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Agricultural Progress in Cameroon, Ghana and Mali

WHY IT HAPPENED AND HOW TO SUSTAIN IT

Joe Dewbre[*], Adeline Borot de Battisti

[*] OECD, France

Agricultural Progress in Cameroon, Ghana and Mali:

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Joe Dewbre
and
Adeline Borot de Battisti

Foreword

This booklet synthesizes findings from analysis of agricultural policy and performance in three African countries: Cameroon, Ghana and Mali. Case studies of each of these countries were undertaken as part of the Support for African Agriculture Project (SAAP), a project largely financed by the French Ministries of Foreign Affairs and Agriculture and the International Fund for Agricultural Development (IFAD). The purpose was to identify constraints to agricultural growth and poverty reduction that might be eased through better policy, both domestically and internationally. Analysis of agricultural performance focused on trends in output, factor use, and productivity. Analysis of agricultural policy featured measurement of domestic and international price distortions as well as the evolution of aid-financed public expenditures on agriculture. This booklet is published under the responsibility of the Secretary-General of the OECD. The views expressed herein are those of the authors and should not be construed as those of funding partners – France and IFAD.

Ghana

Mrs. Lena Esinam Otoo (national coordinator), Mrs. Zalia Egala, Mrs. Angela Dannson, Mr. Francis Strofenyoh, Mr. Kwaku Owusu Baah and Mr. Jeremy Opoku-Agyemang - Ministry of Food and Agriculture.
Dr. Charles Jebuni - Center for Economic Policy Analysis.
Dr. Edward O. Asante, Director Business Support and Executive Programme, Ghana Institute of Management and Public Administration.

Mali

Adama Coulibaly (coordinator of project in Mali) – Ministry of Agriculture.
Bocar Bâ – Planning and Statistical Department.
Bouréma Cissé - Ministry of Livestock, Fisheries.
Brahima Sangaré – Food Security Commission.

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Executive Summary

The agricultural situation in Sub-Saharan Africa is often characterised as dire, needing immediate policy action if food production is to keep up with a growing population, famine averted and poverty reduced. The ten to twenty year record of agricultural performance in three countries in the region: Cameroon, Ghana and Mali, belies such bleak assessments. Since the mid-1980s food crop production in all three has more than kept up with population growth fuelling significant increases in per capita food availability. Ghana's cocoa exports have quadrupled and Mali's cotton exports tripled. Cameroon's cocoa and cotton production have grown but there was a fall-off in production of coffee, that country's other main export crop.

A frequently expressed concern is that, where it occurs, growth in African agricultural production comes mainly from increases in the area of land cultivated - not from increases in yields or from gains in factor productivity. Prior to the mid-1980s, growth in food crop production in these countries was sluggish and in fact did come mainly from cultivating an ever increasing share of the agricultural land base. Indeed, from 1964 to 1983, the annual average rate of cereal yield growth was negative in both Ghana and Mali and only marginally positive in Cameroon. Since then, however, increased cereal production has been sustained by a combination of increased yields and area cultivated.

Multiple factors contributed to the turnaround in agricultural performance. Growing per capita incomes boosted domestic demand and prices paid for food crops and livestock and generally positive trends in world prices of cocoa and cotton helped. Perhaps most importantly however, in all three countries recovery in agriculture coincided with major re-orientations of macroeconomic and agricultural sector policy. Ghana implemented a phased devaluation and a gradual move to market determined exchange rates, a process leading eventually to a free float. Cameroon and Mali together with other African countries in the same currency zone, devalued their exchange rates but left them fixed, at first to the French franc and subsequently to the euro. Macroeconomic policy targeted low inflation and reductions in government and trade deficits.

Agricultural policy changed fundamentally. Most state-owned procurement and marketing agencies were privatised, closed or lost responsibility for some of the wide range of activities in which they were engaged prior to the reforms. Export taxes, which in earlier years soaked up the lion's share of receipts from export sales of agricultural commodities, were substantially reduced in Ghana and Mali and eliminated altogether in Cameroon. Tariffs on agricultural imports were harmonised and reduced in accord with terms of various regional trade agreements to which the three belong. Although no attempt was made to formally measure causal effect, the coincidence of better agricultural performance with the implementation of macroeconomic and sectoral policy reforms seems too great to ignore.

Under performance of Africa's agriculture has frequently been blamed, at least in part, on the lower world prices resulting from farm subsidies and trade protection OECD

governments provide their farmers. The combined impact of all kinds of OECD price support and subsidy has been estimated to reduce farm incomes in the sub-Saharan region that includes the three study countries by between 2 and 3%. The most widely publicised of OECD agricultural support measures thought to harm farmers in the region are cotton subsidies. Mali farmers receive prices for their cotton that are an estimated 5% to 20% lower because of subsidies given cotton farmers in OECD countries, mainly in the United States.

Partially offsetting the negative impacts of OECD agricultural trade protection and farm subsidies are the beneficial effects of preferential tariff treatment and agricultural development assistance OECD countries provide the three study countries. Cameroon is an important beneficiary of the preferential access OECD countries give to exports from all countries in the region but the estimated value of Ghana's preferences are much less and those for Mali, smaller again.

Donor aid is the dominant source of financing for public investment in agriculture in all three countries. OECD donors, bilaterally and through their support of multilateral organisations, have, since the early 1990s provided increasing amounts of agriculture-specific development assistance to Ghana and Mali. There has been a decline in the relatively small amount of agriculture-related aid provided Cameroon. But, even for Ghana and Mali the amounts involved tend to be small relative to the agricultural GDP of the three countries. From 2001 to 2005 the total of donor aid targeted to agriculture amounted to less than 0.5% of Cameroon's agricultural GDP, just over 0.5% of Ghana's and less than 2% of Mali's - percentages that would be smaller still if adjustments were made for administrative costs and waste. Moreover, much of the increase in donor aid in recent years has been to foster improvements in administrative and policy development functions of government rather than to enhance productive capacity or market functioning within the sector itself.

There has been progress in reducing poverty, and especially so in Ghana where the national poverty rate has nearly halved since the early 1990s. In all three countries there are fewer rural and urban people living below the respective national poverty lines now than in the late 1990s. Still, roughly half the rural population in Cameroon (in 2001) and Mali (in 2006) are in poverty and well over one-third in Ghana (in 2006). More could have been expected on the poverty front given the strong growth in agricultural production and productivity witnessed in the three countries. Although agricultural GDP has grown steadily, so has the number of workers in the sector so that agricultural GDP per worker, a proxy for agricultural income, has not grown very much at all – except in Cameroon. In Ghana, the country posting the fastest progress in poverty reduction, almost all the recent reduction in rural poverty seems to be coming from growth in earnings from off-farm sources. And, in Cameroon, the country posting the strongest growth in agricultural GDP per worker the apparent progress in poverty reduction has been meagre.

There remains some scope for further progress in reducing agricultural market distortions through domestic policy reform. Administered pricing arrangements for cotton in Mali and for cocoa in Ghana could be improved so that farmers get a still higher share of the export value of their production. Likewise, farm incomes could be boosted if the wide margins between prices at wholesale versus farm-gate could be reduced through, *e.g.* improvements in transportation and marketing infrastructure. Relatively high rates of import protection divert productive resources from production of export competing goods reducing economic efficiency with perhaps negative implications for income distribution and poverty as well.

Development assistance targeted to agriculture in the three study countries and in Africa more generally is slated to increase sharply in coming years. While this trend is laudable it must be remembered that the quality of spending is at least as important as the level. A large share of foreign aid to agriculture in the study countries in past years was spent on subsidies to production, including subsidies to purchased input use – a category of public spending that has been shown to be amongst the least efficient and most inequitable mechanisms for improving the economic plight of farmers in OECD countries. There is no evident theoretical case for expecting otherwise for developing countries such as Cameroon, Ghana or Mali. A relatively small share of foreign aid to agriculture has gone to finance activities known to yield high social payoffs such as agricultural research, extension and education.

Cameroon, Ghana and Mali all show signs of following a road to economic development similar to that followed by all developed countries. Continuing along that road will create adjustment pressures that call for policy action. The share of the workforce and probably the absolute number of people working in agriculture is likely to fall, and could fall rapidly in coming years if economy-wide progress continues. Policies that foster the associated adjustments could include programmes of training and education: (1) for those wanting to stay in farming but needing to diversify their sources of income; (2) for those wishing to leave farming but remain in the area; or (3) for those wishing to migrate to jobs in town. There will also be a continuing need for agricultural policy, not to subsidise agricultural production or protect farmers from markets, but to improve the sustained productive capacity of farm households and their ability to access markets at home and abroad.

Introduction

Agriculture plays a prominent role in the economy and society in every country in sub Saharan Africa. Most countries in the region have the natural and human resources needed for strong and sustainable agricultural development and African governments generally put agriculture at the top of their development priorities. Yet agriculture is widely seen as underperforming [World Bank (2007), InterAcademy Council (2004)]. Despite some improvements in recent years large percentages of people who depend on farming for a living are in poverty. Income gaps between farm and non-farm households are wide and a too-high percentage of both rural and urban populations suffer from malnutrition and food insecurity. It is an open question, however, whether these problems can be blamed on poor agricultural sector performance *per se* or whether they, and stagnant agricultural growth itself, are the consequence of other factors that constrain economic growth more generally.

Economic conditions in sub Saharan Africa were worse in the mid-1980s when the International Monetary Fund and the World Bank began to require changes in domestic macroeconomic and sector policy as conditions for granting new loans or to obtain interest rate relief on existing loans. A complete re-orientation of economic policy was thought essential to promote economic growth, to generate income and reduce poverty. As they applied to agriculture, these so-called Structural Adjustment Programs (SAPs) were guided by free market principles similar in many respects to those used to judge agricultural policy performance in OECD countries.

Cameroon, Ghana and Mali each suffered its own economic crisis at some point during the 1980s' to early-1990s'. Their respective governments responded to the crisis by implementing economic policy reforms featuring profound changes in agricultural policy. The agricultural sectors of all three countries have prospered since these reforms. However, was the improved agricultural performance the result of policy reforms or was it caused by something else, such as favourable developments in weather; higher world commodity prices, increased development assistance and public spending on agriculture, or improved trading opportunities?

The OECD has accumulated considerable experience in analyzing agricultural policy and performance in OECD and some major non-OECD countries. We use the same basic approach to evaluate the evolution of agricultural policy in Cameroon, Ghana and Mali, focusing especially on the last ten to twenty years during which each country was recovering from economic crisis. During these years, their governments implemented the policy reforms imposed by the SAP's. However, the policies of interest here also include those of OECD countries, including the agricultural trade protection and subsidies afforded to OECD farmers and the agriculture-specific development assistance OECD donor countries give to Cameroon, Ghana and Mali. In the second section, trends in agricultural output, productivity and rural poverty in the years before and following economic crisis are compared. The paper concludes by drawing implications for future policy and identifies a number of issues meriting further analysis.

Macroeconomic Context

From economic crisis to stability and sustained growth

The timing and duration of economic crisis were different among the three study countries, but the pattern was broadly similar. In each, at some point during the late 1970s to early 1990s there commenced a prolonged period of economic downturn culminating in economic and political emergency. The three panels of Figure 1 trace the evolution of real per capita incomes and inflation for Cameroon, Ghana and Mali from the 1960s to 2005. Measured by the low point in real per capita income, Ghana's economy hit bottom in 1983, Mali's in 1985 and Cameroon's in 1994. The policy response triggered by each country's economic crisis provided the basis for a phase of improving incomes and relatively stable inflation that has continued through to present times.

In US dollar terms, per capita incomes are more than twice as high in Cameroon as in either Ghana or Mali. The fall was also the hardest there. Cameroon's income per capita peaked at over USD 1 000 (constant USD 2 000) in 1986; less than ten years later it had fallen to below USD 600 and, despite continuous growth since 1994, remains today well short of that 1986 peak. Ghana's economy bottomed out in 1983; real incomes per head have increased in every year since, finally surpassing the previous record in 2006 (a record that had stood since 1971). Mali, poorer than either Cameroon or Ghana, did not suffer an economic downturn as severe (in percentage terms) as the other two. However, recovery has been slower and there have been the occasional years when per capita income has dipped.

Inflation has continued to plague Ghana's economic recovery with annual rates averaging above 20% until recent years when they have receded to the mid-teens. In Mali and Cameroon the fixing of the exchange rate to the euro has kept inflation in check, but perhaps at the cost of some significant loss in competitiveness. For example, in Ghana, cocoa prices in local currency terms have risen much faster than in Cameroon. Ghana's cocoa production has also accelerated while Cameroon's has stagnated. Other factors, including major differences in the organisation of cocoa marketing and research between Cameroon and Ghana could have contributed to Ghana's relatively better performance in the sector.

Figure 1. Per capita income and inflation

Constant 2 000 USD   **Cameroon**   %

- - - - Per Capita Income (left scale)   ——— Inflation (right scale)

Constant 2 000 USD   **Ghana**   %

- - - - Per Capita Income (left scale)   ——— Inflation (right scale)

Constant 2 000 USD   **Mali**   %

- - - - Per Capita Income (left scale)   ——— Inflation (right scale)
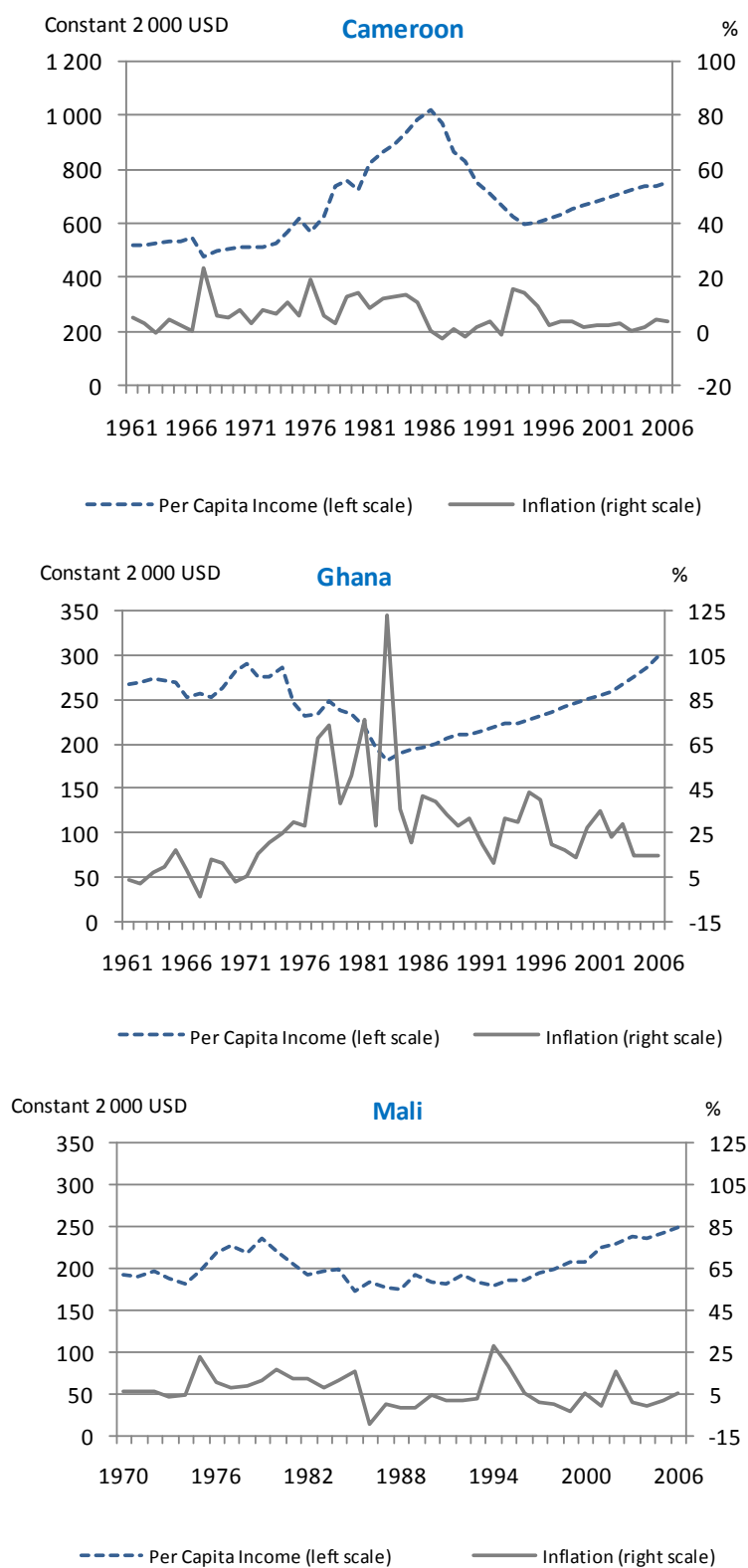
Source: World Bank, World Development Indicators, 2007.

Agriculture's role in the economy is declining, signalling economic development along familiar paths

Figure 2 compares trends in economy-wide and agriculture GDP. Reflecting their stage of economic development, agriculture's importance in the economy is relatively much higher in these than in OECD countries, higher even than is the average for the Sub-Saharan African region in total. In both Ghana and Mali, although agricultural GDP fell during the crisis years it fell less than the total, *i.e.* in both countries agriculture's share of GDP rose when the economy faltered. Since then, agricultural GDP in all three countries has been growing, but less fast than the economy-wide total so that agriculture's share has been declining.

Agriculture's share of the economy-wide GDP typically declines in growing economies because growth in per capita incomes favours growth in consumer demand for non-food goods and services over demand for food. Thus, except when growth in agricultural exports offsets, an increasing share of labour and capital is used in the non-agricultural sectors. Tracing these latter developments is difficult given data availabilities for the three study countries.

Figure 2. Agricultural GDP and share

Cameroon

Constant 2 000 USD million   %

—— Agricultural GDP, constant (left scale)   – – – Agricultural GDP share (right scale)

Ghana

Constant 2 000 USD million   %

—— Agricultural GDP, constant (left scale)   – – – Agricultural GDP share (right scale)

Mali

Constant 2 000 USD million   %

—— Agricultural GDP, constant (left scale)   – – – Agricultural GDP share (right scale)
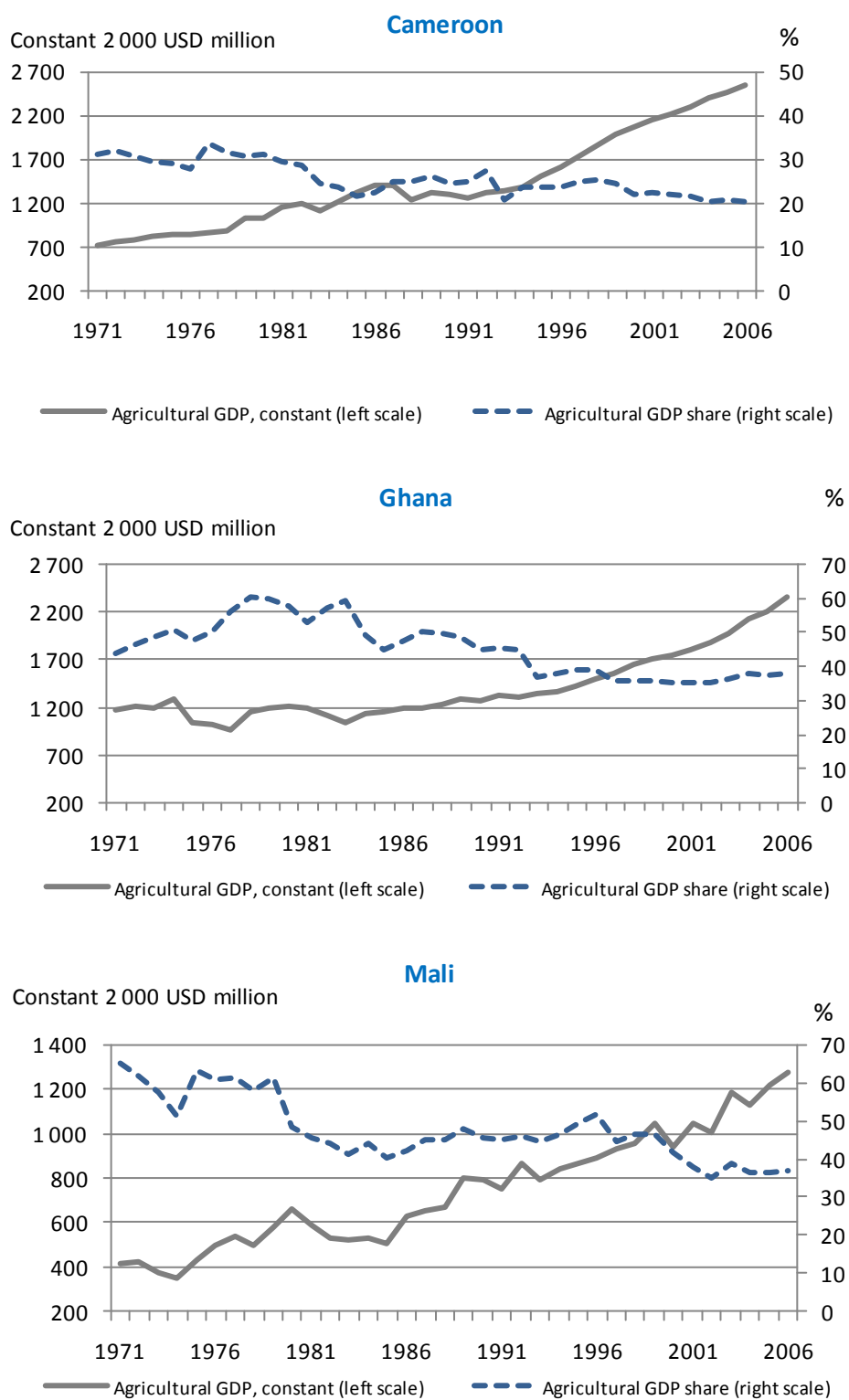
Source: World Bank, World Development Indicators, 2007.

Agricultural Policy Developments

Major re-alignments of policy have led to a diminishing state role in agricultural markets

In the years leading up to their respective economic crises government played a dominant role in agricultural markets in Cameroon, Ghana and Mali. Both the prices farmers received for their output and those they paid for purchased inputs were largely influenced by the parameters of government procurement, subsidy and trade policies. Of course, it was not only in these three developing countries that government was omnipresent in agricultural markets and in the economic affairs of farmers. In a study of agricultural price distortions, Krueger, Schiff and Valdes concluded that the net impact of the whole package of macroeconomic, trade and agricultural policies used by governments in developing countries before 1985 was largely negative for farmers, *i.e.* that the farm sector was, in effect, taxed at a higher rate than non-farm sectors. Their calculations acknowledged the positive support deriving from the price protection afforded by import tariffs and from input subsidies but these were swamped by the negatives deriving from both explicit and implicit taxation of exports – the latter a result of overvalued exchange rates.

Agricultural policy reforms implemented since the 1980s have dramatically changed the policy and market context in which farmers in the three study countries find themselves. One way of quantifying this policy evolution is through the calculation of annual indicators of financial transfers created by government interventions in the sector (whether positive as is common in developed countries or negative as was common in earlier years in most developing countries). Here we focus on just two categories of transfers: (1) the market price support (positive and negative) that results from border measures; and (2) public expenditures for agriculture financed by agriculture-specific development assistance. As is typical for OECD countries, price support accounts for the lion's share of total agricultural support provided farmers in Cameroon, Ghana and Mali. And, almost all public expenditures on agriculture projects and programmes in these countries are financed by development assistance under shared funding arrangements whereby the government may contribute 20% or less of the total with donors covering the rest.

Anti-agriculture domestic policy biases reduced but not eliminated

Market price support refers to the gross transfers from consumers and taxpayers to agricultural producers arising from policy measures that create a gap between domestic market prices and border prices. Ideally, this price gap is estimated by comparing prices actually received by farmers to an associated world market price, with adjustments as necessary to allow comparisons at the farm gate. Preliminary attempts to use the price gap method for the present study were unsuccessful. Accordingly, a shortcut was chosen

whereby percentage rates of price support were estimated using solely the data on applied tariffs and export taxes. Estimates of applied (Most Favoured Nation - MFN) tariffs for each country's main agricultural imports are available in the World Integrated Trade System (WITS) database. Export tax data was obtained from national sources. Annex 1 contains a tabular presentation and an explanation of the data used in making market price support calculations. Data measuring trends in agriculture specific development assistance are available from the Creditor Reporting System database maintained by the OECD's Development Assistance Committee. A discussion of findings from analysis of that data is presented in a later section.

Tariffs

Cameroon, Ghana and Mali each belong to at least one regional trading agreement that calls for preferential tariffs on trade amongst members and common external tariffs (CET's) to be applied to trade with non-members. Cameroon belongs to the Economic and Monetary Community of Central Africa (CEMAC). Both Ghana and Mali are members of the Economic Community of West African States (ECOWAS). Mali is also a member of the West African Economic and Monetary Union (UEMOA) a group of West African countries with a common currency and a CET schedule identical to that of ECOWAS.

In reality, most trade with other member countries of their respective trading agreements tends to be small compared to trade with non-members, principally OECD member countries, so that it is the CET's that really matter. The structure of CET's is similar for all the regional agreements. Each comprises a tariff ladder wherein higher tariffs are charged the higher the degree of further processing (value added) embodied in the imported product. In all three cases, the tariff ladder contains a few rungs with only slight variation in the products covered and the associated tariff rate.

Cameroon follows the system of common external tariffs (CET) applied by CEMAC member countries. It is composed of four different tiers: 5% for essential goods, 10% for raw materials, 20% for intermediate goods and 30% for finished consumer goods. Ghana's tariff structure comprises three rates: a low rate of 0% (with some items recently raised to 5%) reserved primarily for primary products, capital goods, and some basic consumer goods; a moderate rate of 10% applied primarily to other raw materials and intermediate inputs, as well as some consumer goods; and a higher rate of 20%, mainly on final consumer goods. In addition, there are several programmes under which imports can be exempted from import duties, and manufacturers can apply for permission to import raw materials and intermediate inputs at concessionary duty rates. The UEMOA agreement to which Mali adheres sets a minimum rate of 2% for essential goods, notably medicines; 7% for raw materials, production equipment and some categories of agricultural inputs; 12% for intermediate goods requiring further processing; and 22% for finished consumer goods.

Care must be taken in using tariffs as indicators of the rate of protection afforded the agricultural sector of a particular country. Generally speaking the tariff rate overstates the farm price benefits of tariff protection. This partly reflects the fact that imported commodities are typically not viewed by buyers and consumers as being identical to (perfectly substitutable with) the domestically produced good. Where the imported and the domestic good cannot be regarded as perfect substitutes the transmission of the tariff-inclusive higher price for the imported good into a higher price for the domestically

produced good will be partial and the tariff rate will overstate the associated producer price benefits.

Price transmission will be less than 100% even for perfectly substitutable imports and domestic goods if the costs of transporting the product from the border and/or from the domestic producing zone are not proportional to product prices (as when, for example, the transportation charge is so much per tonne per kilometre). Additionally, the protective effect of the tariff is obviously of benefit only to those producers whose output competes with the protected imported good. Producers of other imported or non-tradable goods may not and producers of exported goods most likely would not gain from the imposition of tariffs on selected imports. Indeed, some of those producers may find they have to pay higher wages or land rents in order to meet the competition for those resources coming from producers of protected commodities.

Export taxes

Where import tariffs have the potential to boost producer prices to levels higher than they would otherwise be (positive market price support), export taxes have the opposite effect, *i.e.* they depress producer prices to levels below where they would otherwise be (negative market price support). Agricultural exports have long been an important source of government revenue in all three study countries. But taxes on exports have also long been judged a serious impediment to achieving a country's economic growth potential. Accordingly, reducing them was a key objective of each of the country's policy reform efforts – an objective largely accomplished.

Before the reforms, the government in Cameroon collected taxes on exports of a number of different agri-industrial products: cocoa, cotton, medical plants, sugar, rubber, coffee, palm oil and bananas. These were progressively eliminated and since 2000 only exports of forestry products have been subject to export taxes.

In Ghana, cocoa procurement and pricing is done by a quasi-governmental marketing board – COCOBOD. The tax rate for cocoa beans is determined annually by the Minister of Finance and Economic Planning. Taxes are collected by COCOBOD and the revenues transferred to the government - considered along with producers and other market participants a 'partner' in the cocoa business. Cocoa tax receipts are sufficiently important to be singled out in routine presentations of government budgetary operations and financing. In recent years 4 to 5% of the government's annual tax receipts have come from cocoa export taxes. The rate of export tax charged was falling before the economic crisis and has continued to fall since, now averaging just above 10% of the border price of cocoa beans.

In Mali, the government used to but no longer collects taxes on exports of cotton. However, cotton producer prices are set by a marketing organisation, the CMDT, partly owned by the government of Mali. The pricing formula sets a processing and marketing margin that is proportional to the FOB price of cotton so that in some years anyway the government earns tax-like revenues in much the same way as if export taxes were explicit. Part of these revenues was in the past used to fund services to cotton farmers, such as rural infrastructure and education. We estimated this implicit export tax by comparing domestic and world cotton prices adjusted for an assumed margin for cotton processing and marketing. The procedure used in calculating the processing margin is explained in Annex 2.

Estimated Market Price Support Rates

Figure 3 chronicles the evolution of market price support rates (%MPS) since the early 1990s. In making the calculations to obtain data for Figure 3, two aggregates were created: (1) agricultural imports on which tariffs were charged; and (2) agricultural exports on which export taxes were collected. Table 1 contains the country lists of commodities included in the calculations. Annex 1 contains estimates for all individual commodities. In each of the country panels in the Figure, the top (solid) line represents the positive market price support resulting from tariffs applied to imported farm commodities, expressed as a percentage of farm gate receipts for those commodities. The bottom (dashed) line in each of the country panels corresponds to the negative %MPS due to export taxes.

Table 1. Commodities for which market price support estimates were made

	Cameroon	Ghana	Mali
Import commodities	Maize, millet, sorghum, sugar, pig meat, beef meat, poultry	Rice, maize, millet, sorghum, poultry	Rice, maize, millet, sorghum, milk
Export commodities	Cocoa, coffee, cotton, palm oil	Cocoa	Cotton

Trends in import taxes differ markedly among the three countries. In Cameroon the %MPS for importable agricultural commodities averages around 20% with hardly any change occurring since the early 1990s. In Ghana, the %MPS for imports in the early years studied averaged just over 10% but has been steadily increasing since. The opposite occurred in Mali. In the early years of the study period, the %MPS averaged around 20% but it has been declining progressively since then to an average rate in the most recent year of just over 5%.

Governments have progressively and significantly reduced export taxes in both Ghana and Mali and have eliminated them altogether in Cameroon. In interpreting results shown in Figure 3 it may be helpful to recall that the figures express the volume of export taxes collected by government relative to farmer receipts from their sales. So, for example, a %MPS of more than negative 100% does not mean that farmers were paying the government for the privilege of growing crops for export but rather that their receipts would have been more than double what they actually received if government had not collected any export taxes.

Figure 3. Estimated rates of market price support by source as % of production value

Cameroon

Ghana

Mali
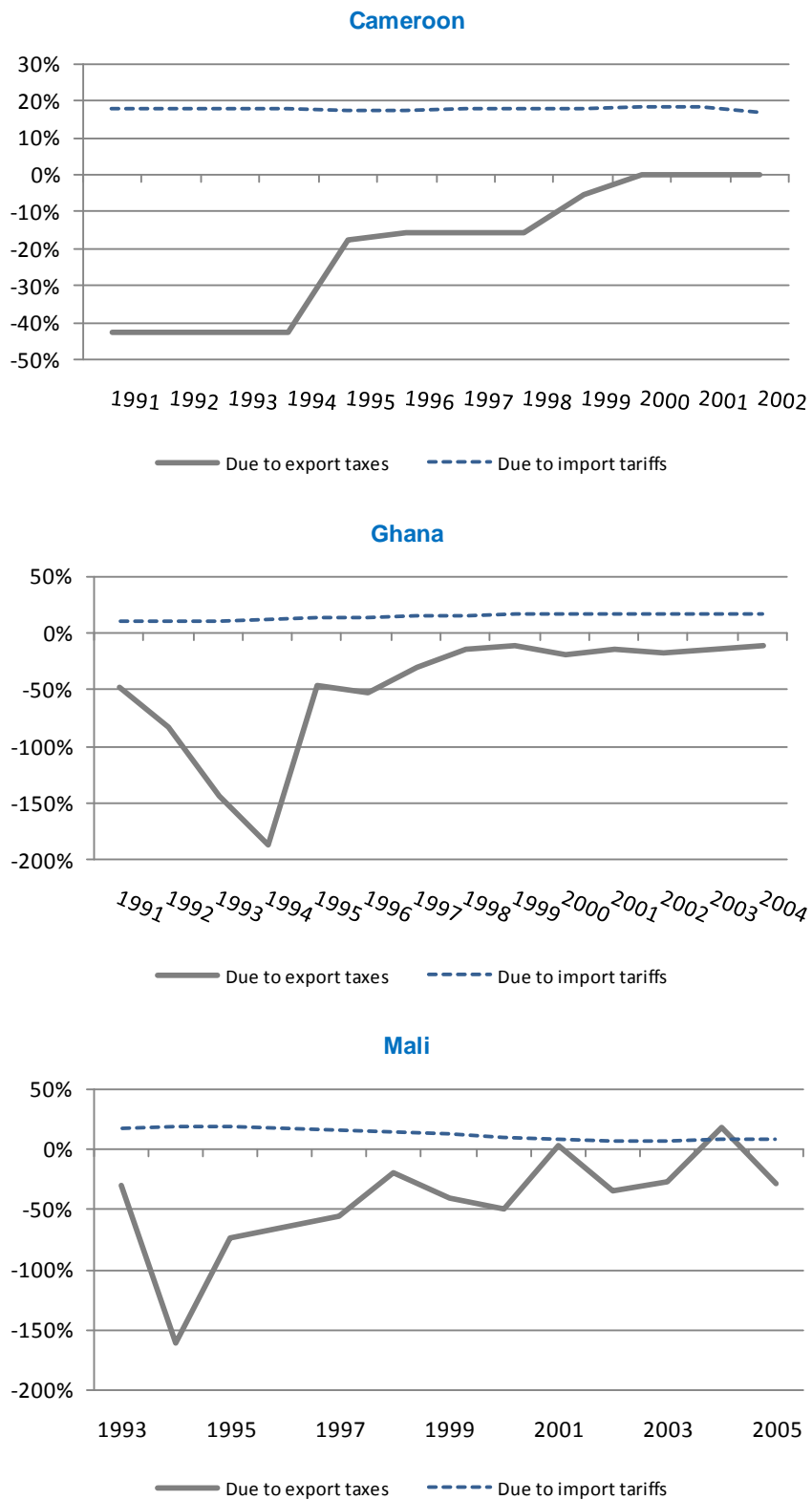
Source: OECD calculations, 2008.

Agricultural Development Assistance

Disbursements of development assistance earmarked for agriculture are currently running at less than 0.2% of agricultural GDP in Cameroon; around 0.9% in Ghana and 2.0% in Mali. Sector aid flows to Ghana and to Mali have been growing sharply in recent years, but have been falling in Cameroon. All three countries could see dramatically increased aid for agriculture if widespread demands for increased donor priority for the sector are met. Agriculture's share in total sector aid (labelled "Agr aid share" in Figure 4 on following page) has declined, but that is because of increases in social sector aid flows (health and education mainly), not because the real dollar amounts of agricultural development assistance are falling.

Composition of aid to agriculture has largely favoured production - smaller shares for agricultural research, extension and education

The data graphed in Figure 4 are totals of disbursements incorporating numerous individual sub-categories. Using data for the entire period 1990 to 2005, Figure 5 allocates disbursements into four broad sub-categories: (a) support to agricultural production;[1] (b) agricultural research, education and extension; (c) support to agricultural policy development and administration; and (d) a residual "other" category. Of these the largest share of disbursements has been to promote increased agricultural production.

Historically, export and staple crops have been the main beneficiaries of production related support with much less spent on livestock sub-sector. Production related support has been especially dominant in Mali, accounting for nearly three-quarters of total agricultural sector aid during 1990 to 2005. Recall in this connection the volume of agricultural sector aid is itself, both absolutely and relative to the size of the sector, much greater in Mali than in either Ghana or Cameroon.

Public investment in agriculture research, extension and education is generally agreed to yield social returns substantially greater than costs (Alston *et al.*, 2008 and Fan *et al.*, 2000). Yet, aid financed expenditures on this category during 1990 to 2005 accounted on average for only 6% of Mali's total agricultural aid, 10% of Ghana's and 28% of Cameroon's. Aid spending for agricultural policy development and administration has become relatively more important in recent years in part, presumably because of an increasing involvement of ministries of agriculture in strategic planning, policy monitoring and evaluation – an evolution strongly encouraged by the donor community.

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1. The individual DAC creditor reporting categories considered here as support to agricultural production are: agricultural land resources, agricultural water resources, agricultural inputs, food crop production, industrial/export crops, livestock, agricultural services, plant/post-harvest protection and pest control, agricultural financial services and livestock/veterinary services.

Figure 4. Aid disbursements to agriculture

Cameroon

Constant 2005 USD million

— Agricultural aid (left scale)   - - - Agricultural aid share (right scale)

Ghana

Constant 2005 USD million

— Agricultural aid (left scale)   - - - Agricultural aid share (right scale)

Mali

Constant 2005 USD million

— Agricultural aid (left scale)   - - - Agricultural aid share (right scale)
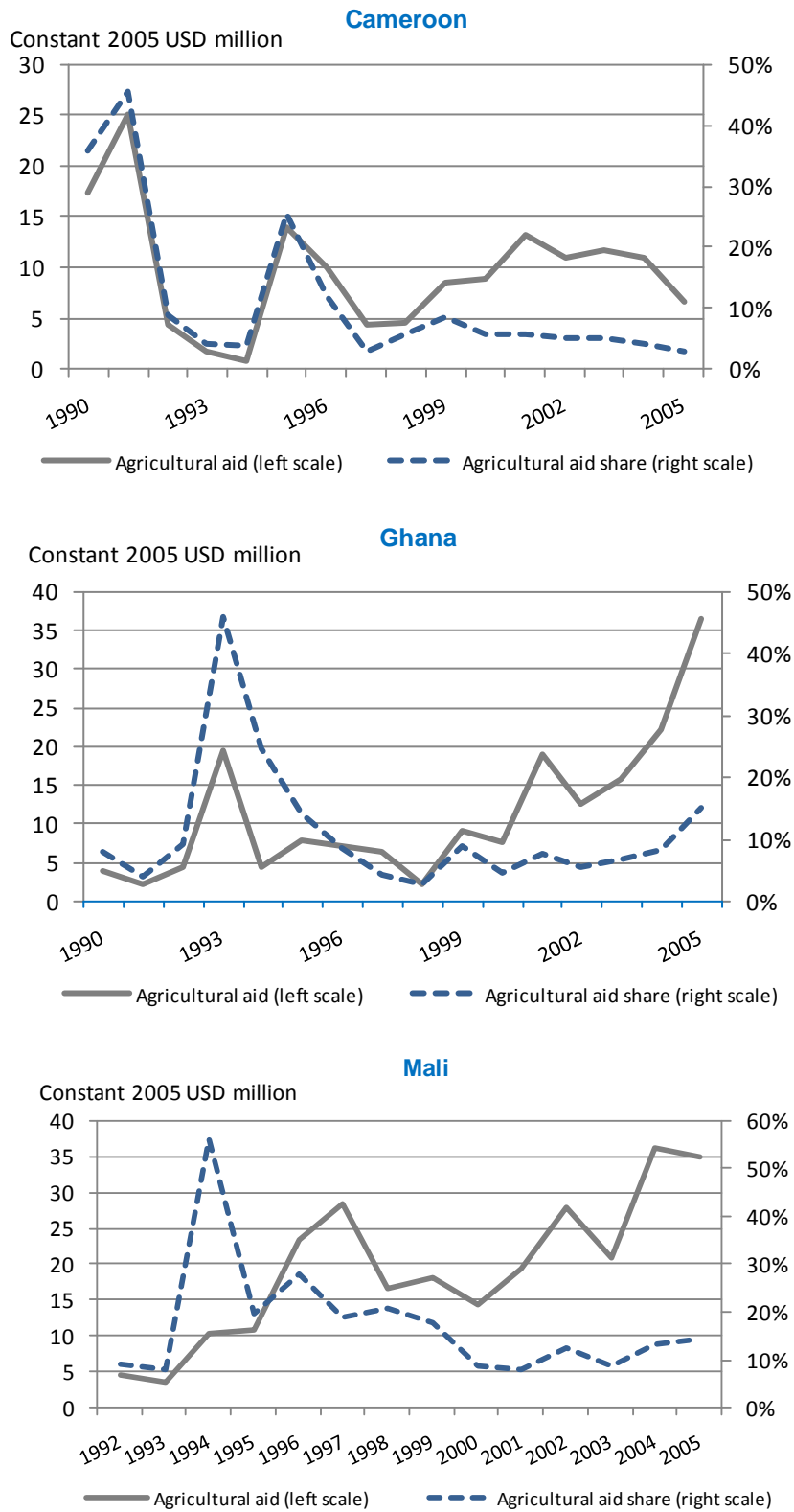
Source: OECD, DAC/CRS online, 2007.

Figure 5. Agricultural aid allocation, shares of total disbursements, 1990-2005 average

Cameroon

Other, 16%

Agricultural policy and administrative management, 15%

Agricultural production, 40%

Agricultural Research, Extension, Education, 28%

Ghana

Other, 26%

Agricultural production, 39%

Agricultural policy and administrative management, 25%

Agricultural research, extension, education, 10%

Mali

Other, 9%

Agricultural and administrative management, 11%

Agricultural production, 74%

Agricultural research, extension, education, 6%

Source: OECD, DAC/CRS online, 2007.

Effects of Agriculture Policies in OECD Countries

Incidence of OECD agricultural trade and subsidy policies in countries varies among countries and products

Farmers in Cameroon, Ghana and Mali may be both helped and harmed in consequence of agricultural policies implemented in OECD member countries. Many OECD governments impose tariffs on imports of agricultural goods; some pay subsidies to encourage exports and provide additional financial help through direct budgetary payments, concessions on taxes, subsidised credit, fuel and fertiliser. Such interventions boost the incentives to produce and, ultimately, the supply of protected commodities on world markets. Through trade and world market links, the trade protection and domestic support afforded OECD farmers lead to lower-than-otherwise world market prices and farm incomes in some non-OECD countries.

However, some of the most important agricultural commodities produced in the three study countries, cocoa and coffee for example, are either not produced at all or they are produced in only small quantities in OECD countries. Accordingly, OECD trade protection for those products tends naturally to be relatively insignificant also. Meanwhile, other commodities produced in one or more of the study countries, rice and cotton for example, are heavily supported or protected in the OECD. Undoubtedly, world market prices for these are lower than they would be in the absence of trade protection and support given OECD farmers.

A recent OECD study used a general equilibrium model in policy simulation analysis aimed at estimating the economic and market effects for aggregated national, regional and global markets of substantially reducing OECD's agricultural tariffs and subsidies (OECD, 2007). The study estimated the potential impacts on farm incomes in a large number of countries and regions that might be expected if all forms of agricultural trade protection and subsidy in OECD countries were reduced. Although none of the study countries is separately identified in that model, an indication of potential impacts on them can be obtained from results for a regional aggregate representing all sub-Saharan countries except South Africa. The results indicate that the prices of tradable agricultural products and farm incomes in the region would increase by between 2 to 3% if OECD governments were to eliminate all forms of farm trade protection and support.

Cotton, an important crop in Cameroon and the dominant export crop in Mali, is not separately identified in OECD's producer support estimates. However, there is a general consensus that cotton subsidies in OECD countries lead to increased supplies and substantially lower-than-otherwise world market prices for cotton fibre. The potential magnitude of such effects has been studied extensively in recent years with results that differ somewhat between different studies depending on the time period being considered, the assumptions made about key economic parameters and the production incentives associated with different subsidy programmes.

Alston, Sumner and Brunke (2007) discuss these complexities in some depth, review findings obtained in many past studies and report estimates from their own analysis of the effects of eliminating just those subsidies provided US cotton farmers. They estimate that world market prices for cotton fibre would be between 6 and 14% higher if the United States were to completely eliminate cotton subsidies. Estimated price impacts of the same order of magnitude were found in a recent World Bank study that considered the effects of eliminating both US and EU cotton subsidies (Anderson and Valenzuela, 2006). Using these estimated price impacts, Mali farmers may lose upwards of USD 30 million per year due to cotton subsidies given farmers in OECD countries (Annex 3 shows how this estimate was made).

Economic benefits from preferential access are generally low

Many OECD countries provide market access to agricultural exports from Cameroon, Ghana and Mali at tariff rates that are below the rates provided under the WTO's MFN principle (Liapis, 2007). The potential negative consequences of OECD farm support for world market prices and farm incomes in some countries can, in theory, be mitigated to some degree by this preferential treatment. The economic value of preferential access depends on the difference between the tariff applied to imports from the beneficiary country and the rates applied to imports from countries not benefiting from preferential access, the preference margin.

The great majority of Cameroon's agricultural exports enter the European Union, the United States, Japan and Canada at zero tariffs. On an import-weighted average basis the rate is less than 0.15% in all four markets. The preference margin for agricultural imports from Cameroon into Canada, Japan or the United States is insignificantly small. However, for the European Union - overwhelmingly the largest buyer of Cameroon's exports, that difference is significant – averaging over 12% on an imported weighted basis during 2001-03. The total economic benefits for Cameroon of preferential access for its agricultural exports into the European Union have been estimated at approximately USD 46 million (Liapis, 2007), which translates as just over 1% of agricultural sector GDP. Cameroon ranks among the top 10 countries in terms of the economic value of their preferential access to EU's agricultural markets.

For Ghana, agricultural trade with OECD countries is dominated by cocoa beans and these enter tariff free, regardless of source, *i.e.* there are no preferential margins to be had. Most of Ghana's exports of other agricultural products also enter OECD markets at zero or very low tariffs. Neither the volumes nor the preferential margins are big enough to provide a large monetary gain. For example, the import-weighted averages of the preferential margin on Ghana's exports to the European Union and the United States in 2003 were less than 2%. The average annual value of preferential access for Ghana's agricultural exports to the European Union, the United States, Japan and Canada during 2001-03 has been estimated at less than USD 9 million, a sum which translates at less than 0.5% of agricultural sector GDP.

Mali's overwhelmingly most important export crop – cotton, enters most OECD countries free of import duties regardless of source. Accordingly, the economic benefits of Mali's preferential access are negligible – estimated at only around USD 85 000 annually for 2001-03.

Agricultural Performance

Real agricultural output has been growing, with food output in particular growing faster than the population

What were the effects on agricultural sector performance of the policy reforms and the ensuing transition from severe economic crisis to growth? Answering such question satisfactorily would require analytical effort beyond the scope of the present study. Nonetheless, simple trend analysis of available data provides some insights. Figure 6 shows volume trends in agricultural production for Cameroon, Ghana and Mali and the breakdown amongst main agricultural products for 1964 to 2004.[1] In each case there was a significant acceleration in agricultural output growth in the years following economic crisis in the three countries - from 1983 in Ghana and Mali and from 1994 in Cameroon. The turnaround was especially pronounced in Ghana where during 1964 to 1983 the annual average percent change in the total real value of agricultural production was slightly negative but has since averaged nearly 6% per year. Meanwhile, the trend rate of growth in total agricultural production doubled in both Mali and Cameroon following the worst year of their respective economic crises. In none of the three countries was domestic food production keeping up with growth in the population in the ten to twenty years preceding the worst of their respective economic crises. However, in all three, food output[2] has been increasing significantly faster than population since the crisis years: by 6% per year in Ghana and by 4% per year in both Mali and Cameroon.

The composition of agricultural output has also changed since the mid-1980s. In Cameroon there has been a shift away from traditional export crops (coffee and cocoa for example) towards staple crops. Increased production of staple crops there may have been driven by growth in food demand and prices due both to increased regionalisation and urbanisation of markets for food commodities. Meanwhile weak world prices, low yields and unfavourable exchange rates (compared to competitors such as Ghana for cocoa and Viet Nam for coffee) have contributed to the stagnation and some decline in Cameroon's production of traditional export crops.

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1. These data have been constructed by valuing annual production of each crop and livestock component at the average of their respective prices during the three years 1999-2001. For Cameroon and Ghana this aggregate was taken directly from the FAOSTAT database. For Mali it was calculated from national data using the FAO's method.

2. Food output is defined here as follows: food crops and livestock in Cameroon; crops other than cocoa and livestock in Ghana and cereals and livestock in Mali. With some exceptions (palm oil and sugar for Cameroon) these products are mainly destined for food consumption within the domestic market.

Figure 6. Trends in real agricultural output for Cameroon, Ghana and Mali
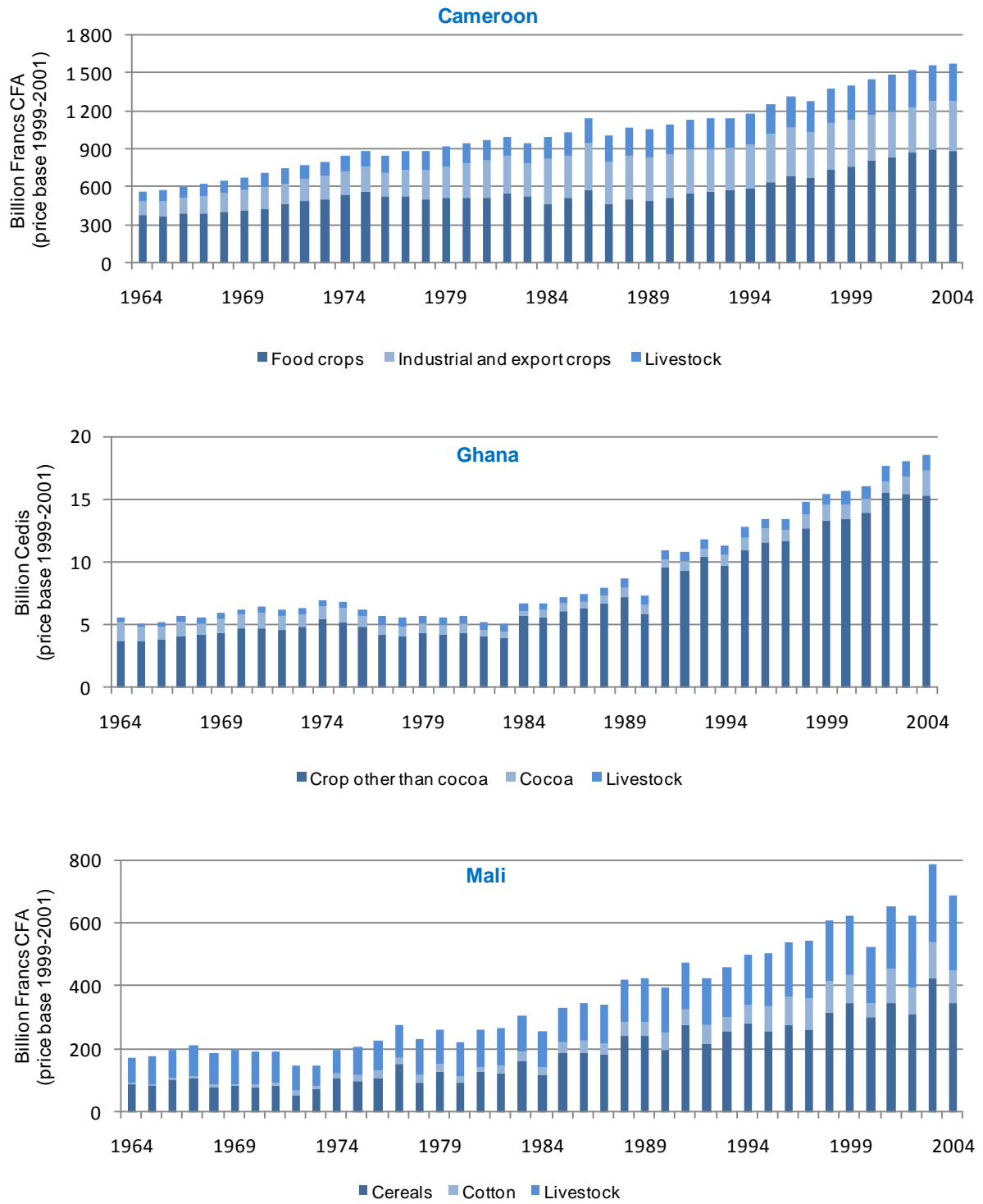
Cameroon

■ Food crops   ■ Industrial and export crops   ■ Livestock

Ghana

■ Crop other than cocoa   ■ Cocoa   ■ Livestock

Mali

■ Cereals   ■ Cotton   ■ Livestock

Source: FAO statistics (Cameroon, Ghana) and OECD calculations (Mali) using national data from CPS, 2008.

By contrast, growth in production of traditional export crops in Ghana and Mali has accelerated. Ghanaian cocoa production was declining in the years following independence (-3.5% per year over the period 1961-83) but has recovered strongly since 1983 with both continuing area expansion and significant yield improvements. Malian cotton is another success story. Policy reforms have led to a diminished role for the state in cotton marketing and a higher producer share of cotton export receipts. The benefits of these reforms have been enhanced by generally favourable world market prices and have led to increases in Mali's cotton production that outpaced the quite strong growth in the country's total agricultural output. And this occurred despite subsidized competition on world cotton markets coming from OECD cotton producing countries.

Both area expansion and yield improvements have contributed to output growth

An influential report on African agriculture done recently for the United Nations Secretary General warned of the implications for future food security of stagnant crop yields and the concomitant expansions of arable land that have been required to meet the food needs of fast growing populations. (InterAcademy Council, 2004) In the long run, agricultural output growth based on using more and more of a country's fixed endowment of land is unsustainable. In other parts of the world, declining availability of land suitable for cultivation has been offset by yield improvements but this seems not to be happening generally in Africa.

Of course, these concerns differ in degree depending on a country's land endowments and whether technological progress favours land intensive or land extensive techniques. In Mali, for example, although the share of arable in total agricultural land has been growing, it is lower than in Ghana and lower still compared to Cameroon. Land extensive technical progress could achieve increased production by enabling conversion of land currently unsuitable for crops. Recall also, that it may not be possible to simultaneously increase both the area under cultivation and the average yields as the marginal hectare of land brought in to production would generally be less productive than land already in production.

As the data in Figure 6 reveal, the composition of aggregate agricultural production differs markedly among the three study countries. It is difficult to compare area and yield trends using such highly aggregated data. It is common therefore to focus instead, as in Figure 7, on the evolution of production and yield of cereals.[3] Yield here refers to the total real value of cereal production per hectare of land dedicated to cereal crops. Growth over time in this variable can occur either because physical yields of the individual crops making up that total (maize, millet, rice, etc.) are increasing or because the composition of the aggregate increasingly favours higher priced crops. This latter effect made little difference to yield results obtained for either Cameroon or Ghana. For Mali, however, the strong production and yield growth for rice since the mid-1980s has driven the total real value of cereal crop production upwards despite flat yield trends in lower priced millet, sorghum and maize.

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3. For all three countries, the cereal aggregate includes millet, sorghum, rice paddy and maize. It additionally includes wheat in Cameroon, oats in Ghana, and wheat and fonio in Mali. Data for this variable was calculated, as for the aggregates reported in Figure 6, by multiplying annual production for each individual cereal crop times a three-year average price and then adding across all of them.

Two periods are compared for each country – 1964 to 1983 and 1984 to 2004. In all three, total cereals output has grown rapidly in recent years at annual rates that are: (a) well above population growth; and (b) considerably faster in the last two decades than in the previous two. Moreover, while production growth from the mid-1960s to the mid-1980s was driven largely by area expansion, yield improvements have been more important contributors since. In both Ghana and Mali the annual average rate of yield growth was negative in the earlier two decades but significantly positive in the latter two.

Figure 7. Area and yield contribution to growth in cereals production, 1964-83 and 1984-2004
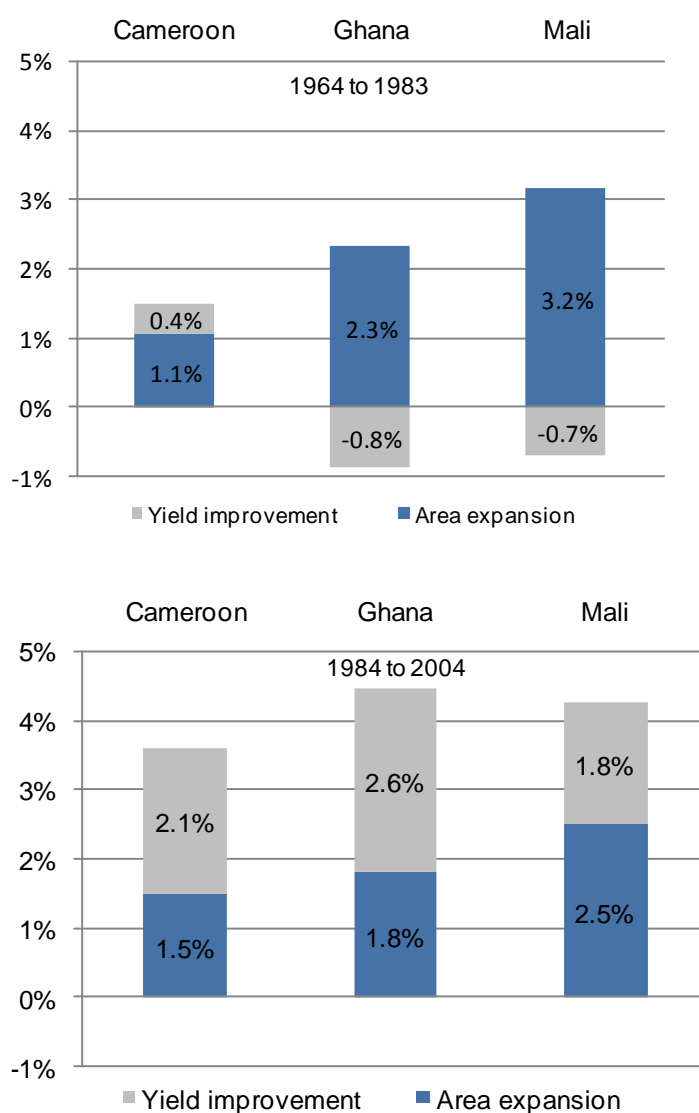
Source: FAO statistics (Cameroon, Ghana) and OECD calculations (Mali) using national data from CPS, 2008.

Farm Incomes and Rural Poverty

The turnarounds in agricultural and food production following their respective economic crises were surely welcome developments for Cameroon, Ghana and Mali. But, to what extent were those developments accompanied by progress in reducing poverty? There are two questions one can pose when evaluating agricultural sector performance in this context. Are the incomes of those who depend on farming or farm related occupations rising? Are the prices consumers (including consumers who earn their living in farm related occupations) pay for food and other products produced by the farm sector declining? In the best case, the answer to both questions is yes. But, sometimes lower prices for consumers can mean lower incomes for farmers and sometimes higher incomes for farmers cannot be achieved except as consumers pay higher prices.

Agricultural GDP measures the returns to the primary factors: land, labour and capital, used in agricultural production. Reflecting the assumption that these factors are largely owned and supplied by farmers, agricultural GDP per agricultural worker is an often used indicator of trends in farm incomes.[1] Figure 8 plots the evolution of agricultural GDP per worker in the three countries over the period 1967 to 2004. The indicator suggests that per worker income has been growing somewhat in all three countries, especially since the mid-1990s and more so in Cameroon than in either Ghana or Mali. In general, however, because the number of agricultural workers has been growing too, per worker GDP has not grown as fast as has total agricultural production or sector-wide GDP in any of the three countries.

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1. Measurement problems afflict the data for both agricultural GDP and the number of workers in the sector, undermining confidence in the ratio of the two as an indicator of farm income. First, not all primary factors used in agriculture are owned and supplied by farmers. Some farm land and capital is owned by people who do not farm; some labour is supplied by people classified as working in other sectors and some people classified as agricultural workers actually earn a significant part of their income working in other sectors. Moreover, employment data is sparse. For example, the World Bank's WDI database contains estimates of the percentage of Ghana's work force employed in agriculture for only three years (61.1% in 1984, 62.2% in 1992 and 55.0% in 2000) only one such estimate for Cameroon (60.6% in 1990) and no information at all for Mali

Figure 8. Trends in agricultural GDP per worker

Constant 2000 USD
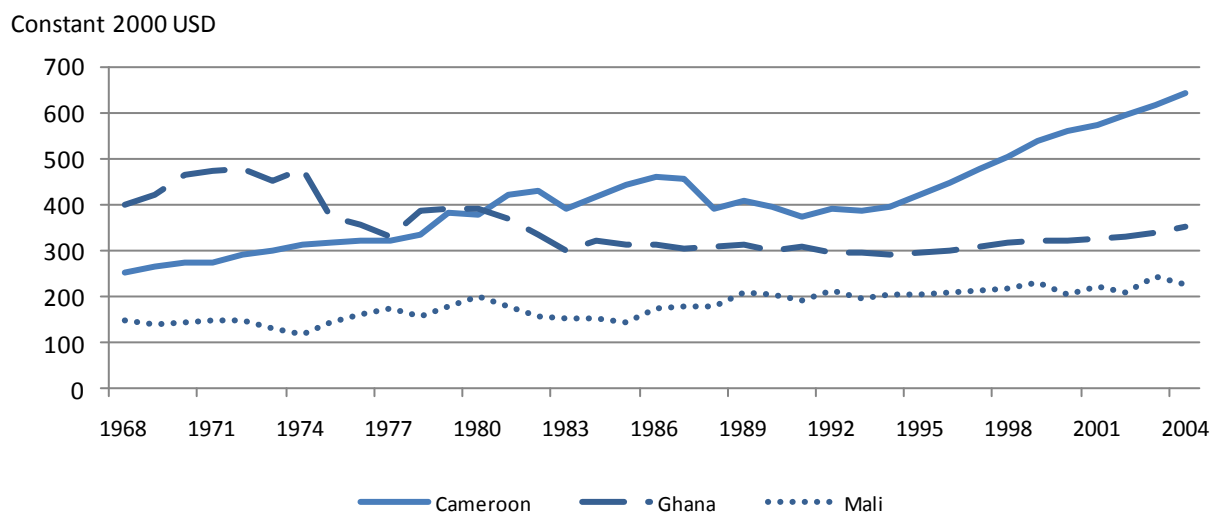
Source: World Bank, World Development Indicators, 2007.

Figure 9 reports national poverty rates estimated from cost of living surveys made in selected years for the three study countries. In general terms, the estimated rates refer to the proportion of people whose consumption expenditures fall below a threshold level established in consideration of the minimal expenditure necessary to cover basic needs. In all cases, adjustments are made to acknowledge the value of commodities produced by households for self-consumption. Specific procedures differ from country to country and from one survey year to another within a given country. Here, for each country, we reference both the source of the raw survey data and the reports analyzing that data from which we took the poverty rate estimates. These latter reports contain comprehensive documentation of the data, the procedures used in analyzing it and the associated limitations.

The data for Cameroon are based on two surveys "*enquêtes camerounaise auprès des ménages*" conducted in 1996 and 2001 respectively and commonly referred to by their acronyms ECAM I (1997) and ECAM II (2002). An analysis and comparison of results from these two surveys can be found in INS (2002). A ten point decline in Cameroon's rural poverty rate (from 60 to 50%) occurred between 1996 and 2001, a period of rapidly increasing agricultural GDP per worker (5% per year). Although no new poverty estimates for Cameroon have been published since 2002 it seems likely that rural poverty rates have declined further as GDP per agricultural worker has continued to grow apace in the years since. On balance then, it seems safe to say that Cameroon's improved agricultural performance contributed significantly to reducing rural and national poverty rates.

Figure 9. Poverty rates[1]

Cameroon

■ 1996 ■ 2001

Mali

■ 2001 ■ 2006

Ghana

■ 1991 ■ 1999 ■ 2006
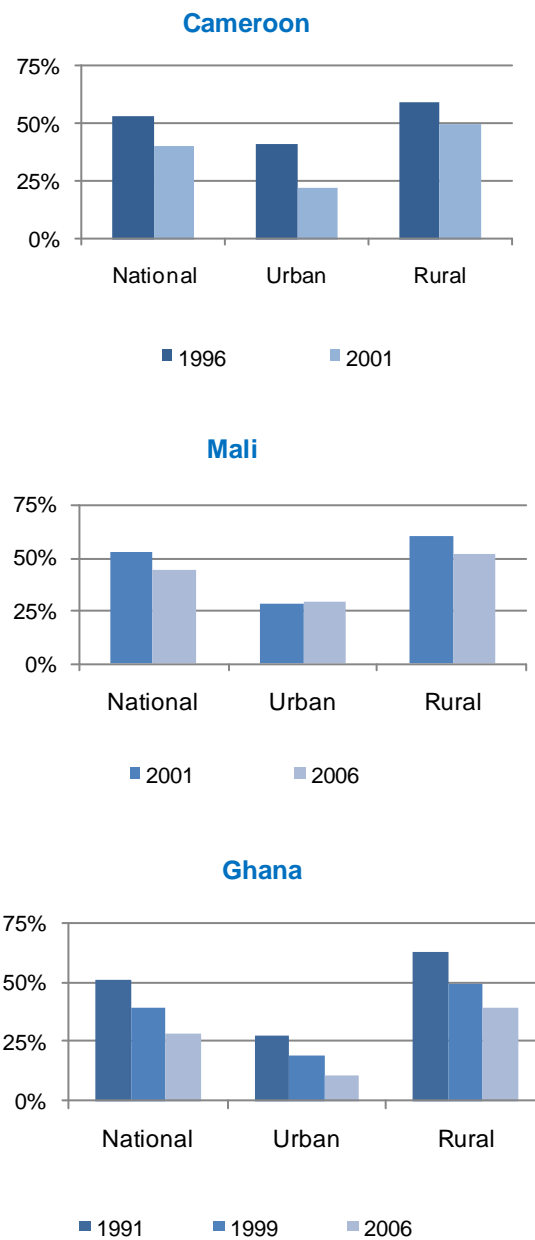
1. Mali results refer to comparisons based only on food expenditures.

Source: Cost of living surveys: ECAM I and ECAM II (Cameroon), GLSS (Ghana), EMEP and ELIM (Mali), 2008.

The estimates of rural, urban and national poverty rates in Mali come from cost of living surveys done in 2001 and 2006. The 2001 survey is called EMEP « *enquête malienne pour l'évaluation de la pauvreté* »; the 2006 survey is called ELIM « *enquête légère intégrée auprès des ménages* ». The poverty estimates we report here come from an in-depth analysis of the raw data obtained in these two surveys done by Mesplé-Somps

et al. (2008). Although both the EMEP and the ELIM surveys solicited information on both food and non-food expenditures, Mesplé-Somps *et al.* used only the data measuring food expenditures. They chose to focus just on food items because the method they use to measure real consumption expenditures requires regional price information and none was available for non-food items.

The estimated proportion of Mali's total population in poverty declined from 52.1 to 44.4% between 2001 and 2006, due entirely to a fall in the rural poverty rate – from 60.4 to 51.7%. Mali's urban poverty rate is estimated to have increased fractionally between the two survey years (28.4 to 28.7%), perhaps reflecting the dampening effect on urban wage rates of an ongoing and rapid rural to urban migration. Nationally, even though Mali's population continued growing at around 3% per year from 2001 to 2006 the reduced incidence of poverty more than offset so that the absolute number of people living in poverty also went down.

The role of improved agricultural performance in boosting farm incomes and reducing rural poverty is less clear for Mali than seems the case for Cameroon. As Figure 8 reveals growth in GDP per agricultural worker in Mali has been fairly flat compared to that in Cameroon. However, over the period for which we have poverty estimates growth in per worker GDP had accelerated somewhat, a development that would have contributed to the improvement in the poverty rates. Another hypothesis is that the improvement in rural poverty rates occurred, not because farm incomes were growing, but because incomes of rural people from other sources were rising. For example, in Mali as elsewhere in developing countries, earnings of agricultural workers (mainly self-employed farmers) are significantly lower than those of workers in other sectors. A large enough shift from farm to non-farm rural employment could significantly increase the national average earnings of rural workers.

Poverty data plotted in Figure 9 for Ghana comes from three nationally representative Ghana Living Standards Surveys (GLSS) conducted by the Ghana Statistical Service in 1991-92, 1998-99 and 2005-06. The discussion here is based on results obtained in a World Bank analysis of the data reported in Coulombe and Wodon (2007). Nationally, the poverty rate fell from 51.7% in 1991-92 to 39.5% in 1998-09, and then to 28.5% in 2005-06, probably the best record in poverty reduction seen in the whole of sub-Saharan Africa over the last fifteen years. Ghana is on trend to achieve the Millennium Development Goal of halving its poverty head count well ahead of the 2015 target date, indeed possibly even by the end of 2008. Poverty in Ghana is almost exclusively a rural phenomenon and within the rural population largely among those who depend on agriculture for a living. Remarkably, the estimated incidence of urban poverty is now just over 10%, less than one-third the estimated rate in 1991/92. Rural poverty rates are higher (39% according to the 2005-06 survey) and have not dropped as fast. Still, the incidence of rural poverty in Ghana is much less than in other countries in the region.

As for Mali, it is not entirely clear from the data graphed in Figure 8 what contribution Ghana's improved agricultural performance made to progress in rural poverty reduction. For Ghana though, there are some data available that help clarify the picture. Figure 10 compares agricultural GDP per worker and earnings per agricultural worker for 1991-92, 1998-99 and 2005-06. In theory, the former measures only that income from agricultural activities while the latter includes earnings of people classified as agricultural workers from both farm and non-farm sources. The data for agricultural GDP per worker are two year averages based on national accounts; those for earnings are survey estimates taken from Coulombe and Wodon (2006). Both indicators increased and

for both the increase was much greater from 1998-99 to 2005-06 than from 1991-92 to 1998-99. Agricultural GDP per worker was just under 50% of total earnings across the three survey periods, signalling a diversification of income sources for Ghana's agricultural workers not greatly different than that observed in other surveys done for Ghana and for other countries. But, the apparent growth in earnings per worker was much faster than the growth in per worker GDP. This latter suggests, but of course comes far short of proving, that the observed progress on the rural poverty front in Ghana may have had more to do with what was going on in the rural non-farm than farm economy.

Figure 10. Earnings versus GDP per agricultural worker in Ghana

Constant 2006 cedis per year
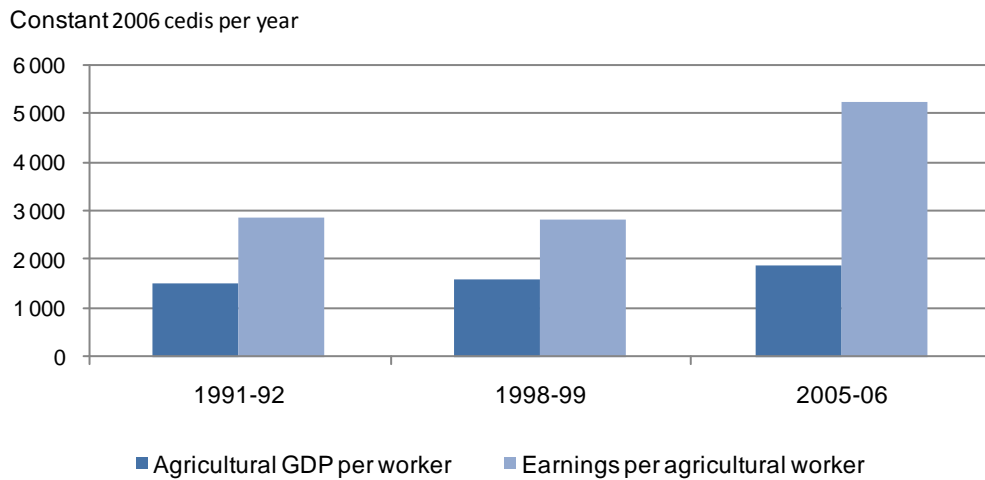
Source: Coulombe and Wodon, 2007 and OECD calculations, 2008.

Implications and Limitations

The macroeconomic and agricultural policy achievements in the study countries during the past ten to twenty years have yielded reduced and more stable rates of inflation, exchange rates that better reflect market realities, significant diminution of export taxes and greatly enhanced role for the market in determining agricultural prices. These reforms sharply reduced the anti-agricultural biases that existed before. They seem to have paid off so that where there are vestiges of those former biases, as is the case for cotton in Mali and, though less so, for cocoa in Ghana, they should be eliminated. Import tariffs have been harmonised and the system is more transparent than before but for the covered commodities, the rates seem rather high for Ghana and Cameroon (15 to 20%) much less in Mali (5%). Reducing such tariffs could: (1) further improve competitiveness of agricultural export commodities that compete for the same resources as used to produce protected imports; (2) enhance the efficiency of economy-wide resource allocation; and (3) reduce the food bill for consumers.

Reducing OECD agricultural trade protection and subsidies could also help farm incomes in the study countries. However, apart from the major exception of cotton subsidies, estimated gains are modest. Recent increases in the actual and promised levels of agricultural development assistance provide opportunities to correct for perceived under-investment in provision of public goods for the sector and to correct for private market failures. The challenge will be to ensure that funds are not diverted to provision of goods and services that could better be provided by the private sector. Relatively small shares of agricultural aid are currently used to fund provision of agricultural research, extension and infrastructure – public expenditures known to yield high social returns.

A related challenge, evident when looking at the process for planning and implementation of agricultural programmes and projects in the three study countries, is how to better allocate, monitor and measure the impact of aid flows. In none of the three case study countries does it appear that applied benefit-cost analysis plays an important role in policy planning, monitoring or evaluation. Yet, the needs for such analysis are growing as the responsibility for decisions about how aid monies are to be used, is increasingly devolved from donors to recipients. Without the capacity to subject alternative policy prescriptions to rigorous cost/benefit analysis there is a risk that large sums of money could be wasted. Meeting those needs will be difficult within the constraints of existing statistical support systems and analytical capacity in these countries.

Support to agricultural production (as opposed to productivity) has featured prominently in past allocations of agricultural aid in all three study countries. For Ghana, Cameroon and Mali (though perhaps less so), the benefit of such a policy focus is not evident from available data. Agricultural production to meet domestic food needs is more than keeping pace and export crop production is generally booming, but this seems to have more to do with macroeconomic and sectoral policy reform than with production

related subsidies. Such strong growth in real agricultural output did not spur equally rapid improvements in farm incomes or poverty in either Ghana or Mali (but did so in Cameroon). It seems clear that improvements in agricultural performance alone are not sufficient to achieve desired progress in poverty reduction. While agriculture undoubtedly has a role to play, public investments in improving productive capacity (for example, extension and advisory services, research and technology development, and infrastructure) appear to offer greater potential benefits than support for prices and inputs.

Some of the indicators studied here (declining shares of agricultural GDP and employment, wide income gaps between farm and non-farm populations) are characteristic of economies undergoing development. That process typically leads to sharp declines in number of farmers and in the share of their income coming from farm sources. The policy needs for the future may thus be more related to fostering income diversification and smooth transitions from farm to non-farm work – in both rural and urban settings. These needs, *e.g.* programmes of training and education or transitional financial assistance, may be better addressed in the framework of rural development or economic growth and adjustment policy more generally.

Of course, in attempting to infer policy conclusions from these case studies it is not possible to set aside concerns about the robustness of the data and methods used. Conclusions drawn here were based on descriptive analysis of trends in a limited number of indicators of policy and performance. Moreover, for some of those indicators, such as poverty, only a very few comparable observations are available and then only for recent years. Valid data measuring prices, input use and incomes of farmers and farm households is practically non-existent. These limitations translate directly as limitations to the quality, depth and scope of applied economic analysis that would be necessary to validate policy conclusions, including those tentatively drawn from the present study.

Many other issues deserve more attention than could be given them in this report. Among potential constraints to further agriculture and rural development in the study countries, four deserve much deeper analysis:

- Access to off-farm work and other opportunities to diversify income sources.

- Market failures that inhibit price transmission along the farm to market chain or that make the costs of transportation, credit and modern inputs higher than they should be.

- Economic and market effects of agricultural and trade policies both in the study countries and in those countries that are, or could be, important trading partners.

- Security of land tenure and the efficiency of land markets.

Annex 1

Estimated Market Price Support Rates
for Individual Commodities

Table A1.1. Market Price Support Totals - Cameroon

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Main Exports												
Oil Palm Fruit												
USD mn	-37.73	-38.42	-39.02	-21.22	-12.63	-11.74	-12.93	-11.94	-5.50	0.00	0.00	0.00
...as a % of value of production	-43%	-43%	-43%	-43%	-18%	-16%	-16%	-16%	-7%	0%	0%	0%
Coffee												
USD mn	-36.67	-23.33	-22.13	-16.38	-12.08	-10.36	-6.42	-18.96	-5.04	0.00	0.00	0.00
...as a % of value of production	-43%	-43%	-43%	-43%	-18%	-16%	-16%	-16%	-5%	0%	0%	0%
Cocoa Beans												
USD mn	-33.46	-29.95	-32.02	-23.77	-21.87	-12.51	-12.80	-21.06	-5.97	0.00	0.00	0.00
...as a % of value of production	-43%	-43%	-43%	-43%	-18%	-16%	-16%	-16%	-5%	0%	0%	0%
Cotton												
USD mn	-15.98	-17.16	-15.95	-17.99	-8.09	-10.04	-7.56	-7.64	-2.80	0.00	0.00	0.00
...as a % of value of production	-43%	-43%	-43%	-43%	-18%	-16%	-16%	-16%	-5%	0%	0%	0%
Subtotal exportables												
USD mn	-123.84	-108.86	-109.12	-79.37	-54.67	-44.64	-39.71	-59.60	-19.32	0.00	0.00	0.00
...as a % of value of production	-43%	-43%	-43%	-43%	-18%	-16%	-16%	-16%	-6%	0%	0%	0%
Main Crop Imports												
Maize												
USD mn	24.51	23.69	21.77	12.39	13.43	22.32	23.31	23.21	29.29	25.17	25.97	25.45
...as a % of value of production	17%	17%	17%	17%	15%	16%	17%	17%	18%	19%	20%	16%
Sorghum												
USD mn	12.38	16.50	16.30	8.06	10.52	8.25	11.04	17.39	19.47	27.32	17.21	15.52
...as a % of value of production	17%	17%	17%	17%	15%	16%	17%	17%	18%	19%	20%	16%
Millet												
USD mn	3.12	3.82	4.01	1.84	2.41	2.13	3.09	3.62	6.87	5.38	2.73	2.30
...as a % of value of production	17%	17%	17%	17%	15%	16%	17%	17%	18%	19%	20%	16%
Sugar												
USD mn	0.37	0.53	0.46	0.28	1.69	2.31	2.14	1.65	2.05	2.31	2.52	3.25
...as a % of value of production	5%	5%	5%	5%	23%	23%	23%	23%	23%	23%	23%	23%
Subtotal importable crops												
USD mn	40.39	44.54	42.54	22.57	28.05	35.01	39.59	45.87	57.68	60.18	48.42	46.52
Main Meat Imports												
Pigmeat												
USD mn	7.06	13.66	15.14	9.24	8.37	7.83	6.61	6.98	5.44	6.41	5.25	5.53
...as a % of value of production	20%	20%	20%	20%	20%	19%	19%	19%	18%	18%	17%	17%
Poultry												
USD mn	13.64	19.57	17.26	11.20	10.54	12.09	11.80	11.16	9.83	6.92	8.88	9.36
...as a % of value of production	20%	20%	20%	20%	20%	19%	19%	19%	18%	18%	17%	17%
Beef												
USD mn	27.22	38.54	59.39	37.30	26.99	30.12	30.07	27.01	35.24	34.40	30.80	31.00
...as a % of value of production	18%	18%	18%	18%	18%	18%	18%	18%	17%	17%	17%	17%
Subtotal importable meats												
USD mn	47.92	71.77	91.79	57.74	45.90	50.05	48.49	45.15	50.51	47.73	44.93	45.90
Total importables												
USD mn	88.31	116.31	134.33	80.32	73.96	85.06	88.08	91.02	108.18	107.90	93.35	92.42
...as a % of value of production	17.6%	17.8%	17.9%	18.0%	17.3%	17.5%	17.6%	17.8%	18.1%	18.4%	18.5%	16.6%
Grand total - tradables												
USD mn	-35.53	7.45	25.21	0.95	19.29	40.41	48.36	31.41	88.87	107.90	93.35	92.42
...as a % of value of production	-4.5%	0.8%	2.5%	0.2%	2.6%	5.2%	6.4%	3.5%	9.4%	12.6%	13.2%	10.8%

Table A1.1.1. Cameroon: Beef and Veal

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
I. Level of production	FAOSTAT	000t	74.3	75.0	75.0	75.0	73.0	73.0	76.0	77.0	91.2	93.0	94.8	90.0
II. Producer price	FAOSTAT	USD/t	1 992.7	2 795.0	4 306.8	2 704.9	2 010.6	2 273.5	2 210.1	1 986.1	2 218.3	2 154.0	1 919.9	2 027.3
III. Value of production	(I) * (II)/1000	USD mn	148.1	209.6	323.0	202.9	146.8	166.0	168.0	152.9	202.3	200.3	182.0	182.5
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	1 626.3	2 281.1	3 514.9	2 207.5	1 640.9	1 860.9	1 814.4	1 635.4	1 831.9	1 784.2	1 595.0	1 682.8
IV.1. Tariff (1994,1995,2001,2002)	UNCTAD	%	22.5	22.5	22.5	22.5	22.5	22.2	21.8	21.5	21.1	20.7	20.4	20.5
V. Market price differential	(II) - (IV)	USD/t	366.4	513.9	791.9	497.4	369.7	412.6	395.7	350.8	386.4	369.9	324.9	344.5
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	27.2	38.5	59.4	37.3	27.0	30.1	30.1	27.0	35.2	34.4	30.8	31.0

Table A1.1.2. Cameroon: Green Coffee

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
I. Level of production	FAOSTAT	000t	115.1	76.2	68.4	73.7	74.0	104.1	63.6	112.5	98.0	86.2	70.5	41.0
II. Producer price	FAOSTAT	USD/t	743.5	714.3	754.7	518.4	924.9	637.5	647.0	1 079.7	977.9	686.0	407.6	1 004.3
III. Value of production	(I) * (II)/1000	USD mn	85.6	54.4	51.6	38.2	68.4	66.4	41.1	121.5	95.8	59.1	28.7	41.2
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	1 062.1	1 020.4	1 078.2	740.6	1 088.1	736.9	747.9	1 248.2	1 029.4	686.0	407.6	1 004.3
IV.1. Tariff (export tax if negative)	MINAG	%	-30.0	-30.0	-30.0	-30.0	-15.0	-13.5	-13.5	-13.5	-5.0	0.0	0.0	0.0
V. Market price differential	(II) - (IV)	USD mn	-318.6	-306.1	-323.5	-222.2	-163.2	-99.5	-101.0	-168.5	-51.5	0.0	0.0	0.0
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	-36.7	-23.3	-22.1	-16.4	-12.1	-10.4	-6.4	-19.0	-5.0	0.0	0.0	0.0

Table A1.1.3. Cameroon: Cotton Lint

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
I. Level of production	FAOSTAT	000t	47.1	52.6	51.7	62.5	78.6	90.0	73.1	75.1	79.8	85.0	96.8	103.0
II. Producer price	FAOSTAT	USD/t	791.8	760.7	719.1	671.6	583.2	714.6	663.1	651.7	667.3	581.0	563.5	578.7
III. Value of production	(I) * (II)/1000	USD mn	37.3	40.0	37.2	42.0	45.8	64.3	48.4	48.9	53.3	49.4	54.6	59.6
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	1 131.1	1 086.7	1 027.3	959.4	686.1	826.1	766.6	753.5	702.4	581.0	563.5	578.7
IV.1. Tariff (export tax if negative)	MINAG	%	-30.0	-30.0	-30.0	-30.0	-15.0	-13.5	-13.5	-13.5	-5.0	0.0	0.0	0.0
V. Market price differential	(II) - (IV)	USD/t	-339.3	-326.0	-308.2	-287.8	-102.9	-111.5	-103.5	-101.7	-35.1	0.0	0.0	0.0
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	-16.0	-17.2	-15.9	-18.0	-8.1	-10.0	-7.6	-7.6	-2.8	0.0	0.0	0.0

Table A1.1.4. Cameroon: Cocoa Beans

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
I. Level of production	FAOSTAT	000t	105.0	97.8	99.0	107.0	134.0	125.7	126.8	125.0	116.0	122.6	122.1	125.0
II. Producer price	FAOSTAT	USD/t	743.5	714.3	754.7	518.4	924.9	637.5	647.0	1 079.7	977.9	686.0	407.6	1 004.3
III. Value of production	(I) * (II)/1000	USD mn	78.1	69.9	74.7	55.5	123.9	80.1	82.0	135.0	113.4	84.1	49.8	125.5
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	1 062.1	1 020.4	1 078.2	740.6	1 088.1	736.9	747.9	1 248.2	1 029.4	686.0	407.6	1 004.3
IV.1. Tariff (export tax if negative)	MINAG	%	-30.0	-30.0	-30.0	-30.0	-15.0	-13.5	-13.5	-13.5	-5.0	0.0	0.0	0.0
V. Market price differential	(II) - (IV)	USD/t	-318.6	-306.1	-323.5	-222.2	-163.2	-99.5	-101.0	-168.5	-51.5	0.0	0.0	0.0
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	-33.5	-29.9	-32.0	-23.8	-21.9	-12.5	-12.8	-21.1	-6.0	0.0	0.0	0.0

Table A1.1.5. Cameroon: Maize

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
I. Level of production	FAOSTAT	000t	495.0	531.0	507.0	524.0	618.0	750.0	760.0	793.0	785.0	741.4	738.6	861.5
II. Producer price	FAOSTAT	USD/t	297.4	267.9	257.8	142.0	146.4	189.2	184.8	167.8	204.1	177.7	176.6	186.5
III. Value of production	(I) * (II)/1000	USD mn	147.2	142.2	130.7	74.4	90.5	141.9	140.5	133.0	160.2	131.8	130.5	160.7
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	247.9	223.3	214.9	118.4	124.7	159.5	154.2	138.5	166.8	143.8	141.5	157.0
IV.1. Tariff (1994,1995,2001,2002)	UNCTAD	%	20.0	20.0	20.0	20.0	17.4	18.7	19.9	21.1	22.4	23.6	24.9	18.8
V. Market price differential	(II) - (IV)	USD/t	49.5	44.6	42.9	23.7	21.7	29.8	30.7	29.3	37.3	33.9	35.2	29.5
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	24.5	23.7	21.8	12.4	13.4	22.3	23.3	23.2	29.3	25.2	26.0	25.4

Table A1.1.6. Cameroon: Millet

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
I. Level of production	FAOSTAT	000t	63.0	55.0	60.0	50.0	66.0	70.7	70.0	65.0	60.0	51.7	50.0	50.3
II. Producer price	FAOSTAT	USD/t	297.4	417.1	401.5	221.2	246.6	191.2	266.2	318.9	625.9	544.9	273.9	289.2
III. Value of production	(I) * (II)/1000	USD mn	18.7	22.9	24.1	11.1	16.3	13.5	18.6	20.7	37.6	28.2	13.7	14.5
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	247.9	347.7	334.6	184.4	210.0	161.2	222.0	263.3	511.4	440.9	219.4	243.4
IV.1. Tariff (1994,1995,2001,2002)	UNCTAD	%	20.0	20.0	20.0	20.0	17.4	18.7	19.9	21.1	22.4	23.6	24.9	18.8
V. Market price differential	(II) - (IV)	USD/t	49.5	69.5	66.9	36.8	36.6	30.1	44.2	55.6	114.4	104.1	54.5	45.8
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	3.1	3.8	4.0	1.8	2.4	2.1	3.1	3.6	6.9	5.4	2.7	2.3

Table A1.1.7. Cameroon: Poultry

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
I. Level of production	FAOSTAT	000t	18.0	18.4	19.2	20.4	21.2	24.0	26.8	30.0	28.8	21.2	30.0	30.0
II. Producer price	FAOSTAT	USD/t	3 817.4	5 357.1	4 528.3	2 765.0	2 504.8	2 589.6	2 310.5	1 993.4	1 870.7	1 829.3	1 698.4	1 793.4
III. Value of production	(I) * (II)/1000	USD mn	68.7	98.6	86.9	56.4	53.1	62.2	61.9	59.8	53.9	38.8	51.0	53.8
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	3 059.6	4 293.6	3 629.3	2 216.1	2 007.5	2 085.7	1 870.1	1 621.4	1 529.3	1 502.8	1 402.3	1 481.4
IV.1. Tariff (1994,1995,2001,2002)	UNCTAD	%	24.8	24.8	24.8	24.8	24.8	24.2	23.6	22.9	22.3	21.7	21.1	21.1
V. Market price differential	(II) - (IV)	USD/t	757.9	1 063.5	899.0	548.9	497.3	503.9	440.4	372.0	341.5	326.4	296.0	312.0
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	13.6	19.6	17.3	11.2	10.5	12.1	11.8	11.2	9.8	6.9	8.9	9.4

Table A1.1.8. Cameroon: Pigmeat

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
I. Level of production	FAOSTAT	000t	14.4	13.2	12.0	12.0	12.0	12.0	12.0	14.4	12.0	16.1	16.2	16.2
II. Producer price	FAOSTAT	USD/t	2 468.1	5 212.8	6 355.3	3 880.5	3 515.4	3 354.9	2 890.7	2 597.8	2 482.3	2 225.0	1 859.2	1 963.2
III. Value of production	(I) * (II)/1000	USD mn	35.5	68.8	76.3	46.6	42.2	40.3	34.7	37.4	29.8	35.9	30.1	31.8
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	1 978.1	4 178.0	5 093.6	3 110.1	2 817.5	2 702.1	2 339.7	2 113.0	2 029.2	1 828.0	1 535.1	1 621.7
IV.1. Tariff (1994,1995,2001,2002)	UNCTAD	%	24.8	24.8	24.8	24.8	24.8	24.2	23.6	22.9	22.3	21.7	21.1	21.1
V. Market price differential	(II) - (IV)	USD mn	490.0	1 034.9	1 261.7	770.4	697.9	652.8	551.0	484.7	453.1	397.0	324.1	341.5
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	7.1	13.7	15.1	9.2	8.4	7.8	6.6	7.0	5.4	6.4	5.2	5.5

Table A1.1.9. Cameroon: Oil Palm Fruit

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
I. Level of production	FAOSTAT	000t	930.0	930.0	950.0	950.0	1 000.0	1 000.0	1 050.0	1 050.0	1 100.0	1 100.0	1 150.0	1 150.0
II. Producer price	FAOSTAT	USD/t	94.7	96.4	95.8	52.1	71.6	75.2	78.9	72.9	76.4	67.2	61.1	64.5
III. Value of production	(I) * (II)/1000	USD mn	88.0	89.7	91.0	49.5	71.6	75.2	82.8	76.5	84.0	73.9	70.3	74.2
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	135.2	137.7	136.9	74.4	84.2	87.0	91.2	84.2	76.4	67.2	61.1	64.5
IV.1. Tariff (export tax if negative)	MINAG	%	-30.0	-30.0	-30.0	-30.0	-15.0	-13.5	-13.5	-13.5	0.0	0.0	0.0	0.0
V. Market price differential	(II) - (IV)	USD/t	-40.6	-41.3	-41.1	-22.3	-12.6	-11.7	-12.3	-11.4	-5.0	0.0	0.0	0.0
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	-37.7	-38.4	-39.0	-21.2	-12.6	-11.7	-12.9	-11.9	-5.5	0.0	0.0	0.0

Table A1.1.10. Cameroon: Sugar Cane

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
I. Level of production	FAOSTAT	000t	59.6	65.0	59.0	53.0	53.0	53.0	54.0	59.6	62.0	82.1	99.0	121.0
II. Producer price	FAOSTAT	USD/t	131.9	171.4	163.7	110.4	138.3	189.1	171.8	119.9	143.5	121.7	110.2	116.4
III. Value of production	(I) * (II)	USD mn	7.9	11.1	9.7	5.9	7.3	10.0	9.3	7.1	8.9	10.0	10.9	14.1
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	125.6	163.2	155.9	105.1	106.4	145.4	132.2	92.3	110.3	93.6	84.8	89.5
IV.1. Sugar Tariff (1994,1995,2001,2002)	UNCTAD	%	5.0	5.0	5.0	5.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
V. Market price differential	(II) - (IV)	USD/t	6.3	8.2	7.8	5.3	31.9	43.6	39.7	27.7	33.1	28.1	25.4	26.9
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	0.4	0.5	0.5	0.3	1.7	2.3	2.1	1.6	2.1	2.3	2.5	3.3

Table A1.1.11. Cameroon: Sorghum

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
I. Level of production	FAOSTAT	000t	400.0	380.0	390.0	350.0	460.0	439.2	400.0	500.0	272.2	420.0	505.0	542.0
II. Producer price	FAOSTAT	USD/t	185.9	260.7	250.9	138.2	154.1	119.5	166.4	199.3	391.2	340.6	171.2	180.8
III. Value of production	(I) * (II)/1000	USD mn	74.3	99.1	97.9	48.4	70.9	52.5	66.5	99.7	106.5	143.0	86.5	98.0
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	154.9	217.3	209.2	115.2	131.3	100.7	138.8	164.6	319.6	275.5	137.1	152.1
IV.1. Tariff (1994,1995,2001,2002)	UNCTAD	%	20.0	20.0	20.0	20.0	17.4	18.7	19.9	21.1	22.4	23.6	24.9	18.8
V. Market price differential	(II) - (IV)	USD/t	31.0	43.4	41.8	23.0	22.9	18.8	27.6	34.8	71.5	65.1	34.1	28.6
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	12.4	16.5	16.3	8.1	10.5	8.3	11.0	17.4	19.5	27.3	17.2	15.5

Table A1.2. Market Price Support Totals - Ghana

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Main Exports														
Cocoa bean														
USD mn	-70.6	-149.6	-146.6	-186.7	-152.8	-173.5	-122.1	-55.7	-33.7	-41.3	-40.1	-89.0	-110.4	-70.6
...as a % of value of production	-48%	-83%	-145%	-187%	-46%	-52%	-30%	-15%	-11%	-19%	-14%	-18%	-15%	-12%
Main Imports														
Maize														
USD mn	19.6	19.9	15.0	17.1	28.1	27.9	50.7	40.7	24.4	26.4	32.2	26.0	33.2	49.6
...as a % of value of production	9%	9%	9%	10%	11%	12%	14%	15%	16%	17%	17%	17%	17%	17%
Sorghum														
USD mn	4.8	6.1	5.2	4.4	8.7	9.7	10.6	19.3	9.8	6.4	4.3	11.5	12.2	14.4
...as a % of value of production	9%	9%	9%	10%	11%	12%	14%	15%	16%	17%	17%	17%	17%	17%
Millet														
USD mn	3.1	3.9	4.2	2.7	5.6	5.8	5.5	11.1	6.5	5.2	6.5	6.8	7.7	6.3
...as a % of value of production	9%	9%	9%	10%	11%	12%	14%	15%	16%	17%	17%	17%	17%	17%
Paddy rice														
USD mn	10.5	7.9	10.2	9.9	12.4	14.5	12.0	10.3	12.3	6.3	8.0	8.0	5.3	6.6
...as a % of value of production	17%	17%	17%	17%	16%	15%	14%	13%	11%	9%	9%	9%	9%	9%
Poultry														
USD mn	4.9	4.8	4.5	5.4	6.5	7.0	8.3	10.7	12.5	9.0	8.7	9.7	8.9	8.1
...as a % of value of production	17%	17%	17%	18%	20%	21%	22%	24%	25%	26%	24%	21%	19%	16%
Total importables														
USD mn	42.9	42.5	39.1	39.6	61.4	64.9	87.1	92.1	65.4	53.4	59.6	62.0	67.3	85.0
...as a % of value of production	11%	11%	11%	12%	13%	14%	14%	15%	16%	16%	16%	16%	16%	16%
Grand total - tradables														
USD mn	-27.7	-107.1	-107.5	-147.1	-91.5	-108.6	-34.9	36.4	31.8	12.1	19.5	-27.0	-43.2	14.4
...as a % of value of production	-5%	-18%	-23%	-35%	-11%	-13%	-3%	4%	4%	2%	3%	-3%	-4%	1%

Table A1.2.1. Ghana: Cocoa Beans

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
I. Level of production	FAOSTAT	000t	242.8	312.1	254.7	309.5	403.9	322.5	409.4	397.7	436.9	389.8	340.6	496.8	737.0	599.3
II. Producer price	COCOBOD	USD/t	609.0	574.7	397.5	321.9	829.8	1034.3	999.8	959.1	693.6	562.0	854.6	1017.7	1022.1	996.7
III. Value of production	(I) * (II)/1000	USD mn	147.9	179.4	101.2	99.6	335.1	333.5	409.3	381.4	303.1	219.1	291.0	505.7	753.3	597.3
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	899.7	945.0	883.3	1312.2	1042.4	1236.3	1164.0	1000.2	505.8	619.3	919.2	1265.8	1501.1	1775.6
IV.1. Export tax	COCOBOD	USD/t	290.7	479.3	575.5	603.3	378.3	538.1	298.2	140.1	77.1	105.9	117.9	179.2	149.8	117.7
V. Market Price Support (MPS)	(I)*(II-IV)/1000	USD mn	-70.6	-149.6	-146.6	-186.7	-152.8	-173.5	-122.1	-55.7	-33.7	-41.3	-40.1	-89.0	-110.4	-70.6

Table A1.2.2. Ghana: Maize

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
I. Level of production	FAOSTAT	000t	1 143.6	1 144.6	1 145.6	1 146.6	1 147.6	1 148.6	1 149.6	1 150.6	1 151.6	1 152.6	1 153.6	1 154.6	1 155.6	1 156.6
II. Producer price	FAOSTAT	USD/t	188.9	191.1	144.4	145.7	215.1	194.2	325.2	241.6	135.3	137.4	167.5	135.3	172.5	257.3
III. Value of production	(I) * (II)/1000	USD mn	216.0	218.7	165.4	167.1	246.8	223.0	373.8	278.0	155.8	158.3	193.3	156.2	199.4	297.6
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	171.7	173.8	131.3	130.8	190.6	169.9	281.0	206.2	114.1	114.5	139.6	112.8	143.8	214.4
IV.1. Tariff (1993, 2000 ,2004) extrapolated	UNCTAD	%	10.0	10.0	10.0	11.4	12.8	14.3	15.7	17.1	18.6	20.0	20.0	20.0	20.0	20.0
V. Market price differential	(II) - (IV)	USD/t	17.1	17.3	13.1	14.9	24.5	24.3	44.1	35.3	21.2	22.9	27.9	22.6	28.8	42.9
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	19.6	19.9	15.0	17.1	28.1	27.9	50.7	40.7	24.4	26.4	32.2	26.0	33.2	49.6

Table A1.2.3. Ghana: Millet

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
I. Level of production	FAOSTAT	000t	112.4	133.3	198.1	167.8	200.8	193.3	143.5	172.0	159.8	169.4	134.4	159.1	175.7	143.8
II. Producer price	FAOSTAT	USD/t	308.6	323.4	230.9	156.5	245.0	238.7	283.0	440.0	260.0	185.3	288.5	255.3	263.9	263.9
III. Value of production	(I) * (II)/1000	USD mn	34.7	43.1	45.7	26.3	49.2	46.1	40.6	75.7	41.5	31.4	38.8	40.6	46.4	37.9
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	280.6	294.1	209.9	140.4	217.1	208.9	244.5	375.6	219.3	154.5	240.4	212.7	219.9	219.9
IV.1. Tariff (1993, 2000 ,2004) extrapolated	UNCTAD	%	10.0	10.0	10.0	11.4	12.8	14.3	15.7	17.1	18.6	20.0	20.0	20.0	20.0	20.0
V. Market price differential	(II) - (IV)	USD/t	28.0	29.3	21.0	16.0	27.9	29.8	38.4	64.4	40.7	30.9	48.1	42.5	44.0	44.0
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	3.1	3.9	4.2	2.7	5.6	5.8	5.5	11.1	6.5	5.2	6.5	6.8	7.7	6.3

Table A1.2.4. Ghana: Poultry

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
I. Level of production	FAOSTAT	000t	9.6	10.4	11.3	11.5	11.7	11.9	14.5	16.0	17.1	19.5	21.0	23.4	25.5	28.3
II. Producer price	FAOSTAT	USD/t	3 074.8	2 795.8	2 423.5	2 595.4	2 846.5	2 818.8	2 573.0	2 841.6	2 939.5	1 774.0	1 734.1	1 932.3	1 843.9	1 776.9
III. Value of production	(I) * (II)/1000	USD mn	29.6	28.9	27.3	29.9	33.3	33.5	37.3	45.6	50.3	34.6	36.4	45.2	47.1	50.2
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	2 565.3	2 332.5	2 021.9	2 126.3	2 290.9	2 229.1	2 000.0	2 171.8	2 209.4	1 311.7	1 321.2	1 518.4	1 495.9	1 489.8
IV.1. Tariff (1993, 2000 ,2004) extrapolated	UNCTAD	%	19.9	19.9	19.9	22.1	24.3	26.5	28.6	30.8	33.0	35.2	31.2	27.3	23.3	19.3
V. Market price differential	(II) - (IV)	USD/t	509.5	463.2	401.6	469.0	555.6	589.6	573.0	669.9	730.1	462.2	412.9	413.8	348.0	287.1
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	4.9	4.8	4.5	5.4	6.5	7.0	8.3	10.7	12.5	9.0	8.7	9.7	8.9	8.1

Table A1.2.5. Ghana: Paddy Rice

	Sources	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
I. Level of production	FAOSTAT	000t	150.9	131.5	157.4	162.3	201.7	215.7	197.1	193.6	209.8	248.7	274.6	280.0	238.8	241.8
II. Producer price	FAOSTAT	USD/t	416.9	361.1	387.0	367.7	393.3	460.1	446.8	426.0	510.8	276.0	319.8	314.3	242.6	298.6
III. Value of production	(I) * (II)/1000	USD mn	62.9	47.5	60.9	59.7	79.3	99.3	88.1	82.5	107.1	68.6	87.8	88.0	57.9	72.2
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	347.4	300.9	322.5	306.4	331.6	392.7	386.0	372.6	452.3	250.7	290.8	285.8	220.6	271.5
IV.1. Tariff (1993, 2000 ,2004) extrapola	UNCTAD	%	20.0	20.0	20.0	20.0	18.6	17.2	15.8	14.3	12.9	10.1	10.0	10.0	10.0	10.0
V. Market price differential	(II) - (IV)	USD/t	69.5	60.2	64.5	61.3	61.6	67.4	60.8	53.4	58.5	25.3	29.1	28.6	22.1	27.1
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	10.5	7.9	10.2	9.9	12.4	14.5	12.0	10.3	12.3	6.3	8.0	8.0	5.3	6.6

Table A1.2.6. Ghana: Sorghum

	Source	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
I. Level of production	FAOSTAT	000t	241.4	258.8	328.3	323.9	360.1	353.4	332.6	387.4	302.0	279.8	279.7	316.1	337.7	399.3
II. Producer price	FAOSTAT	USD/t	217.5	257.8	175.2	133.4	212.9	220.2	234.6	340.4	206.9	137.8	93.1	218.5	216.2	216.2
III. Value of production	(I) * (II)/1000	USD mn	52.5	66.7	57.5	43.2	76.7	77.8	78.0	131.9	62.5	38.5	26.0	69.1	73.0	86.3
IV. Reference price (at farm gate)	II/(1+IV.1/100)	USD/t	197.7	234.4	159.3	119.7	188.7	192.7	202.8	290.6	174.5	114.8	77.5	182.1	180.1	180.1
IV.1. Tariff (1993, 2000 ,2004) extrapolated	UNCTAD	%	10.0	10.0	10.0	11.4	12.8	14.3	15.7	17.1	18.6	20.0	20.0	20.0	20.0	20.0
V. Market price differential	(II) - (IV)	USD/t	19.7	23.4	15.9	13.7	24.2	27.5	31.8	49.8	32.4	23.0	15.5	36.4	36.0	36.0
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	4.8	6.1	5.2	4.4	8.7	9.7	10.6	19.3	9.8	6.4	4.3	11.5	12.2	14.4

Table A1.3. Market Price Support Totals - Mali

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Main Exports																
Cotton																
USD mn	-49.3	-18.9	-13.2	-24.8	-110.8	-92.8	-88.4	-84.9	-32.8	-45.3	-29.2	4.0	-39.3	-58.1	41.4	-48.4
...as a % of value of production	-52%	-21%	-13%	-30%	-161%	-74%	-65%	-56%	-20%	-40%	-50%	3%	-35%	-27%	18%	-29%
Main Imports																
Maize																
USD mn	n.a.	n.a.	n.a.	11.6	6.6	9.2	11.9	9.0	9.9	10.6	1.8	2.3	3.8	4.2	3.4	8.2
...as a % of value of production	n.a.	n.a.	n.a.	32%	33%	29%	26%	23%	18%	15%	12%	7%	6%	7%	7%	7%
Sorghum																
USD mn	n.a.	n.a.	n.a.	33.5	15.3	23.2	23.1	14.5	16.0	12.5	4.9	4.2	7.6	8.1	5.1	9.3
...as a % of value of production	n.a.	n.a.	n.a.	28%	28%	24%	21%	20%	16%	13%	11%	6%	6%	7%	7%	6%
Millet																
USD mn	n.a.	n.a.	n.a.	31.2	19.6	22.4	31.7	16.7	22.5	13.2	5.9	6.8	9.3	15.4	8.3	18.0
...as a % of value of production	n.a.	n.a.	n.a.	26%	27%	25%	21%	19%	15%	12%	9%	6%	6%	6%	7%	6%
Rice																
USD mn	n.a.	n.a.	n.a.	51.4	36.1	50.9	61.7	40.0	45.6	38.7	25.7	24.0	19.3	16.3	25.5	39.6
...as a % of value of production	n.a.	n.a.	n.a.	27%	28%	27%	23%	22%	20%	17%	13%	9%	9%	5%	10%	10%
Milk																
USD mn	7.2	7.0	8.7	8.2	4.3	5.0	6.7	7.1	8.0	9.2	8.9	9.7	12.0	17.4	19.7	19.9
...as a % of value of production	3%	3%	3%	3%	3%	3%	3%	3%	4%	4%	5%	5%	6%	7%	7%	7%
Total importable commodities																
USD mn	n.a.	n.a.	n.a.	136.0	81.9	110.7	135.1	87.3	102.0	84.1	47.2	47.1	52.0	61.4	61.9	95.0
...as a % of value of production	n.a.	n.a.	n.a.	17%	18%	18%	17%	15%	14%	12%	9%	7%	7%	6%	8%	8%
Total																
USD mn	n.a.	n.a.	n.a.	111.1	-28.9	17.9	46.7	2.4	69.2	38.8	17.9	51.1	12.7	3.3	103.4	46.6
...as a % of value of production	n.a.	n.a.	n.a.	13%	-6%	2%	5%	0%	8%	5%	3%	6%	1%	0%	10%	3%

Table A1.3.1. Mali: Cotton

	Source	Unit	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
I. Level of production	FAOSTAT	000t	276.0	272.4	319.4	240.2	293.0	405.9	452.0	522.9	518.4	459.8	242.8	571.3	439.7	620.7	592.0	552.5
II. Producer price	OMA	USD/t	341.6	329.7	321.1	344.3	234.1	310.5	303.0	291.3	313.6	243.6	238.8	272.8	258.3	344.1	397.5	303.3
III. Value of production	[(I) * (II)/1000]	USD mn	94.3	89.8	102.6	82.7	68.6	126.0	137.0	152.3	162.6	112.0	58.0	155.9	113.6	213.6	235.3	167.6
IV. Reference price (at farmgate)	(IV1)*(1-IV.2)*(IV.3)	USD/t	520.1	399.2	362.5	447.7	612.1	539.2	498.6	453.6	376.8	342.2	359.2	265.8	347.7	437.7	327.5	391.0
IV.1. Border reference price (f.o.b. or c.i.f.)	Estimated (Annex 2)	USD/t	1 827.0	1 386.7	1 253.8	1 559.8	2 042.8	1 887.4	1 734.2	1 589.8	1 300.1	1 165.1	1 262.1	923.3	1 230.4	1 526.5	1 180.1	1 258.8
IV.2. Ginning margin (as % of border price)	Estimated (Annex 2)	%	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
IV.3. Conversion coefficient cotton to fiber	FAOSTAT	%	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
V. Market price differential	(II) - (IV)	USD/t	-178.5	-69.5	-41.4	-103.4	-378.0	-228.7	-195.6	-162.4	-63.2	-98.6	-120.4	7.0	-89.4	-93.6	70.0	-87.7
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	-49.3	-18.9	-13.2	-24.8	-110.8	-92.8	-88.4	-84.9	-32.8	-45.3	-29.2	4.0	-39.3	-58.1	41.4	-48.4

Table A1.3.2. Mali: Maize

	Source	Unit	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
I. Level of production	FAOSTAT	000t	196.6	256.8	192.5	283.4	322.5	266.1	294.2	343.4	393.0	619.9	214.5	301.9	363.6	451.0	459.5	634.5
II. Producer price	OMA	USD /t	169.9	245.5	137.2	129.8	62.4	118.2	154.0	113.6	138.2	116.2	70.8	110.9	170.4	133.2	100.9	179.1
III. Value of production	[(I) * (II)/1000]	USD mn	33.4	63.0	26.4	36.8	20.1	31.5	45.3	39.0	54.3	72.0	15.2	33.5	62.0	60.1	46.4	113.6
IV. Reference price (at farmgate)	(IV.1)-(IV.3)-(IV.4)	USD /t	n.a.	n.a.	n.a.	88.8	41.8	83.7	113.5	87.3	113.1	99.1	62.4	103.2	160.0	123.8	93.4	166.2
IV.1. Border reference price (f.o.b. or c.i.f.)	(IV.2)/(1+IV.5/100)	USD /t	n.a.	n.a.	n.a.	181.4	91.2	152.9	206.2	157.3	182.1	156.9	106.4	153.8	209.6	187.3	150.2	259.1
IV.2. Wholesale selling price	OMA	USD /t	n.a.	n.a.	n.a.	222.3	111.8	187.4	246.7	183.6	207.2	174.0	114.8	161.5	220.1	196.6	157.7	272.1
IV.3. Wholesale selling margin	OMA	USD /t	n.a.	n.a.	n.a.	31.5	17.3	19.6	25.3	18.3	20.3	20.8	14.5	13.5	18.9	18.3	12.5	6.9
IV.4. Farm to wholesale margin	OMA	USD /t	n.a.	n.a.	n.a.	61.1	32.1	49.7	67.4	51.8	48.7	37.0	29.5	37.0	30.8	45.2	44.2	86.1
IV.5 Tariffs	UNCTAD	%	22.6	22.6	22.6	22.6	22.6	22.6	19.7	16.7	13.8	10.9	7.9	5.0	5.0	5.0	5.0	5.0
V. Market price differential	(II) - (IV)	USD /t	n.a.	n.a.	n.a.	41.0	20.6	34.5	40.5	26.3	25.1	17.0	8.4	7.7	10.5	9.4	7.5	13.0
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	n.a.	n.a.	n.a.	11.6	6.6	9.2	11.9	9.0	9.9	10.6	1.8	2.3	3.8	4.2	3.4	8.2

Table A1.3.3. Mali: Millet

Source	Unit	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
FAOSTAT	000t	737.0	889.9	582.3	708.1	897.6	706.7	738.9	641.1	813.6	818.9	759.1	792.5	795.1	1 260.5	974.7	1 157.8
OMA	USD /t	217.3	308.4	188.4	168.5	80.6	127.1	201.8	137.0	179.3	136.0	85.3	140.4	206.5	192.2	125.4	247.8
[(I) * (II)/1000]	USD mn	160.2	274.4	109.7	119.3	72.3	89.8	149.1	87.9	145.8	111.4	64.8	111.3	164.2	242.3	122.2	286.9
(IV.1)-(IV.3)-(IV.4)	USD /t	n.a.	n.a.	n.a.	124.4	58.8	95.3	159.0	111.0	151.6	119.9	77.5	131.8	194.8	180.0	116.9	232.3
(IV.2)/(1+IV.5/100)	USD /t	n.a.	n.a.	n.a.	195.2	96.6	140.6	218.0	156.0	200.3	148.4	98.4	171.6	232.7	244.2	170.6	310.3
OMA	USD /t	n.a.	n.a.	n.a.	239.3	118.4	172.4	260.9	182.1	227.9	164.5	106.2	180.2	244.3	256.4	179.1	325.8
OMA	USD /t	n.a.	n.a.	n.a.	24.3	12.6	17.5	18.8	18.8	14.1	10.8	5.1	12.1	14.6	22.5	19.6	26.4
OMA	USD /t	n.a.	n.a.	n.a.	46.5	25.2	27.8	40.2	26.2	34.6	17.7	15.8	27.7	23.3	41.7	34.1	51.7
UNCTAD	%	22.6	22.6	22.6	22.6	22.6	22.6	19.7	16.7	13.8	10.9	7.9	5.0	5.0	5.0	5.0	5.0
(II) - (IV)	USD /t	n.a.	n.a.	n.a.	44.1	21.8	31.8	42.8	26.1	27.6	16.1	7.8	8.6	11.6	12.2	8.5	15.5
(I) * (V)/1000	USD mn	n.a.	n.a.	n.a.	31.2	19.6	22.4	31.7	16.7	22.5	13.2	5.9	6.8	9.3	15.4	8.3	18.0

Table A1.3.4. Mali: Milk

	Source	Unit	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
I. Level of production	FAOSTAT	000t	373.3	377.3	391.7	393.1	406.0	426.1	441.5	464.7	467.2	500.0	508.2	523.5	537.8	578.3	601.8	608.4
II. Producer price	OMA	USD/t	761.0	734.5	880.6	823.2	419.8	467.0	506.3	443.7	439.0	420.7	363.8	353.3	371.6	445.6	490.3	491.0
III. Value of production	[(I) * (II)/1000]	USD	284.1	277.1	344.9	323.6	170.5	199.0	223.5	206.2	205.1	210.3	184.9	185.0	199.8	257.7	295.0	298.8
IV. Reference price (at farm gate)	(II)/(1+IV.3/100)	USD/t	741.7	715.9	858.3	802.3	409.2	455.2	491.1	428.4	421.8	402.3	346.2	334.7	349.3	415.6	457.6	458.3
IV.1 Tariffs	UNCTAD	%	2.6	2.6	2.6	2.6	2.6	2.6	3.1	3.6	4.1	4.6	5.1	5.6	6.4	7.2	7.1	7.1
V. Market price differential	(II) - (IV)	USD/t	19.3	18.6	22.3	20.9	10.6	11.8	15.2	15.4	17.2	18.4	17.5	18.6	22.3	30.0	32.7	32.7
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	7.2	7.0	8.7	8.2	4.3	5.0	6.7	7.1	8.0	9.2	8.9	9.7	12.0	17.4	19.7	19.9

Table A1.3.5. Mali: Rice

	Source	Unit	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
I. Level of production	FAOSTAT	000t	282.4	454.3	410.0	427.6	469.1	476.1	627.4	575.7	717.9	727.1	742.6	940.9	710.4	931.9	718.1	945.8
II. Producer price	OMA	USD /t	652.4	533.8	456.4	440.9	277.9	402.6	425.2	313.9	323.5	316.6	266.0	277.4	296.6	325.2	358.8	411.7
III. Value of production	[(I) * (II)/1000]	USD mn	184.2	242.5	187.1	188.5	130.4	191.7	266.7	180.7	232.2	230.2	197.5	261.0	210.7	303.0	257.6	389.4
IV. Reference price (at farmgate)	(IV.1)-(IV.3)-(IV.4)	USD /t	n.a.	n.a.	n.a.	320.6	201.1	295.8	326.8	244.5	259.9	263.4	231.4	251.8	269.3	307.6	323.3	369.8
IV.1. Border reference price (f.o.b. or c.i.f.)	(IV.2)/(1+IV.5/100)	USD /t				400.9	256.3	356.4	370.6	300.5	323.3	328.0	270.6	273.7	291.9	350.6	354.9	419.4
IV.2. Wholesale selling price	OMA	USD /t	n.a.	n.a.	n.a.	521.1	333.1	463.2	468.9	370.0	386.9	381.2	305.1	299.2	319.1	368.2	390.4	461.3
IV.3. Wholesale selling margin	OMA	USD /t	n.a.	n.a.	n.a.	28.4	14.9	17.8	14.2	14.5	7.8	11.5	8.5	4.2	2.7	7.8	23.9	5.7
IV.4. Farm to wholesale margin	OMA	USD /t	n.a.	n.a.	n.a.	51.9	40.4	42.8	29.6	41.5	55.6	53.1	30.6	17.6	19.9	35.2	7.8	43.9
IV.5 Tariffs	UNCTAD	%	30.0	30.0	30.0	30.0	30.0	30.0	26.5	23.1	19.7	16.2	12.8	9.3	9.3	5.0	10.0	10.0
V. Market price differential	(II) - (IV)	USD /t	n.a.	n.a.	n.a.	120.2	76.9	106.9	98.4	69.4	63.6	53.2	34.6	25.5	27.2	17.5	35.5	41.9
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	n.a.	n.a.	n.a.	51.4	36.1	50.9	61.7	40.0	45.6	38.7	25.7	24.0	19.3	16.3	25.5	39.6

Table A1.3.6. Mali: Sorghum

	Source	Unit	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
I. Level of production	FAOSTAT	000t	531.4	770.0	602.3	776.9	746.2	711.6	540.6	559.6	600.4	688.8	564.7	517.7	641.7	728.7	664.1	629.1
II. Producer price	OMA	USD /t	209.8	301.2	166.2	155.7	74.0	133.3	203.2	132.1	170.6	141.2	79.6	127.1	205.2	168.6	117.0	236.3
III. Value of production	[(I) * (II)/1000]	USD mn	111.5	232.0	100.1	121.0	55.3	94.9	109.9	73.9	102.4	97.3	45.0	65.8	131.7	122.9	77.7	148.6
IV. Reference price (at farmgate)	(IV.1)-(IV.3)-(IV.4)	USD /t	n.a.	n.a.	n.a.	112.5	53.5	100.7	160.4	106.3	144.0	123.1	71.0	118.9	193.4	157.6	109.4	221.5
IV.1 Border reference price (f.o.b. or c.i.f.)	(IV.2)/(1+IV.5/100)	USD /t	n.a.	n.a.	n.a.	191.2	90.8	144.3	217.5	154.5	192.7	167.1	108.5	163.5	235.6	221.5	152.5	294.8
IV.2 Wholesale selling price	OMA	USD /t	n.a.	n.a.	n.a.	234.3	111.3	176.9	260.2	180.3	219.3	185.3	117.2	171.7	247.4	232.6	160.2	309.5
IV.3 Wholesale selling margin	OMA	USD /t	n.a.	n.a.	n.a.	27.3	13.5	12.7	20.0	15.7	16.4	18.6	16.7	15.0	17.2	24.2	14.2	25.2
IV.4 Farm to wholesale margin	OMA	USD /t	n.a.	n.a.	n.a.	51.3	23.7	30.8	37.0	32.4	32.3	25.5	20.8	29.6	25.0	39.7	28.9	48.1
IV.5 Tariffs	UNCTAD	%	22.6	22.6	22.6	22.6	22.6	22.6	19.7	16.7	13.8	10.9	7.9	5.0	5.0	5.0	5.0	5.0
V. Market price differential	(II) - (IV)	USD /t	n.a.	n.a.	n.a.	43.2	20.5	32.6	42.7	25.8	26.6	18.2	8.6	8.2	11.8	11.1	7.6	14.7
VI. Market Price Support (MPS)	(I) * (V)/1000	USD mn	n.a.	n.a.	n.a.	33.5	15.3	23.2	23.1	14.5	16.0	12.5	4.9	4.2	7.6	8.1	5.1	9.3

Annex 2

Estimating Cotton Processing Margins for Mali

The usual procedure for estimating market price support for an export commodity such as cotton is to calculate the gap between the price at which the commodity is sold on the export market, adjusted as necessary to take account of transportation and processing costs, and the price actually paid the farmer. The main difference between cotton sold at the farm gate and the cotton sold into export markets is that the former still contains the seeds. The distinction is acknowledged by referring to product sold by farmers as "seed cotton" and that sold by exporters as "cotton fibre". Because cotton is such an important source of export earnings for Mali and because it is widely traded on world markets, it was relatively easy to find data on both farmgate and export prices. It was much more difficult to find the data needed to make the necessary adjustments for transportation and processing costs.

Here we used data obtained from analysis of cotton processing cost in a neighbouring cotton producing country – Benin. The findings of that analysis were reported in Alston, Sumner and Brunke (2007). The table below contains the numbers extracted from their study and used to make the cotton market price support calculations for Mali.

Table A2.1. Estimated cotton transport and processing margins

Farmgate prices	2001/02	2002/03	2003/04	Average
Farmgate price per kilogram of seed cotton	165	190	195	
Cotton fiber per kilogram of seed cotton	0.416	0.424	0.425	
Farmgate price per kilogram of cotton fiber	396.6	448.1	458.8	
Cotton Processing and Transport Costs in FCFA/kg of cotton fiber				
Transport cost (to gin)	43.5	42.7	42.6	
Ginning cost	90.5	107.4	108.4	
Overhead costs	37.5	52.6	53.5	
Financial costs	15.4	15.4	15.4	
Export cost FOB	35.9	35.9	35.9	
Cotton seed sales	-42.1	-44.9	-47.2	
Sub-total of transport, processing and marketing costs	180.7	209.1	208.6	
Total costs in FCFA/kg of cotton fiber delivered FOB	577.3	657.2	667.4	
Processing margin as a % of total FOB cost	31.3%	31.8%	31.3%	31.5%

Cotton seed sales are treated as an off-set (reduction) in the costs of processing and marketing.
Source: Alston, Sumner and Brunke, 2007.

An important question that arises when making price gap adjustments is whether to assume that transport, processing costs are constant or that they are proportional to the price of the product. Then, if proportional, are they to be measured relative to the farmgate or the export price? Alson, Sumner and Brunke argue that the bulk of costs of cotton marketing, trucks, fuel, loading and unloading and similar charges do not depend on the price of cotton. Yet, for the three years for which we have the data for Benin, there is very little variation in the margin when expressed as a percent of total costs (this calculation is based on total unit costs at FOB rather than an export price assuming that, in the medium term, these two will always converge). Accordingly, we have assumed a margin for calculating cotton market price support equal to the three-year average of the Benin results, *i.e.* 31.5%.

Annex 3

The Cost of OECD Cotton Support Policies to Mali's Farmers

Price impacts

Five OECD cotton producing countries: United States, Greece, Spain, Turkey and Mexico provide significant levels of financial assistance to their cotton producers. In contrast with other commodities where market price support attributable to border measures dominates, financial support for cotton comes exclusively in the form of taxpayer-financed subsidies. Table A3.1 contains year by year estimates for 1998 to 2004.

Table A3.1 Estimated government assistance to cotton producers in OECD countries, 1998–2004

	1998	1999	2000	2001	2002	2003	2004
USD millions							
US	1 947	3 432	2 149	3 937	3 075	1 021	2 244
Greece	660	596	537	735	718	761	836
Spain	204	199	179	245	239	233	230
Turkey	220	199	106	59	57	22	115
Mexico	15	28	23	18	7	6	49
Total	3 046	4 454	2 994	4 994	4 096	2 043	3 474

Source: Baffes, 2005.

The potential impact of this support on world cotton prices has come under increasing scrutiny during the past five years since Mali joined three other African cotton producing countries (Benin, Burkina Faso and Chad) to demand their elimination be made part of the World Trade Organization's Doha development Agenda (DDA). These four countries, often referred to as the Cotton 4 or C-4, proposed both an accelerated elimination of trade-distorting cotton subsidies and financial compensation for losses while subsidies are being eliminated (Sumner, 2007).

Numerous analyses have been undertaken using models to quantify world price impacts of OECD cotton subsidies. Results differ between different studies depending on the time period being considered, the assumptions made about key economic parameters and the production incentives associated with different subsidy programs. Alston, Sumner and Brunke (2007), Sumner (2007), Baffes (2007), and Anderson and Valenzuela (2006)

all contain extended discussions of the issues as well as reviews of the growing literature on the subject.

Most estimates of price effects fall in the range of 5 to 20% centred on 12 to 13%. That is to say, world cotton prices would be from 5 to 20% higher than they are now if all financial assistance to OECD cotton farmers were withdrawn. We can obtain an estimate of what this means in money terms using as an indicator of the export price of cotton fibre produced in West Africa the Cotlook A Index, an average of the cheapest five quotations from a selection of the principal cottons traded internationally (Historical data can be found at www.cotlook.com).

The top row of Table A3.2 below shows results when using the average price and exchange rate prevailing in 2005. For example, a 12.5% increase in the Cotlook A Index would yield an increase of approximately 83FCFA per kilogram of cotton fibre export sales from Mali. But, what would a higher export price of cotton mean for farm prices in Mali? Cotton prices in Mali are administered by the Compagnie Malienne pour le Développement des Textiles (CMDT), a company jointly owned by the government of Mali and DAGRIS, a French textile company. The CMDT uses a pricing formula to calculate the price to be paid cotton farmers for their seed cotton as a function of the Cotlook A Index.

The current formula is:

$$FP_{sc} = A*[(WP_{cf} - XSHR_{cf} * C_{fob})*cfsc + (P_{cs} * MSHR_{cs})*cssc]$$

Where, with all variables and coefficients assumed to be measured on a per kilogram basis:

FP_{sc}	=	the farm price of seed cotton
A	=	the farmer share of gross revenues earned from exports of cotton fibre and sales of cotton seed, set at 60% beginning in 2005
WP_{cf}	=	the export price of cotton fibre produced in West Africa as measured by the Cotlook A index
$XSHR_{cf}$	=	the share of domestic production that is exported
C_{fob}	=	the FOB fees applied to cotton fibre exports
$cfsc$	=	the yield of cotton fibre per kilogram of seed cotton (assumed here to be 0.425)
P_{cs}	=	selling price of cotton seed
$MSHR_{cs}$	=	the share of production of cotton seed that is marketed
$cssc$	=	the yield of cotton seed per kilogram of seed cotton

According to this formula a change in the world market price of cotton fibre would be transmitted to the farm price of seed cotton with a coefficient of price transmission of 0.25, *i.e.* the product of the revenue share coefficient A (=0.60) and the fibre yield coefficient *cfsc* (=0.425). This provides the basis for estimating a range of farm price impacts in Mali that might accompany cotton subsidy reform in the OECD.

Table A3.2. Estimated effects of eliminating OECD cotton support (based on 2005 exchange rates, farm prices and production)

Impact on:	Average 2005 value	Change if world price increases by:		
		5.0%	**12.5%**	**20.0%**
Cotlook A Index (USD/lbs)	0.57	0.03	0.07	0.11
Mali Export Price FCFA/kg of cotton fiber[1]	662	33.1	82.8	132.4
Mali Farm Price FCFA/kg of seed cotton	160	8.3	20.7	33.1

1. Cotlook A Index converted to FCFA at average 2005 FCFA/USD rate of 527.

Source: OECD calculations based on data reported in Alston, Sumner and Brunke, 2007.

Continuing to use the middle of the range estimate of world market price impact (12.5%) gives an associated farm price impact of 20.7 FCFA per kilogram (bottom row, middle column entry in Table A3.2.), a gain of roughly 13% on the average producer price of cotton in 2005.

Income and poverty impacts

Anderson and Valenzuela (2007) is one of the few studies to address farm income effects of cotton subsidies. They estimate using the GTAP model that eliminating all cotton subsidies and import tariffs globally would raise the price of cotton in international markets by 12.9% and the net incomes of cotton farmers in the Sub-Saharan region that includes Mali by just over 30%.

Mesplé-Somps, *et al.* (2008) use Mali's ELIM 2006 household survey data to simulate directly the effects of variations in cotton prices on poverty, allowing for resource adjustments that differ for the short versus the long term. Results are summarized in Table A3.3.

Table A3.3. Simulated poverty impacts of cotton price changes

	2006 Poverty	Poverty rate if cotton prices were:			
		Reduced by 25%		Increased by 25%	
		Short term	**Long term**	**Short term**	**Long term**
Cotton farmers	53.7	57.2	56.4	47.7	46.7
National	43.8	44.4	44.3	42.7	42.5

Source: Mesplé-Somps *et al.*, 2008.

Their findings suggest that a 25% increase in the farmer price of cotton in Mali would reduce the poverty rate amongst cotton farmers by 7 percentage points from 53.7% to 46.7% in the long term. The corresponding estimates for the national poverty rate are 43.8% and 42.5%, a reduction of 1.3%. In interpreting these findings recall that the estimated (mid-range) farm price impact from eliminating OECD cotton subsidies was 13%.

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