5	22	na	4	2	4	na	23	13	2	9	na	5	1	na
1970-74	6	5	19	na	4	2	3	na	23	14	1	10	na	5	1	5
1975-79	5	8	15	na	3	3	3	1	21	12	2	9	4	6	1	5
1980-84	3	6	13	14	3	3	2	1	23	11	1	10	2	4	1	5
1985-89	3	6	13	15	2	2	2	1	23	10	1	11	2	2	1	5
1990-94	4	5	12	12	3	2	2	1	25	10	1	10	2	3	1	7
1995-99	3	5	11	13	3	2	2	1	28	8	1	8	3	4	1	6
2000-04	3	5	11	12	3	2	2	1	23	9	1	12	3	5	1	6

Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-18 of Anderson and Masters (2008).
a. Value of production at undistorted prices.
b. Cotton countries: Benin, Burkina Faso, Chad, Mali and Togo.

Appendix Table 20: Summary of NRA data for studied African countries

Country	ISO Code	Max. number of years	Maximum number of products	Number of NRA observ-ations	2000-04		
					Weighted average NRA[a]	Standard deviation NRA[b]	Gross value o productio n[c]
Benin	BJ	36	5	180	-0.5	7.2	1.1
Burkina Faso	BF	36	5	180	-0.1	10.4	1.2
Cameroon	CM	45	10	432	-0.1	7.5	2.9
Chad	TD	36	5	180	-0.1	10.3	0.7
Cote d'Ivoire	CI	45	7	310	-24.5	33.1	3.8
Egypt	EG	51	7	357	-6.1	22.1	9.8
Ethiopia	ET	25	8	192	-11.2	23.6	10.5
Ghana	GH	49	7	343	-1.4	25.5	2.9
Kenya	KE	49	7	324	9.3	25.6	1.6
Madagascar	MG	51	10	413	1.0	22.5	1.3
Mali	ML	36	5	180	0.1	9.9	1.7
Mozambique	MZ	31	14	378	12.4	37.9	0.9
Nigeria	NG	44	10	440	-5.4	53.2	19.8
RSA	ZA	51	14	618	-0.1	20.3	7.4
Senegal	SN	45	4	169	-7.5	18.6	0.5
Sudan	SD	50	12	594	-11.9	63.2	10.0
Tanzania	TZ	29	18	517	-12.4	51.9	2.7
Togo	TG	36	5	172	-0.7	7.7	0.4
Uganda	UG	44	13	572	0.4	6.9	4.0
Zambia	ZM	45	10	394	-29.6	38.1	0.5
Zimbabwe	ZW	51	8	373	-56.8	33.9	1.5
All AFRICA studied countries[c]		**51**	**44**	**7318**	**-7.3**	**25.2**	**85.4**

Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-18 of Anderson and Masters (2008).

a. Weighted average NRA and standard deviation NRA for covered products using the gross value of production at undistorted prices as weights.

b. Simple average of country 5-year averages.

c. Gross value of total production at undistorted prices, in current US$ billions.

Appendix Table 21: Summary of NRA data by major product, African region, 2000-04

Product	Unweighed average NRA	Weighted average NRA	Gross Value of Production[a]	Countries included (by ISO code)
Apple [b]	0.0	0.0	0.00	ZA
Banana	0.2	0.3	0.15	CM
Bean	1.1	1.1	0.08	MZ, TZ, UG
Beef	-1.7	-25.1	0.49	EG, ZA, SD
Camel	-18.1	-26.0	5.89	SD
Cashew	87.7	87.7	0.10	MZ, TZ
Cassava	-9.6	-9.9	0.06	BJ, BF, CM, TD, CI, GH, MG, ML, MZ, NG, TZ, TG, UG
Chat	-0.4	-2.6	8.45	ET
Clove	-39.5	-39.5	0.07	MG
Cocoa	-18.7	-18.7	0.05	CM, CI, GH, MG, NG
Coffee	-23.4	-35.8	2.59	CM, CI, ET, KE, MG, TZ, UG
Cotton	-13.5	-12.0	0.70	BJ, BF, CM, CI, TD, EG, ML, MZ, NG, SN, SD, TZ, TG, UG, ZM, ZW
Fruit & veg [b]	-20.7	-46.1	1.94	KE
Grape [b]	0.0	0.0	0.14	ZA
Groundnut	4.2	7.4	0.21	GH, MZ, NG, SN, SD., UG, ZM, ZW
Gumarabic	-27.3	-40.3	1.72	SD
Hides & skins	-67.1	-67.1	0.02	ET
Maize	-48.4	-48.4	0.03	CM, EG, ET, GH, KE, MG, MZ, NG, ZA, TZ, UG, ZM, ZW
Milk	3.5	-5.4	7.24	EG, SD
Millet	3.5	14.6	2.99	BJ, BF, CM, TD, ML, MZ, NG, SN, SD, TZ, TG, UG, ZM
Oilseed	-0.3	-2.3	1.79	ET
Orange [b]	-39.4	-39.4	0.08	ZA
Roots & tubers	5.7	8.4	0.23	CM
Palmoil	0.0	0.0	0.38	NG
Pepper	-12.6	-12.6	0.73	MG
Plantain	-10.2	-10.2	0.00	CM, CI, GH, TZ, UG
Potato	-0.1	-0.1	1.93	MZ, TZ
Poultry	0.0	0.0	0.07	ZA
Pulse	2.7	2.7	1.36	ET
Pyrethrum	-20.4	-20.4	0.16	TZ
Rice	-47.7	-47.7	0.00	CI, EG, GH, MG, MZ, NG, SN, TZ, UG, ZM
Sesame	9.0	-5.5	2.45	SD
Sheepmeat	-38.1	-38.1	0.20	ZA, SD
Sisal	-10.6	-21.4	1.57	TZ
Sorghum	0.0	0.0	0.01	
Soybean	-2.5	20.7	2.13	ZM, ZW
Sugar	-42.1	-54.2	0.04	EG, KE, MG, MZ, ZA, SD, TZ, UG
Sunflower	54.1	43.7	1.03	ZA, ZM, ZW
Tea	-1.3	-3.5	0.15	KE, TZ, UG
Teff	-30.2	-16.4	0.58	ET
Tobacco	-7.1	-7.1	0.37	MZ, TZ, ZM, ZW
Vanilla	-45.4	-63.0	0.51	MG
Wheat	-12.8	-12.8	0.06	EG, ET. KE, ZA, SD, TZ, ZM, ZW
Yam	14.5	-1.1	4.03	BJ, BF, TD, CI, GH, MG, ML, MZ, NG, TZ, TG, UG
All covered products	**-9.6**	**-7.3**	**52.8**	

Source: Anderson and Valenzuela (2008) based on estimates reported in Chapters 2-18 of Anderson and Masters (2008).

a. Average annual gross value of production of covered products at undistorted prices (US$billion).

b. Even though apple, fruit and vegetables, grape and orange are covered only by one country, the weighted and simple averages differ because traded and nontraded products have treated separately.