Distortions to Agricultural Incentives in Cote d'Ivoire

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After independence in 1960 the economy of Cote d'Ivoire was heralded as one of the success stories of Sub-Saharan Africa. Gross domestic product (GDP) grew at 8.1 percent per year from 1960 to 1979, so that per capita GDP increased in real terms from $595 to $1114.[1] This economic boom was led by increasing agricultural exports, principally cocoa and coffee. Cocoa and coffee exports in 1961 equaled $112 million or 51 percent of total exports, with agricultural exports accounting for 61 percent of total exports. By the late 1970s, cocoa and coffee exports amounted to $1.5 billion, and were then 53 percent of total exports, with agricultural exports still accounting for 61 percent of total exports (FAOSTAT 2006; World Bank 2006b). Cote d'Ivoire has emerged as the world's largest cocoa exporter as a result, now accounting for as much as 40 percent of world cocoa trade, and during the 1960s and 1970s was Africa's largest coffee exporter. Coffee exports have fallen to only 4 percent of agricultural exports in 2004, however, while cocoa has increased to over 70 percent, with agricultural exports now still accounting for 43 percent of total merchandise exports.

Several economists and political scientists sought to explain the unique features of agricultural policy in Cote d'Ivoire which gave rise to this better economic performance than was found elsewhere in Africa, and was based on agricultural exports (Boone 1995, Hecht 1983, Widner 1993, Woods 2003, 2004). That set of studies, and most attention now directed at the agricultural sector of Cote d'Ivoire, has focused on policy for the cocoa and coffee sectors. In this study, that focus will remain, although another agricultural export success, cotton, and one of Cote d'Ivoire's most important agricultural imports, rice, are also examined. Also examined briefly are wheat, which is imported but not produced in Cote d'Ivoire, and coarse grains, roots and tubers, for which trade is very limited and that trade is mainly with neighboring countries rather than the broader international market.

Cote d'Ivoire's agricultural exports benefited from the commodity boom of the late 1970s, and then suffered along with those of many other developing countries after 1979.

[1] GDP per capita measured in constant 2000 U.S. dollars (World Bank 2006b).

Both economic outcomes and trade policy were strongly influenced by volatile international agricultural commodity prices. GDP declined 11 percent in 1980 and the economic growth rate averaged only 0.7 percent per year from 1980 through 1994. Per capita GDP fell to $579 in 1994, less than what it was in 1960 (World Bank 2006b), and remained only $574 in 2004. Agricultural exports fell to about 60 percent of total exports, and cocoa and coffee exports were about 40 percent of total exports and two-thirds of agricultural exports (FAOSTAT 2006). In the case of cocoa, apart from heavy taxation its problems were largely due to low, volatile international prices as production continued to grow, leveling off in some years. In the case of coffee, yields and production have declined, and were quite erratic over this later period. Cotton exports followed a similar pattern, although starting from a very low level in the early 1960s but reaching nearly 5 percent of exports in 1991, and varying around 2.5-3 percent of exports recently.

Structural adjustment reforms began in the early 1980s as economic recession set in and export revenues failed to keep pace with imports. Cote d'Ivoire is part of the West African currency union, sharing its currency, the CFA, with neighboring French West African countries, and receiving support from the French central bank. Devaluation was (politically) hard to implement, and did not occur until 1994, when the CFA was devalued by 50 percent. Agricultural policy was managed by parastatal monopolies, such as CAISTAB (Caisse de stabilisation) in the cases of cocoa and coffee and CIDT (Compagnie Ivoirienne pour le développement des fibres textiles) for cotton, utilizing institutional frameworks derived from French colonial heritage. Privatization of those parastatals was an objective of international donors, but was slow in coming and sporadic in Cote d'Ivoire, as it was resisted by the government. CAISTAB continued to regulate cocoa and coffee trade until 2000, and the government's majority interest in cotton companies created from CIDT (CIDT, Ivoire Coton) were not divested until 2002 (IMF 2002). Trade liberalization, a part of the structural adjustment program, was implemented in fits and starts, with periods when tariffs were reduced, followed by periods when they rose again. Quantitative restrictions have accompanied parastatal management of agricultural trade, and may still remain in the case of rice through "voluntary" administered prices (OECD 2006).

Cote' d'Ivoire's agricultural economy has focused on smallholder farming and export crops. Those farmers and their exports were heavily taxed. In spite of structural adjustment reforms, which included the reduction of agricultural export taxes as one of its goals, taxation of cocoa and coffee exports (especially cocoa) remains a hallmark of Ivorian policy. Those

taxes were reduced briefly around the time of privatization of CAISTAB, but were subsequently raised for key agricultural exports so that export tax revenue in 2003 amounted to nearly a quarter of government revenue. Import tariff revenue is important, as well, at 30 percent of government revenue in 2003 (World Bank 2006b).

Policy has usually discouraged food crop production, against the wishes of farmers. Rice and wheat are the predominant cereal imports, with coarse grains, like roots and tubers, behaving like non-tradeables. Rice imports surged during the commodity boom of the late 1970s, were generally flat during the recession until 1994 apart from a brief surge in the mid-1980s, and have increased again since 1994. The mid-1980s import surge gave rise to a policy focus on self sufficiency, which briefly slowed but never eliminated imports. Wheat imports emerged in the late 1970s, as well, and have also been increasing since 1994.

The recent need for tax revenue from exports derives from political events that have also negatively impacted on economic performance. While the devaluation in 1994 initially led to a resurgence in economic growth, the first coup d'état in 1999 and continuing civil conflict have hampered the economy; and, since 2002, they have divided the country, with the northern part of the country still held by rebel troops as of 2007. Since cocoa and coffee are grown in the south, the effects of the civil war have been mostly seen in the resumption of export taxes and increased trader margins. Crops predominantly grown in the north, such as cotton and maize, have been more severely affected, and smuggling to neighboring countries has affected both management of the cotton sector, another successful agricultural export at one time, as well as collection of data on conditions in the Ivorian agricultural economy. The need for rice and wheat imports must result in part because they are mostly produced in the north while there is a need for food in the urban areas of the south. In its assessment of the outlook for the Ivorian economy more generally, the OECD (2006) cited problems due to continuing civil conflict as being key to future economic performance.

The mystery of Cote d'Ivoire's agricultural policy and economic performance is the continuing success of the cocoa sector in spite of heavy taxation. Hecht (1983, p. 26) wrote "…the government has consistently followed a set of policies designed to encourage expansion of cocoa and coffee production, while at the same time taxing small-holders heavily for capital accumulation and investment elsewhere in the economy. Other countries … have also tried to finance public expenditure in a similar fashion, but have ended up by either crippling or retarding this sector. The Ivory Coast, on the other hand, has successfully nurtured this golden goose, and exploited its precious eggs – without killing the animal." This

quote remains remarkably relevant. Cocoa export volume has grown steadily since 1960, with a plateau from 1987 until 1994, and again since 1999, but without periods of decline in exports, production or area planted. During none of those periods were there sustained increases in farm-gate prices. Attempts to estimate supply response for cocoa are plagued by data exhibiting increases in production as prices, particularly in international markets, fall (Maizels, Bacon and Mavrotas 1997). Pricing has been stabilized (somewhat) by CAISTAB, so that farmers have not felt the full effect of drops in international commodity prices, have not seen nominal price declines, and, because of currency stability, have not seen the erratic pricing in some neighboring cocoa-exporting countries (e.g. Ghana – see Brooks, Croppenstedt and Aggrey-Fynn 2007). Analysts attribute increasing production in the face of low and sometimes falling real prices to liberal immigration and land tenure policies (Boone 1995, Widner 1993, Woods 2003, 2004). This goes a long way toward explaining growth until 1994, which was due largely to area expansion, but cannot account for the increasing yields and constant area planted since then, as well as the change since 1993 in attitudes and policy toward immigrants, which lies behind the civil conflict of this decade.

Measures of distortions to agricultural incentives reflect this continuing taxation of agricultural exports, and administered pricing in the case of rice. While structural adjustment reforms have aimed at liberalizing trade by Cote d'Ivoire, and have at times succeeded in doing so, the civil conflict since 1999 has driven a desire for tax revenue from agriculture and continued limitations on imports. Farm-gate prices for cocoa have varied between 35 and 60 percent of border prices, changing inversely with international prices and reaching 100 percent of international prices in the early 1990s when world cocoa prices were very low. Since 2000 they have remained around 40 percent of border prices. Coffee farm-gate prices have also varied, in part in relation to world prices, at around 40 to 60 percent of world prices. Some very low price ratios are observed when world coffee prices rose, and coffee prices according to most recent data are about 40-50 percent of border prices. Cotton farm-gate prices have also been a low share of world prices, averaging around 54 percent and reaching 63 percent in recent years, although the cotton margins reflect also ginning costs of parastatals. Rice farm-gate prices have a much higher share of world prices, varying from 65 percent to 100 percent and sometimes even higher, reaching over 120 percent in recent years. Stabilization in the face of volatile international prices, effects of the recent civil conflict, and structural adjustment reforms earlier, are all evident in the extent of taxation of export agriculture in Cote d'Ivoire.

In the next section, more detail on Cote d'Ivoire's economic performance is provided. The role of agriculture in the economy, and particularly in exports, is then explored further. A brief historical overview of agricultural policy is then provided, showing the colonial roots of policy institutions and the importance of structural adjustment reforms. Policies and performance for the four key agricultural sectors – cocoa, coffee, cotton, and cereals – are then examined. The data on prices and performance, based on sources noted in the Appendix, are used to quantify the extent of distortions to agricultural incentives in Cote d'Ivoire. The concluding section summarizes what has been learned about both the extent of distortions and the political economy factors determining those distortions.

Economic and trade performance

In 2005 GDP per capita was at $563 in real terms (constant 2000 US dollars). This low income level reflects an inability to sustain the success of the first twenty years after independence, from 1960 to 1979, and is also due to the costs of continuing civil conflict.[2] GDP growth averaged 8.1 percent per year from 1960 until 1979, and was nearly 10 percent per year during the commodity boom, from 1975 to 1979. Per capita GDP reached its peak at $1114 in 1978, and has subsequently declined to levels below that found in 1960. A recession due to low export earnings and over extended public debt ensued from 1979 and led to persistent negative economic growth until 1994. The devaluation of the CFA in 1994 briefly spurred economic growth, which averaged 6.3 percent per year until 1999. The ongoing civil conflict has resulted in stagnation, with negative economic growth from 1999 to 2004, averaging -0.55 percent per year (Appendix Figure 1).

Trade, and especially agricultural trade, has been important to the evolution of the Ivorian economy. In 2005 exports represented 50 percent of GDP while imports equaled 40 percent of GDP. At peak GDP in 1978, exports and imports were each already 37 percent of GDP. Just before the devaluation of 1994, exports had declined to 29 percent of GDP while imports were only 26 percent of GDP at the overvalued exchange rate (World Bank 2006b).

[2] Economic performance data are from *World Development Indicators* (World Bank 2006b) and from the IMF (2006).

Immediately after the devaluation, exports rose to 40 percent of GDP, while imports averaged about one-third of GDP.

Trade taxes have been an important source of revenue for the government. Export taxes accounted for 24 percent of revenue in 2003, while customs duties contributed 30 percent of revenue. Export taxes were only 12 percent of revenue in 1998, a consequence of structural adjustment reforms, while customs duties have remained steady at about one-third of revenue. Since the GATT's Uruguay Round, Cote d'Ivoire has maintained a relatively uniform tariff schedule at typically a 20 percent ad valorem rate, with some exceptions. A value added tax (VAT), now at 18 percent, also applies to imports as well as domestically produced goods locally consumed (World Bank 2006a).

In 2003, agricultural exports were nearly 60 percent of total exports. Cocoa in 2003 accounted for 37 percent of exports, while coffee was 2.2 percent of exports and cotton was 2.9 percent of exports (Appendix Figure 2). In 1978 agriculture accounted for about 72 percent of exports, with cocoa contributing 31 percent of exports, coffee 21 percent and cotton 1.2 percent. Hence, cocoa has increased in importance, while coffee has declined considerably and cotton has become somewhat more important.

Food imports were 26 percent of imports in 2003, and only 10.5 percent of imports in 1978, but had risen to about one-quarter of imports by the mid-1980s and have remained there since. Rice in 2003 represented 3.2 percent of total imports while wheat was about 1.5 percent of imports (Appendix Figure 3). All of these shares show considerable variation, reflecting both events in Cote d'Ivoire and the instability of international commodity prices. The effects of efforts to limit rice imports around the mid-1980s are particularly evident.

Trade and economic growth have both been influenced by exchange rate policy. Cote d'Ivoire's currency is the CFA, which is also used in Benin, Burkina Faso, Mali, Niger, Senegal and Togo. The BCEAO (Banque Centrale des Etats de l'Afrique de l'Ouest) was created in 1946 by France to support its colonies and remained in force after independence. This currency continued to be supported and managed by the French central bank, who also attempted to impose monetary and fiscal disciplines on the governments of participating countries (van de Walle 1991). When borrowing evaded those disciplines and this currency became overvalued, the French central bank was required to inject considerable capital into the West African central bank (BCEAO) and thereby to the economy of Cote d'Ivoire. In the early period, from 1960 to 1979, this system created a stable foreign currency, avoiding

hyperinflation or large black market premiums, in contrast to many experiences elsewhere in Africa.

A parallel (black market) exchange rate for the CFA has been collected by Easterly (2006), which shows only very small back market premiums from 1960 to 1970 and again in the late 1970s to early 1980s, and no premiums in other years. It is not surprising that there were never large black market premiums, given the capital inflows from France and the extent of convertibility of this currency. But the real exchange rate (REER) estimated by the IMF, based on differential inflation, shows the overvaluation of the recession of the 1980s, and the need for the devaluation of 1994, which brought this measure of the real exchange rate and the official rate back into alignment. (Appendix Figure 4 shows the official exchange rate in Cote d'Ivoire from 1960 until 2005. It also shows the CPI, a measure of inflation, as well as two indicators of real exchange rates, and so the extent of overvaluation over time.) This index suggests overvaluation of 54 percent in 1980, and more than 40 percent from 1987 until the devaluation in 1994. The IMF's REER is a useful measure to use to reflect distortions to incentives due to exchange rate misalignment, and to show the underlying story about exchange rates in Cote d'Ivoire. Real and official exchange rates were quite close, showing little overvaluation, hence distortion, except from 1980 until 1994. The IMF's REER is used below as this study's proxy for a parallel market exchange rate: as discussed below, it shows a bias against agricultural exports and in favor of food imports only during this protracted recession.

Agriculture's role in the economy

Cote d'Ivoire has remained a largely rural society: 82 percent of the population was rural in 1960, 64 percent remained rural in 1979, and still 55 percent in 2005 (World Bank 2006b). As of 2003 value added from agriculture contributed nearly one-quarter of GDP. At $1048 per worker, agricultural value added is 2.7 times greater than that found elsewhere in Sub Saharan Africa (FAO 2003). These data reflect some industrialization and urbanization, as agriculture contributed nearly half of GDP in 1960. But as the trade statistics above demonstrate, agricultural exports remain critically important to this economy. While coffee has declined in importance, cocoa remains Cote d'Ivoire's key export, and a number of other

tropical products (e.g. bananas, pineapples) and cotton are exported as well. Nevertheless, in many respects Cote d'Ivoire is a classic example of a developing economy heavily dependent on a single commodity export. Cognizant of this, the government has on several occasions pursued diversification strategies, but to little effect.

Cote d'Ivoire's 32 million hectares can be divided into two distinct parts – the tropical rain forests of the south and the savannahs of the north. Cocoa and coffee as well as tropical fruits and vegetables are grown in the southern region, while cotton, maize and cassava are grown in the north. Rice is mostly grown in the north, while some rice is grown in the forest areas of the southwest. Only 7 percent of the rice area is irrigated, and most rice is upland varieties (WARDA 2006, FAO 2003). Forests accounted for 31 percent of area in 1995 but only 22 percent in 2002, reflecting serious deforestation. Traditional cocoa planting techniques coexist with rain forest, but modern techniques utilizing fertilizer eliminate the forest cover. This deforestation reflects the limitations now experienced to expanding the area planted to cocoa and coffee, and shifts to new techniques in some areas (Ahmend, Kazianga and Sanders 2005). Land nevertheless remains relatively abundant, as cultivable land represents 75 percent of total area whereas actually cultivated land is only 30 percent (FAO 2003). Cereal production is on only 4 percent of area in Cote d'Ivoire, while pasture accounts for over 40 percent of area (FAO 2003).

Small scale farmers, who on average own 4 hectares, are the rule for most agricultural activities, including cocoa, coffee and cotton production. Over 500,000 smallholders plant cocoa in Cote d'Ivoire. Large plantations are found mainly for bananas, rubber, palm oil and pineapple, and account for only a small share of agricultural production in Cote d'Ivoire (FAO 2003).

While cocoa and coffee, including processed product exports, contributed on average over 70 percent of agricultural exports during the late 1990s, other agricultural exports matter as well. Cotton averaged nearly 7 percent of agricultural exports, and other important exports included pineapple (2.1 percent), bananas (3.0 percent), palm oil (2.7 percent), rubber (3.5 percent) and logs (0.6 percent) (FAOSTAT 2006). Canned fish also accounted for nearly 6 percent of exports. Shares of food imports in the late 1990s were 20 percent for rice, 29 percent for fish, 8.8 percent for dairy products, 9.5 percent for wheat, 3.7 percent for sugar and 3.8 percent for tobacco (FAO 2003).

Since Cote d'Ivoire is dependent on commodity exports, performance is strongly determined by international prices which have been quite volatile since 1960. (Appendix

Figure 5 shows international price indices for key agricultural goods – cocoa, coffee, cotton, maize and rice.) These nominal prices show a pattern of correlation among international commodity prices, and key periods when high and low prices have occurred. High prices prevailed for all these commodities during the mid- to late 1970s, with declines particularly evident for cocoa and coffee starting in 1979. A second common peak occurs around 1995, and low prices for all these commodities are found around 2000. The magnitude of these variations is also striking. Cocoa reached nearly $3800 per metric ton before the decline (in 1977), fell below $1000 per metric ton in 2000, increased because of civil conflict in 2002,[3] but by 2007 was only about $1500 per ton. Coffee reached nearly $5000 per metric ton in 1976, and fell to less than $1000 per metric ton both in 1991 and from 2000 to 2003. By comparison, rice, maize and cotton prices seem less volatile, but these prices also reveal considerable variability. There are some commodity specific trends, but strong correlation among all the international commodity prices. Cote d'Ivoire's export revenues have been dependent on some of the most volatile commodity prices, and these international price variations are much larger than domestic distortions. In spite of its efforts to stabilize prices, domestic prices of key exports have seen some effects from these trends. This is more evident in recent years as structural adjustment reforms have eliminated mechanisms to stabilize domestic prices (CAISTAB, CIDT), but private traders have absorbed some price instability.

History of agricultural policy incentives, interventions and reforms

Various analysts have offered different period delineations of Cote d'Ivoire's economic and political events, depending on their objectives. In particular, the recession and structural adjustment period has been divided by some, to account for ups and downs in liberalization efforts and the end of the Presidency of Houphouet Boigny. Political events have influenced the evolution of agricultural policy and helped to define these periods (Appendix Table 1). For the purposes of this chapter's focus on distortions to agricultural incentives, it will be sufficient to follow the divisions used to this point, namely, 1960-1979 (initial economic

[3] Since Cote d'Ivoire exports as much as 40 percent of the world's cocoa, it may be a large country affecting the world price. Yilmaz (1999) has investigated the optimal export tax under this circumstance, and argues this is the case. In the trade, an increase in world market prices for cocoa has been attributed to the civil conflict in Cote d'Ivoire, with spikes evident at critical times.

success after independence), 1980-1993 (recession and structural adjustment), 1994-1998 (post-devaluation reforms and resurgence), and 1999-present (civil conflict and economic decline). But as background we begin with the pre-independence period.

Colonial heritage

The institutional development behind agricultural policy, and indeed all policy evolution, was conditioned by Cote d'Ivoire's experience as a French colony. Cote d'Ivoire officially became a French colony in 1893, became an autonomous republic within the French community in 1958, and achieved full independence in August 1960 (US Dept. of State 2003). As a colony, it was a source of agricultural exports to Europe, with cocoa and coffee plantations being established alongside smallholder farms beginning in the 1920s (FAO 2003). Cotton production was also developed from about the same time. According to Bassett (1988, p. 269), "The first period (1910-22) saw the establishment of the conditions for commodity production through the development of transportation networks, the activities of merchant houses and the imposition of export-oriented cotton production."

One consequence of the French colonial period was establishment of the infrastructure and institutional structures that characterized Ivorian agriculture and policy afterwards. It is still the case that transportation costs within Cote d'Ivoire are lower than elsewhere in Africa, which is due to the roads and railroad built by the French. And the cotton parastatal, CIDT, was fashioned after the French public company CFDT (Compagnie Française pour le développement des fibres textiles). Parastatals dominated agricultural export policy institutions until well after the 1994 devaluation and privatization demands of structural adjustment reforms. By the time of independence the structure of smallholder agriculture now found in cocoa, coffee and cotton had been established, even though the colonial era included periods of forced labor and coercion and French settlers had established plantations for cocoa and coffee in the south that required significant labor from other areas of Cote d'Ivoire (Bassett 1988). The focus of policy on export crops at the expense of food production also emanated from this period.

Post-independence success

From independence until 1993, Houghphouet Boigny served as president, and the first multi-party elections did not occur until 1990. Several analysts (Boone 1995, Hecht 1983, Widner 1993, Woods 2003; 2004) debate the importance of having a president with rural roots and who continued to own agricultural assets, but it is clear that Houghphouet Boigny pursued policies to support Ivorian export agriculture, while managing to extract significant export taxes from the sector. Hecht (1983) in particular notes the success of this regime, contrasting it with other African economies where agricultural taxation ultimately harmed export revenue generation.

While some authors claim high prices as part of the regime, prices as a share of international prices then for cocoa, coffee and cotton were only somewhat higher, at 40-55 percent, than these shares were during the recession period or now. International price levels probably played a bigger role in determining these shares than did domestic or trade policy. In the case of cocoa, administered prices never fell in nominal terms and the stability of the CFA meant that hyper-inflation never eroded the value of those administered prices. Coffee's subsequent decline is also explained partially by the more erratic policy subsequently applied in that sector.

The growth in exports, particularly of cocoa, is attributed to available rain forest and supportive immigration and land tenure policies which allowed immigrants from elsewhere in West Africa not only to provide labor but also to "own" their own farms with the knowledge that they could maintain control of their land as long as they were productive. Ruf (1995) and Lopez (1998) argue that this regime exploited a forest rent which led not only to area expansion as the engine of growth but also to pioneering new areas rather than replanting older trees to maintain yields. The opportunities for immigrants on smallholder cocoa farms, particularly relative to returns to subsistence crops in their home countries, explains why estimations of supply response often yielded incorrectly signed estimates, as these institutional factors dominated. Bassett (1998) also notes the importance of the technical package for cotton which gave rise to its initial success in the mid-1960s, and which came from the French through CIDT. Several authors note that during this period parastatals not only administered markets, but also provided extension and research services to farmers as well as organizing input supplies.

French and other African colonial agricultural institutions are often contrasted, especially for cocoa. Boone (1995, p. 447) in particular describes Ivorian parastatal management as "relatively laissez faire". In the cases of cocoa and coffee, while the

parastatal (CAISTAB) set administered prices and provided public goods (extension, inputs), private agents were allowed to conduct trade, and the state intervened little in the production process itself. Ivorian management of cocoa and coffee can be contrasted not only with the approaches in Ghana and other important cocoa producing countries, where state agents bought and sold all cocoa and influenced production techniques, but also with its own management of cotton by CIDT, which is more similar to public management found elsewhere. This was probably necessitated by the agronomy of cotton, which is much more intensive in inputs and requires a more sophisticated technology than traditional cocoa production. The need for fewer inputs into cocoa permitted the successful strategy described by Boone (1995), which may have become less successful as access to new rainforest diminished and more intensive practices as well as methods to avoid disease became more necessary.

Recession and structural adjustment

During the structural adjustment era there was significant variation in the extent of protection, and in liberalization in response to IMF initiatives, driven in part by variations in export earnings (Kouassy, Pegatienan and Ngaladjo 2004). Tariffs had reached an average of 32 percent by 1989, fell to 24 percent by 1993, and following the 1994 devaluation were reduced to an average of 20 percent, similar to current levels (FAO 2003).

While structural adjustment reforms began with recession and public debt in the early 1980s, significant changes to agricultural policy were a long time in coming over this period. Parastatals persisted in spite of international donors' insistence on privatization, until 1995 in the case of rice, 1998 (really 2002) in the case of cotton,[4] and 2000 in the cases of cocoa and coffee. Effective protection had significantly increased in the early 1980s, so in 1984 tariff reforms were instituted to foster industrialization (FAO 2003). Variations in world prices, especially for cocoa and coffee, and financial difficulties following from the liberalization, led to reversal of policies in the late 1980s and then to a return to liberalization in the early 1990s, which was consolidated by the devaluation of 1994 (Kouassy, Pegatienan and Ngaladjo 2004). Parastatals and the government implemented quantitative restrictions on trade during this period as well.

[4] CIDT was broken into regional companies in 1998, including one still called Nouvelle CIDT, Compagnie Cotonniere, and Ivoire Coton, but the government did not divest its majority interest in these regional companies until 2002.

Rice self- sufficiency was administered through a parastatal (Caisse générale de péréquation des prix) created during this period, who managed the market, provided extension services and invested in irrigation. Rice prices even exceeded border prices by more than 50 percent for a few years in the mid-1980s (when world prices were very low). This, and quantitative restrictions on wheat imports, were the only significant deviations in policy focus away from export crops. Investments in sectors to diversify exports from cocoa and coffee had been found even in earlier periods, including the late 1970s, and are found in later periods, as stabilization revenues for cocoa and coffee were instead spent on public investments in other sectors. Few of these diversification projects succeeded.

The debate over CFA devaluation is also characteristic of the recession/structural adjustment reform era. Evidence of overvaluation as high as 50 percent (based on the REER) is seen as early as 1980, and persisted until the 1994 devaluation (Appendix Figure 4). French intervention and political problems of a devaluation of a currency shared by several countries delayed the devaluation, and it was resisted by Houphouet Boigny until his death in 1993 (van der Walle 1991). But public debt accumulated to crisis levels, so a step was taken as an economic necessity in spite of serious political concerns, even over the potential collapse of the CFA as a currency. This overvaluation is the primary characteristic defining this period as being unique in terms of relative agricultural distortions.

Variations in cocoa and coffee prices and export revenue lay behind the weakening international financial positions in West Africa. CAISTAB shielded cocoa farmers from much of the international price variations, with remarkably stable nominal, domestic cocoa prices over this period of enormous change in international prices. Coffee prices showed more variability, though hardly all of international price variability. From 1979 to 1999, the standard deviation of domestic cocoa prices was 37 percent of that for border prices in CFA, and for coffee the standard deviation of the domestic price was 39 percent of the border price in CFA and 167 percent of the standard deviation in cocoa domestic prices. The 1994 devaluation was also more evident in nominal coffee, cereals and cotton prices than for cocoa prices. Administered prices in the case of cocoa prevented operation of the mechanism by which devaluation could succeed. The surprising result is that cocoa remained the dominant crop, and continued to expand even when land availability restrictions began to bind.

Devaluation and privatization

More serious efforts to liberalize Ivorian trade and to privatize Ivorian agricultural markets followed the 1994 devaluation, if slowly for some sectors. Privatization of a previously state run economy, as noted above, was an important part of the reform package and was eventually implemented for these crops, although gradually and with resistance from the government and the sector. Tariffs were also reduced following the devaluation. By 1995, tariffs averaged 24 percent and the VAT averaged 17 percent. These were somewhat lower for agricultural products (at 17 and 9.5 percent, respectively) but similar for food products (at 25 and 14 percent) (WTO 1995). The devaluation succeeded in stimulating the Ivorian economy, which grew rapidly again after 1994 and until the period of civil conflict began in 1999. The efforts to privatize overlap these two later periods, continuing until 2002 when the last support from the IMF was received in Cote d'Ivoire.

The devaluation period also marks the beginning of change in immigration policy which had fueled growth in cocoa production until then. Houphouet Boigny's successor ran on a liberal immigration campaign, but subsequently introduced the concept of "Ivoirite". Immigration had provided necessary labor earlier, while only limited benefits from the cocoa and coffee successes filtered back to farmers. Limitations on land to expand, and less economic success, made it more difficult for Ivorians to share the benefits of agricultural production with immigrants. Political problems to follow often involved issues related to the consequences of immigration, and immigrants were important in the political crises in the current decade.

Better economic performance and significant steps toward liberalization characterized the period just after the 1994 devaluation. But that period also marked a change in attitudes toward immigration and limitations were finally reached in the rain forest frontier, giving rise to new strategies to expand cocoa production. The military coup d'état in 1999 brought the end to this period, and continuing civil conflict has hampered economic performance and particularly agriculture in the north of the country. Remarkably, cocoa output has remained relatively stable over this period.

Civil conflict

Elections were reestablished in 2000, but another failed coup d'état occurred in 2002, and then a rebel uprising divided the country between the north and south. That division was still in place in 2007 in spite of numerous international efforts to end the dispute. Immigration and

eligibility for the presidency were key issues in this dispute, and in 2004 there was a mass exodus of workers from the south (OECD 2006). In 2005 presidential elections were postponed due to continuing conflict and had not yet been held as of 2007.

Efforts to liberalize the Ivorian economy continued until 2002, the last time that Cote d'Ivoire received financial assistance from the IMF ((IMF 2002, OECD 2006). CAISTAB and the cocoa and coffee sectors were privatized in 2000. Cotton, sugar, rubber, palm oil and pineapple holdings of the government were divested in 2002 at the request of the IMF. Several professional associations were created to replace the privatized parastatals. The BCC (Coffee and Cocoa Marketing Exchange) and ARCC (Coffee and Cocoa Regulatory Authority) took over CAISTAB functions for cocoa and coffee, and SOFICOCI was created to help finance cotton. But subsequently export taxes were raised to generate more public revenue during this crisis period.

The north-south division affected agricultural sectors differently. Cocoa and coffee are produced in the rain forests of the south, and exports for cocoa have remained steady in spite of the conflict. But cotton and much of cereals production are in the north, in areas held by rebels. In the case of cotton, much production is apparently sold and ginned in neighboring Mali and Burkina Faso (OT Africa Line 2006), so the Ivorian cotton companies have been facing difficult financial times. Credit has been more difficult to obtain during this period as well, in part due to the conflict and in part due to structural adjustment reforms. Even rice is mostly produced in the north, so imports of rice to feed the urban areas of the south have increased markedly. "Voluntary administered prices" for rice in urban areas were established, but appear to help traders more than farmers, raising wholesale to retail margins (OECD 2006, Oryza 2004).

The timeline of events related to agricultural policy in Cote d'Ivoire has been somewhat difficult to establish, mainly because there has been a consistency of policy – state intervention persisting – and fits and starts at liberalization followed by periods of increasing taxation of agriculture. Cocoa production has consistently been supported by broad policy initiatives, while at the same time being heavily taxed. Political events have affected policy, and have influenced the ways in which the state has managed its key agricultural exports. Structural adjustment has played the key role in fostering liberalization, but was never embraced by the Ivorian government. Sporadic, slow reform efforts overlap several of the periods identified here. Overvaluation of the CFA characterized the 1980s, and devaluation in 1994 was a pivotal event briefly bringing faster economic growth and fewer distortions. But

in periods of reform, farm-gate prices did not improve much, as private traders gained margins reduced by the government.

Agricultural policies, output and trade

In this section pricing and performance data will be examined by sector for the four key sectors which are the focus of this study – cocoa, coffee, cotton and cereals. In addition, critical issues relevant to each sector will be identified, and events in that sector will be related to the policy evolution outlined earlier.

Cocoa

Cocoa remains Cote d'Ivoire's leading agricultural export, accounting for 40 percent of export revenue in 2002, 37 percent in 2003 and 30 percent in 2004, in spite of continued heavy taxation and low farm-gate prices relative to border prices. These revenue variations are explained by world price changes, as export volume was higher in 2004 than in the two previous years. Exports for Cote d'Ivoire were 41 percent of world cocoa trade in 2001 and 35 percent in 2003, making it the world's largest exporter and a large country exporter with motivation to maintain those export taxes (ICCO 2006). The most fundamental reform to trade policy in this sector was privatization of CAISTAB in 2000, emanating from structural adjustment reforms. But when export taxes were briefly lowered at the insistence of international donors, export trader margins increased while farm-gate prices did not and short run international price variability was not passed through to the farm-gate (Wilcox and Abbott 2004). That and the civil conflict have led to a reinstatement of export taxes. (Appendix Figure 6 shows the evolution of cocoa production and trade in response to these distorted incentives.)

The area planted to cocoa increased steadily until the mid-1980s. While there was a significant rise in area planted around the 1994 devaluation, it remained flat before and afterwards. Yields rose erratically until 1994, and there has been a significant, steady increase in yields to 2004. The earlier area increases and later yield increases have allowed production and exports to grow, with a strong increase in output after 1994. While little of Cote d'Ivoire's cocoa is consumed locally, the share of beans processed locally has increased

considerably since 1999, encouraged by a reduction in export taxes on processed cocoa products (BNETD 2002).

High export taxes, averaging 34 percent of fob export value[5] from 1995 to 2004, account for much of the difference between farm-gate and border prices. (Appendix Table 2 presents cocoa farm-gate prices as a percentage of border prices. It also shows export taxes since the privatization initiatives began in 1995, when excess profits to the parastatal exporter were replaced by explicit export taxes (the DUS and prélèvements professionnels). Export taxes were higher until 1998, when reform pressures were greatest, but have increased steadily since then to very high values. Exporter margins fell around the initial 1998-99 liberalization, quickly recovered and then reached higher levels as the conflict intensified after 2002. All this came at the expense of farmers, as farm-gate prices as a share of border prices are in 2003 and 2004 at their lowest levels since the late 1970s, when world prices were much higher.

This share of cocoa farm-gate prices was strongly influenced by the level of world prices as a result of CAISTAB's stabilization efforts. Official cocoa prices in nominal terms would stay fixed for years prior to 1994. When adjustments were made, they typically reflected earlier, significant changes in the level of world prices. The result was that the correlation between domestic and world prices from 1979 to 1994 was only 61 percent and the standard deviation of farm-gate prices was only 33 percent of that for border prices measured in CFA. Price instability is one strong complaint of farmers in the post-liberalization era. As is the case often of trade policy measures, these shares vary endogenously with world market conditions, and those changes in world prices have often been more important than domestic policy in determining national welfare, though less so for farmer welfare because of this stabilization.

The early success of Cote d'Ivoire's cocoa sector should not be attributed to high farm-gate prices, which over the years of successful expansion from 1960 to 1979 averaged only 47 percent of border prices. Rather, institutional factors including immigration and land tenure policies encouraged area expansion in spite of high taxation. The devaluation did seemingly succeed in stimulating cocoa exports and even yield increases, but with farm-gate prices from 1994 to 1999 still only 45 percent of border prices. Only during the 1980-1993 recession period were they higher, and that effect was negated when prices are measured at real exchange rates, so that a similar 44 percent share is then found. There have been many

[5] The DUS (Droite unique de sortie) is a specifc tax, as are most of the prelevements professionels, but they have been changed often, even during seasons, in response to changing world market conditions.

attempts to estimate cocoa supply functions from these data (Maizels, Bacon and Mavrotas 1997) which have been unable to obtain the correct sign on the supply elasticity, consistent with unmeasured institutional changes rather than higher prices driving supply trends.

The structural adjustment reforms have brought a number of other concerns to the Ivorian cocoa sector, as private traders very successfully marketed cocoa, but various public goods provisions suffered. Complaints focused on credit availability, market information, input provisions and disease control. Moreover, BNETD (2006) has reported that significant declines in the quality of cocoa exported from Cote d'Ivoire have resulted, and that the premium Cote d'Ivoire received on the LIFFE commodity exchange diminished. The "laissez faire" regulation of private traders that had characterized CAISTAB's parastatal management meant the transition for traders was easy, but there remained a need for a government agency in certain areas after structural adjustment reforms. New institutions were created to fill these gaps, but solving governance problems has not been possible with the continuing civil conflict.

Another important part of the cocoa story since 1999 has been the increase in processing of cocoa beans into butter, powder and paste. Prior to that time, origin processing was small, and the products produced were considered to be of inferior quality. Both ADM and Cargill have built processing plants in Cote d'Ivoire meeting the output specifications of their European plants. Origin processing has benefited from reduced export taxes. In 1999 export taxes on processed beans were only 9 percent, compared to 33 percent for whole beans. As taxes on raw beans have increased, so have taxes on cocoa processed products, but those taxes remained nearly 20 percent lower in 2004. Plant managers at ADM and Cargill argue the quality of products now coming from African plants is as good as from European plants, but costs are much higher. Without the export tax reduction incentives, processing would still be in Europe (or North America); but with these incentives, over 25 percent of cocoa beans from Cote d'Ivoire are now processed before export.

Coffee

The coffee story for Cote d'Ivoire is markedly different in some respects from the cocoa story. Most notably, Cote d'Ivoire was Africa's largest coffee exporter in the 1960s to 1970s, but has seen declines in its very erratic production and exports. Coffee contributed from 35-40 percent of export revenue for Cote d'Ivoire in the early 1960s, but that fell steadily to only

7 percent in the late 1990s and only 1.7 percent in 2004. Export taxes have not been as high for coffee as cocoa, in part because the fall in world coffee prices was greater. But farm-gate prices have remained a low share of farm-gate prices, averaging 47 percent of border prices.

The area planted to coffee grew steadily until the mid-1980s, then leveled off, but fell around 1990 and declined steadily from 1999. Yield has been extremely volatile, and had declined considerably until 1994, when a resurgence of yields occurred. As a consequence production and exports rose slowly but erratically until the early 1980s, declined until the mid-1990s, increased considerably with the yield advances of the late 1990s, but have fallen back again since 2001 (Appendix Figure 7). Exports of processed coffee products have never been large, in contrast to the cocoa case.

Export taxes have averaged only 8.3 percent since 1995, smaller than those for cocoa, while trader margins are somewhat higher, with exporter margins reaching 35 percent since 2002 (Appendix Table 17). Farm-gate prices averaged 44 percent of border prices from 1960 to 1979, 49 percent from 1980 to 1993, 56 percent from 1994 to 1999, and 48 percent from 2000 to 2004. Some very low shares were realized (14 percent in 1976 and 28 percent in 1993) and higher shares occurred in 1991 (78 percent) and 1995 (69 percent). The period of recession from 1980 to 1993 yielded very low relative coffee prices, averaging a 35 percent share of border prices, once the exchange rate overvaluation is factored in.

International coffee prices had been higher than cocoa prices at the peak in 1975, and have been lower than cocoa prices since 1990 (Appendix Figure 5). These trends in border prices have strongly influenced domestic coffee prices, and as a share of border prices, with slightly less stabilization than was found for cocoa. Shares varied considerably over the rather stable period as a consequence of volatile international prices. Nominal coffee farm-gate prices never show the plateaus over several years found for cocoa, and the standard deviation of domestic coffee prices was 40 percent of that for border prices from 1979 to 1999. Trade policy for coffee also endogenously responded to border prices, raising the share of farm-gate prices in border prices when international coffee prices were very low.

Structural adjustment reforms were also the driving force for recent changes in domestic coffee policy. A big jump in coffee farm-gate prices was seen following the 1994 devaluation, driving area and yield expansion. But low world prices brought domestic prices down dramatically by 2001. The same institutional changes affecting cocoa impacted the coffee sector, which had also been managed by CAISTAB prior to liberalization, so many of the same problems arose for coffee producers.

Cotton

The cotton sector in Cote d'Ivoire has been managed somewhat differently than cocoa or coffee, without the "laissez faire" parastatal management. This is due to agronomic and institutional differences. Cotton is more input demanding, requiring fertilizer, pesticides and variety changes over time. Cocoa and coffee trees once planted, will produce crops with few inputs beyond labor. Seed cotton is also ginned in-country, and lint, cotton seed and other products are then sold. CIDT, a parastatal, held a monopoly in cotton until privatization began in 1998, when it was broken into three regional companies, but each of those held a monopoly over their region, and the state did not divest a majority interest in those companies until 2002. Liberalization advocates have not insisted on as great a degree of privatization for cotton, and parastatal management has extended to monopoly control of trade since the French colonial period (Goreux and Macrae 2003).

Cotton farmers and cotton exports are also heavily taxed, if less so than cocoa or coffee farmers when ginning costs are considered, and with sustained periods of low world cotton prices leading to apparently higher farmgate prices as a share of border prices realized. (Appendix Table 18 shows cotton farm-gate prices for seed cotton, compared to the A (Liverpool) index, an international indicator of cotton lint prices. In that table I also compare cotton lint export unit values to the FAO cotton lint "producer price"[6] which show a very similar pattern as the seed cotton prices.) Lint and other products, not seed cotton, are exported. The international index of cotton lint prices is transformed to a seed cotton equivalent basis utilizing the methodology and ginning ratios taken from Baffes (2007). FAO reports cotton lint "producer prices" which are simply seed cotton producer prices converted to a lint basis utilizing a very similar ginning ratio (FAOSTAT 2006). Seed cotton prices have been a small fraction of the transformed A index, averaging 54 percent from 1966 to 1979, 51 percent from 1980 to 1993, 51 percent from 1994 to 1999, and 63 percent from 2000 to 2004. The extent of implicit taxation of cotton appears to be greater during the recession period from 1980 to 1993, when the overvaluation of the CFA is taken into account, since farmgate prices are then only 39 percent of border prices.

[6] The FAO producer price for cotton lint is not a factory gate price, but rather the seed cotton producer price divided by a standard ginning ratio – 40 pecent until 1992 and 44 percent afterwards. Baffes (2007) ginning ratios show variability, but are generally similar to these estimates.

The cotton margins include ginning costs, but ginning is done by parastatals who were not privatived until 2002, and still involve some government control. Thus, taxation of cotton is implict in any excess profits collected by ginners, but is hard to measure because ginning costs appear to be reported as the difference between sales prices for lint exports and seed cotton costs of ginners (prices paid to farmers). Mis-management has led to losses by these ginners in years of very low world cotton prices. Baffes (2007) adjusts cotton margins to reflect excess costs of these paratsatals, and subsequent NRA calculations will reflect assumptions necessary to make these adjustments.

The patterns seen here are quite similar to those for cocoa and coffee, though conditioned by the unique history of world cotton prices. Once again, considerable variations around these means are found, driven by variations in international cotton prices. Moreover, seed cotton prices from 1966 to 1999 are much like cocoa prices under parastatal management. They remained fixed in nominal terms for several years. Cotton prices, like cocoa prices, only increased (were never lowered) in nominal terms until 1991, and afterwards. Increases occurred well after international prices had increased, and the fall in 1991 reflected a 50 percent drop in international cotton prices. Higher farmgate price shares in the later periods reflect persistently low world cotton prices in recent years.

The area planted to cotton has grown steadily since 1960, with a leveling off around 1989, a jump in area planted at the time of devaluation, and subsequent decline due to the civil conflict. Seed cotton yields also grew over the 1960s and 1970s, but stagnated and varied erratically until the devaluation, and have returned to varying around levels found in the mid-1980s. Production as a result grew until 1987, and again after the devaluation, with increased variability. Cotton lint production has mirrored seed cotton production, and most lint has been exported, so exports follow the same pattern. Some cottonseed has also been exported since 2000. (Appendix Figure 8 shows cotton production and trade since 1960.)

These trends indicate that policies during the recession and after the devaluation hurt cotton exports, but that cotton has become an increasingly important export in spite of the sustained taxation. Recent BNETD data suggest farmers may have received somewhat better prices as the second phase of privatization took effect. But cotton is in the north, in territory held by rebels. Reports indicate that farmers have been selling cotton at lower prices for cash in neighboring countries rather than on credit to the financially troubled Ivorian cotton companies (OT Africa Line 2006). The apparent implicit taxation of cotton farmers since

2000 probably reflects these problems, and BNETD as well as Baffes/CIDT report that cotton farm-gate prices continued to fall after 2004.

Cereals

Rice is one of Cote d'Ivoire's most important agricultural imports, amounting to US$218 million in 2004, or nearly 3 percent of total imports. This accounts for almost half of Cote d'Ivoire's rice consumption. Cote d'Ivoire also imported $73 million worth of wheat, which it does not produce. This country does produce maize, millet and sorghum (as well as rice), but none of these other cereals are traded to any degree. According to the FAO (2003), roots and tubers, especially cassava, are important sources of calories in the Ivorian diets, but these are not traded either. Non-tradable cereals (maize, sorghum and millet) and roots and tubers (cassava, plantains, yams) accounted for over half of agricultural production value in the 1960s and still over one-third of production value in recent years. As noted earlier, a parastatal marketing board managed rice trade until its privatization in 1995, and rice self sufficiency was a policy goal in the mid-1980s, supported by quantitative restrictions on imports. It appears that the government still influences rice prices and trade, in urban areas, through "voluntary" administered pricing (OECD 2006).

Rice and maize farm-gate prices as a share of border prices are much higher than those typically found for exportables, but have been low over some periods, and vary with international price changes (Appendix Table 19). Rice farm-gate prices averaged 96 percent of border prices from 1961 to 1979, 121 percent from 1980 to 1993, 110 percent from 1994 to 1999, and 125 percent from 2000 to 2003. Maize farm-gate price ratios were well above these ratios for rice, and those domestic prices were well above border prices for most of this time. Maize prices averaged 113 percent of the international (US Gulf) price from 1966 to 1979, 174 percent from 1980 to 1993, 133 percent from 1994 to 1999 and 134 percent from 2000 to 2004. But maize has never been traded to any significant extent, and is behaving as a non-tradable.[7]

Cereals tariffs are the same for all cereals, and are low, averaging 8 percent since privatization of the parastatal. MFN tariffs are 10 percent, and a lower ECOWAS preferential tariff applies to trade with neighbors. Tariffs on roots and tubers are somewhat higher (the

[7] Both data showing very limited trade of maize and other staple home goods and the disconnection between domestic and world maize prices supports this assertion.

MFN tariff is 20 percent for cassava), but they are also not traded to a significant degree. To the extent there is trade in cereals other than rice or in roots and tubers, it would likely be with African neighbors, and statistics report trade in maize, millet, sorghum and cassava is a very small fraction of consumption (FAO 2003). Tariffs are inconsistent with deviations of rice prices from world prices in recent years, and implicit stabilization and subsidization by the parastatal using quantitative restrictions and market segmentation is evident in earlier years. High maize prices are also consistent with restrictions on cereals imports.

Rice area planted has been relatively constant, rising in the mid-1980s when the self sufficiency policy applied and prices were higher, and has fallen since the devaluation of 1994. Area planted to maize shows a similar pattern. Yields have been relatively stable, with dramatic increases shown in the data since 1994. These look suspiciously like data problems rather than actual technical improvements. (Appendix Figure 9 shows rice production and trade, while Appendix Figure 10 shows maize and wheat production and trade.) Diange (2006) and Warda (2006) report that Ivoirian farmers are adopting new rice varieties, but at a time much later than the yield increases shown in the FAO data. Imports of wheat and rice grew until the self sufficiency period, when they remained relatively constant. Wheat trade has been steadier, but smaller than rice, and rice imports actually declined in the mid-1980s after a surge. Another dramatic increase in rice imports is evident since 1999, with imports in 2004 more than double those in the mid-1990s. There was a brief drop in rice imports around the time of the devaluation, which coincided with high world rice prices, but low world prices around 2001 and civil conflict since have brought increasing imports.

Information on urban rice prices were obtained both from BNETD (2006) and Oryza (2004) for recent years. They show two characteristics of the rice market. One is that local rice commands a premium over imported rice. That premium was 27 percent in 2001 and 41 percent in 2002. The second is that urban retail rice prices are substantially higher than are farm-gate prices or import prices, even after tariffs and the VAT are applied. In 2002, farm-gate prices were 166 CFA per kilogram (in milled terms), import unit values were 123 CFA per kilogram, imported rice in the Abidjan market average 207 CFA per kilogram, and local rice averaged 271 CFA per kilogram according to Ozrya (2004). During this same year BNETD reported an urban wholesale price of 250 CFA and a retail price of 300 (reflecting the VAT). As noted earlier, the OECD (2006) reports that traders were asked to voluntarily set urban prices (probably at the BNETD reported levels). The BNETD wholesale price yields an urban- rural margin of 63 percent, and an import to wholesale margin of 68 percent.

The rural-import price differential reflects both transportation costs and the premium on local rice. Taking those into account still leaves a substantial margin for urban rice traders. It appears the current policy restricts imports like quantitative restrictions did in the past, with little benefit accruing to farmers. Urban traders appear to collect any rents in this system, but restrictions on imports are needed to account for the import to wholesale margin, with segmented markets and the voluntary pricing scheme enabling collusion.

In spite of this recent protection, rice imports have expanded greatly in recent years. Since most rice is grown in the north, trade within the country is severely affected by the ongoing civil conflict. This would help account for the large urban-rural margin, and the urban rice price.

Distortions to agricultural incentives

The main focus of the empirical part of the present study's methodology (Anderson et al. 2008) is on government-imposed distortions that create a gap between domestic prices and what they would be under free markets. Since it is not possible to understand the characteristics of agricultural development with a sectoral view alone, the project's methodology not only estimates the effects of direct agricultural policy measures (including distortions in the foreign exchange market), but it also generates estimates of distortions in non-agricultural sectors for comparative evaluation. More specifically, a Nominal Rate of Assistance (NRA) for producers of the main traded crops is computed. Also generated is an NRA for nonagricultural tradables, for comparison with that for agricultural tradables via the calculation of a Relative Rate of Assistance (RRA).

Assessing the extent of "average" distortions to agriculture in Cote d'Ivoire is limited somewhat by the focus on the four key commodities traded by Cote d'Ivoire, which account for around only 40 pecent of the value of agricultural production. But these commodities are the ones gaining attention in policy discussions, and are important in determining the behavior of Cote d'Ivoire's trade both for agriculture and in total. Data and information limitations prevent going far beyond these focus commodities, particularly for historical comparisons. Strong assumptions must be invoked to compute average protection rates for even these four traded products in Cote d'Ivoire. There are, however, three important

nontradable staple food products (cassava, plantains and yams), whose markets are not directly distorted by government price or trade policies, that we include; they raise the product coverage ratio to between 70 and 80 percent.

For the three exportables focused on here, farm-gate prices are a small share of world prices. Cocoa and coffee shares were at 50-55 percent and cotton was 57 percent in 2001. These fell to about 36 percent for cocoa and coffee, and increased to 61 percent for cotton in 2004. Explicit export taxes explain these low farm-gate prices for cocoa. High trader margins and excess profits for coffee and cotton suggest an effective non-tariff barrier (NTB) or imperfectly competitive traders. The war has increased domestic trader margins for cocoa as well. In the case of cotton, privatization appears to have briefly raised the share of the border price going to farmers, and the effective NTB had fallen, but after privatization margins remain high. A very small explicit export tax (prélèvement professionel) was recently added for cotton, but it is not big enough to affect these results, and explicit export taxes have not been found for other exportables.[8]

Import-competing products considered here included rice and wheat. Cote d'Ivoire produces no wheat, but rice production is important, and similar tariffs apply. Both are subject to a 10 percent MFN tariff and the VAT, which was 18 percent in 2004 and 20 percent in 2001. Producer price data reveal protection to rice, but wholesale to retail margins are larger and suggest quantitative restrictions may still apply, benefiting local traders more so than farmers.[9]

Other cereals produced in Cote d'Ivoire include maize, millet and sorghum. Roots and tubers, especially yams and cassava, also make up a substantial part of diets. Tariffs on other cereals are the same as for rice and wheat, whereas tariffs on roots and tubers are higher, near the level of other agricultural products. Trade data for West Africa suggest these products and plantains are non-tradable in this region, however, so those tariffs are redundant and the NRA for cassava, plantains and yams is thus assumed to be zero. For those products, both import and export volumes are very low and erratic, as are trade unit values. Maize farm-gate prices

[8] Data reported for bananas reveal low farm-gate prices relative to border prices, suggesting an NTB or high margins, as in the case of cotton. In the case of palm oil, farm-gate prices are higher, indicating little intervention. Both bananas and palm oil are produced on plantations which were to be privatized in 2002, but this has resulted in little change in the share of the world price accruing to farmers.

[9] Fruits and vegetables and other agricultural products are now typically charged a 20 percent MFN tariff. The average tariff for fruits and vegetables was somewhat higher in 2001, and somewhat lower for agricultural products overall. These current tariffs are similar to the protection afforded to manufactured goods, where the 20 percent MFN tariff and 18 percent VAT generally apply. There are exceptions to all these MFN tariffs for special cases, however.

are substantially higher than international prices, more so than can be accounted for by the tariffs, suggesting that rural cereals prices depend to some extent on domestic market conditions, and may be influenced also by the quantitative restrictions on rice imports.

Table 1 presents the evolution of the nominal rates of assistance (NRA) for cocoa, coffee, cotton and rice from 1961 to 2005, while Figure 2 shows averages NRAs for exportables and the one importable. Average NRAs are -43 percent for cocoa, -55 percent for coffee and -31 percent for cotton, showing heavy taxation of export agriculture. The NRA for rice imports averaged close to zero over the whole period, but was 24 percent during the most recent period shown (2000-05).

These estimates appear to show a great deal of variability over time in agricultural protection (or rather taxation, since these are negative in most cases). NRAs are higher, and taxation of agriculture is lower, in years when commodity prices are low, and they are lower at times of high commodity prices. This reflects the stabilization goals of parastatal management, which has only recently been eliminated, by more serious structural adjustment reforms, from the policy regimes applied to these crops.

When we discussed the individual crop histories above, we saw much greater similarity in the average extent of taxation during the critical political-economic periods identified earlier. In large part this is because each period witnessed both low and higher international prices. The transition from one period to the next (e.g. the beginning of the protracted recession) was often brought about by a sustained change in the relative level of the key international commodity prices. (In Appendix Figure 5 we also saw that these international prices tended to move together, if imperfectly, with peaks (mid-1970s, mid-1990s) and valleys (around 2000, mid-1980s) occurring simultaneously.) A key point is that border policy and domestic agricultural policy in Cote d'Ivoire have endogenously responded to world market conditions, isolating to some extent farmers from those extremes, but continuing to tax farmers in most years, and especially when world prices are high.

Also included among the covered products are the three key nontraded staples, namely cassava, plantains and yams, but their NRAs are assumed to be zero so their inclusion simply lowers the weighted average NRA for our group of covered farm products (which account for 70-80 percent of agricultural output valued at undistorted prices). The NRA for the whole sector is generated after making assumptions about the NRA for the exportable, import-competing and nontradable parts of non-covered farm products and of their shares in the value of non-covered production. Those NRAs are shown in the top rows of Table 2. The

NRA for just tradable farm products is then compared with that for non-agricultural tradables using the relative rate of assistance (RRA), shown in the lower part of Table 2 and illustrated in Figure 3. What those RRAs suggest is that the prices of tradable farm products, relative to those received by producers of non-farm tadables, has been depressed by between one-third and one-half over the past five decades.

Conclusions

Cote d'Ivoire is an export oriented agricultural economy, dominated by the export of cocoa. It has managed to maintain and grow exports of its leading export in spite of heavy taxation. Historically, taxes have been somewhat lower on cocoa than on some other key agricultural exports, but those taxes have been quite high, nevertheless. From 1961 to 2004 the nominal rate of assistance (NRA) applied to cocoa showed an average effective 44 percent taxation of this crop, compared with average taxes on coffee of 55 percent over this period and on cotton of 29 percent. Cocoa exports expanded such that Cote d'Ivoire for many years now has been the world's largest exporter of cocoa. Coffee exports in the face of these incentives have diminished substantially, but cotton has expanded in spite of the high rate of taxation. Explaining these trends in the light of incentives is problematic. Only coffee seems to behave according to our simple price-driven supply models, and other explanations beyond simply price incentives are required to explain increasing production in the face of heavy taxation.

The NRA for rice production, a key agricultural import, has averaged 1.3 percent since 1961, and is now much higher (26 percent). In spite of quantitative restrictions in the past, rice imports have grown, and have grown rapidly even as the protection has risen recently. It is interesting to note that virtually all analysts have described policy in Cote d'Ivoire as focusing on agricultural exports, and on discouraging food production, yet rice is protected, and prices for other cereals, which are largely non-tradable, also have been generally higher than international norms (perhaps buoyed by the high rice price and import limitations).

Taxation of agriculture appears to be remarkably stable over the critical political-economic periods defined according to Ivorian history, hiding significant year-to-year variations. In each of the four periods, averages of the NRAs are very close to the overall

average, and the extent of taxation since 1980 is very close to the average before 1980. In the case of cocoa, taxes averaged 43 percent before 1980, and 44 percent afterwards. In the case of coffee, taxes averaged 55 percent in each of those periods, and in cotton the rate was about 30 percent in both periods. The change has been greatest for rice, where effective tariffs were -1 percent from 1960 to 1979 and 24 percent afterwards. This stability, in spite of the large variations in yearly taxation rates, reflects the stabilization objective of Ivorian agricultural policy, and the endogeneity of agricultural taxation. Very high tax rates have been lowered in years of low international prices, sheltering farmers from the full effects of international price volatility, but taxing them nevertheless.

One of the main forces for change of Cote d'Ivoire's agricultural policy has been structural adjustment reforms. These have included pressure to reduce export taxes and to privatize parastatal agencies that have managed the key agricultural sectors. The government of Cote d'Ivoire in the past has not taken ownership of these reforms, and since the first reforms began in 1981 trade liberalization efforts have begun and stalled and then begun again. More recent efforts, since the 1994 devaluation and particularly after 2000 when CAISTAB was finally privatized, might have finally been effective in making this a more open, market-oriented economy, but the recent civil conflict has put reduced agricultural taxation on hold.

It is not entirely evident that these reforms are always in the national interest. Farmers have objected to the price variability they now face. More importantly, as a large country exporter it may be that export taxes are in the national interest, even if not in farmers' interests. Yilmaz (1999) a decade ago estimated that optimal export taxes for cocoa from Cote d'Ivoire were around 30 percent, only somewhat lower than the historical rate of taxation. Others have shown that quotas, and parastal management, can also exploit Cote d'Ivoire's market power in cocoa (Panagariya and Schiff 1992). Tax revenues were intended to help stabilize prices, but were more often used to finance diversification of exports and industrial development. Gilbert and Varangis (2003) argue in the case of cocoa that if structural adjustment raised farm-gate prices for all the African exporters, supply expansion could have frustrated the intent of this initiative to improve farmer welfare by lowering world prices. Abbott, Wilcox and Muir (2005) note that imperfectly competitive private traders have at times raised margins when structural adjustment reduced taxation, and those margins fell again as taxes were subsequently raised. In neighboring countries, where reforms have gone further, farm-gate prices remain a fraction of world prices, and imperfectly competitive

behavior by traders is found, resulting in weak transmission to farmers of world price fluctuations. The share of farmgate prices in consumer goods prices is notoriously small, and large multinationals who may have market power intervene between consumers and cocoa farmers (Dorin 2003, Fold 2002, Losch 2002). Thus, the effects of the longstanding structural adjustment reforms in Cote d'Ivoire, even in the brief periods when they were more seriously applied, have not led to significantly higher farm-gate prices.

Early analysts emphasized the institutional structure of markets and policy in Cote d'Ivoire. Immigration and land tenure policies were important, at least before 1994, in explaining supply response and expansion of cocoa exports. The "laissez faire" parastatal management of cocoa and coffee interfered little with cocoa production beyond the collection of taxes at the port. Lessons after privatization of cocoa and coffee have been that the private sector can continue to market cocoa effectively, that taxes are not necessarily reduced, and that a role for government remains. Farmers' complaints about prices reflect as much the problems of poor market information when pan-territorial, stable prices no longer apply. Quality deterioration, credit availability, ineffective disease and pest management, and the need for research and extension show that some government involvement must persist, and each of these aspects had been addressed by policy prior to 2000. Newly invented "private" institutions have attempted to cope with some of these problems in a difficult political environment.

One must be careful in advocating simplistic policy solutions for Cote d'Ivoire's agricultural sector. WTO-style trade liberalization, if it involves only tariff changes, is unlikely to have a large effect. It is difficult to find any effect of the 1995 Uruguay Round Agreement (FAO 2003), in part because structural adjustment not WTO commitments dictated any actual reforms, and in part because it occurred at the same time as the 1994 devaluation. But institutionally set prices changed only slowly in response to these forces. That sectors improved even in cases where positive changes in farm-gate prices are not immediately evident demonstrates the importance of accompanying institutional changes.

The most powerful political economy factor dictating policy and performance in Ivorian agriculture has been civil conflict. This has influenced the specifics of agricultural policy through the north-south division of the country and through impacts on immigrant labor. It has frustrated the intent of recent, more serious liberalization efforts. It is unfair to judge the potential of greater agricultural liberalization until those problems are solved. But both the successes and the problems of agricultural exports in Cote d'Ivoire highlight the

need to solve governance problems so that the state can perform its appropriate role in agriculture.

References

Abbott, P., M. Wilcox and W. Muir (2005), “Corporate Social Responsibility in International Cocoa Trade”, presented at the IAMA Symposium, Chicago, June 25-26.

Ahmed, M., H. Kazianga and J. Sanders (2005), "West African Cocoa: Modernization or Loss of Production Shares?" Mimeo, Purdue University, West Lafayette, November.

Anderson, K., M. Kurzweil, W. Martin, D. Sandri and E. Valenzuela (2008), “Methodology for Measuring Distortions to Agricultural Incentives,” Agricultural Distortions Working Paper 02, World Bank, Washington DC, revised January.

Baffes, J. (2007), “Distortions to Cotton Sector Incentives in West and Central Africa”, Agricultural Distortions Working Paper 50, World Bank, Washington DC, December.

Bassett, T (1988), “The Development of Cotton in Northern Ivory Coast, 1910-1965”, *Journal of African History* 29(2): 267-284.

Boone, C. (1995), “The Social Origins of Ivoirian Exceptionalism: Rural Society and State Formation”, *Comparitive Politics* 27(4): 445-463, July.

Bourse Du Café Et Du Cacoa (BCC) (2006), “Analyse De La Commercialisation Du Café Et Du Cacao Campagne 2005-2006”, Abidjan, April.

Bourse du Cafe et du Cacoa (BCC) (2006), Website: http://www.bcc.ci/index.asp.

Brooks, J., A. Croppenstedt and E. Aggrey-Fynn (2007), “Distortions to Agricultural Incentives in Ghana”, Agricultural Distortions Working Paper 47, World Bank, Washington DC, December.

Bureau National d’Etude Technique et de Développement (BNETD) (2002 and earlier years), “Observatoire Café-Cacao”, Ministere De La Planification Et De La Programmation Du Developpement, Abidjan.

Bureau National d’Etude Technique et de Développement (BNETD) (2006), Website: http://www.bnetd.ci/index.htm

Dand, R. (1999), *International Cocoa Trade,* 2nd ed., Cambridge: Woodhead Publishing.

Département de L’Evaluation des Opérations (1998), “Les Opportunities Offertes par la Devaluation en Côte d’Ivoire”, Numero 161, World Bank, Paris.

Diagne, A. (2006),"Diffusion and Adoption of Nerica Rice Varieties in Côte d'Ivoire," *The Developing Economies* 44(2): 208.

Dorin, B. (2003), " From Ivorian Cocoa Bean to French Dark Chocolate Tablet", CIRAD, AMIS-36, CP-1602, Paris.

Easterly, W. (2006), "Global Development Network Growth Database", Development Research Institute, New York University, New York. http://www.nyu.edu/fas/institute/dri/global percent20development percent20network percent20growth percent20database.htm

EIU (2006), "Country Profile - Côte d'Ivoire", Economist Intelligence Unit, London.

FAO (2003), "Cote d'Ivoire: WTO Agreement on Agriculture: The Implementation Experience-Developing Country Case Studies", Commodities and Trade Division, FAO, Rome.

FAOSTAT (2006), Food and Agriculture Organization Statistics Databases, Available at: //faostat.fao.org

Fold, N. (2002), "Lead Firms and the Competition in 'Bi-polar' Commodity Chains: Grinders and Branders in the Global Cocoa-chocolate Industry", *Journal of Agrarian Change* 2(2): 228-247.

Gilbert, C.L. and P. Varangis (2003), "Globalization and International Commodity Trade with Specific Reference to the West African Cocoa Producers", NBER Working Paper No. W9668, Cambridge MA, May.

Goreux, L. and J. Macrae (2003), "Reforming the Cotton Sector in Sub-Saharan Africa", Africa Region Working Paper Series No. 47, World Bank, Washington DC, March.

Hecht, R.M. (1983), "The Ivory Coast Economic Miracle: What Benefits for Peasant Farmers?", *Journal of Modern African Studies* 21(1): 25-53.

International Coffee Organization (ICCO) (2006) Website: http://www.icco.org/

International Coffee Organization (ICO) (2006) Website: http://www.ico.org/

International Currency Analysis (1993 and earlier years), *World Currency Yearbook* (formerly *Pick's Currency Yearbook*), Brooklyn NY: International Currency Analysis, Inc.

International Monetary Fund (2002), "Côte d'Ivoire-Letter of Intent, Memorandum of Economic and Financial Policies, and Technical Memorandum of Understanding," Washington DC: International Monetary Fund.

International Monetary Fund (2006), *International Financial Statistics*, Washington DC: International Monetary Fund . http://www.imfstatistics.org/imf/imfbrowser.aspx?branch=ROOT

Kouassy O., J. Pegatienan and B. Ngaladjo (2004), "Côte d'Ivoire: Policy Making and Implementation: Examples of Selective Trade and Strategic Industrial Policies", in C. Soludo, O. Ogbu and H-J. Chang (eds.), *The Politics of Trade and Industrial Policy in Africa*, Ottawa: Africa World Press/IDRC. http://www.idrc.ca/en/ev-52168-201-1-DO_TOPIC.html

Krueger, A.O., M. Schiff and A. Valdes (1991), *The Political Economy of Agricultural Pricing Policy, Volume 1: Latin America, Volume 2: Asia, and Volume 3: Africa and the Mediterranean*, Baltimore: Johns Hopkins University Press for the World Bank.

López, R. (1998), "The Tragedy of the Commons in Côte d'Ivoire Agriculture: Empirical Evidence and Implications for Evaluating Trade Policies", *World Bank Economic Review* 12(1): 105-131.

Losch, B. (2002), "Global Restructuring and Liberalization: Cote d' Ivoire and the End of the International Cocoa Market?", *Journal of Agrarian Change* 2(2): 206-227.

Maizels, A., R. Bacon and G. Mavrotas (1997), *Commodity Supply Management by Producing Countries: A Case Study of the Tropical Beverage Crops*, Oxford: Clarendon Press.

OECD (2006), *African Economic Outlook 2005-2006, Côte d'Ivoire*, Paris: OECD. www.oecd.org/dev/publications/africanoutlook

OT Africa Line (2006), "West African Commodity Reports," OTAL, August. http://www.otal.com/images/OTAL%20Services/CommodityReport/Commodity%20August%202006.pdf

Oryza (2004 and earlier years), "Oryza Market Reports - Ivory Coast", Ivory Coast Rice Market Reports: http://oryza.com/africa//ivorycoast/index.shtml

Panagariya, A. and M. Schiff (1992), "Taxes Versus Quotas: The Case of Cocoa Exports", in I. Goldin and A. Winters (eds.), *Open Economies: Structural Adjustment and Agriculture*, Cambridge: Cambridge University Press.

Ruf, F. (1995), *Booms et Crises du Caooa: Les Vertiges de l'or Brun*, Paris: CIRAD-SAR and Karthala.

UNCTAD (2006), TRAINS, United Nations Conference on Trade and Development, Trade Analysis and Information System, , Geneva: United Nations. http://r0.unctad.org/trains_new/index.shtm

US Department of State (2003), *Côte d'Ivoire Country Commercial Guide FY 2003-Economic Trends and Outlook*, Washington DC: US Department of State.

US Department of State (2007), *Background Note: Côte d'Ivoire*, Washington DC: US Department of State.

van de Walle, N. (1991), "The Decline of the Franc Zone: Monetary Politics in Francophone Africa", *African Affairs* 90: 383-405.

WARDA (2004), "The Best of Both Worlds – Cote d'Ivoire", West African Rice Development Association, Bouake, Cote d'Ivoire, September.

Widner, J.A. (1993), "The Origins of Agricultural Policy in Ivory Coast 1960-86", *Journal of Development Studies* 93: 25-59.

Wilcox, M.D. and P.C. Abbott (2004), "Market Power and Structural Adjustment: The Case of West African Cocoa Market Liberalization", Selected Paper, American Agricultural Economics Association Annual Meeting, Denver, Colorado, August 1-4.

Woods, D. (2003), "The Tragedy of the Cocoa Pod: Rent-seeking, Land and Ethnic Conflict in Ivory Coast", *Journal of Modern African Studies* 41(4): 641-655.

Woods, D. (2004), "Predatory Elites, Rents and Cocoa: A Comparative Analysis of Ghana and Ivory Coast", *Commonwealth and Comparative Politics* 42(2): 224-241.

World Bank (2006a), "Country Brief: Cote d'Ivoire", World Bank Website: www.worldbank.org

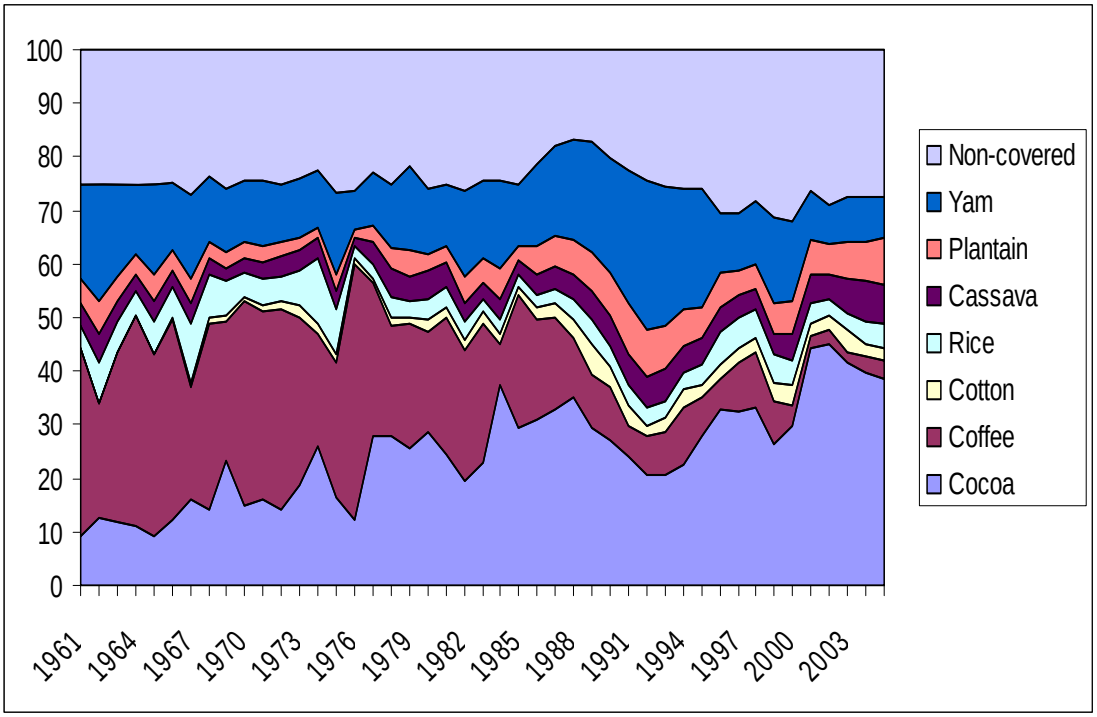
World Bank (2006b), *World Development Indicators 2006*, Washington DC: World Bank. http://devdata.worldbank.org/data-query/.

World Trade Organization WTO (1995), *Trade Policy Review: Côte d'Ivoire*, WT/TPR/S/2 World Trade Organization, Geneva. http://www.wto.org/English/tratop_e/tpr_e/tp8_e.htm

Yilmaz, K. (1999), "Optimal Export Taxes in a Multicountry Framework", *Journal of Development Economics* 60(2): 439-465.

Figure 1: Product composition of agricultural production, Cote D'Ivoire, 1961 to 2005

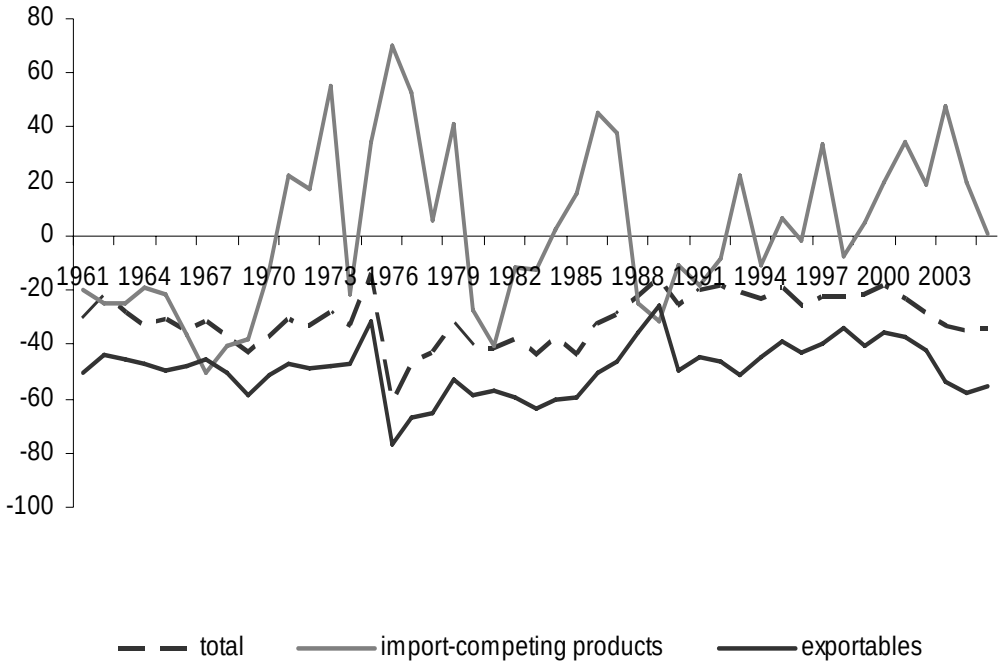
(percent at undistorted domestic prices)



Source: Author's spreadsheet

Figure 2: Nominal rates of assistance to exportables, import-competing and all[a] agricultural products, Cote D'Ivoire, 1961 to 2005

(percent)

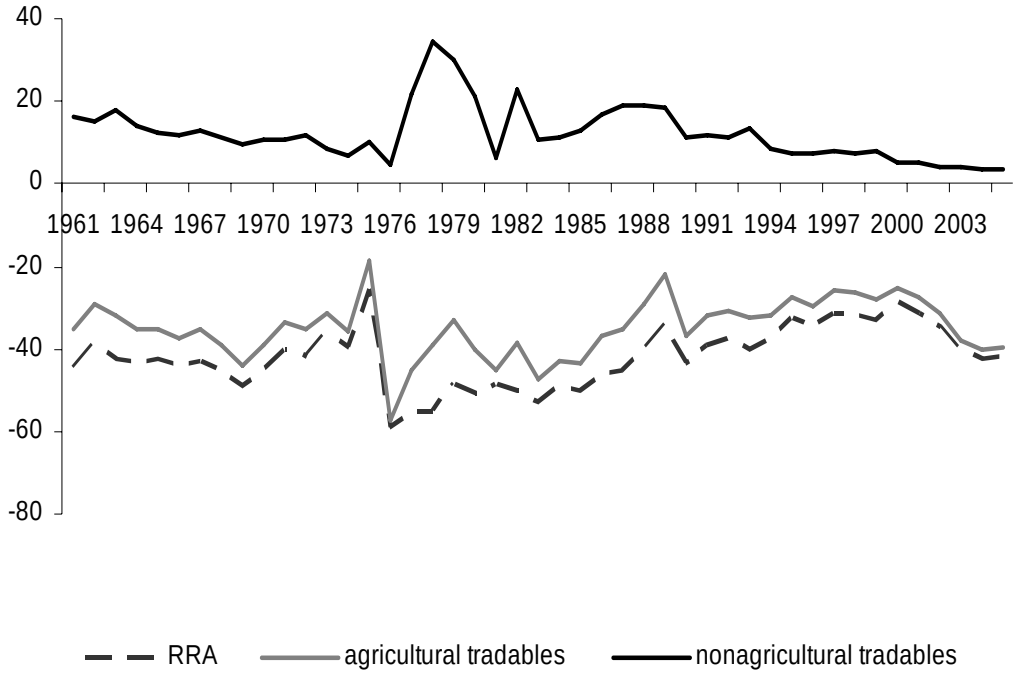


Source: Author's spreadsheet

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

Figure 3: Nominal rates of assistance to all nonagricultural tradables, all agricultural tradable industries, and relative rates of assistance[a], Cote D'Ivoire, 1961 to 2005

(percent)



Source: Author's spreadsheet
a. The RRA is defined as $100*[(100+NRAag^t)/(100+NRAnonag^t)-1]$, where $NRAag^t$ and $NRAnonag^t$ are the percentage NRAs for the tradables parts of the agricultural and nonagricultural sectors, respectively.

Table 1: Nominal rates of assistance to covered farm products, Cote D'Ivoire, 1961 to 2005
(percent)

	1961-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-05
Exportables [a]	**-46.5**	**-50.4**	**-48.6**	**-58.6**	**-59.8**	**-43.4**	**-47.4**	**-39.4**	**-47.1**
Cocoa	-33.3	-45.4	-40.4	-50.2	-51.9	-37.1	-44.1	-41.1	-49.4
Coffee	-51.6	-52.2	-52.6	-64.0	-69.9	-57.6	-57.9	-39.1	-48.0
Cotton	na	-20.6	-29.2	-24.9	-46.9	-34.9	-38.4	-21.9	-15.0
Import-competing products [a]	**-22.3**	**-37.4**	**12.2**	**41.0**	**-17.8**	**8.4**	**-5.4**	**7.2**	**23.6**
Rice	-22.3	-37.4	12.2	41.0	-17.8	8.4	-5.4	7.2	23.6
Nontradables	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cassava	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plantains	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total of covered products [a]	**-28.6**	**-35.4**	**-32.7**	**-39.8**	**-40.1**	**-28.5**	**-21.7**	**-22.5**	**-28.7**
Dispersion of covered products [b]	22.9	27.5	33.1	46.2	33.3	33.1	26.2	23.4	32.6
% coverage (at undistorted prices)	75	75	76	75	75	80	76	71	72

Source: Author's spreadsheet

a. Weighted averages, with weights based on the unassisted value of production.

b. Dispersion is a simple 5-year average of the annual standard deviation around the weighted mean of NRAs of covered products.

Table 2: Nominal rates of assistance to agricultural relative to nonagricultural industries, Cote D'Ivoire, 1961 to 2005
(percent)

	1961-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-05
Covered products	-28.6	-35.4	-32.7	-39.8	-40.1	-28.5	-21.7	-22.5	-28.7
Non-covered products	-8.5	-11.2	-13.7	-2.5	-8.9	-8.5	-12.2	-14.3	-16.3
All agricultural products	-23.5	-29.3	-28.1	-30.8	-32.2	-24.3	-19.5	-20.0	-25.2
Trade bias index[a]	-0.53	-0.50	-0.55	-0.70	-0.64	-0.54	-0.55	-0.49	-0.55
Assistance to just tradables:									
All agricultural tradables	-32.9	-38.1	-35.0	-38.6	-42.9	-33.3	-32.7	-27.5	-33.7
All non-agricultural tradables	15.9	11.7	9.6	20.2	14.7	17.2	11.2	7.5	4.3
Relative rate of assistance, RRA[b]	**-42.1**	**-44.6**	**-40.7**	**-48.7**	**-50.2**	**-43.1**	**-39.5**	**-32.6**	**-36.5**

Source: Author's spreadsheet

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

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

Appendix: Data, data sources, and assumptions

Data for this study were collected on supply and utilization (area, yield, production, exports, imports, domestic use and processing), on pricing (at the farm-gate, at wholesale markets and at the border), and on explicit border policy measures (export taxes and tariffs). Historical data were available from FAOSTAT (2006). More recent data, which also allowed estimation of wholesale and exporter margins, were available from BNETD (Bureau National d' Etudes Techniques et de Développement 2006), the former planning ministry and now public "think tank" examining agricultural policy. Cotton data were taken from the study by Baffes (2007), which obtained information from the cotton compamies in Cote d'Ivoire and elsewhere. Data on broader economic performance and trade, particularly in value terms, came from *International Financial Statistics* (IMF 2006) and *World Development Indicators* (World Bank 2006).

Comparisons of data sources reveal both inconsistencies and certain regularities. Prices are harder to find than quantity data. During periods of parastatal management, prices were regulated or administered on a pan-territorial basis for most important commodities. During those periods, reported prices were official prices, and were better data that did not conflict among sources. If black markets violated these administered prices, that outcome is simply not reflected in any available data. In private markets prices vary over time, space, quality and even institutions governing transactions. The notion of "a farm-gate price" becomes less meaningful under these conditions, but indicators of the level of average prices can be collected. Surveys must be employed to gather price information, and terms for transactions (e.g. quality definitions) must be defined. This has been done in Cote d'Ivoire by both BNETD and the BCC for cocoa, and to a lesser extent coffee. Differences among reported prices show up during these periods, and the nationally collected prices seemed to yield the most consistent trader margins.

In general, for more recent periods national price data from BNETD has been used to assess distortions to agricultural incentives, whereas FAOSTAT data was used for earlier periods as well as for quantity data. Specific issues related to the different types of data collected are discussed below:

Supply-utilization data and processing

None of the national statistics I found were better than or inconsistent with the FAOSTAT (2006) data. FAO supply-utilization data for these commodities are provided in Appendix Tables 7-11. These data include exports of processed products – cocoa butter, powder and paste. It is not clear whether crushing cocoa beans to obtain cocoa butter, powder and past is "light processing," a term used in the overall World Bank study. It is however an important part of this story, as Cote d'Ivoire has reduced export taxes on processed beans, and so the major processors (ADM, Cargill, etc.) have built plants and exported cocoa products at those reduced export taxes. Plant managers [10] stated they would not process or export locally without the reduced export taxes.

Computation of nominal rates of assistance also required value share data for tradeables and home goods. Detailed agricultural production values at farmgate prices were downloaded from FAOSTAT (2006) and the FAO supply utilization data was used to assign commodities to exports, imports or home goods. These data were also used to compute the share of covered products (cocoa,

[10] Personal communications with plant managers for ADM and Cargill in Cote d'Ivoire.

coffee, cotton, rice, yams, plantains and cassava) in overall agricultural production, valued at farmgate prices and at undistorted prices – corrected by the NRAs estimated here. The traded products accounted for about a third of agriculture from 1961 to 2004, rising to 40 percent when the extent of export taxation is considered, and to 70 percent when non-tradable roots and tubers are included.

Farm-gate and reference (border) prices

BNETD (formerly the Planning Ministry, now a public "think tank") runs surveys and publishes farm-gate prices in recent years (since 1995 for cocoa and 2000 for some other crops), and also reports export prices. These are consistent for cocoa and coffee with BCC (2006) (Bourse du Café et du Cacao – a new quasi private coffee and cocoa exchange) surveys, newspaper reports, etc. They also give more consistent and reasonable trader margins than do recent FAO data in those cases. The FAO data seem to miss the effects of civil conflict and reduced farm-gate prices through greater export taxes. Earlier FAO price data, overlapping BCC and BNETD data in years when CAISTAB, the parastatal, managed exports are consistent. (This is not surprising since CAISTAB implemented pan-territorial, administered pricing.) The discrepancies in FAO price data were never large until very recently, but do result in smaller trader margins.

Cotton farmgate prices were also collected by Baffes (2007) from CIDT. Those prices were much lower than prices obtained from BNETD, and tell a qualitatively different story about recent taxation of cotton in Cote d'Ivoire. Since the BNETD prices seem implausibly high, and were unlikely to have actually been paid to farmers (OT Africa Line 2006), the Baffes/ CIDT data is used in computing NRAs. But this discrepancany, which relates to problems arising from the civil conflict, is noted.

The ICCO (Cocoa) and ICO (Coffee) report international price indices comparable to the cotton A-Index used by Baffes (2007) in his study of distortions in West African cotton sectors. These give a better indication of reference (border) prices and so trader margins in earlier years when BNETD data is unavailable. These prices indices are reported in appendix table A5.

Farm-gate price data are based on BNETD data (when available) for cocoa and coffee, Baffes/ CIDT data for cotton, and FAO data for rice and for earlier periods. Reference (border prices) are BNETD data where available and the international (ICCO, ICO, A) indices in earlier years. Margins for traders in periods when parastatals were in effect are assumed constant, at levels computed from the BNETD data during periods prior to privatization of a sectors parastatal. BNETD data is used to compute margins in each year after liberalization when available. The recent Baffes' data (2007) also includes margins for cotton as well as ginning costs. Since ginning costs appear to have been computed from the difference between lint border prices and seedcotton farmgate prices, those costs were adjusted by Baffes to reflect the implicit taxation of farmers by cottton parastatal ginning companies. Price data and margins used later to compute shares of border prices and other distortion measures are provided in Appendix Tables 12-15 for these commodities.

Export taxes and import tariffs

BNETD reports export taxes for coffee, cocoa and cotton. These include both the basic tax (DUS – Droite Unique de Sortie) and fees to support "private associations" such as the BCC, called "Prélèvements professionnels". The cotton export tax is only the "prélèvement professionnel", and only exists after 2004. It is likely that Cote d'Ivoire has used these professional fees, or will do so in the future, for other agricultural exports, but data to verify this was not available.

No one states that there were any export taxes, except those found for cocoa, coffee and cotton (BNETD 2006 and earlier years; FAO 2003). But it is likely that parastatals collected "excess profits" from other agricultural export sectors before privatization, and "quasi private" exporters may continue to do so. I estimate those profits in a few cases based on the ratio of farm-gate to reference prices, assuming trader margins (20 percent) comparable to those observed for cocoa and coffee. In the case of cotton, I use Baffes (2007) adjustment of ginning costs. I use BNETD-reported export taxes where available, and impute export NTBs based on guessed trader margins and observed farm-gate to border price ratios, to account for parastatal excess profits. I also assume that taxation of other uncovered exportables is on average comparable to cocoa, coffee and cotton taxation, given the similar trends for the covered exportables and the extent of apparent taxation comparing recent farmgate and export prices for palm oil, bananas and rubber. In these cases the mechanism of farmer taxation is different since these are produced on (often government owned) plantations.

FAO (2003) in a case study of implementation of the URAA by Cote d'Ivoire reports average applied import tariffs for some agricultural goods. UNCTAD Trains (2006) reports current (2006) MFN tariffs. The WTO (1995) reported tariffs at the last trade policy review for Cote d'Ivoire in 1995. *World Development Indicators* (World Bank 2006b) reports average tariffs (computed from revenue) for 1991 to 2004. Data on industrial tariffs from 1961 to 1981 is also available from Krueguer, Schiff and Valdes (1991). The tariff scheme in Cote d'Ivoire appears to be relatively simple now. Cereals are charged a 10 percent MFN tariff, and most other agricultural products a 20 percent MFN tariff. This scheme of tariffs at 20 percent except for special cases where lower tariffs apply was in place in 1995, and applies also to manufactured goods. Cote d'Ivoire is a member of ECOWAS, where a lower CET applies – so the FAO study computes average tariffs which are lower than current MFN tariffs due to the lower preferential ECOWAS tariffs, but the author suggests that the ECOWAS CET appears to be violated in some cases.

Historical data on tariffs in Cote d'Ivoire appears to be very poor. For example, *World Development Indicators* reports tariff revenue only for a limited number of years. Tariffs were less relevant, and endogenous quantitative restrictions were applied when parastatals managed imports, as in the rice case. Numerous authors describe variations in market access to Cote d'Ivoire, particularly over the structural adjustment/ recession period, without citing numbers (Kouassy, Pegatienan and Ngaladjo 2004). I use FAO (2003) tariffs as an estimate for 2001, and UNCTAD Trains MFN tariffs for 2004 for specific agricultural products. I use World Bank (2006b) and Krueger, Schiff and Valdes (1991) for industiral tariffs, extrapolating data for the 1980s from trends described in Kouassy, Pegatienan and Ngaladjo (2004). I assume that tariffs for agricultural imports other than rice are the same as those for industrial tariffs, since only rice imports appear to have been treated exceptionally.

Consumer taxes

Cote d'Ivoire now applies a somewhat uniform value added tax (VAT). In 1995 the VAT averaged 17.5 percent and varied across goods, with the highest rate and the one applying to most goods at 20 percent (WTO 1995). Evidently it was lowered as part of the post-devaluation reforms. The VAT was raised in 2001 to 20 percent, and then lowered to 18 percent in 2003 (World Bank 2006b, OECD 2006). The VAT in principle applies to imports as well as domestic production. It is unlikely that the VAT is collected on all cereals sales, especially in rural areas. It is likely that lower rates for some goods persist.

Rice

Only FAO data on producer prices and export unit values are available for rice. Much of Cote d'Ivoire's imports are Thai broken rice, and an index of that price is available from the IMF (2006). FAO unit import values and Thai broken rice prices are similar. I use the Thai broken rice price as my reference price. FAO producer prices are of a similar magnitude or higher than Thai broken rice prices, when farmgate prices are converted from paddy to milled equivalent terms. It would appear that the small import tariff is the only protection now afforded rice producers, but voluntary adminsitered prices continue the tradition of quantitative restriction on imports.

BNETD reports (only) market prices for rice (in Abidjan), and they are much higher than farm-gate prices. The Oryza Market Reports (2004, 2003, 2002, 2001 and 2000) indicate urban market prices that are similar to those reported by BNETD, and also report a substantial premium to local rice over imported rice, around 25 percent in 2000 and 2001. The retail margin for rice seems large, even taking into account the VAT. The OECD (2006) reports that Cote d'Ivoire instituted "voluntary" administered prices for rice in 2002. Cote d'Ivoire historically applied quantitative restrictions on rice and other food imports, especially before privatization of parastatals. The high retail margins suggest that either quantitative margins persist, or that "voluntary" price controls raise urban market prices and limit imports.

I use FAO producer prices for rice farm-gate prices and the IMF Thai broken rice price as a reference (border) price for rice. The voluntary administered pricing regime is best modeled as an additional consumer tax, beyond the VAT, but both only apply in urban areas. This effect is not captured in the study methodology (Anderson, Martin, Sandri and Valenzuela 2008), and illustrates the difficulty in covering all contingencies when modeling trade related policy impacts.

Other products

Appendix Table 20 includes several additional commodities important to trade, and for which recent data is available. Tariff data are from two different sources: the 2004 data is MFN tariffs from UNCTAD (TRAINS); the 2001 data is for average applied tariffs from FAO (2003), reflecting trade under the ECOWAS preferential tariff scheme, accounting for some of the differences between 2001 and 2004. International commodity prices in virtually all of these cases were higher, and sometimes by quite a bit, in 2004 over 2001. Since protection in Cote d'Ivoire varies endogenously with the level of world prices, some of the differences in these measures are due to those changes in world prices. In the case of exports, civil conflict and the need to generate public revenue also have led to higher recent export taxes.

Non-tradables

Roots and tubers (cassava, plantains and yams) and coarse grains (maize, sorghum and millet) appear to act like non-tradeables. Reported trade was a very small fraction of consumption. Producer prices are well above reference border prices (e.g. the US Gulf price for maize), but there is no evident policy to support cereals production beyond limits on rice imports. Policies tend to discriminate against food production in favor of exports. Import tariffs are somewhat higher for roots and tubers than for cereals, but imports are minimal and unit values are quite erratic and often unreasonably high. If there were to be trade among coarse grains or cassava, it would likely be with neighboring West African countries where the lower ECOWAS CET would apply, but smuggling could limit enforcement even of the low tariff that applies to trade between ECOWAS members.

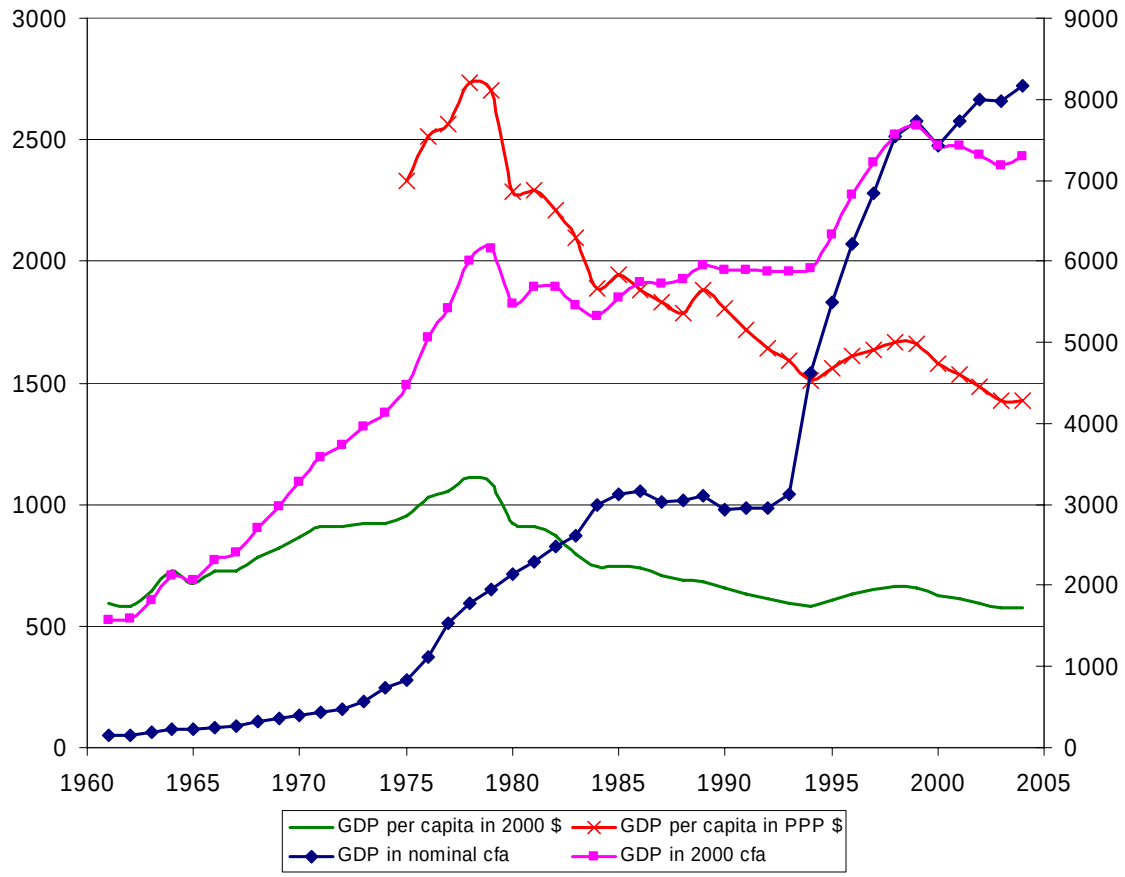
Input and production subsidies

Especially in cotton, and in cocoa and coffee, parastatals or publicly (partially) owned companies sold inputs (fertilizers, fungicides, insecticides, and herbicides) to farmers, possibly at subsidized prices. Input subsidies, credit and sales were tied together by these institutional relationships. After liberalization, relationships with traders often incorporated these same dimensions. In cotton, input use is critical. In cocoa and coffee, it has been written that input use was quite small (Widner 1993), but Ahmed, Kazianga and Sanders (2005) argue that some of the recent success of Ivorian cocoa is due to use of fertilizer. Use of fungicides, especially in cocoa, had a strong public goods externality aspect, as diseases need to be controlled on a limited number of farms to prevent them from spreading widely. It also appears to have been the case that parastatals invested in infrastructure in regions where crops were grown. No data was found to estimate the quantitative magnitude of these subsidies.

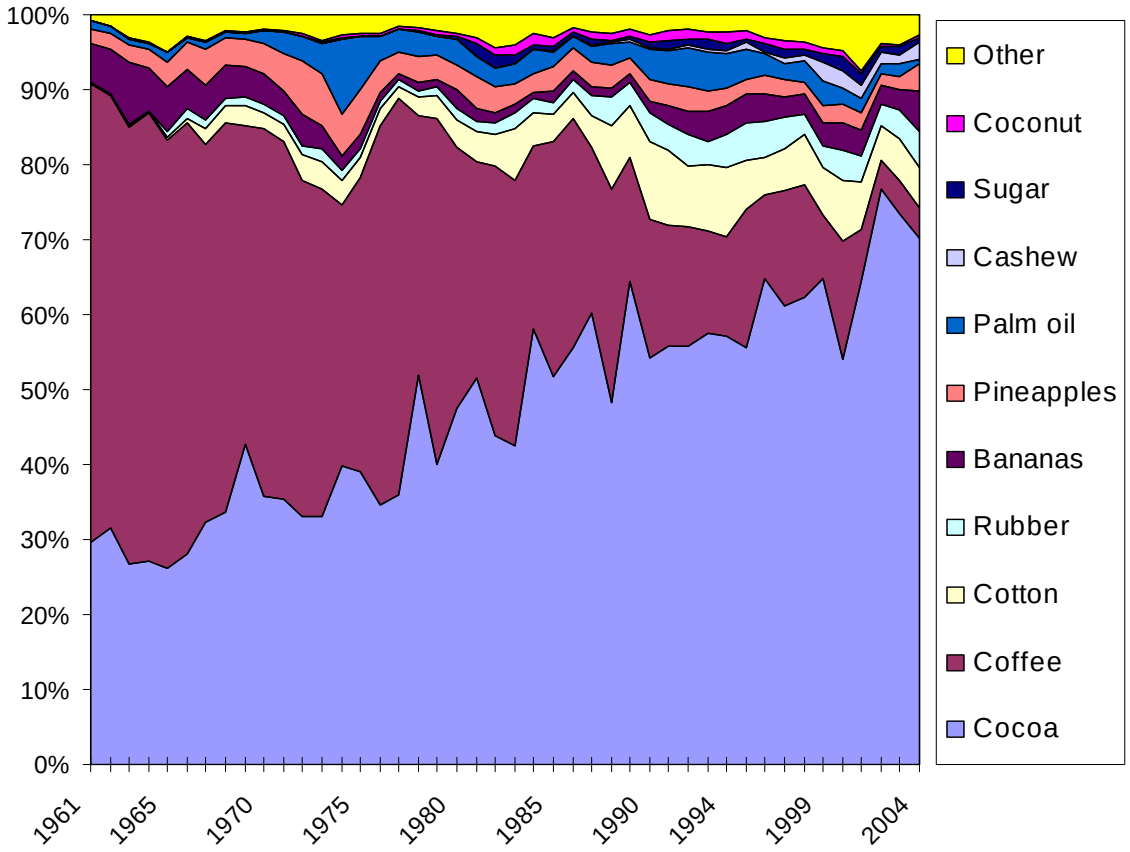
"Prélèvements professionnels" collected as export taxes are also used to support public and quasi private institutions in the cocoa, coffee and now cotton sectors. Credit subsidies to cooperatives are funded by this mechanism, though many have been highly critical of some of these institutions, and repayments of loans by cooperatives are very low.

I treat production subsidies as zero, but doubt this is accurate. These subsidies are likely to offset, though only partially, the heavy taxation of agricultural exports from Cote d'Ivoire. In the following sections I use this information to examine historical trends in prices and performance and the extent of distortions to agricultural incentives for the four key agricultural commodities.

Appendix Figure 1: Gross Domestic Product (GDP) in Cote d'Ivoire, 1960 to 2005

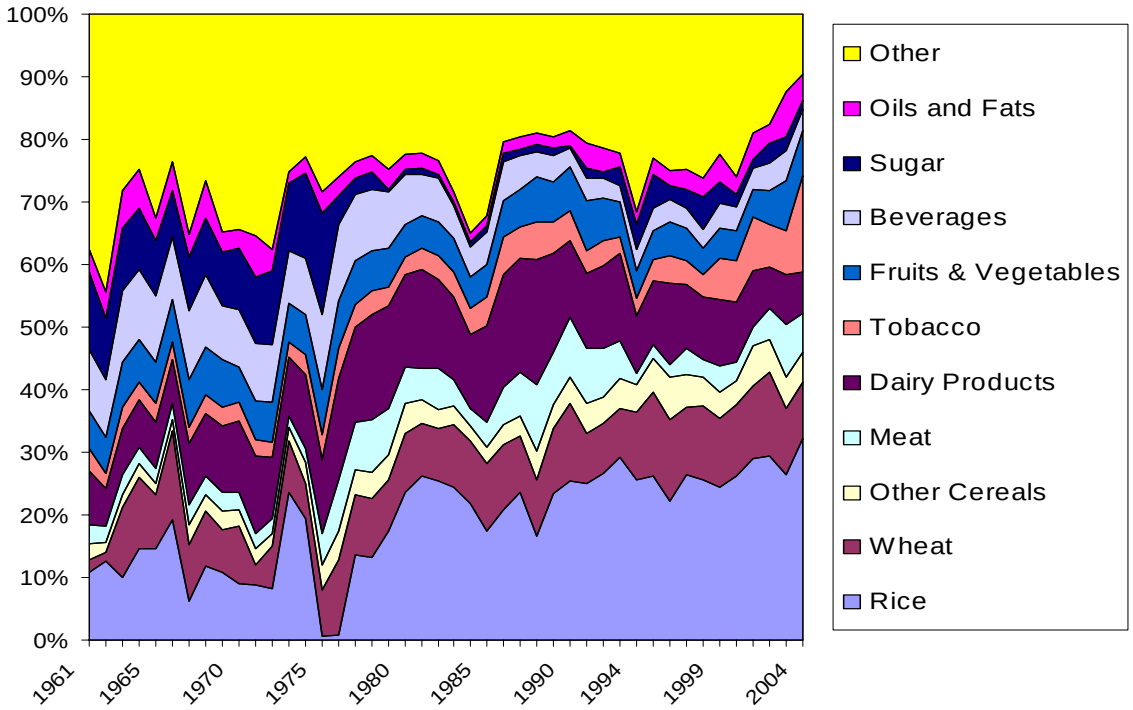


Appendix Figure 2: Commodity shares* of agricultural exports, Cote d'Ivoire, 1961 to 2004



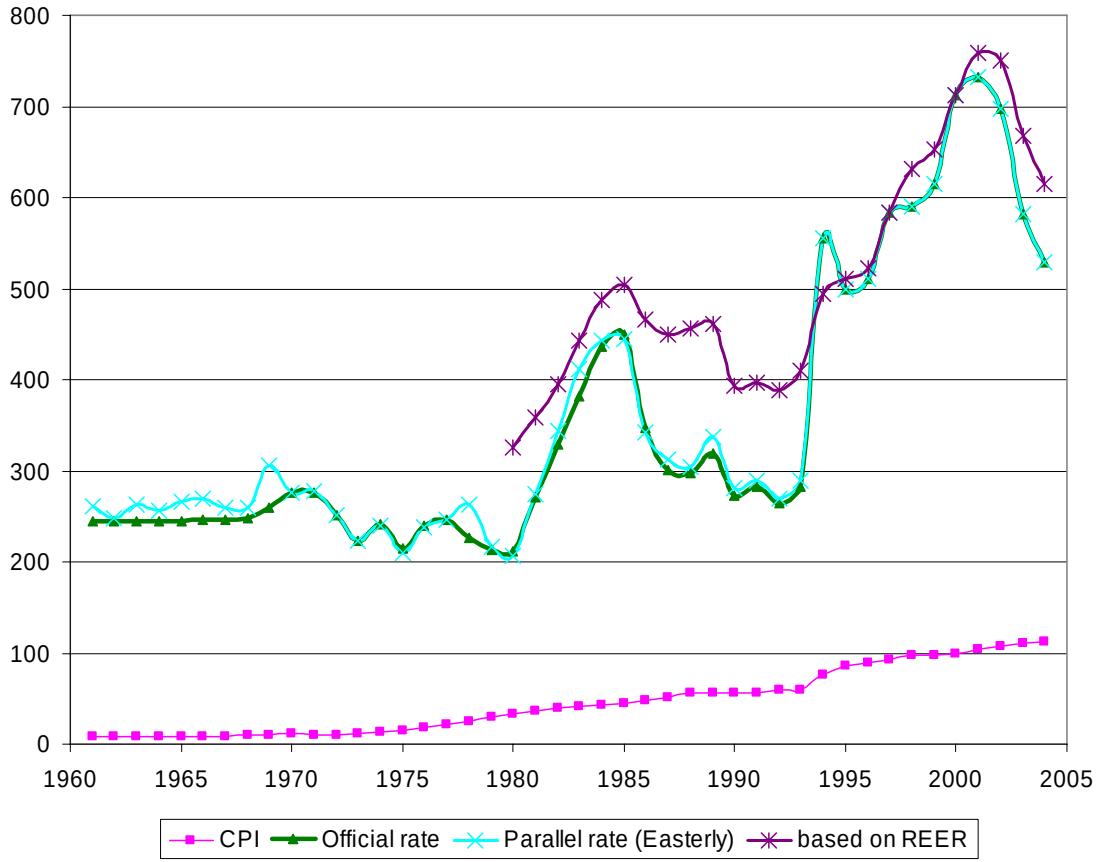
*in value, including processed products.

Appendix Figure 3: Commodity shares* of agricultural imports, Cote d'Ivoire, 1961 to 2004



*in value, including processed products

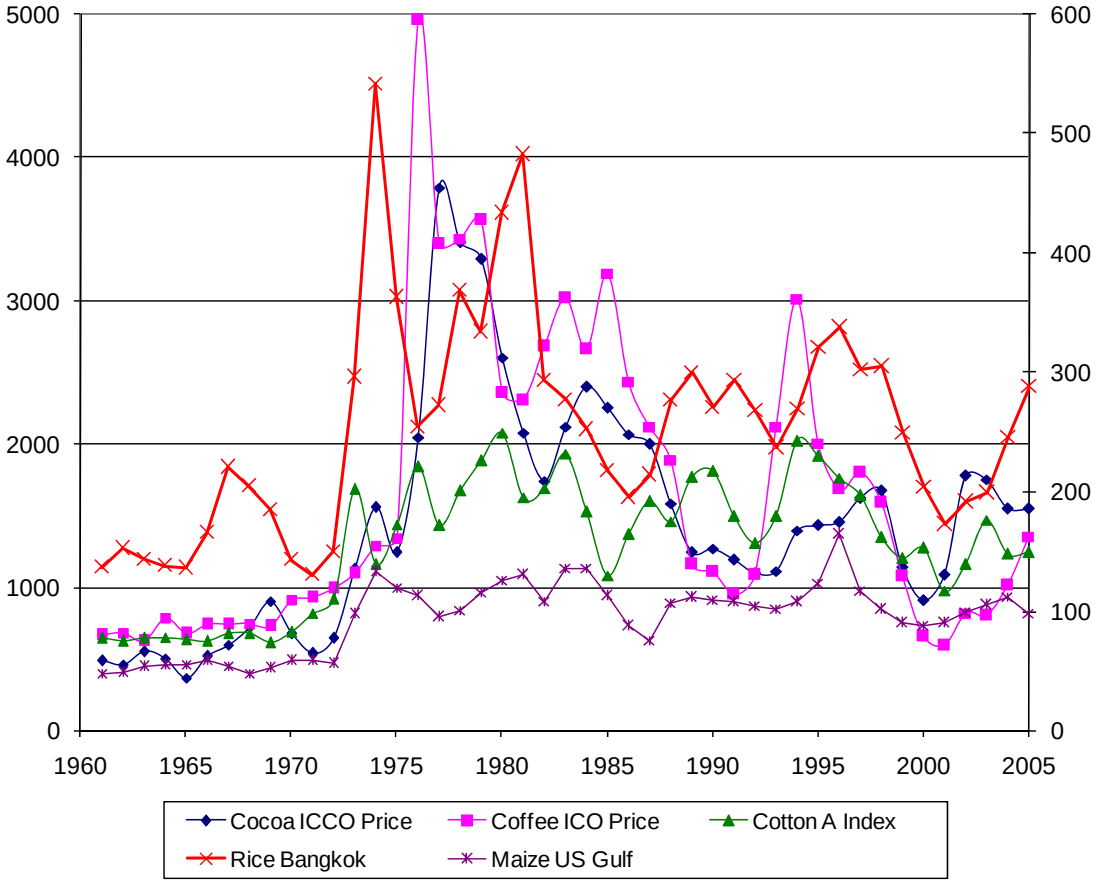
Appendix Figure 4: Exchange rates* and consumer prices** in Cote d'Ivoire, 1961 to 2004



* in CFA per $

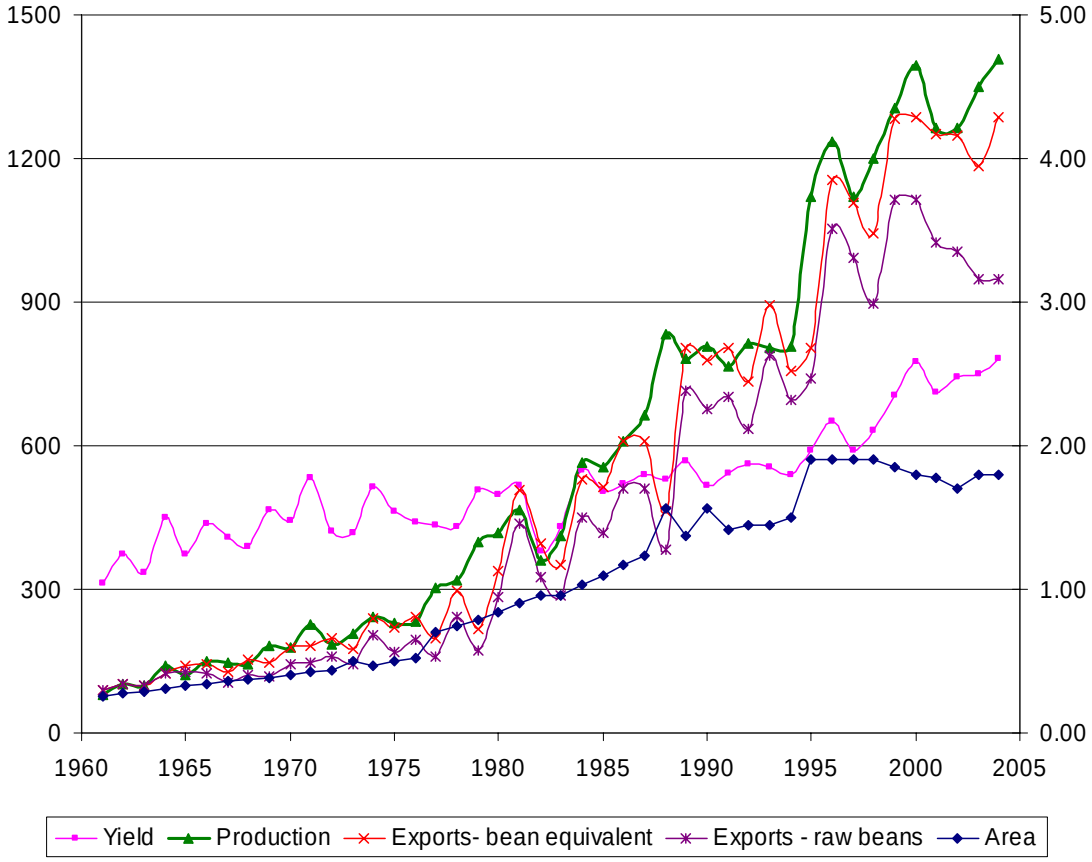
** Index, 2000 equals 100

Appendix Figure 5: Commodity prices* important to Cote d'Ivoire, 1961 to 2005



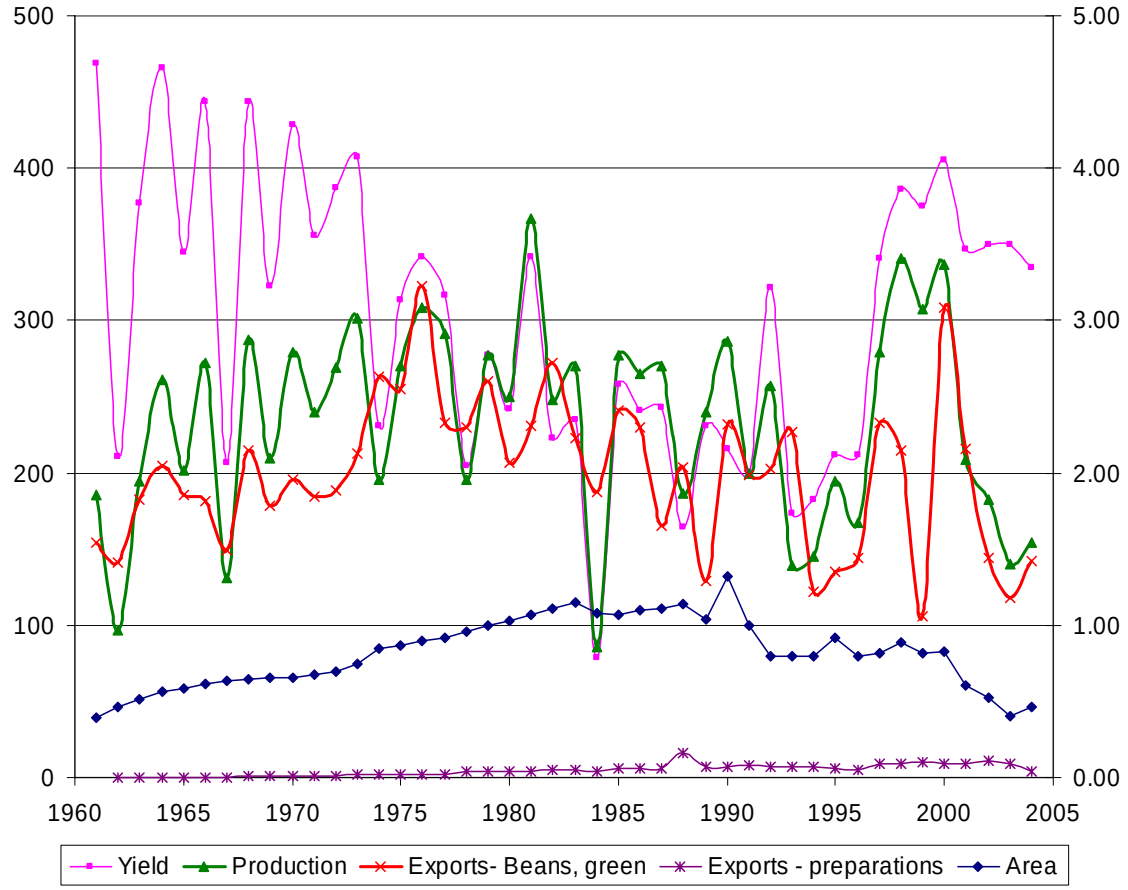
* in $ per metric ton

Appendix Figure 6: Cocoa production and trade*, Cote d'Ivoire, 1961 to 2004



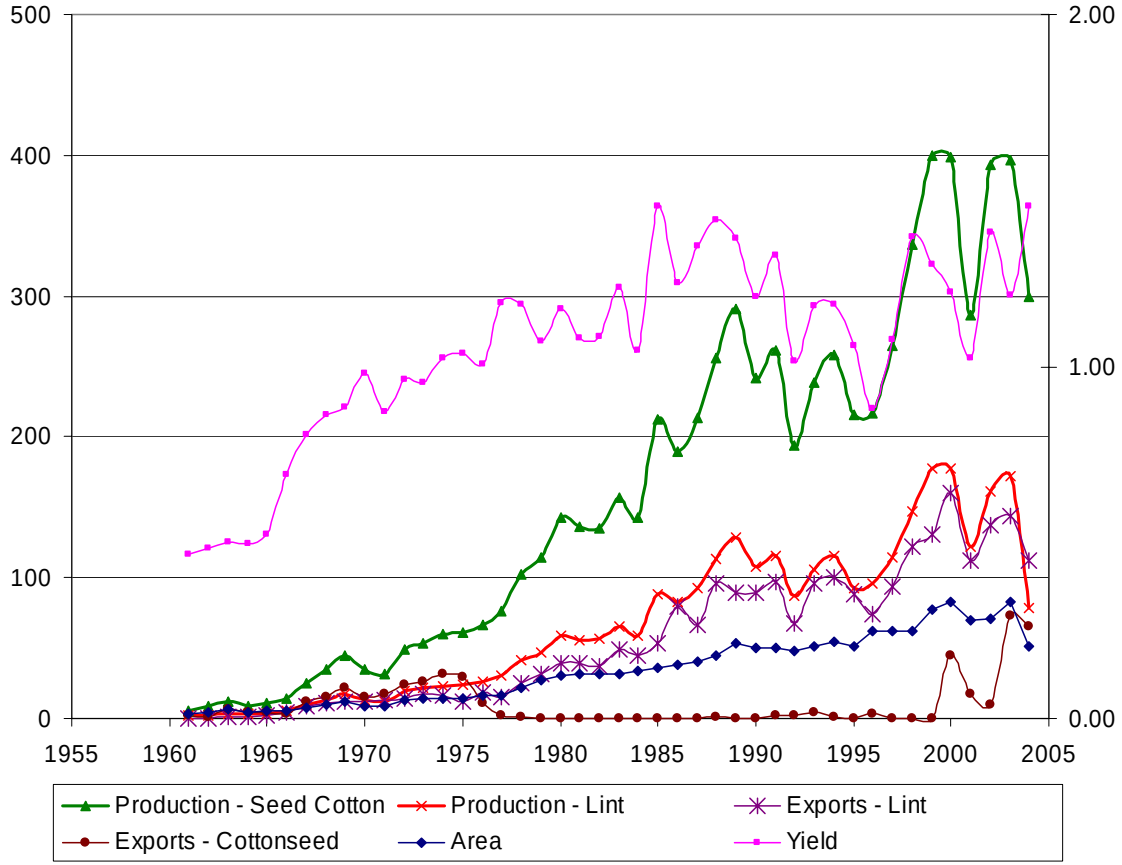
*Area in million hectares, yield in kilograms per hectare and quantities in 1000 metric tons.

Appendix Figure 7: Coffee production and trade*, Cote d'Ivoire, 1961 to 2004



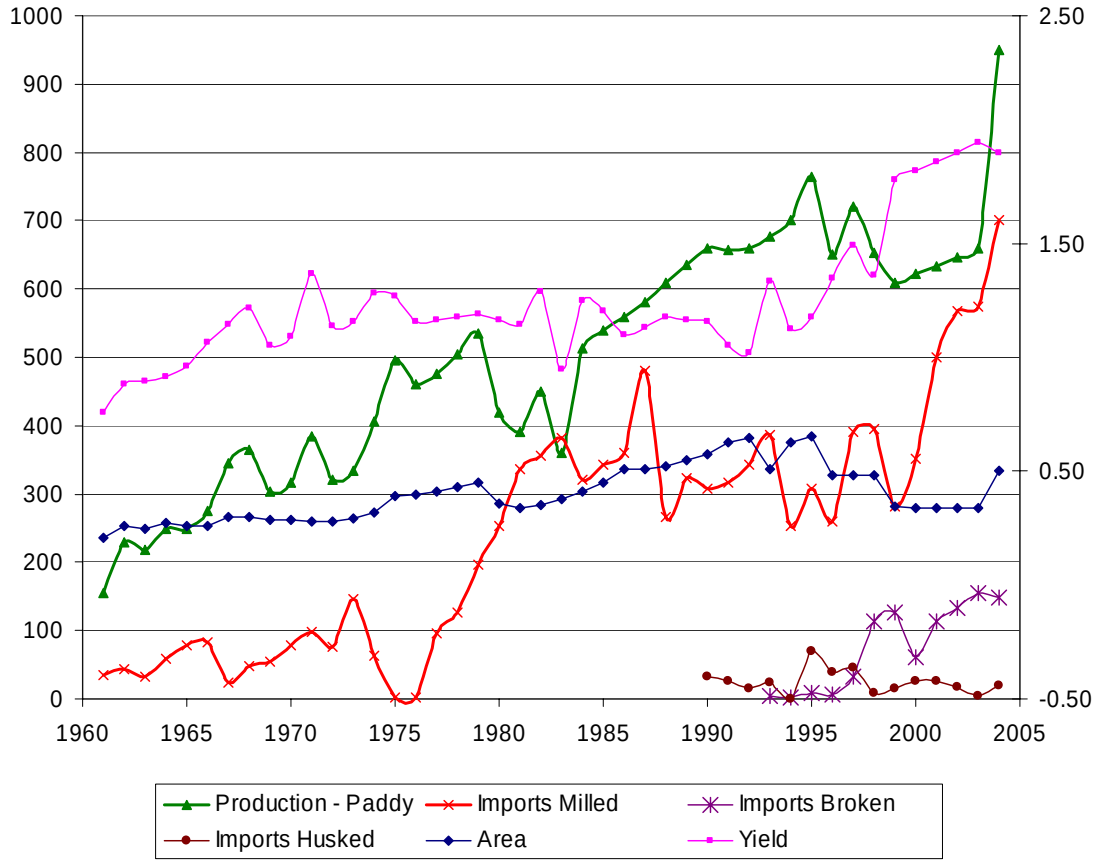
*Area in million hectares, yield in kilograms per hectare and quantities in 1000 metric tons.

Appendix Figure 8: Cotton production and trade*, Cote d'Ivoire, 1961 to 2004



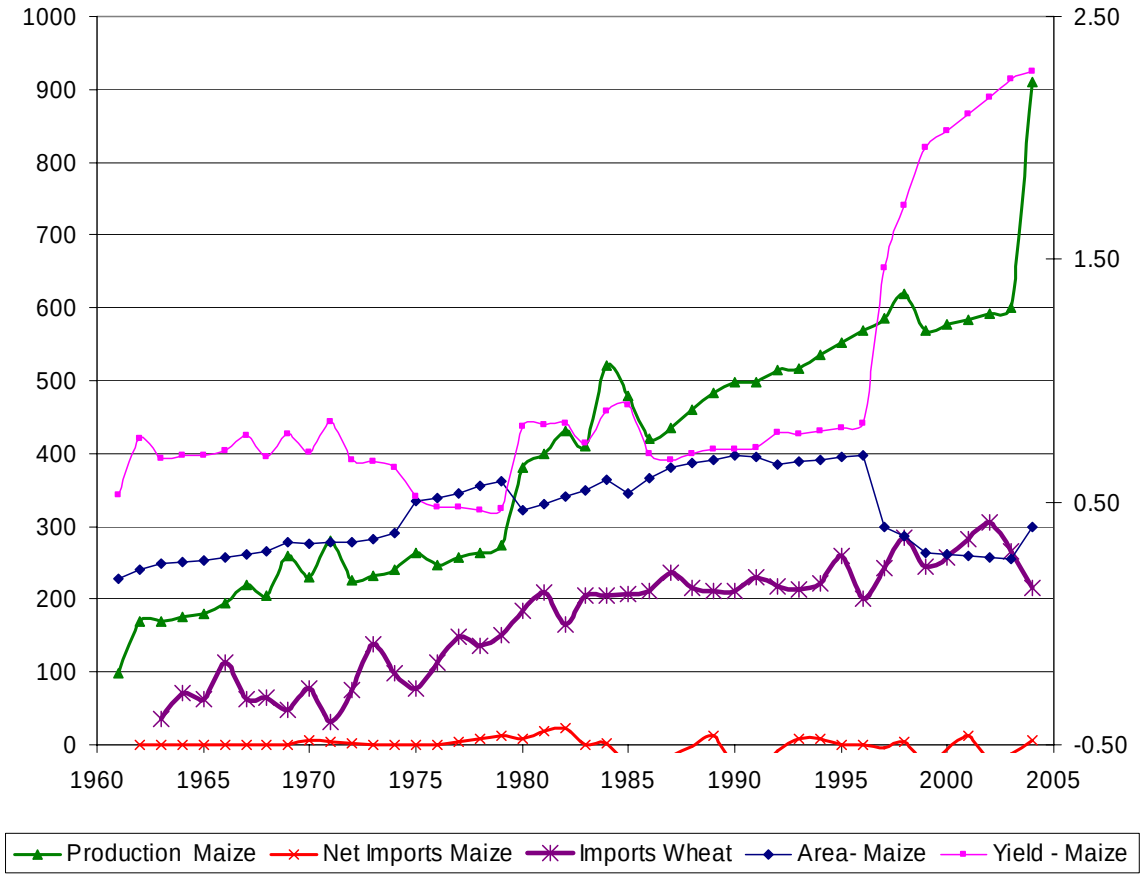
*Area in million hectares, yield in metric tons per hectare and quantities in 1000 metric tons.

Appendix Figure 9: Rice production and trade*, Cote d'Ivoire, 1961 to 2004



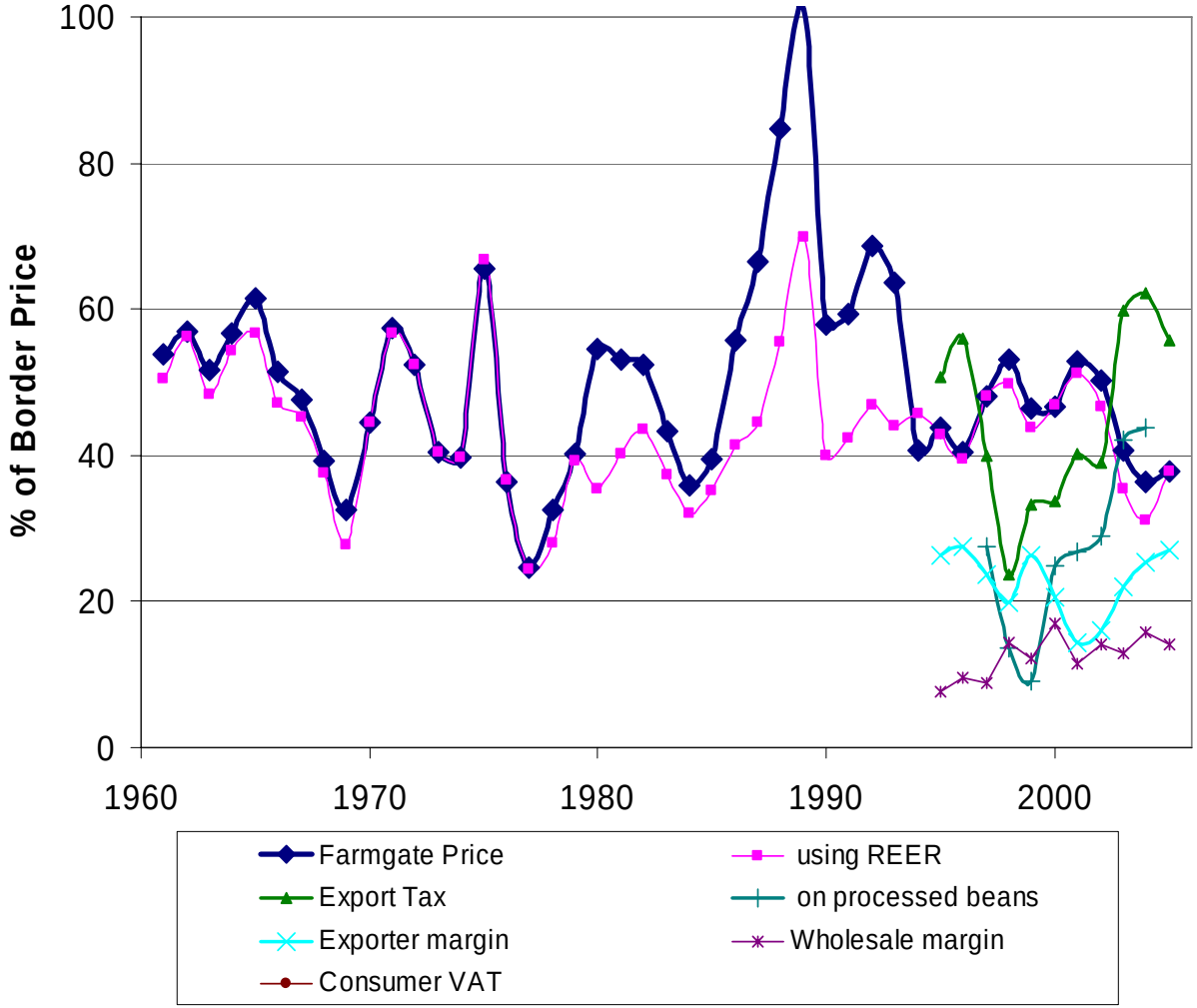
*Area in million hectares, yield in metric tons per hectare and quantities in 1000 metric tons.

Appendix Figure 10: Maize and wheat production and trade*, Cote d'Ivoire, 1961 to 2004

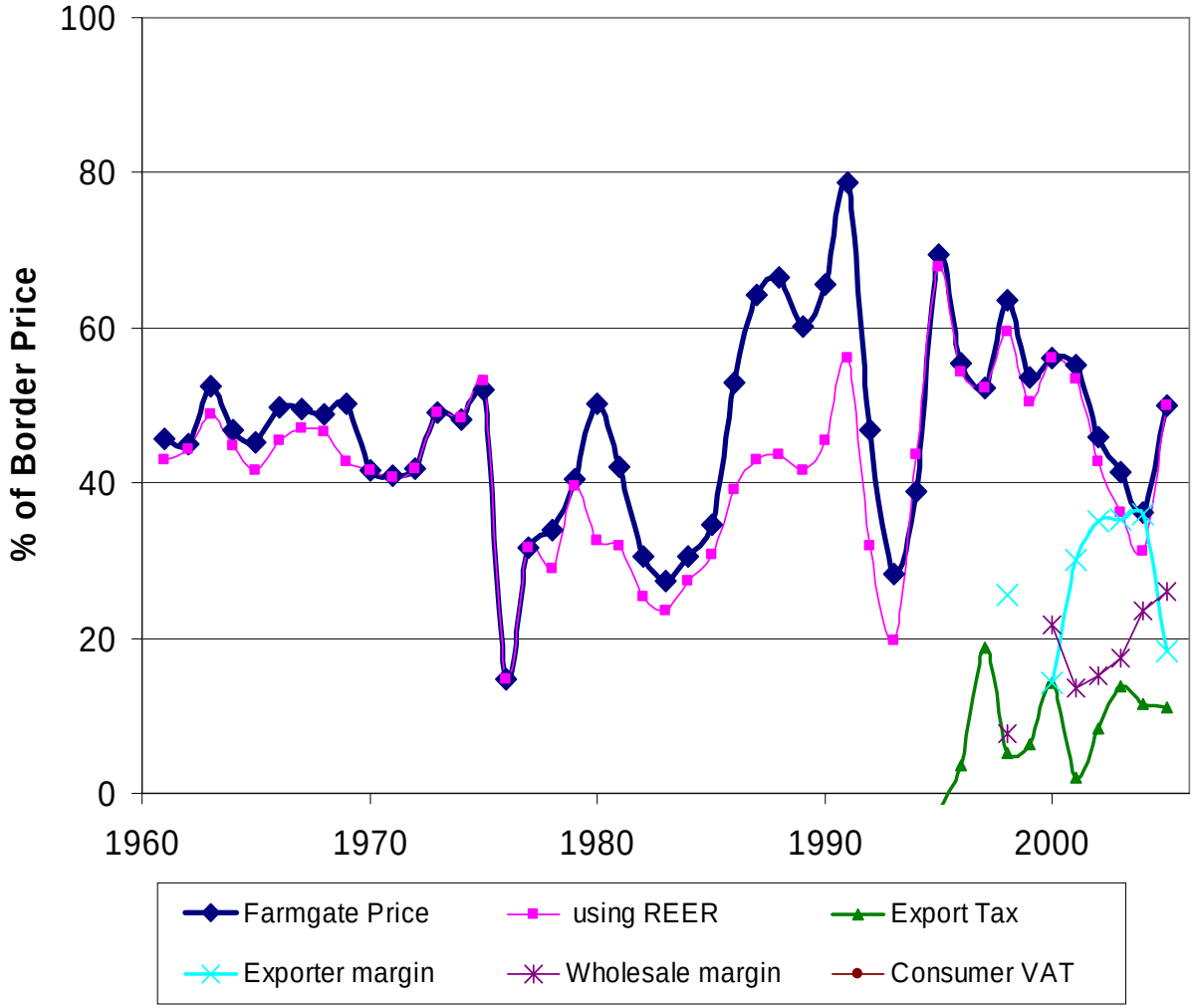


*Area in million hectares, yield in metric tons per hectare and quantities in 1000 metric tons.

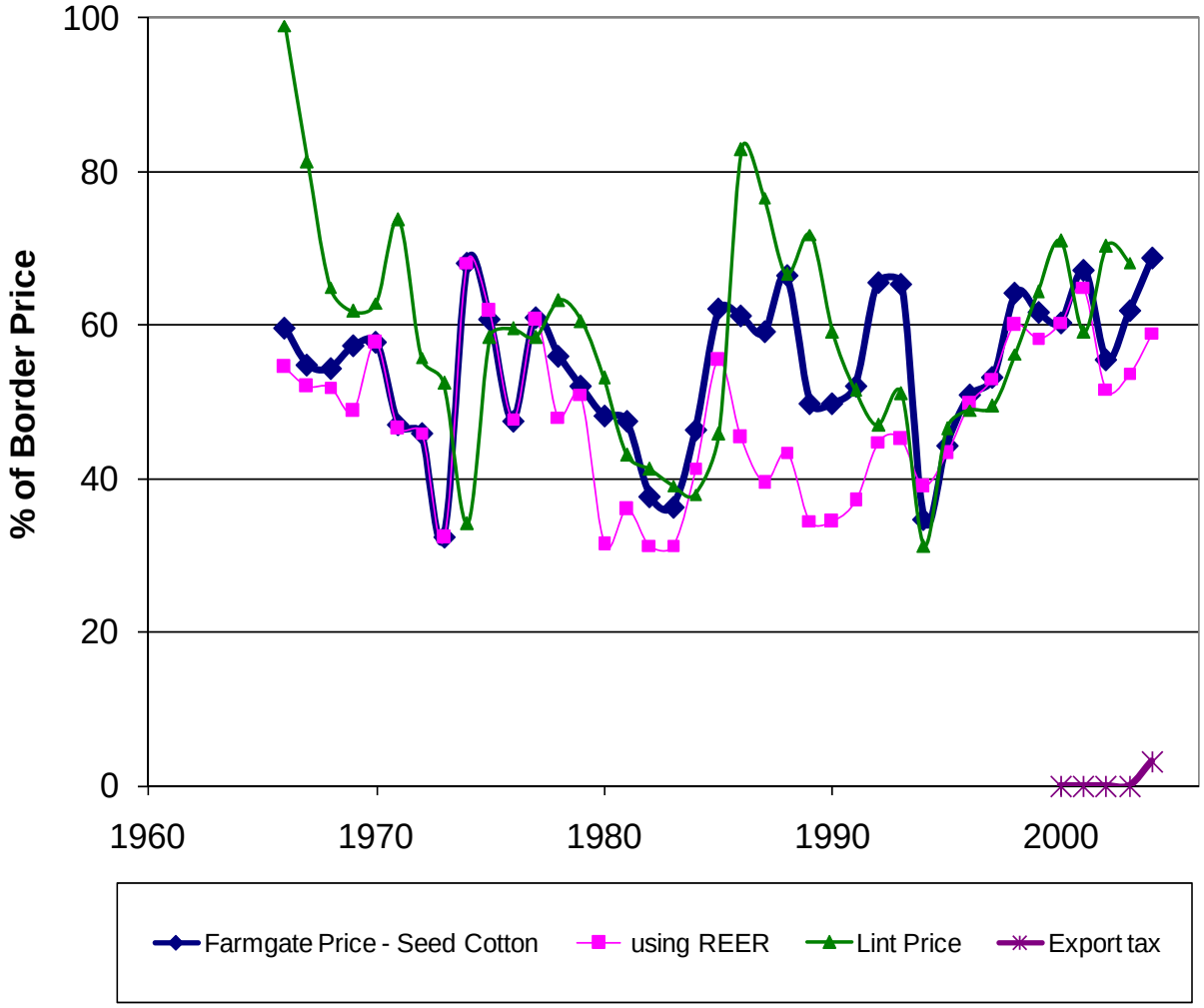
Appendix Figure 11: Cocoa prices as a percent of border prices, Cote d'Ivoire, 1961 to 2004



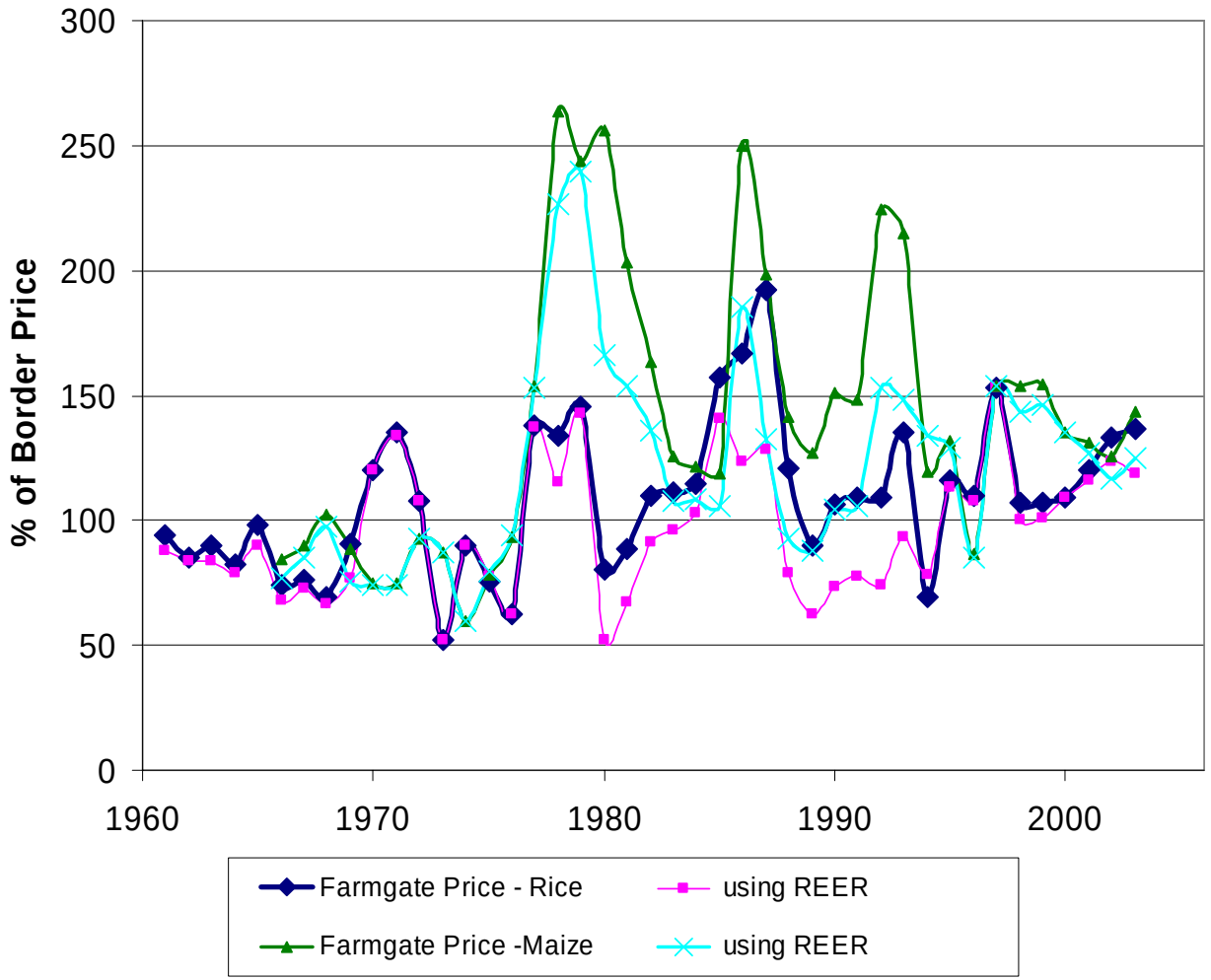
Appendix Figure 12: Coffee prices as a percent of border prices, Cote d'Ivoire, 1961 to 2004



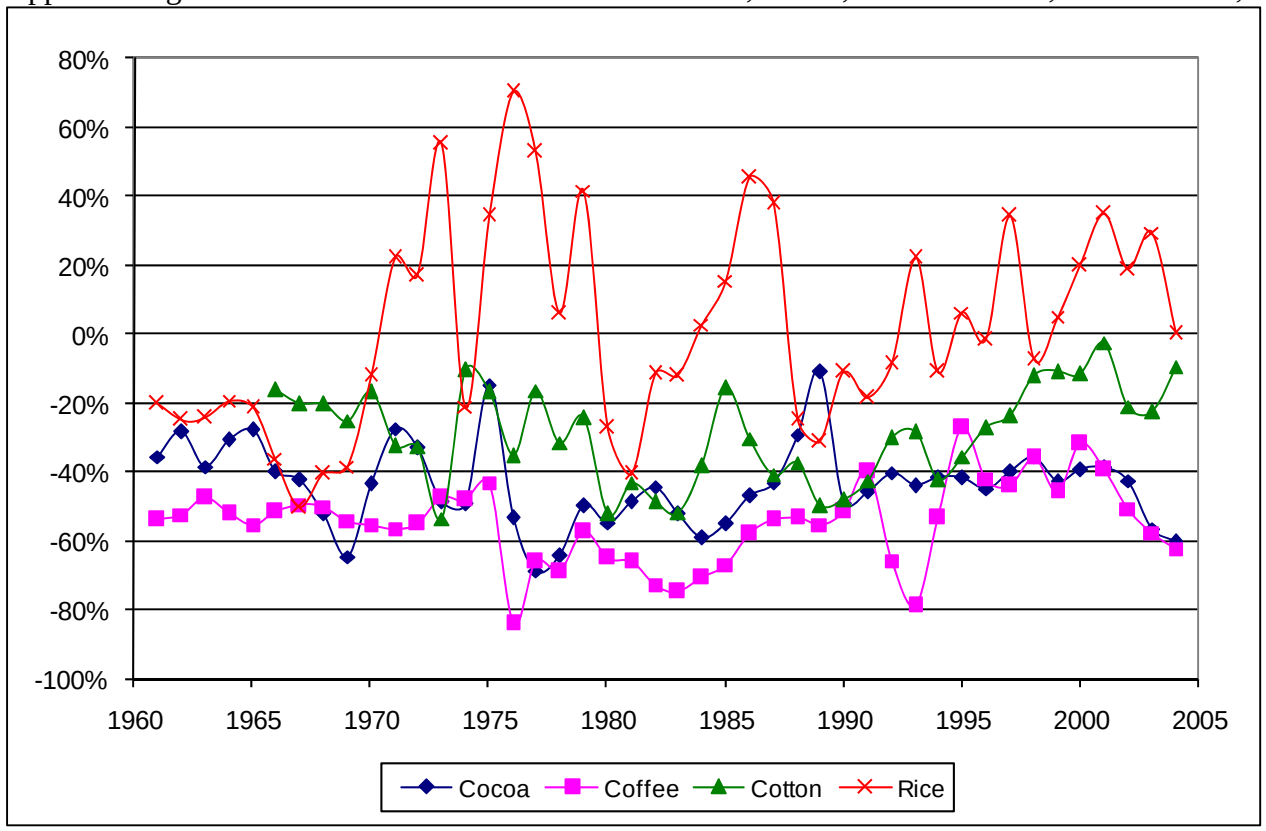
Appendix Figure 13: Cotton prices as a percent of border prices, Cote d'Ivoire, 1966 to 2004



Appendix Figure 14: Cereals prices as a percent of border prices, Cote d'Ivoire, 1961 to 2004



Appendix Figure 15: Nominal rates of assistance to cocoa, coffee, cotton and rice, Cote d'Ivoire, 1961 to 2004



Appendix Table 1: Timeline of political and economic events important to agricultural policy and macroeconomic performance, Cote d'Ivoire, 1958 to 2005

Year	Event
1958	Became an autonomous republic within French community
1960	Full independence from France
1975	Oil and World Food Crises – Commodity prices surge
	ECOWAS created
1981	First Structural Adjustment Reforms begin
1989	Reversal of liberalization measures
1990	Multi-party system introduced
1993	Houphouet Boigny, President since independence, died
1994	Devaluation of CFA
1995	Rice parastatal privatized
	Commodity prices surge again
1998	CIDT (Cotton parastatal) begins privatization,
	loses monopoly as three regional compamies created
1999	Civil conflict begins with Cote d'Ivoire's first coup d'etat
	Economy in decline, low commodity prices again
2000	CAISTAB replaced (Coocoa and Coffee parastatal privatized)
	BCC, ARCC, etc (Cocoa professional associations) created
	SOFICOCI (Cotton financing institution) created
2001	VAT on food increased from 11.1 percent to 20 percent
2002	"Voluntary" price controls on retail rice prices
	Failed coup d'etat, Rebel uprising, country split between north and south
	Disvestiture of CIDT and Ivoire Cotton by government
	Divestiture by govt of sugar, rubber, palm oil and pineapple plantations
	Middlemen in north sell cotton to Mali and Burkina Faso
2003	Linas-Marcoussis Accord
	VAT reduced from 20 percent to 18 percent
2004	Mass exodous of migrant workers from south
2005	Presidential elections postponed

Appendix Table 2: Macroeconomic performance of Cote d'Ivoire, 1961 to 2004

	Gross Domestic Product (GDP)				
	in billion CFA	in billion constant (2000) CFA	Growth rate %/year	Per capita in constant (2000) $	Per capita in constant PPP $
1961	152	1563	9.93	595	
1962	158	1583	1.23	581	
1963	186	1812	14.49	641	
1964	226	2131	17.61	726	
1965	225	2065	-3.11	676	
1966	252	2304	11.58	724	
1967	266	2410	4.60	726	
1968	317	2712	12.55	782	
1969	354	2971	9.54	821	
1970	402	3279	10.38	868	
1971	436	3589	9.46	910	
1972	466	3741	4.24	909	
1973	559	3963	5.94	923	
1974	739	4135	4.33	922	
1975	835	4476	8.25	954	2333
1976	1114	5054	12.92	1029	2511
1977	1539	5424	7.31	1053	2564
1978	1783	6016	10.91	1114	2735
1979	1945	6160	2.39	1088	2702
1980	2150	5485	-10.96	924	2289
1981	2291	5677	3.50	911	2292
1982	2487	5688	0.20	871	2212
1983	2606	5466	-3.90	798	2094
1984	2990	5319	-2.70	743	1888
1985	3135	5558	4.50	743	1944
1986	3172	5739	3.26	737	1880
1987	3032	5719	-0.35	706	1829
1988	3054	5784	1.14	689	1790
1989	3113	5955	2.95	684	1881
1990	2939	5889	-1.10	654	1807
1991	2960	5892	0.04	633	1717
1992	2952	5877	-0.24	611	1640
1993	3128	5866	-0.19	592	1593
1994	4616	5914	0.81	579	1508
1995	5491	6335	7.13	603	1563
1996	6210	6825	7.73	632	1612
1997	6842	7215	5.72	650	1634
1998	7541	7558	4.75	664	1664
1999	7731	7678	1.58	658	1661
2000	7423	7421	-3.35	623	1576
2001	7737	7428	0.10	612	1536
2002	8003	7307	-1.63	592	1485
2003	7982	7186	-1.66	573	1428
2004	8175	7304	1.64	574	1425

Source: World Bank, *World Development Indicators*

Appendix Table 3: Exports by Cote d'Ivoire in $ millions, 1961 to 2004

	Total	Agriculture	Cocoa	Coffee	Cotton	Rubber	Bananas	Pineapples	Palm oil	Cashew
1961	218	134	40	82	0	0	7	3	2	0
1962	222	136	43	78	0	0	8	3	1	0
1963	258	171	46	100	0	0	14	4	1	0
1964	331	217	59	130	0	0	13	6	2	0
1965	336	187	49	106	1	1	11	6	2	0
1966	371	217	61	124	2	3	11	8	1	0
1967	391	209	67	106	5	2	10	10	2	0
1968	523	288	97	149	7	3	13	11	2	0
1969	501	287	123	122	7	3	12	11	2	0
1970	518	330	118	162	7	4	13	14	5	0
1971	507	332	117	158	7	4	11	16	9	0
1972	619	334	111	149	12	4	14	24	11	0
1973	898	467	154	204	17	9	14	32	19	0
1974	1404	791	315	275	26	11	15	43	80	0
1975	1430	756	295	298	20	8	14	46	54	0
1976	1946	1125	390	567	26	12	13	46	38	0
1977	2671	1551	559	818	26	13	13	45	48	0
1978	2886	1759	912	611	42	16	18	61	57	0
1979	3164	1762	704	815	52	21	17	58	44	0
1980	3561	1981	943	687	74	28	50	66	67	0
1981	2966	1693	874	486	71	23	29	71	46	0
1982	2756	1412	621	507	59	21	19	49	36	0
1983	2527	1280	543	452	89	28	15	35	33	0
1984	3100	1868	1,083	457	83	35	16	48	59	0
1985	3264	2139	1,105	670	80	31	33	70	45	1
1986	3617	2409	1,340	734	86	39	29	77	33	3
1987	3372	2055	1,236	454	88	54	25	69	40	4
1988	3127	1734	838	491	147	67	21	55	50	1
1989	3126	1806	1,162	301	122	57	21	39	38	5
1990	3421	1613	874	300	168	59	27	47	64	4
1991	3149	1531	854	246	155	52	36	46	66	4
1992	3559	1433	798	229	117	61	43	46	75	5
1993	3252	1606	923	220	141	52	65	41	85	7
1994	3369	1558	889	209	144	68	59	37	71	6
1995	4594	2179	1,213	399	142	112	81	44	89	19
1996	4989	2445	1,587	272	119	121	87	59	71	7
1997	4855	2437	1,490	375	138	100	69	53	54	19
1998	5038	2647	1,651	398	175	75	69	40	79	19
1999	5067	2441	1,581	209	154	68	77	57	79	61
2000	4211	1916	1,034	303	155	78	68	48	41	43
2001	4357	2033	1,308	142	129	70	70	46	39	37
2002	5695	3012	2,309	120	139	87	74	45	39	50
2003	6280	3216	2,361	142	183	122	88	52	56	38
2004	7445	3178	2,229	129	171	154	170	117	20	71

Sources: World Bank, *World Development Indicators* and FAOSTAT

Appendix Table 4: Imports by Cote d'Ivoire in $ millions, 1961 to 2004

	Total	Agriculture	Food	Rice	Wheat	Other Cereals	Meat	Dairy Products	Tobacco	Fruits & Vegetables
1961	174	38	32	4	1	1	1	3	1	2
1962	166	45	29	6	1	1	1	3	1	3
1963	179	42	35	4	5	1	1	3	1	3
1964	228	54	44	8	6	1	1	4	1	4
1965	275	62	52	9	5	1	1	5	2	4
1966	292	66	56	13	9	1	2	5	2	5
1967	311	58	47	4	5	2	2	6	2	4
1968	360	64	53	8	6	2	2	6	2	5
1969	369	67	57	7	5	2	2	7	2	5
1970	422	82	70	7	8	2	2	9	3	5
1971	447	91	77	8	3	2	2	11	2	5
1972	536	106	91	9	7	2	2	10	3	7
1973	834	165	143	39	13	4	3	15	4	10
1974	1179	176	148	34	10	6	4	21	5	11
1975	1425	172	138	1	13	7	9	20	7	12
1976	1690	176	139	2	21	8	14	28	9	13
1977	2276	260	212	35	25	11	19	39	9	18
1978	2958	316	262	42	30	13	27	53	12	20
1979	3443	367	310	64	30	15	27	60	11	22
1980	4190	486	419	115	46	24	28	72	13	26
1981	3566	492	429	129	41	19	25	78	17	25
1982	2976	412	358	105	34	13	27	59	15	23
1983	2443	386	340	94	38	12	16	51	15	21
1984	2175	360	318	79	36	9	10	42	16	18
1985	2261	341	290	60	37	9	13	53	15	18
1986	2764	390	332	81	41	13	23	70	23	23
1987	2988	454	393	107	41	15	31	83	22	28
1988	2860	413	360	68	38	18	44	82	25	29
1989	2835	446	391	104	47	17	38	70	22	29
1990	2927	424	379	108	53	17	41	52	20	30
1991	2832	413	371	103	33	20	36	50	15	33
1992	3136	429	384	114	35	18	33	57	17	30
1993	2861	417	382	122	33	20	25	58	10	23
1994	2437	304	271	78	33	13	6	28	8	13
1995	3789	438	392	114	59	24	9	45	15	20
1996	3935	419	365	93	54	29	8	55	18	23
1997	3879	478	399	126	52	25	21	49	18	25
1998	4224	554	453	142	66	25	16	55	21	23
1999	4041	456	393	111	50	20	19	48	30	22
2000	3471	373	320	98	42	14	12	36	25	18
2001	3529	453	381	131	52	29	13	41	39	21
2002	3837	455	381	134	61	23	23	30	30	24
2003	4848	594	500	157	63	29	51	48	42	47
2004	7445	675	535	218	60	33	41	45	104	48

Sources: World Bank, *World Development Indicators* and FAOSTAT

Appendix Table 5: Price deflators and exchange rates, Cote d'Ivoire, 1961 to 2004

	Price deflators		Exchange rates -- Cfa/$		REER	
	GDP deflator	CPI	Official	Parallel Market	Real from REER	Index = 100 in 1997,2000
1961	9.70	8.24	245	261		
1962	9.99	8.13	245	248		
1963	10.29	8.21	245	263		
1964	10.59	8.26	245	256		
1965	10.91	8.47	245	266		
1966	10.92	8.83	246	269		
1967	11.05	9.03	246	259		
1968	11.69	9.51	248	259		
1969	11.91	9.94	260	305		
1970	12.27	10.75	276	277		
1971	12.15	10.70	275	278		
1972	12.46	10.74	252	252		
1973	14.10	11.93	223	223		
1974	17.87	14.00	241	240		
1975	18.64	15.60	214	210		
1976	22.04	17.49	239	238		
1977	28.37	22.28	246	246		
1978	29.63	25.23	226	263		
1979	31.57	29.36	213	217		
1980	39.19	33.67	211	207	325	154
1981	40.35	36.64	272	274	359	132
1982	43.70	39.41	329	344	395	120
1983	47.66	41.64	381	411	442	116
1984	56.19	43.42	437	443	488	112
1985	56.39	44.23	449	445	504	112
1986	55.25	48.51	346	342	466	135
1987	53.00	51.88	301	312	449	150
1988	52.79	55.48	298	305	455	153
1989	52.26	56.06	319	337	461	144
1990	49.90	55.61	272	282	394	145
1991	50.23	56.54	282	289	396	140
1992	50.21	58.94	265	270	388	147
1993	53.31	60.21	283	289	409	145
1994	78.03	75.92	555	555	494	89
1995	86.65	86.77	499	499	510	102
1996	90.97	88.92	512	512	523	102
1997	94.80	92.50	584	584	584	100
1998	99.75	96.84	590	590	631	107
1999	100.67	97.60	616	616	652	106
2000	100.00	100.00	712	712	712	100
2001	104.12	104.28	733	733	758	103
2002	109.49	107.52	697	697	750	108
2003	111.06	111.12	581	581	668	115
2004	111.90	112.72	528	528	615	116

Sources: World Bank, *World Development Indicators* ; IMF, *International Financial Statistics;* and Easterly (2006) for Parallel market exchange rates

Appendix Table 6: Commodity Prices (in $ per metric ton) important to Cote d'Ivoire

	Cocoa	**Coffee**	**Cotton**	**Rice**	**Maize**
	ICCO Price	ICO Price	A Index	Bangkok	US Gulf
1961	485	668	642	137	48
1962	459	681	626	153	49
1963	552	622	643	143	54
1964	504	785	649	138	55
1965	365	677	634	136	55
1966	518	738	621	166	58
1967	598	738	675	221	54
1968	721	745	677	205	48
1969	903	728	612	185	52
1970	674	912	686	143	58
1971	539	930	819	130	58
1972	643	994	919	150	56
1973	1131	1098	1686	297	97
1974	1560	1291	1158	542	132
1975	1246	1343	1439	363	120
1976	2046	4965	1843	254	112
1977	3791	3396	1434	272	95
1978	3405	3434	1677	369	101
1979	3293	3565	1883	334	116
1980	2603	2357	2076	434	126
1981	2077	2307	1627	483	131
1982	1742	2680	1690	293	108
1983	2119	3020	1933	277	136
1984	2396	2658	1525	252	136
1985	2255	3191	1080	217	112
1986	2068	2434	1368	196	88
1987	1998	2120	1602	214	76
1988	1584	1889	1459	277	107
1989	1242	1161	1767	300	111
1990	1268	1108	1811	271	109
1991	1193	947	1496	294	107
1992	1099	1082	1305	268	104
1993	1111	2119	1495	237	102
1994	1396	3014	2022	269	108
1995	1433	2004	1912	321	123
1996	1455	1683	1764	338	165
1997	1619	1798	1641	302	117
1998	1676	1589	1345	305	102
1999	1135	1074	1199	249	90
2000	904	657	1275	204	88
2001	1088	591	975	173	90
2002	1779	819	1160	192	99
2003	1753	800	1469	199	105
2004	1551	1013	1229	246	112
2005	1545	1352	1244	288	98

Source: IMF, *International Financial Statistics*
Baffes (2007) for Cotton A index

Appendix Table 7: Cocoa Production and Trade, Cote d'Ivoire, 1961 to 2004

	Area	Yield	Production	Exports					
	million hectares	kilograms per hectare	1000 mt	Bean Equivalent 1000 mt	Raw beans 1000 mt	% processed	Butter 1000 mt	Powder 1000 mt	Paste 1000 mt
1961	0.26	311	81	88	88				
1962	0.28	372	103	101	101				
1963	0.29	336	98	100	100				
1964	0.31	452	139	125	124	1	0.2	0.4	0.0
1965	0.33	372	122	140	126	10	5	5	1
1966	0.34	437	150	142	124	13	7	7	1
1967	0.36	410	147	129	105	18	7	9	3
1968	0.37	389	144	152	121	20	8	9	8
1969	0.39	467	181	148	119	20	8	9	7
1970	0.40	443	179	180	143	20	8	12	10
1971	0.42	534	226	181	147	19	9	9	10
1972	0.44	421	185	198	159	20	11	12	8
1973	0.50	420	209	174	143	18	8	10	7
1974	0.47	513	242	240	205	15	7	10	11
1975	0.50	464	231	219	170	23	17	14	8
1976	0.53	442	232	243	195	20	12	14	13
1977	0.70	435	304	199	158	20	11	14	7
1978	0.74	430	318	298	244	18	14	19	10
1979	0.78	507	398	217	171	21	13	14	11
1980	0.84	499	417	338	285	16	14	14	14
1981	0.90	516	465	508	438	14	16	23	17
1982	0.95	378	360	395	326	17	16	23	16
1983	0.95	432	411	352	286	19	14	20	18
1984	1.03	549	565	528	449	15	19	22	23
1985	1.10	505	555	514	419	18	24	27	25
1986	1.17	520	611	611	511	16	24	33	24
1987	1.23	538	664	611	511	16	21	29	29
1988	1.57	531	832	464	383	17	21	25	19
1989	1.37	568	781	805	715	11	27	28	18
1990	1.57	515	808	779	676	13	35	33	15
1991	1.41	542	765	805	702	13	30	33	19
1992	1.45	561	813	735	636	13	31	31	18
1993	1.45	554	804	893	789	12	27	31	25
1994	1.50	539	809	756	695	8	24	5	20
1995	1.90	589	1120	806	741	8	25	1	26
1996	1.90	650	1235	1155	1054	9	27	5	49
1997	1.90	589	1119	1108	993	10	29	5	58
1998	1.90	632	1201	1045	895	14	30	6	83
1999	1.85	706	1306	1283	1113	13	39	10	88
2000	1.80	776	1396	1285	1113	13	34	13	91
2001	1.78	711	1265	1252	1026	18	44	21	117
2002	1.70	744	1265	1247	1004	19	54	31	109
2003	1.80	751	1352	1183	948	20	60	34	94
2004	1.80	782	1407	1286	948	26	67	78	126

Source: FAOSTAT

Appendix Table 8: Coffee Production and Trade, Cote d'Ivoire, 1961 to 2004

	Area	Yield	Production	Exports	
	million hectares	kilograms per hectare	1000 mt	Beans, Green 1000 mt	Processed Products 1000 mt
1961	0.40	468	186	154	
1962	0.46	211	97	141	0.1
1963	0.52	377	195	182	0.2
1964	0.56	466	261	204	0.5
1965	0.59	344	202	186	0.4
1966	0.62	443	273	181	0.4
1967	0.63	207	131	149	0.5
1968	0.65	443	288	214	0.7
1969	0.65	322	210	178	1.0
1970	0.65	429	280	195	1.4
1971	0.67	356	240	185	1.3
1972	0.70	387	269	188	1.5
1973	0.74	407	302	213	1.9
1974	0.85	231	196	263	2.5
1975	0.86	313	270	255	2.2
1976	0.90	342	308	323	2.4
1977	0.92	316	291	233	1.9
1978	0.96	205	196	230	4.1
1979	1.00	277	277	260	3.7
1980	1.03	242	250	206	3.7
1981	1.07	342	367	231	4.3
1982	1.11	223	248	272	4.7
1983	1.15	235	271	223	4.8
1984	1.08	79	85	188	4.4
1985	1.07	258	277	241	5.7
1986	1.10	241	265	230	5.7
1987	1.11	243	270	165	5.6
1988	1.14	164	187	203	16.1
1989	1.04	231	240	129	7.4
1990	1.32	216	286	232	6.8
1991	1.00	200	200	199	7.8
1992	0.80	321	257	203	7.3
1993	0.80	174	139	226	7.5
1994	0.80	182	146	122	7.5
1995	0.92	212	195	135	5.7
1996	0.79	212	168	144	5.2
1997	0.82	341	279	233	8.9
1998	0.88	386	341	215	9.3
1999	0.82	375	307	106	10.5
2000	0.83	405	336	308	9.2
2001	0.60	347	209	215	9.2
2002	0.52	350	182	144	10.6
2003	0.40	350	140	118	9.1
2004	0.46	335	154	142	4.2

Source: FAOSTAT

Appendix Table 9: Cotton Production and Trade, Cote d'Ivoire, 1961 to 2004

	Area	Yield	Production			Exports		
	million hectares	tonnes per hectare	Seed cotton 1000 mt	Lint 1000 mt	Cottonseed 1000 mt	Oil 1000 mt	Lint 1000 mt	Cottonseed 1000 mt
1961	0.01	0.464	6	2	4	0.2	0	2.0
1962	0.02	0.484	8	2	6	0.6	0	1.2
1963	0.02	0.503	12	4	8	0.3	1	6.1
1964	0.02	0.498	9	3	6	0.2	1	4.3
1965	0.02	0.522	10	4	7	0.2	2	4.9
1966	0.02	0.691	14	5	8	0.6	4	3.0
1967	0.03	0.808	25	10	15	0.1	9	12.2
1968	0.04	0.861	35	13	21	0.7	11	14.9
1969	0.05	0.885	44	17	26	0.3	12	21.6
1970	0.04	0.981	34	13	19	0.1	12	15.6
1971	0.04	0.873	31	12	18	0.0	13	17.9
1972	0.05	0.964	50	20	27	0.2	15	23.5
1973	0.06	0.952	54	21	31	0.3	17	26.1
1974	0.06	1.022	59	23	34	0.0	16	31.5
1975	0.06	1.037	61	24	36	0.6	12	28.9
1976	0.07	1.009	66	26	37	4.7	19	11.4
1977	0.06	1.180	76	31	43	8.3	15	2.0
1978	0.09	1.176	103	41	58	9.4	26	0.7
1979	0.11	1.071	115	47	65	10.7	31	0.0
1980	0.12	1.163	143	59	80	14.3	39	0.0
1981	0.13	1.081	137	56	76	12.9	39	0.0
1982	0.12	1.086	135	56	76	13.0	37	0.0
1983	0.13	1.223	157	66	87	14.7	49	0.0
1984	0.14	1.044	142	58	79	13.4	45	0.1
1985	0.15	1.454	212	88	117	20.1	54	0.0
1986	0.15	1.237	189	82	100	17.4	80	0.0
1987	0.16	1.341	214	93	115	21.5	66	0.2
1988	0.18	1.418	256	114	136	23.8	96	0.6
1989	0.21	1.362	291	128	155	27.0	89	0.0
1990	0.20	1.200	242	107	128	22.4	89	0.5
1991	0.20	1.315	261	116	135	22.2	97	2.3
1992	0.19	1.017	194	87	100	16.9	67	1.7
1993	0.20	1.173	239	106	124	20.1	96	3.9
1994	0.22	1.178	258	116	133	23.0	100	1.0
1995	0.20	1.059	216	93	120	20.9	88	0.5
1996	0.25	0.881	217	96	113	19.0	75	3.1
1997	0.25	1.075	265	114	143	30.1	94	0.0
1998	0.25	1.367	337	147	179	36.2	122	0.0
1999	0.31	1.290	400	177	191	33.1	131	0.1
2000	0.33	1.210	399	177	220	30.3	161	44.4
2001	0.28	1.025	287	123	162	24.9	113	17.9
2002	0.28	1.380	393	161	170	27.9	138	9.3
2003	0.33	1.200	396	172	175	17.3	144	73.2
2004	0.21	1.454	300	79	161	16.2	113	65.2

Source: FAOSTAT

Appendix Table 10: Rice Production and Trade, Cote d'Ivoire, 1961 to 2004

	Area	**Yield**	**Production**	**Imports**		
	million hectares	tonnes per hectare	Paddy 1000 mt	Milled 1000 mt	Broken 1000 mt	Husked 1000 mt
1961	0.21	0.757	156	34		
1962	0.26	0.881	229	43		
1963	0.25	0.894	219	34		
1964	0.27	0.915	248	58		
1965	0.26	0.958	250	78		
1966	0.26	1.068	276	83		
1967	0.30	1.145	345	24		
1968	0.30	1.218	365	47		
1969	0.29	1.051	303	55		
1970	0.29	1.092	316	79		
1971	0.28	1.365	385	97		
1972	0.28	1.135	320	77		
1973	0.29	1.155	335	146		
1974	0.32	1.281	406	64		
1975	0.39	1.272	496	2		
1976	0.40	1.156	460	2		
1977	0.41	1.166	477	96		
1978	0.43	1.178	504	126		
1979	0.45	1.192	534	198		
1980	0.36	1.167	420	253		
1981	0.34	1.147	390	335		
1982	0.35	1.286	450	357		
1983	0.38	0.947	360	383		
1984	0.41	1.251	514	321		
1985	0.45	1.200	540	342		
1986	0.51	1.100	560	361		
1987	0.51	1.133	580	479		
1988	0.52	1.175	610	266		
1989	0.55	1.165	635	323		
1990	0.57	1.155	660	308		33
1991	0.63	1.051	657	318		25
1992	0.65	1.017	660	343		16
1993	0.51	1.336	676	387	3	24
1994	0.62	1.123	701	253	3	0
1995	0.65	1.175	764	308	10	70
1996	0.48	1.349	650	259	7	40
1997	0.48	1.493	720	391	33	46
1998	0.48	1.357	654	396	114	8
1999	0.34	1.783	610	281	127	15
2000	0.34	1.821	622	352	62	26
2001	0.34	1.861	634	500	114	27
2002	0.34	1.900	647	568	133	17
2003	0.34	1.941	660	575	156	5
2004	0.50	1.900	950	702	148	19

Source: FAOSTAT

Appendix Table 11: Maize and Wheat Production and Trade, Cote d'Ivoire, 1961 to 2004

	Area	Yield	Production	Imports	Production	Imports
	million hectares	tonnes per hectare	1000 mt	Net 1000 mt	1000 mt	1000 mt
1961	0.19	0.529	99			
1962	0.22	0.762	170	0		
1963	0.25	0.681	169	0	0	36
1964	0.25	0.693	176	0	0	71
1965	0.26	0.695	180	0	0	64
1966	0.27	0.714	195	0	0	113
1967	0.28	0.775	220	0	0	62
1968	0.30	0.687	206	0	0	64
1969	0.33	0.781	260	0	0	47
1970	0.33	0.705	231	7	0	78
1971	0.34	0.832	280	5	0	30
1972	0.34	0.672	226	2	0	75
1973	0.35	0.669	232	0	0	139
1974	0.37	0.642	240	0	0	99
1975	0.51	0.522	264	1	0	76
1976	0.52	0.477	247	0	0	114
1977	0.54	0.480	258	3	0	149
1978	0.56	0.468	264	9	0	137
1979	0.58	0.471	275	13	0	151
1980	0.47	0.812	380	9	0	183
1981	0.49	0.816	400	19	0	209
1982	0.52	0.827	430	23	0	166
1983	0.55	0.745	410	-1	0	205
1984	0.60	0.874	520	2	0	205
1985	0.53	0.901	480	-31	0	206
1986	0.60	0.700	420	-57	0	212
1987	0.64	0.677	435	-20	0	236
1988	0.66	0.698	460	-2	0	216
1989	0.68	0.717	484	13	0	212
1990	0.69	0.720	497	-29	0	211
1991	0.68	0.727	497	-29	0	230
1992	0.66	0.785	514	-7	0	218
1993	0.67	0.777	517	8	0	213
1994	0.68	0.794	536	9	0	221
1995	0.69	0.806	552	1	0	259
1996	0.69	0.825	569	0	0	201
1997	0.40	1.465	586	-5	0	244
1998	0.36	1.722	620	5	0	285
1999	0.29	1.962	569	-22	0	245
2000	0.28	2.029	577	-7	0	257
2001	0.28	2.098	585	13	0	282
2002	0.27	2.169	592	-22	0	305
2003	0.27	2.242	600	-13	0	266
2004	0.40	2.275	910	7	0	214

Source: FAOSTAT

Appendix Table 12: Cocoa Prices, Cote d'Ivoire, 1961 to 2005

	Border Prices			Wholesale	Farmgate	Export Tax	
	ICCO in $ per mt	FAO export unit value in $ per mt	Prix CAF in CFA per kg	Port price in CFA per kg	Trader/Coop Price in CFA per kg	CFA per kg	processed beans CFA per kg
1961	485	449			64		
1962	459	423			64		
1963	552	458			70		
1964	504	474			70		
1965	365	350			55		
1966	518	428			65		
1967	598	535			70		
1968	721	648			70		
1969	903	826			77		
1970	674	672			83		
1971	539	670			85		
1972	643	556			85		
1973	1131	875			102		
1974	1560	1262			149		
1975	1246	1311			175		
1976	2046	1535			178		
1977	3791	2537			229		
1978	3405	2928			250		
1979	3293	3200			281		
1980	2603	2798			300		
1981	2077	1686			300		
1982	1742	1530			300		
1983	2119	1498			350		
1984	2396	2028			375		
1985	2255	2133			400		
1986	2068	2226			400		
1987	1998	2032			400		
1988	1584	1821			400		
1989	1242	1428			400		
1990	1268	1063			200		
1991	1193	1000			200		
1992	1099	1005			200		
1993	1111	1012			200		
1994	1396	1121			315		
1995	1433	1434	730	357	320	246	
1996	1455	1336	768	357	310	276	
1997	1619	1293	909	496	438	260	178
1998	1676	1493	948	614	504	181	104
1999	1135	1154	594	329	275	148	41
2000	904	759	712	423	333	180	132
2001	1088	981	987	603	522	283	189
2002	1779	1759	1292	779	648	363	269
2003	1753	1828	850	415	346	318	224
2004	1551	1583	821	378	298	315	221
2005	1545		887	416	336	318	

Sources: BNETD and BCC for local currency prices and taxes, IMF for ICCO price
FAOSTAT for unit values and older farmgate prices

Appendix Table 13: Coffee Prices, Cote d'Ivoire, 1961 to 2005

	Border Prices			Wholesale	Farmgate	Export Tax
	ICO in $ per mt	FAO export unit value in $ per mt	Prix CAF in CFA per kg	Port price in CFA per kg	Trader/Coop Price in CFA per kg	CFA per kg
1961	668	532			75	
1962	681	539			75	
1963	622	545			80	
1964	785	629			90	
1965	677	565			75	
1966	738	675			90	
1967	738	691			90	
1968	745	677			90	
1969	728	656			95	
1970	912	796			105	
1971	930	821			105	
1972	994	765			105	
1973	1098	925			120	
1974	1291	1007			150	
1975	1343	1125			150	
1976	4965	1723			173	
1977	3396	3467			264	
1978	3434	2530			262	
1979	3565	3015			307	
1980	2357	3125			250	
1981	2307	1927			263	
1982	2680	1710			269	
1983	3020	1858			315	
1984	2658	2246			355	
1985	3191	2591			496	
1986	2434	2935			445	
1987	2120	2381			409	
1988	1889	1913			375	
1989	1161	1784			223	
1990	1108	1030			198	
1991	947	924			210	
1992	1082	821			134	
1993	2119	712			170	
1994	3014	1226			650	
1995	2004	2520	864		600	-19
1996	1683	1593	767		425	26
1997	1798	1274	898		470	142
1998	1589	1490	847	600	538	42
1999	1074	1334	629		337	37
2000	657	792	375	281	210	47
2001	591	471	324	222	179	6
2002	819	503	477	286	219	37
2003	800	657	400	227	166	49
2004	1013	743	483	277	175	50
2005	1352		631	464	316	63

Sources: BNETD and BCC for local currency prices and taxes, IMF for ICO price
FAOSTAT for unit values and older farmgate prices

Appendix Table 14: Cotton Prices, Cote d'Ivoire, 1961 to 2004

	Border Prices		Farmgate Prices			Export Tax	Ginning Ratio	Ginning Cost	Transportation and Marketing Margins	
	Cotton A Index in $ per mt	Cotton Lint FAO export unit value in $ per mt	FAO, BNETD Seed Cotton CFA per kg	Baffes Seed Cotton CFA per kg	FAO Cotton Lint CFA per kg	CFA per kg of lint	percent	CFA per kg of lint	Gin to port CFA per kg	FOB to CIF % of CIF
1961	642	286					40			
1962	626	206					40			
1963	643	218					40			
1964	649	227					40			
1965	634	346					40			
1966	621	344	34	34	84		40			
1967	675	419	34	34	84		40			
1968	677	521	34	34	84		40			
1969	612	521	34	34	84		40			
1970	686	498	35	40	87		40	50	8	8.1
1971	819	487	40	40	99		41	50	8	7.1
1972	919	704	40	40	99		40	50	9	7.1
1973	1686	850	40	45	99		39	55	9	6.1
1974	1158	1363	45	70	112		40	60	11	7.6
1975	1439	1395	70	70	175		40	65	12	7.4
1976	1843	1229	70	80	175		41	75	14	6.2
1977	1434	1391	80	80	200		40	80	16	7.3
1978	1677	1400	80	80	200		41	90	17	7.1
1979	1883	1552	80	80	200		41	100	20	7.0
1980	2076	1779	80	80	200		41	110	22	7.3
1981	1627	1705	80	80	200		42	120	23	8.7
1982	1690	1476	80	80	200		42	130	26	8.7
1983	1933	1677	100	100	250		41	140	29	9.0
1984	1525	1732	115	115	288		42	145	31	10.5
1985	1080	1394	115	115	288		44	150	31	12.3
1986	1368	1001	115	115	288		44	150	30	10.0
1987	1602	1248	115	115	288		44	135	30	9.0
1988	1459	1449	115	115	288		44	120	28	9.7
1989	1767	1255	115	115	288		44	125	27	7.8
1990	1811	1787	115	100	288		44	120	26	8.1
1991	1496	1547	90	90	225		45	115	26	8.7
1992	1305	1647	90	90	205		44	120	27	10.3
1993	1495	1413	90	110	205		45	150	35	11.1
1994	2022	1375	105	160	239		44	175	45	7.3
1995	1912	1567	160	173	364		44	190	50	7.8
1996	1764	1543	170	182	386		43	200	51	7.9
1997	1641	1415	180	205	409		44	210	52	7.5
1998	1345	1369	200	200	455		43	225	53	8.4
1999	1199	1147	200	183	455		44	230	53	8.9
2000	1275	921	281	216	466	0	43	245	54	7.7
2001	975	1102	222	190	477	0	43	225	56	8.4
2002	1160	978	286	180	479	0	43	220	57	7.6
2003	1469	1231	227	200	488	0	40	215	58	6.2
2004	1229	1372	277	185		17	45	220	59	7.1
2005	1244			140		17	43	225	60	7.3

Sources: FAOSTAT for unit values and farmgate prices

BNETD for later farmgate prices (after 1999) and export taxes

Baffes (2007) for farmgate prices, ginning ratios and A Index

Appendix Table 15: Cereals Prices, Cote d'Ivoire, 1961 to 2004

	Rice Bangkok in $ per mt	Rice FAO import unit value in $ per mt	Maize US Gulf in $ per mt	Maize FAO import unit value in $ per mt	Rice CFA per kg	Maize CFA per kg	ad valorem in percent
1961	137	120	48		18		
1962	153	133	49	250	18		
1963	143	126	54		18		
1964	138	137	55	91	18		
1965	136	115	55		18		
1966	166	152	58		18	12	
1967	221	147	54	438	18	12	
1968	205	161	48	417	18	12	
1969	185	131	52	89	20	12	
1970	143	93	58	99	20	12	
1971	130	82	58	87	20	12	
1972	150	113	56	533	20	13	
1973	297	263	97	235	20	19	
1974	542	464	132	127	65	19	
1975	363	615	120	339	65	20	
1976	254	672	112	163	65	25	
1977	272	295	95	125	65	36	
1978	369	331	101	172	65	60	
1979	334	323	116	206	65	60	
1980	434	452	126	202	50	68	
1981	483	384	131	237	60	72	
1982	293	294	108	190	69	58	
1983	277	247	136	239	68	65	
1984	252	245	136	225	80	72	
1985	217	174	112	549	80	60	
1986	196	224	88	542	84	76	
1987	214	224	76	165	84	45	
1988	277	256	107	148	60	45	
1989	300	322	111	808	60	45	
1990	271	319	109	726	60	45	
1991	294	300	107	178	60	45	
1992	268	320	104	189	60	62	5.4
1993	237	301	102	207	75	62	6.2
1994	269	300	108	487	75	71	5.4
1995	321	292	123	385	110	81	5.5
1996	338	301	165	502	110	73	12.5
1997	302	258	117	214	150	105	12.9
1998	305	274	102	441	113	92	9.3
1999	249	253	90	396	108	86	8.3
2000	204	218	88	131	110	85	6.8
2001	173	195	90	344	112	86	6.1
2002	192	179	99	257	108	87	5.0
2003	199	212	105	263	109	88	5.0
2004	246	246	112	300			

Sources: FAOSTAT for unit values and farmgate prices, IMF for border prices

Appendix Table 16: Cocoa prices as % of border prices, Cote d'Ivoire, 1961 to 2005

	Farmgate Price		Export Tax		Export Margin	Wholesale Margin
	using official exch rate	using REER	ad valorem equivalent	on processed beans	percent of pre tax border price	percent of pre tax border price
1961	53.8	50.5				
1962	56.9	56.2				
1963	51.7	48.2				
1964	56.7	54.3				
1965	61.4	56.6				
1966	51.5	47.0				
1967	47.6	45.1				
1968	39.2	37.5				
1969	32.6	27.8				
1970	44.5	44.4				
1971	57.3	56.8				
1972	52.5	52.5				
1973	40.4	40.4				
1974	39.7	39.7				
1975	65.5	66.8				
1976	36.4	36.6				
1977	24.5	24.5				
1978	32.5	27.9				
1979	40.1	39.4				
1980	54.5	35.5				
1981	53.2	40.2				
1982	52.4	43.6				
1983	43.4	37.3				
1984	35.8	32.1				
1985	39.5	35.2				
1986	55.8	41.5				
1987	66.6	44.6				
1988	84.8	55.4				
1989	100.9	69.9				
1990	57.9	40.1				
1991	59.4	42.4				
1992	68.7	46.9				
1993	63.6	44.0				
1994	40.7	45.7				
1995	43.8	42.9	50.8		26.2	7.6
1996	40.4	39.5	56.1		27.4	9.6
1997	48.2	48.2	40.1	27.4	23.6	8.9
1998	53.2	49.7	23.6	13.6	19.9	14.3
1999	46.3	43.7	33.2	9.2	26.2	12.1
2000	46.8	46.8	33.8	24.8	20.5	16.9
2001	52.9	51.1	40.2	26.8	14.3	11.5
2002	50.2	46.6	39.1	29.0	16.1	14.1
2003	40.7	35.4	59.8	42.1	22.0	13.0
2004	36.3	31.2	62.3	43.7	25.3	15.8
2005	37.9	32.5	55.8		27.0	14.0

Source: Calculations from prices in Table A11 and IMF for exchange rates

Appendix Table 17: Coffee prices as % of border prices, Cote d'Ivoire, 1961 to 2005

	Farmgate Price		Export Tax	Export Margin	Wholesale Margin
	using official exch rate	using REER	ad valorem equivalent	percent of pre tax border price	percent of pre tax border price
1961	45.8	43.0			
1962	45.0	44.4			
1963	52.5	48.9			
1964	46.8	44.8			
1965	45.2	41.6			
1966	49.7	45.4			
1967	49.6	47.1			
1968	48.8	46.6			
1969	50.2	42.8			
1970	41.7	41.6			
1971	41.0	40.6			
1972	41.9	41.9			
1973	49.1	49.1			
1974	48.3	48.3			
1975	52.1	53.1			
1976	14.6	14.7			
1977	31.7	31.6			
1978	33.8	29.0			
1979	40.4	39.6			
1980	50.1	32.6			
1981	42.0	31.8			
1982	30.5	25.4			
1983	27.4	23.6			
1984	30.6	27.4			
1985	34.6	30.9			
1986	52.8	39.2			
1987	64.2	42.9			
1988	66.6	43.6			
1989	60.3	41.7			
1990	65.6	45.4			
1991	78.7	56.1			
1992	46.8	32.0			
1993	28.3	19.6			
1994	38.8	43.7			
1995	69.4	67.9	-2.2		
1996	55.4	54.2	3.5		
1997	52.3	52.3	18.8		
1998	63.5	59.4	5.2	25.5	7.7
1999	53.6	50.6	6.3		
2000	56.0	56.0	14.3	14.3	21.6
2001	55.2	53.4	2.0	30.1	13.5
2002	45.9	42.7	8.3	35.1	15.2
2003	41.5	36.1	13.9	35.4	17.4
2004	36.2	31.1	11.5	36.0	23.6
2005	50.1	42.9	11.0	18.3	26.0

Source: Calculations from prices in Table A12 and IMF for exchange rates

Appendix Table 18: Cotton prices as % of border prices, Cote d'Ivoire, 1966 to 2004

	Farmgate Price		Lint Price	Export Tax	Transportation and Marketing Margins	
	using official exch rate	using REER	using FAO unit values	ad valorem equivalent in percent	Gin to port including adjusted ginning costs in percent of lint farmgate	FOB to CIF % of CIF
1961						
1962						
1963						
1964						
1965						
1966	60	55	99			
1967	55	52	81			
1968	54	52	65			
1969	57	49	62			
1970	58	58	63		45	8.1
1971	47	47	74		46	7.1
1972	46	46	56		47	7.1
1973	32	32	52		44	6.1
1974	68	68	34		32	7.6
1975	61	62	58		35	7.4
1976	48	48	60		36	6.2
1977	61	61	58		38	7.3
1978	56	48	63		43	7.1
1979	52	51	61		49	7.0
1980	48	31	53		53	7.3
1981	48	36	43		59	8.7
1982	38	31	41		65	8.7
1983	36	31	39		55	9.0
1984	46	41	38		51	10.5
1985	62	55	46		54	12.3
1986	61	45	83		55	10.0
1987	59	39	77		51	9.0
1988	66	43	67		45	9.7
1989	50	34	72		47	7.8
1990	50	34	59		51	8.1
1991	52	37	52		56	8.7
1992	66	45	47		58	10.3
1993	65	45	51		60	11.1
1994	35	39	31		49	7.3
1995	44	43	46		49	7.8
1996	51	50	49		48	7.9
1997	53	53	50		45	7.5
1998	64	60	56		48	8.4
1999	62	58	64		54	8.9
2000	60	60	71	0	47	7.7
2001	67	65	59	0	51	8.4
2002	56	52	70	0	53	7.6
2003	62	54	68	0	44	6.2
2004	69	59		3.2	54	7.1
2005	53	46		3.2	70	7.3

Source: Calculations from prices in Table A13 and IMF for exchange rates

Appendix Table 19: Cereals prices as % of border prices, Cote d'Ivoire, 1961 to 2004

	Rice Farmgate Price		Maize Farmgate Price		Tariffs	Consumer Tax	Retail Premium
	using official exch rate	using REER	using official exch rate	using REER	ad valorem in percent	VAT percent	Local over Imported percent
1961	94	88					
1962	85	84					
1963	90	84					
1964	83	79					
1965	98	90					
1966	74	68	84	77			
1967	76	73	90	85			
1968	70	67	102	97			
1969	90	77	89	76			
1970	120	120	75	74			
1971	135	134	75	74			
1972	108	108	93	93			
1973	52	52	87	87			
1974	90	90	60	60			
1975	76	77	78	80			
1976	62	63	93	94			
1977	138	138	154	153			
1978	134	115	264	227			
1979	145	143	244	239			
1980	80	52	256	166			
1981	88	67	203	154			
1982	110	91	163	136			
1983	111	96	125	108			
1984	115	103	121	109			
1985	157	140	119	106			
1986	167	124	250	186			
1987	192	129	198	133			
1988	121	79	141	92			
1989	90	62	127	88			
1990	106	73	151	105			
1991	109	78	148	106			
1992	109	74	225	153	5.4		
1993	135	94	215	148	6.2		
1994	69	78	119	134	5.4		
1995	116	114	132	129	5.5	20	
1996	110	107	87	85	12.5	20	
1997	153	153	154	153	12.9	20	
1998	107	100	153	143	9.3	20	
1999	107	101	155	146	8.3	20	
2000	109	109	135	135	6.8	20	27
2001	120	116	131	127	6.1	20	26
2002	133	124	126	117	5.0	20	41
2003	137	119	144	125	5.0	18	
2004						18	

Source: Calculations from prices in Table A14 and IMF for exchange rates

Tariffs are from FAO(2003) and WTO (1995), retail premium from Oryza (2004)

Appendix Table 20: Prices and protection as a percentage of border prices, Cote d'Ivoire, 2001 and 2004

Exportables	**Cocoa**		**Coffee**		**Cotton**		**Bananas**		**Palm oil**	
	2001	2004	2001	2004	2001	2004	2001	2004	2001	2004
Producer price	52.9	36.3	55.2	36.2	67	69	59	55	85	78
Export tax	28.7	38.4	2.0	10.3	0	3.2	0	0	0	0
Trader margins	18.4	25.3	42.8	53.4	*30*	*18*	*20*	*20*	*15*	*22*
NTB	0	0	*23*	*33*	*3*	*7*	*21*	*25*	*0*	*0*
Production subsidy [a]										
Consumer tax	na	na	na	na	na	na	20	18	20	18

Importables	**Rice**		**Wheat**		**Fruits & Vegetables**		**Agricultural Products**	
	2001	2004	2001	2004	2001	2004	2001	2000
Producer price	120	137	na	na				
Import tariff	6.1	10	6.1	10	22.4	20	16.4	20
NTB [b]	14	27						
Production subsidy [a]			na	na				
Consumer tax	20	18	20	18	20	18	20	18

Non-Tradeables	**Maize**		**Cassava and Yams**	
	2001	2004	2001	2004
Producer price	131	144	na	na
Import tariff	6.1	10	19.9	20
Production subsidy	0	0	0	0
Consumer tax	20	18	20	18

[a] For many exportables and possibly rice there are likely input subsidies, but there is no information to quantify their magnitude

[b] Large retail margins for rice suggest quantitative restrictions may still apply, but don't benefit farmers

Sources: Author's calculations and estimates from data cited elsewhere in this chapter – BNETD (2006); FAOSTAT (2006);

FAO(2003), etc. All prices, taxes and margins are expressed as a percentage of the reference (border) prices (FOB or CIF) in appendix tables or using FAO import or export unit values. Consumer taxes are the VAT, which dropped from 20 percent to 18 percent in 2003 (World Bank 2006b). 2004 MFN Tariffs from UNCTAD, TRAINS (2006).

Appendix Table 21: Annual distortion estimates, Cote D'Ivoire, 1961 to 2005

(a) Nominal rates of assistance to covered products (percent)

	Cocoa	Coffee	Cotton	Rice	Cassava	Plantain	Yam	All covered
1961	-36	-54	na	-20	0	0	0	-31
1962	-28	-53	na	-25	0	0	0	-22
1963	-39	-48	na	-24	0	0	0	-28
1964	-31	-52	na	-19	0	0	0	-33
1965	-28	-55	na	-22	0	0	0	-30
1966	-40	-51	-16	-36	0	0	0	-35
1967	-42	-50	-20	-50	0	0	0	-32
1968	-52	-50	-20	-40	0	0	0	-37
1969	-65	-54	-25	-38	0	0	0	-43
1970	-43	-55	-17	-12	0	0	0	-37
1971	-28	-57	-32	22	0	0	0	-31
1972	-33	-55	-33	17	0	0	0	-33
1973	-49	-48	-54	55	0	0	0	-28
1974	-49	-48	-11	-21	0	0	0	-33
1975	-15	-43	-17	34	0	0	0	-14
1976	-53	-84	-35	70	0	0	0	-61
1977	-69	-66	-17	53	0	0	0	-48
1978	-64	-69	-32	6	0	0	0	-43
1979	-50	-58	-24	42	0	0	0	-32
1980	-55	-65	-52	-27	0	0	0	-41
1981	-49	-66	-43	-41	0	0	0	-42
1982	-44	-73	-49	-11	0	0	0	-38
1983	-52	-75	-52	-12	0	0	0	-43
1984	-59	-71	-38	3	0	0	0	-37
1985	-55	-67	-16	15	0	0	0	-44
1986	-47	-58	-30	45	0	0	0	-32
1987	-43	-54	-41	38	0	0	0	-29
1988	-29	-53	-37	-25	0	0	0	-22
1989	-11	-55	-50	-31	0	0	0	-16
1990	-49	-51	-48	-11	0	0	0	-26
1991	-46	-40	-43	-18	0	0	0	-20
1992	-40	-66	-30	-9	0	0	0	-19
1993	-44	-79	-29	22	0	0	0	-21
1994	-42	-53	-42	-11	0	0	0	-23
1995	-42	-27	-36	6	0	0	0	-19
1996	-45	-42	-27	-2	0	0	0	-26
1997	-40	-44	-24	34	0	0	0	-23
1998	-36	-36	-12	-7	0	0	0	-23
1999	-43	-46	-11	5	0	0	0	-22
2000	-39	-32	-12	20	0	0	0	-18
2001	-39	-39	-3	35	0	0	0	-23
2002	-43	-51	-21	19	0	0	0	-29
2003	-56	-58	-23	48	0	0	0	-33
2004	-60	-62	-10	19	0	0	0	-35
2005	-58	-46	-22	1	0	0	0	-34

Appendix Table 21 (continued): Annual distortion estimates, Cote D'Ivoire, 1961 to 2005
(b) Nominal and relative rates of assistance to all[a] agricultural products, to exportable[b] and import-competing [b] agricultural industries, and relative[c] to non-agricultural industries
(percent)

	Total ag NRA				Ag tradables NRA				
	Covered products		Non-covered products	All products (incl NPS)	Export-ables	Import-competing	All	Non-ag tradables NRA	RRA
	Inputs	Outputs							
1961	0	-31	-8	-25	-50	19	-35	16	-44
1962	1	-22	-8	-19	-45	9	-29	15	-39
1963	2	-28	-8	-23	-46	14	-32	18	-42
1964	3	-33	-10	-27	-48	13	-35	14	-43
1965	4	-30	-10	-25	-50	10	-35	12	-42
1966	5	-35	-12	-29	-49	3	-37	12	-44
1967	6	-32	-10	-26	-47	-11	-35	13	-43
1968	7	-37	-11	-31	-50	-3	-39	11	-45
1969	8	-43	-13	-35	-57	0	-44	10	-49
1970	9	-37	-14	-32	-51	10	-39	11	-45
1971	10	-31	-14	-27	-48	19	-34	11	-40
1972	11	-33	-12	-28	-49	21	-35	12	-42
1973	12	-28	-14	-25	-48	32	-31	8	-37
1974	13	-33	-14	-29	-48	-3	-35	7	-40
1975	14	-14	-12	-14	-35	27	-18	10	-26
1976	15	-61	-17	-50	-73	21	-57	5	-59
1977	16	-48	2	-36	-64	53	-45	22	-55
1978	17	-43	10	-30	-62	54	-39	35	-55
1979	18	-32	6	-24	-52	58	-33	30	-48
1980	19	-41	-3	-31	-57	24	-40	21	-51
1981	20	-42	-16	-35	-56	-1	-45	6	-48
1982	21	-38	-1	-28	-58	34	-39	23	-50
1983	22	-43	-12	-36	-61	16	-48	11	-53
1984	23	-37	-11	-31	-58	20	-43	11	-49
1985	24	-44	-10	-35	-57	25	-44	13	-50
1986	25	-32	-9	-27	-50	33	-37	17	-46
1987	26	-29	-8	-25	-47	33	-35	19	-45
1988	27	-22	-8	-20	-37	14	-29	19	-40
1989	28	-16	-8	-14	-29	8	-22	18	-34
1990	29	-26	-13	-23	-49	11	-37	11	-43
1991	30	-20	-12	-18	-46	10	-32	12	-39
1992	31	-19	-11	-17	-47	17	-31	11	-38
1993	32	-21	-11	-18	-51	24	-32	13	-40
1994	33	-23	-13	-20	-46	14	-32	9	-37
1995	34	-19	-14	-18	-41	16	-28	7	-33
1996	35	-26	-14	-22	-45	13	-30	7	-34
1997	36	-23	-14	-20	-42	23	-26	8	-31
1998	37	-23	-15	-20	-38	10	-27	7	-32
1999	38	-22	-15	-20	-43	13	-28	8	-33
2000	39	-18	-16	-18	-40	15	-25	5	-29
2001	40	-23	-16	-21	-40	19	-28	5	-31
2002	41	-29	-16	-25	-43	15	-32	4	-34
2003	42	-33	-17	-29	-53	20	-38	4	-40
2004	43	-35	-16	-30	-56	15	-40	4	-42
2005	44	-34	-16	-29	-54	10	-40	4	-42

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

Appendix Table 21 (cont'd): Annual distortion estimates, Cote D'Ivoire, 1961 to 2005
(c) Value shares of primary production of covered[a] and non-covered products, (percent)

	Cocoa	Coffee	Cotton	Rice	Cassava	Plantain	Yam	Non-covered
1961	9	35	na	4	4	5	17	25
1962	13	21	na	8	6	6	22	25
1963	12	32	na	6	4	5	17	25
1964	11	39	na	4	3	4	13	25
1965	9	34	na	6	4	5	17	25
1966	12	38	0	6	3	4	13	25
1967	16	21	1	11	4	4	16	27
1968	14	35	1	8	3	3	12	24
1969	23	26	1	6	3	3	12	26
1970	15	38	1	5	2	3	12	24
1971	16	35	1	5	3	3	12	24
1972	14	37	2	5	4	2	11	25
1973	19	31	2	6	4	2	11	24
1974	26	21	2	12	4	2	11	23
1975	17	25	2	8	3	3	15	27
1976	12	47	1	2	2	2	7	26
1977	28	29	1	3	4	3	10	23
1978	28	21	2	4	5	4	12	25
1979	26	23	1	3	5	5	15	22
1980	29	19	2	4	5	3	12	26
1981	25	26	2	4	5	3	12	25
1982	19	24	2	3	4	5	16	26
1983	23	26	2	2	3	5	14	24
1984	37	7	2	3	4	5	17	24
1985	29	25	2	2	3	3	11	25
1986	31	19	2	2	4	5	15	21
1987	33	17	3	2	4	6	17	18
1988	35	11	4	4	5	6	19	17
1989	29	10	6	5	5	7	21	17
1990	27	10	4	4	5	8	22	20
1991	24	6	3	4	6	10	25	23
1992	20	8	2	3	6	9	28	24
1993	21	8	3	3	6	8	26	25
1994	23	10	4	3	5	7	22	26
1995	28	7	3	4	5	6	22	26
1996	33	6	3	6	5	6	11	31
1997	32	9	3	6	4	5	11	30
1998	33	10	3	5	4	5	12	28
1999	26	8	3	5	4	6	16	31
2000	30	4	4	4	5	6	15	32
2001	44	2	2	4	6	6	9	26
2002	45	3	3	3	5	6	7	29
2003	41	2	4	3	7	7	8	27
2004	40	3	2	4	7	7	8	27
2005	39	3	2	5	7	9	8	27

a. At farmgate undistorted prices Source: Author's spreadsheet