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Consistently Inconsistent

Addressing income volatility among cocoa producers in Ghana and Côte d'Ivoire

Jason Gibson

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International Institute for Sustainable Development
161 Portage Avenue East, 6th Floor
Winnipeg, Manitoba
Canada R3B 0Y4
Tel: +1 (204) 958–7700
Fax: +1 (204) 958–7710

E-mail: info@iisd.ca
Web site: http://www.iisd.org/

Tackling Commodity Price Volatility

This paper is published as part of a larger project, sponsored by the Norwegian Government, on policy options to tackle the problem of commodity price volatility. More research and papers can be found at http://www.iisd.org/trade/commodities/price.asp

Acronyms

ADM	Archer Daniels Midland
ARCC	Autorité de Régulation du Café et du Cacao
BCC	Bourse du Café et du Cacao
CAISTAB	Caisse de stabilisation et de soutien des prix (stabilisation and price support fund)
CFF	Compensatory Finance Facility
CIF	Cost, Insurance and Freight
COCOBOD	Ghana Cocoa Board
FAO	Food and Agriculture Organization of the United Nations
FLEX	fluctuations in export earnings program
FOB	Free on Board
ICA	international commodity agreement
ICCA	International Cocoa Agreement
ICCO	International Cocoa Organization
IMF	International Monetary Fund
JIT	just-in-time
OPEC	Organization of the Petroleum Exporting Countries
STABEX	Système de stabilisation des recettes d'exportation (stabilization of export earnings program)
UNCTAD	United Nations Conference on Trade and Development

Contents

Summary

Agricultural commodity production plays a key role in the economies of many low-income countries and households. Cocoa in the West African countries of Côte d'Ivoire and Ghana provides a perfect example of agricultural commodity dependence. Prices of cocoa and other agricultural commodities are highly variable in the short term and are gradually declining in the long term. Although much attention has been focused on the latter problem, cocoa price volatility in the short term directly impacts the income of cocoa-producing households.

A consensus has emerged that diversifying income sources is the only way to truly address declining and volatile incomes among commodity-dependent households. However, increasing cocoa price volatility brought on by international pressure for market liberalization prevents cocoa producers from effectively planning and executing diversification strategies.

An examination of the economics of cocoa production and price formation in Ghana and Côte d'Ivoire, the welfare effects of cocoa price volatility on cocoa-producing households and the relative success of past measures to stabilize the prices earned by cocoa producers, brings to light the following observations:

- Liberalization has had a negative effect on Ivorian cocoa producers.
- Ghana has demonstrated that centralized marketing authority can be streamlined without being completely dismantled.
- Smallholders lack the financial support and supply coordination/aggregation capability necessary to utilize forward contracts.
- World price stability may not be achievable in the long run.
- Inter-annual producer price stability has proven difficult to maintain.
- Compensatory finance mechanisms, as implemented in the past, do not directly impact individual producers.

This paper examines several traditional and non-traditional policy options for stabilizing cocoa producer incomes. Options include moving back toward state-led price stabilization, renewing international supply coordination, increasing access to market-based risk management tools, and promoting standards-based niche markets and alternative trade networks. These options are evaluated against four criteria:

1. Focus on producer income stability.
2. Maximize implementation feasibility.
3. Ensure wide producer accessibility.
4. Ensure sustainability in the short-to-medium term.

Based on the analysis, it is clear that no single policy can address the income stability problem; instead, national and international policy-makers should undertake or support the following, complementary, policy actions:

- Reinstitute comprehensive, state-led quality control mechanisms and develop a supply aggregating organization in Côte d'Ivoire.
- Implement national price insurance programs in both Ghana and Côte d'Ivoire, backed by a central price risk hedging strategy.

- Work with chocolate manufacturers to define cocoa quality standards and reduce the power currently enjoyed by multinational grinding companies in the cocoa-chocolate commodity chain.
- Rejuvenate and place more emphasis on the International Cocoa Agreement as a forum for discussion and coordination.
- Support producer groups seeking to take advantage of niche markets and alternative trade networks.
- Harmonize alternative certification requirements to reduce transaction costs borne by small cocoa producers.

1. Introduction

Agricultural commodity production plays a key role in the economies of many low-income countries and households. The United Nations Conference on Trade and Development (UNCTAD) estimates that one billion people depend on agricultural commodities for a substantial portion of their income (South Centre 2005, 11). Cocoa in the West African countries of Côte d'Ivoire and Ghana provides a perfect example of agricultural commodity dependence: approximately four million and two million people in each country, respectively, depend on cocoa production for a substantial portion of their income (Sarris 2002, 3; Talbot 2002, 224). Despite being geographical neighbors (see map in Appendix A), cocoa producers in Côte d'Ivoire and Ghana have had very different experiences in the past 20 years. The relative successes and failures of cocoa policies in the two countries provide a unique view of the possibilities for future national and international action to address commodity dependence.

Unfortunately, commodity prices are highly variable in the short term and are gradually declining in the long term (Cashin and McDermott 2002, 175). Both trends threaten the livelihood security of commodity producers, but most international attention has been focused on the latter issue. During the 1980s and 1990s, structural adjustment programs were implemented in many developing countries, including Côte d'Ivoire and, to a lesser extent, Ghana. A major goal of such programs was to remove government-created distortions, improve supply chain efficiency and, in the end, raise the prices that commodity producers received. The programs have been effective in some cases, but there is also strong evidence that structural adjustment programs have led to an increase in commodity price volatility faced by producers in countries with few social safety nets (Gibbon 2001, 5).

To counter highly volatile commodity prices, a consensus has emerged that commodity-dependent producers need to diversify the range of products they produce (horizontal diversification) and move into downstream processing to capture more of the end-product value (vertical diversification). Often left out of these recommendations is the fact that "diversification into other products entails risks… and the poorer and less diversified the country, the riskier it is for the local producer to diversify, and the riskier it is for a foreign buyer to support any diversification effort" (Adebusuyi 2004, 20). In the context of Côte d'Ivoire and Ghana, structural aspects of cocoa production and processing make vertical diversification difficult, increasing the importance of farm/household-level horizontal diversification. However, volatility in the price of a farmer's primary cash crop directly creates volatility in that farmer's income. Given this relationship, commodity price volatility becomes a major obstacle to strategic planning and diversification of any sort (Brown and Gibson 2006, 22; ITF, "Price Risk: Introduction").

The paper will compare the experiences of Côte d'Ivoire and Ghana to inform policy recommendations for stabilizing cocoa producer incomes in the two countries. Assuming that production cost structures do not change dramatically over time, the primary focus will be on stabilizing the farmgate prices of cocoa—the price cocoa producers actually receive. However, the paper will also consider policies that address producer income risk without directly affecting cocoa prices, such as risk hedging tools. Section 2 and Section 3 will address the structure and economics of cocoa production in Côte d'Ivoire and Ghana, including the cocoa-chocolate commodity chain and trends in farmgate prices. These sections will highlight some of the structural barriers to vertical diversification by producers and also examine the price-level versus price-volatility debate in the specific context of

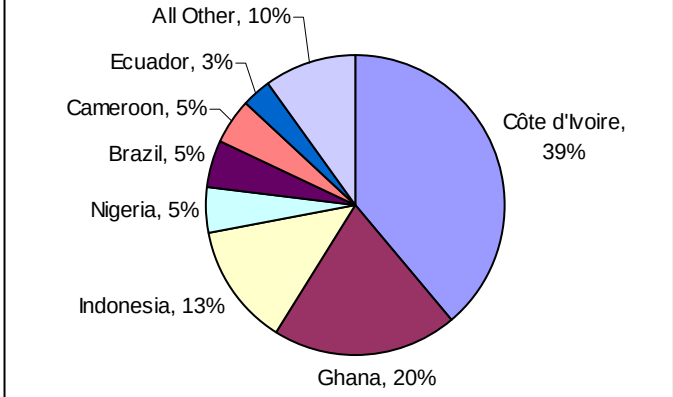
Côte d'Ivoire and Ghana. Section 4 will evaluate the individual welfare effects of cocoa income volatility and motivate the need for addressing producer income stability, while Section 5 details the effectiveness of past and present policies intended to stabilize prices and/or incomes for cocoa producers in Côte d'Ivoire and Ghana. Section 6 will develop and evaluate options for future action to stabilize cocoa producer incomes in Côte d'Ivoire and Ghana, informed by past policy successes and failures in the two countries. The paper concludes with policy recommendations for national and international policy-makers.

2. Cocoa production and export

2.1. Production history

Cocoa is a tropical tree crop that grows best in shaded areas. Once planted, cocoa tree seedlings become productive in three to five years, although newer hybrid varieties are being developed that mature more quickly. Generally, a cocoa tree will remain productive for approximately 25 years, without any age-related decline in production (ICCO 1998b). Cocoa pods take five to six months to grow, resulting in two harvest periods during the year: a main crop and a mid-crop. The mid-crop is typically much smaller than the main crop, and the cocoa beans are slightly lower in fat content than those harvested during the main harvest period. The harvest periods vary by climate and type of cocoa tree, but in Côte d'Ivoire and Ghana, the main crop harvest period is October–March and the mid-crop period runs May–August. In these countries, the main crop typically accounts for 80–85 per cent of the total harvest (ICCO 1998a).

Figure 1: World cocoa production, 2005–2006



Source: World Bank Cocoa Market Brief, 2006.

Cocoa trees were first imported to West Africa from South America in the mid-19th century. In the beginning, chocolate drinks were only popular with elites in the colonial powers of Western Europe, but demand grew rapidly both in Europe and the United States as standards of living increased during the early 20th century. This increase in demand led the colonial governments in Côte d'Ivoire and Ghana to direct resources into expanding cocoa production (ICCO, "Growing Cocoa").

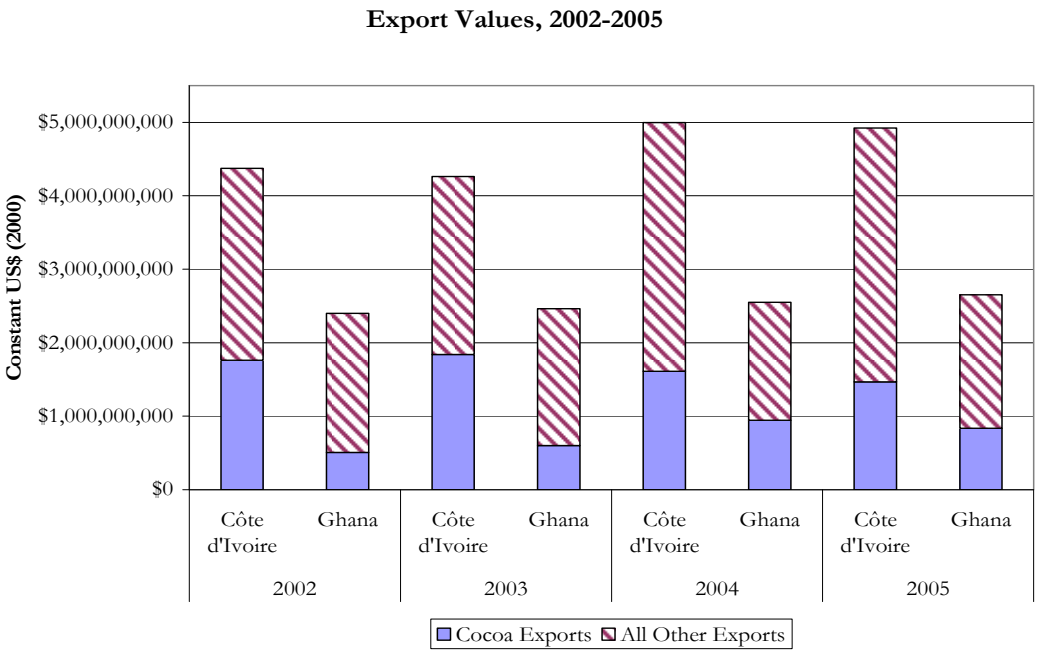
The production incentives initiated by Ghana's colonial government pushed the country to the forefront of world cocoa production. It continued to dominate worldwide cocoa production until the 1970s, when negligence, political turmoil and diseases attacking Ghana's cocoa tree stock devastated the country's production capacity (Talbot 2002, 718). In 1977, Côte d'Ivoire, behind government-supported price incentives, overtook Ghana as the world's dominant cocoa-producing country, now accounting for 39 per cent of world cocoa production and 36 per cent of worldwide cocoa exports (see Figure 1) (Losch 2002, 206).

2.2. Economic and political importance of cocoa

Côte d'Ivoire and Ghana currently produce approximately 59 per cent of the world's cocoa. Accordingly, cocoa plays critical economic and political roles in both countries. In 2002, cocoa accounted for over 30 per cent and 25 per cent of total export earnings for Côte d'Ivoire and Ghana, respectively, and Figure 2 shows that cocoa has continued as a major source of foreign exchange for both countries (ul Haque 2004, 3). At the individual/household level, cocoa production serves as the primary source of income for

over six million people in the two countries—23 per cent of Côte d'Ivoire's population and 11 per cent of Ghana's. With cocoa producers accounting for large population shares, leaders in both countries have used policies governing cocoa production for political gain in the past. For example, Côte d'Ivoire's long-time president, Félix Houphouët-Boigny (1960–1993), blatantly used cocoa price support schemes to ensure his popularity among rural farmers (Losch 2002, 210).

Figure 2: Value of cocoa exports in Côte d'Ivoire and Ghana, 2002–2005



Sources: Export values as reported by the World Bank's World Development Indicators database and cocoa export values as reported in the World Bank Cocoa Market Brief, 2006.

2.3. The role of the state in cocoa production

State entities have played an important role in cocoa production in Côte d'Ivoire and Ghana since colonial times. The British colonial government set up a marketing board to administer Ghanaian cocoa production and export, while the French administration set up a centralized stabilization fund called the Caisse de stabilisation et de soutien des prix.[1] Although the two entities functioned differently, they both set producer prices and played a role in ancillary services to the cocoa sector, such as product quality control, extension services, market intelligence and research (ul Haque 2004, 7; Gilbert and Varangis 2003, 10).

The Ghana Cocoa Board, commonly referred to as COCOBOD, is the state institution that has historically handled the purchase, transport, storage and both internal and external sales activities for export-bound cocoa. COCOBOD purchased and sold the cocoa at set prices, providing first inter-year and, later, intra-year price stability.[2] The board also handled

[1] Côte d'Ivoire's cocoa sector institutions and price-setting mechanisms are commonly referred to by their French names.

[2] Inter-year stabilization entails a set price for producers across multiple years, whereas intra-year price stabilization only provides for stable producer prices across mid- and main-crop harvests within a year. This is an important distinction because production decisions are made annually and a cocoa producer generally does not adjust his behaviour within the year.

quality control and all transportation and storage necessary to move the product to market, as well as providing credit and other support services to individual farmers (ul Haque 2004, 7). In order to finance its operations however, the producer prices paid by COCOBOD included an implied tax (i.e., the difference between the producer price and the price received by COCOBOD, known as the "free on board" or f.o.b. price) (ul Haque 2004, 8; Gilbert and Varangis 2003, 12, 19).

Côte d'Ivoire's Caisse de stabilization, commonly known as CAISTAB, had similar goals in that it guaranteed a set producer price and provided the link between producers and the export market. Unlike COCOBOD however, CAISTAB was not administratively part of the Ivorian government and did not at any point own or transport the cocoa. Instead CAISTAB determined the prices that would be paid to producers and exporters, and then issued export licences to private traders who performed these functions within CAISTAB's guidelines (ul Haque 2004, 8).

Of specific interest for this paper are the ways in which Ghana and Côte d'Ivoire approached liberalization of their respective cocoa marketing institutions.[3] Côte d'Ivoire disbanded CAISTAB and price-setting activities altogether in 1999 under intense pressure from international donors. Meanwhile, Ghana took small steps toward liberalization while streamlining COCOBOD operations, and remains the only major cocoa-producing country to control both exports and producer prices. There is mounting evidence that the dissolution of CAISTAB has been detrimental to Ivorian cocoa farmers, while Ghanaian producers have enjoyed some benefits of Ghana's more cautious approach to cocoa sector liberalization.

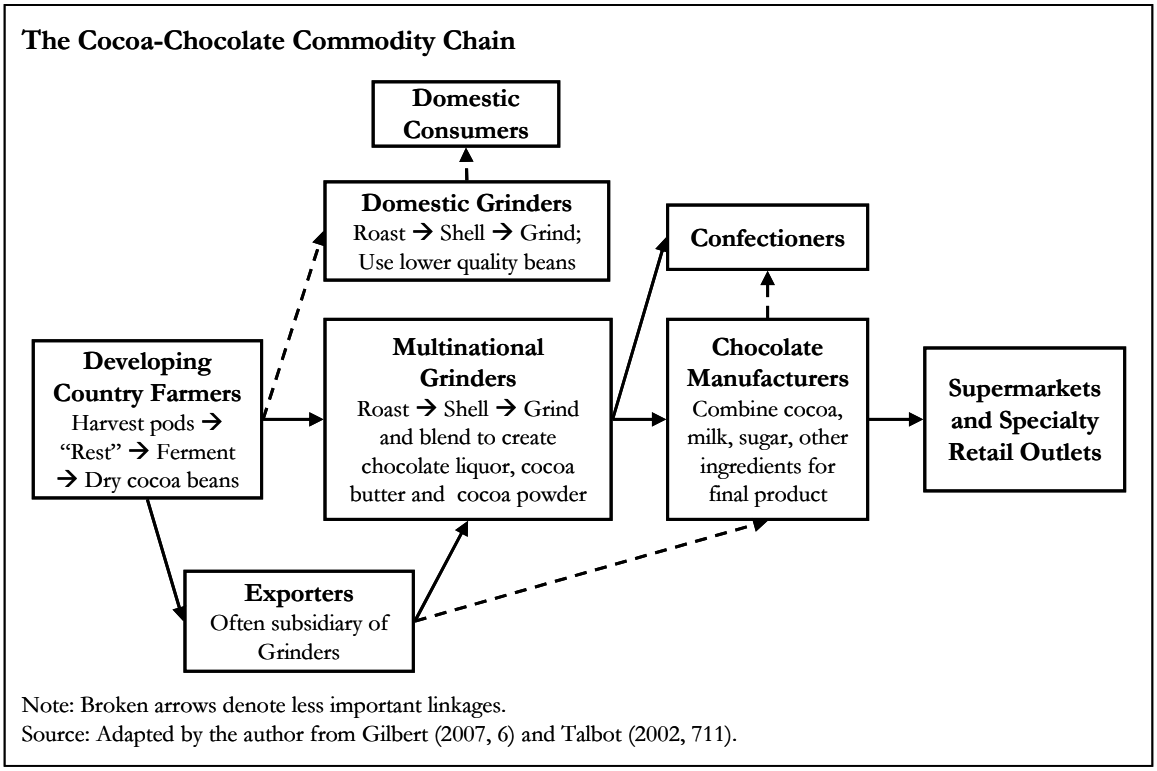
2.4. Cocoa-chocolate value chain

While cocoa production is centered among a small number of developing countries, downstream processing activities in the cocoa-chocolate value chain are highly concentrated among a small number of cocoa grinding and chocolate manufacturing firms located in the major consuming markets of Western Europe and the United States (Gilbert 2007, 6; Fold 2002, 241, 243).[4] This dynamic results in a "buyer-driven" value chain, "…in the sense that agricultural producers are more or less price-takers on the global market" (Fold 2002, 244). Figure 3 presents a stylized view of the cocoa-chocolate value chain.

[3] In this context, "liberalization" refers to "…steps taken toward opening domestic and export markets to competition and toward putting in place public and private institutions consistent with and supportive of private markets" (Gilbert and Varangis 2003, 1).

[4] Gilbert (2007) refers to grinding firms as "converters" whereas most literature uses the traditional term, grinders. The two terms refer to the same set of firms that produce intermediate cocoa products for chocolate manufacturing companies and confectioners.

Figure 3: Representation of the cocoa-chocolate commodity chain



Note: Broken arrows denote less important linkages.
Source: Adapted by the author from Gilbert (2007, 6) and Talbot (2002, 711).

The two major inputs to cocoa production are land and labour. However, fertilizer and pesticide requirements are becoming increasingly important as producers switch to hybrid strains of cocoa trees. These hybrid trees mature more quickly and yield more beans than traditional cocoa trees, but they also require more fertilizer and upkeep. Tree upkeep, fertilization and harvesting/drying are carried out manually, meaning there are few economies of scale in cocoa production. As a result, the vast majority of cocoa produced in Côte d'Ivoire and Ghana comes from small and medium-size farms of less than 20 hectares (ul Haque 2004, 3; Losch 2002, 210; Teal, Zeitlin and Maamah 2006, 10). After cocoa pods are harvested from the trees, they are allowed to rest for 7–10 days before being split open. Next, the cocoa beans are removed and allowed to ferment and then dry. Local buyers (or government purchasing agents, in the case of Ghana) then grade and consolidate the dried cocoa beans before transporting them to the port for export. Some low-quality cocoa is processed domestically, but the quantities involved are relatively small (Gilbert 2007, 6).

Once the dried cocoa beans reach a distribution center or port, the multinational firms take over. International trading companies used to play a key intermediary role at this point, securing bean supplies for grinding companies. However, the multinational grinders have consolidated and moved upstream, now obtaining most of their cocoa beans from subsidiary companies in the producing countries (Fold 2002, 238). Grinding and chocolate manufacturing are highly capital-intensive and enjoy significant economies of scale, both in processing and in bulk transportation (Gilbert 2007, 6). Three major companies—Cargill, Archer Daniels Midland (ADM) and Barry Callebaut—account for approximately 50 per cent of world cocoa grindings, while 60–70 per cent of the world's chocolate is produced by six companies (Fold 2002, 241–243).

The grinding companies convert dry cocoa beans into cocoa liquor, usually using a blend of beans from different origins as specified by the end customer, which is then processed

further into cocoa butter and cocoa powder. These intermediate products can be used separately by manufacturers to produce various drink and confectionary products, or recombined along with other ingredients, including milk and sugar, to make chocolate products (Talbot 2002, 712). The resulting products are then branded and sold through supermarkets and specialty retailers.

As noted above, value in the cocoa-chocolate supply chain is "buyer-driven" due to the high level of concentration among grinders and chocolate manufacturers (Fold 2002, 244). The processing and manufacturing stages are highly capital-intensive and tightly linked. These characteristics of the cocoa-chocolate supply chain, along with storage constraints, work against cocoa producers in Côte d'Ivoire and Ghana and help explain why cocoa/chocolate warehousing, processing and production facilities are geographically concentrated in Western Europe.

Chocolate manufacturers have developed sophisticated relationships with the large cocoa grinders based on "just-in-time" (JIT) production schedules. This requirement necessitates that grinders or warehouses be located close to chocolate production facilities (Fold 2002, 236). In addition, cocoa beans cannot be stored for long periods of time in producing countries due to the high humidity (Losch 2002, 211). Finally, the fact that cocoa is only one of several ingredients in retail chocolate products differentiates cocoa from other commodities to which it is often compared, such as coffee (Gilbert 2007, 2).

All of these factors create barriers to vertical integration by producers or producer groups. As a result, cocoa producers' share in the retail prices of chocolate products is extremely low. For example, one study of milk chocolate sold in the United Kingdom in 2004 found that cocoa producers received only four per cent of the retail price of a finished chocolate bar (Gilbert 2007, 8).

3. Cocoa prices

World cocoa prices are both highly volatile in the short term and trending downward in the long term. Between 1983 and 1997, the world price of cocoa fluctuated between 60 per cent and 170 per cent of its average (ECA 2003, 2). At the same time, world cocoa prices have been declining in real terms at a rate of two per cent each year (ul Haque 2004, 5). Some of the general issues contributing to short-term cocoa price volatility are changing weather patterns, business cycles in developed countries, price speculation on international commodity markets, conflict in producing countries, exchange rate liberalization, the end of national and international supply controls, and the price inelasticity of demand for certain commodities (CEC 2003, 14). The long-term trend in commodity prices, on the other hand, is driven by such factors as productivity improvements, structural oversupply, market distortions and the development of substitutes (CEC 2003, 11).

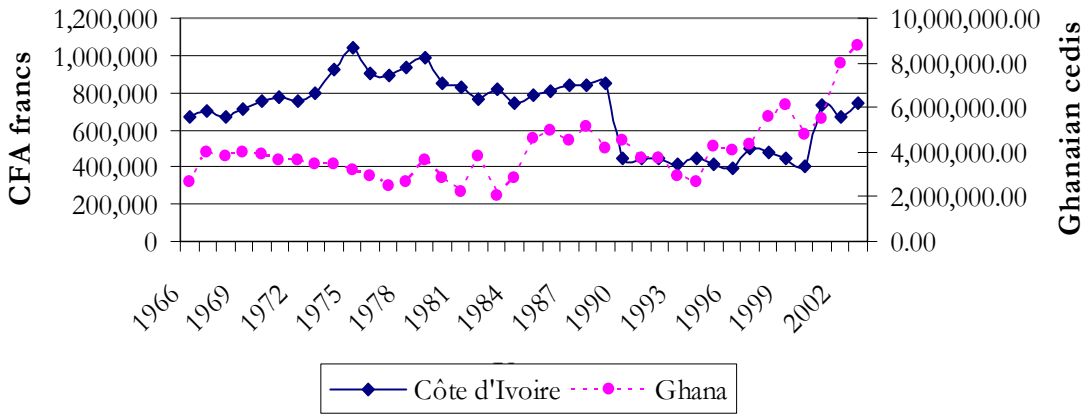
3.1. Long-run price levels

First, it is important to understand the long-term factors at work in Côte d'Ivoire and Ghana, which appear to be primarily market distortions and structural oversupply:

- *Market distortions:* Artificially-high producer prices, supported by national commodity boards led to an expansion in land area devoted to cocoa production in Côte d'Ivoire and Ghana, even while world prices slumped in the 1980s and early 1990s (FAO ProdSTAT). Price supports have distorted cocoa supplies while cocoa demand has consistently grown at two per cent per year and exhibited very low price elasticity of demand (Gilbert and Varangis 2003, 24).
- *Structural oversupply:* There is a lag between movements in world cocoa prices and production changes. It takes two to five years after planting for a cocoa tree to become productive, but once in production, the cocoa pods are generally harvested even if cocoa prices drop. Once the initial capital investment is made and the cocoa trees are planted, smallholders face relatively low marginal costs in harvesting the beans (Gilbert 1996, 9). As a result, high prices will lead to new plantings that, once mature, will drive down world prices for a long period of time.

Factors that affect prices of other commodities—increasing productivity and the development of substitutes—do not appear to be as relevant to cocoa production in Côte d'Ivoire or Ghana. As a labour-intensive, smallholder-dominated crop, cocoa production has not benefited from technological or process improvements to the same extent as other agricultural products. Per-hectare productivity has not increased significantly in Ghana and only increased by half in the past 20 years in Côte d'Ivoire. (FAO ProdSTAT; Teal and Vigneri 2004, 3). Although there is some evidence that the quantity of cocoa inputs required for chocolate products has decreased slightly due to substitutes, value chain studies by Gibbon (2001), Fold (2002), Losch (2002), Talbot (2002) and Gilbert (2007) do not identify substitutes as a major concern for cocoa producers.

Figure 4: Annual producer prices in Côte d'Ivoire and Ghana, 1966–2003



Sources: Calculated based on farmgate prices from FAO PriceSTAT database and GDP deflators from the World Bank's World Development Indicators database.

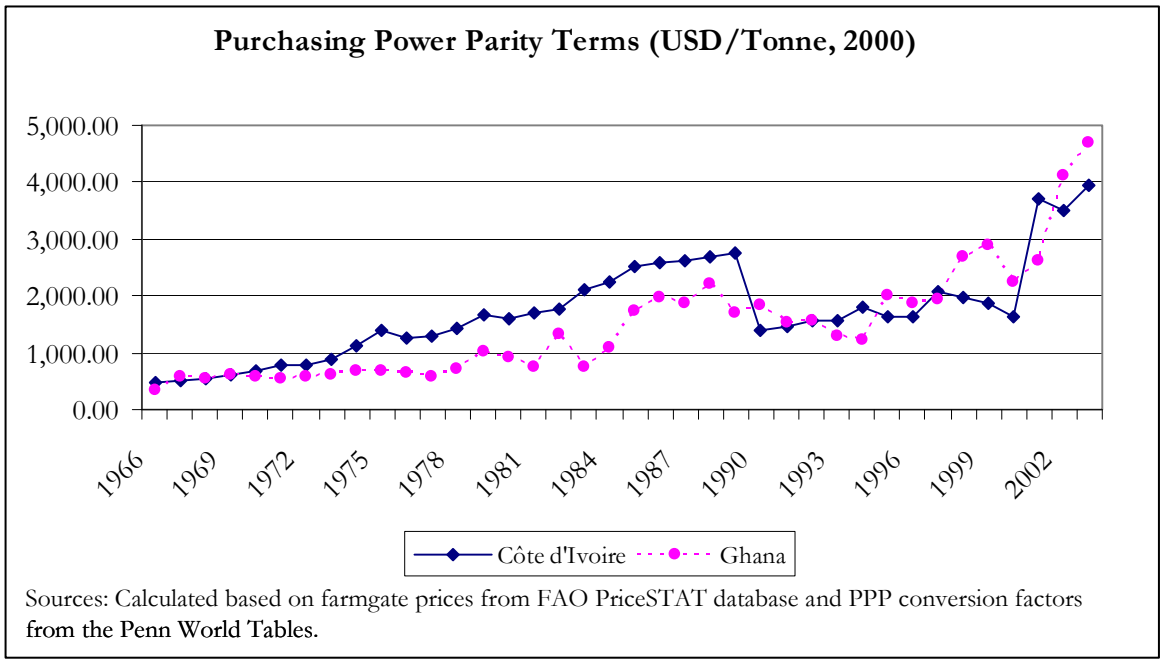
This begs the question of whether cocoa producer prices in the two countries have been experiencing the same secular downward trend that has been affecting world prices for 50 years. As Figure 4 demonstrates, real farmgate prices—the prices paid directly to cocoa producers, excluding inflation—have been declining slightly in Côte d'Ivoire but appear to be rising in Ghana. By insulating producer prices from the long-term declining trend in world prices, the Ghanaian government may well be contributing to the long-term decline in world prices. Interestingly though, real prices in purchasing power parity terms have generally trended upward in both Côte d'Ivoire and Ghana since 1966 (See Figure 5).

3.2. Short-term price volatility

Even compared to other agricultural commodity groups, cocoa has exhibited a high degree of price volatility over the past four decades (ul Haque 2004, 4). After dipping dramatically in the early 1970s and then again at the turn of the century, world cocoa prices have begun to rebound, but are still nowhere near the highs seen in the late 1970s (See Figure 6).

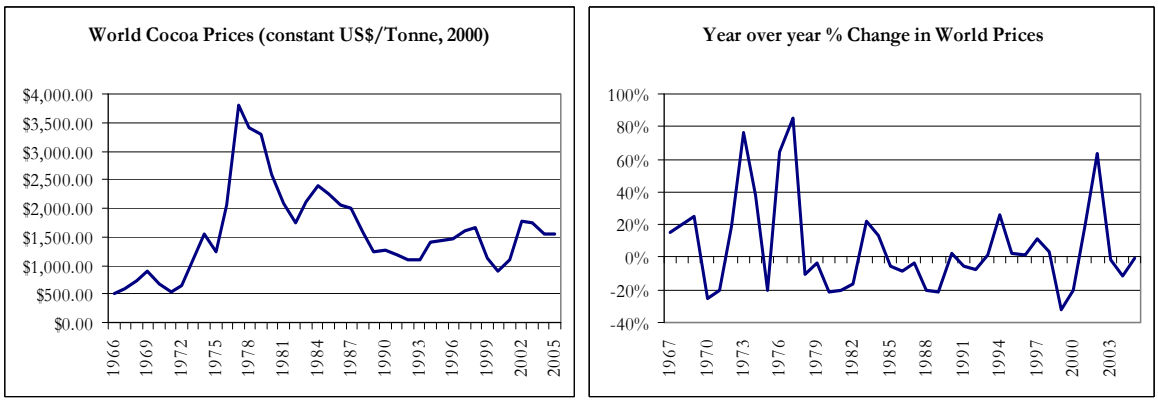
The volatility in world cocoa prices has largely defeated efforts at the national and international levels to provide inter-year income stabilization for cocoa producers. At the farmgate level, prices received by cocoa producers in Côte d'Ivoire and Ghana have exhibited some volatility, despite national stabilization efforts. However, as Figure 7 highlights, prices faced by Ivorian cocoa producers have been significantly more volatile than Ghanaian producer prices since the late 1990s. This increasing gap between the two countries coincides with Côte d'Ivoire's move ahead of Ghana in liberalizing its cocoa marketing and export institutions. We will explore this divergence further in Section 5.

Figure 5: Farmgate prices in PPP terms, 1966–2003



Sources: Calculated based on farmgate prices from FAO PriceSTAT database and PPP conversion factors from the Penn World Tables.

Figure 6: World cocoa price volatility



Sources: International Monetary Fund IFS Online database.

Cocoa price volatility is based on simple supply and demand dynamics. On the supply side, the major drivers of world price volatility are:

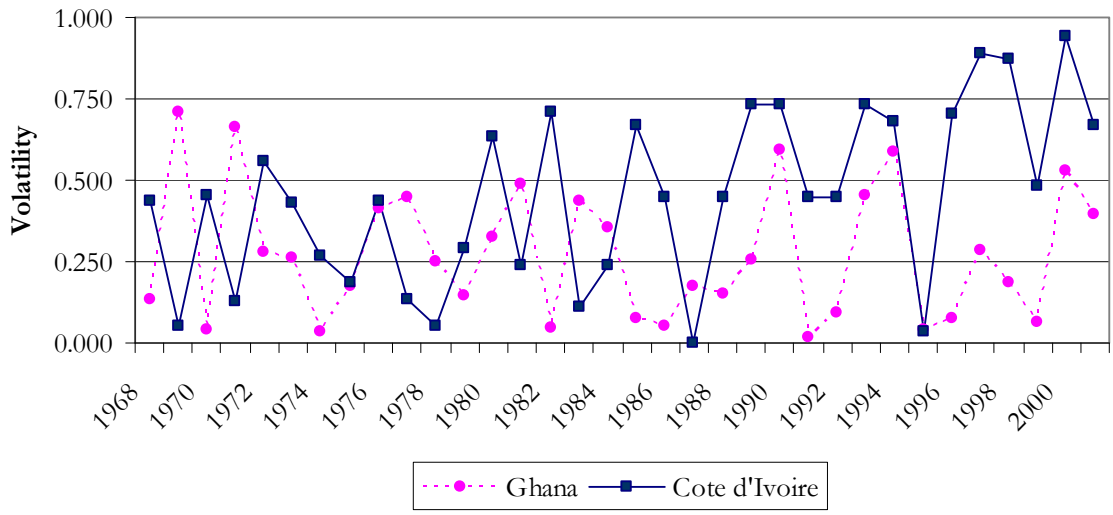
- *Weather and natural disasters:* Since cocoa production is so concentrated among a small number of countries, weather phenomena like drought or unusually high rain levels in one or more of the major producers can cause supply concerns. Early season drought in Côte d'Ivoire in 2003 caused world prices to jump simply on the prospect that the main harvest in the country might have been lower than normal (Elliott 2003).
- *Conflict in producing countries:* When conflict arises, it can damage cocoa-producing lands and make it difficult for buyers to transport the dried beans to a market or port. Continuing conflict in Côte d'Ivoire's northern cocoa-growing region has driven prices up, and also jeopardizes Ivorian producers' livelihoods (Guerriere 2005).

Within the overall trend of volatility in cocoa's world market price, producer price volatility in Côte d'Ivoire and, to a lesser degree, Ghana, have been increased by the international push toward market liberalization. This has had the dual effect of creating greater volatility in transportation costs and eliminating price minimums in Côte d'Ivoire.

On the demand side, the major drivers of volatility in world cocoa prices are:

- *Business cycles in key markets:* Since chocolate is primarily consumed in wealthy, industrialized countries, any slowdown in the developed economies will negatively affect world cocoa prices, as occurred during the slump that followed the September 11, 2001 terrorist attacks on the United States.
- *Increasing market speculation:* Commodity derivatives have become more and more popular among personal and institutional investors as alternatives to traditional equities markets. A sort of bandwagon effect can result, in which investors with no stake in the prices of the actual commodity can amplify price movements on the world commodity markets. In April 2006, Merrill Lynch estimated that commodities were trading at prices 50 per cent higher than they would have been without speculative activity (Thornton *et al.* 2006).

Figure 7: Nominal producer price volatility, Côte d'Ivoire and Ghana



Note: Volatility measure constructed by dividing the difference of annual producer price and the five year moving average by the standard deviation of the five-year period.
Source: Calculated by the author based on annual producer prices from FAO PriceSTAT database.

3.3. Relationship between price levels and volatility

Finally, we must examine the relationship and relative importance of price levels and volatility in our two countries of interest. A direct relationship between cocoa price volatility and mean price level (i.e., that volatility has a direct, positive effect on price levels) could confound the general assumption that volatility is bad for cocoa-producing households. Sandmo (1971, 66) shows that for a competitive firm, or household in this case, "…under price uncertainty, output is smaller than certainty output." A decrease in cocoa output across a large proportion of producers in the world's leading cocoa-producing countries should lead to an increase in cocoa price levels. If Sandmo's findings hold in the case of cocoa producers facing uncertain farmgate prices, then one could argue that volatility is, in fact, a good thing for cocoa producers in our countries of interest.

In order to test this possible relationship between price volatility and price levels, we construct a simple OLS regression model, using real producer prices in Côte d'Ivoire and Ghana as the dependent variables. We construct an independent variable that serves as a measure of price volatility and regress it against the dependent variable of real producer prices.[5] Based on 34 annual observations between 1968 and 2001, there is no statistically significant relationship between price volatility and price level in either Côte d'Ivoire or Ghana. The results hold when the dependent variable is lagged by five years, in one year increments, indicating that there is not a delayed effect as one might suspect in this situation. Furthermore, the volatility level did not explain more than seven per cent of the changes in real cocoa prices in any of the tests (See Appendix B for full regression results).

This finding is logical, since the price elasticity of supply is low for crops like cocoa. Even if evidence indicated that cocoa price volatility did induce lower production, it would be difficult to argue that lower production is beneficial in the context of smallholder cocoa producers in which the "firm" is a rural household. The hardships brought upon a cocoa-dependent family by price instability negate the benefits of potential future price improvements, which would be spread across millions of cocoa-producing households. This is especially true when few social safety nets exist and the future benefits depend on a lack of production distortions in other producing regions.

[5] This volatility measure was constructed by taking the difference from the five year moving average, expressed as the number of standard deviations from the mean in absolute terms.

4. Welfare effects of volatile producer prices

"Changes in agricultural producer prices have major welfare consequences…particularly among small farmers who make up a large share of the poor in sub-Saharan Africa."
Barrett and Dorosh 1996, 656.

Cocoa is a cash crop grown by smallholders primarily for income, rather than for consumption. If the producer price drops suddenly, a cocoa farmer in Côte d'Ivoire or Ghana likely has little recourse to supplement his income. Based on empirical work by Barrett and Dorosh (1996) as well as an intuitive examination of smallholder dependence, it is clear that producer price fluctuations have a detrimental effect on the welfare of cocoa-producing households in Côte d'Ivoire and Ghana.

4.1. Household welfare model

In agricultural commodities like cocoa that are primarily produced by smallholders, the household is the basic unit of production. However, the household usually acts as a unit of consumption as well. In this case, the households are not consumers of cocoa, but they may well depend on the income provided by cocoa production to make up the gap between subsistence crops and household food requirements. The World Bank elaborates on this definition:

> *"Consumption decisions depend on production, and vice-versa. The household must also decide how to allocate labor to productive activities within and outside the household, and how much leisure to consume. Within the household, family members produce items that yield utility, such as child care, and they allocate resources such as child labor, for which there may not be perfect or even functioning markets. Household models are particularly suited to addressing agricultural reforms…" (World Bank 2007)*

Using this definition, Barrett and Dorosh (1996) construct a model that allows them to estimate the welfare effects of real price fluctuations on a commodity-producing household. They find that the welfare effect on a household of commodity price fluctuations is directly related to the share of household budget accounted for by the commodity (657). In an environment of price uncertainty, and assuming a concave utility function, the more important commodity crop income is to household consumption, the greater the first order welfare effect of a sudden drop in the commodity price on the household. This relationship makes intuitive sense, since, especially in the context of annual agricultural crop cycles, farmers "…have little room for anything more than demand-side responses to adverse welfare shocks" (Barrett and Dorosh 1996, 658). Demand-side responses, such as reducing consumption of food, healthcare, education and inputs for the next year's crop(s) have a direct, negative impact on the welfare of household members.

What are the implications of the findings summarized above on cocoa-producing households in our countries of interest? The traditional difficulty in obtaining sound data on household-level income and consumption makes the analysis of cocoa-producing households in Côte d'Ivoire and Ghana problematic. However, some surveys have been conducted in the past, funded by the World Bank and the Ghana Cocoa Board (COCOBOD). There are discrepancies in the exact data collected in the two countries, and the only comprehensive survey data from Côte d'Ivoire date back to 1985. By making some assumptions about the behaviour of Ivorian cocoa-producing households based on trends

in similar Ghanaian households however, we are able to construct a reasonable picture of cocoa–producing households in Côte d'Ivoire and Ghana (Table 1).

Very little cocoa is consumed domestically in the major producing countries, making cocoa-producing households net sellers of their commodity product. In both countries, cocoa producers report income from other agricultural and non-agricultural sources, but cocoa serves as a substantial source of household income. In the past two years, many cocoa-producing households in Ghana have specialized in cocoa due to rising prices, with 22 per cent of surveyed farmers moving from a diversified income to sole reliance on cocoa (Teal, Zeitlin and Maamah 2006, 18). It is highly likely that a similar trend toward increasing household dependence on cocoa has occurred in Côte d'Ivoire as well, although this cannot be proven due to a lack of current household data. Cocoa producers generally grow subsistence crops among the cocoa trees, but given the relatively small farm sizes in the two countries, it seems safe to assume that at least some of the income generated by cocoa production goes toward food purchases.

Table 1: Cocoa-producing households

Comparison of Cocoa-growing Households		
	Côte d'Ivoire [a]	**Ghana** [b]
Average household size	?	5.7
Average farm size	12.5 hectares (all farm types)	8.23 hectares
Income from cocoa sales	$2,425 (383,500 CFA francs)	$805 (129,010 cedis)
Income from non-cocoa ag.	$4,877 (771,000 CFA francs)	$621 (99,530 cedis)
Total agricultural income	$7,303 (1,154,500 CFA francs)	$1,426 (228,540 cedis)
Non-agricultural income	$2,528 (399,700 CFA francs)	?[c]
Percentage of income from cocoa	>32 per cent	≈56 per cent
Average household income (all households)	$9,997 (1,580,400 CFA francs)	$2,910 (2,267,000 cedis)[d]

Note: Income in purchasing power parity terms (2000 US Dollars) reported in parentheses.

Sources::
a) Data from 1985 Living Standards Measurement Survey, as reported by Benjamin and Deaton (1993).
b) Data from 1998 Ghana Living Standards Survey (GLSS), as reported by Teal and Vigneri (2004), and 2004 Ghana Cocoa Farmers Survey, as reported by Teal, Zeitlin and Maamah (2006).
c) Assumed to be low based on Teal and Vigneri, 2004, page 3. Of households surveyed, 64 per cent reported other sources of income in addition to cocoa; however this represents a 25 per cent decrease in just two years, indicating a growing dependence on cocoa for household income.
d) Data from "Incomes in Ghana: Policy Discussion Paper" (2004), page 6.

Taken together, the above facts indicate that volatility in cocoa producer prices has a direct, negative effect on producing households in Côte d'Ivoire and Ghana. Given the available data, such effects would be greater in magnitude for Ghanaian households than for households in Côte d'Ivoire. Cocoa-producing households in Ghana depend on cocoa for a greater share of income and also have much lower overall incomes. However, the extent to which Ivorian households depend on cocoa as a share of income has likely increased in the past 20 years. Furthermore, some of the events that can affect cocoa prices, like drought and conflict, will likely affect subsistence crops and make dietary commodities more expensive, thus compounding the short-term negative welfare effects (Barrett and Dorosh 1996, 667).

> "Prices in London mean little to [Ivorian cocoa producer Salifou] Kabore, and news arrives with a long lag time. 'I've heard that prices of commodities are going up,' he said. 'But now, when we could take advantage of it, we are blocked by a war that is none of our business'" (Cowell 2002, 15).

4.2. An intuitive examination of welfare

Some intuitive observations also bolster the assertion that cocoa price volatility negatively affects household incomes and welfare. Cocoa producers face dynamic and confusing price signals. Price movements can be viewed simply as indications of a well-functioning market, but, even if we assume no market distortions, cocoa producers must be frustrated by their limited ability to adjust in the short term to the price movements. Although farmers around the world face similar frustrations, cocoa producers face greater constraints on their ability to adjust production levels than farmers who grow more traditional annual crops, and do so in an environment with few social safety nets, unlike farmers in developed countries. Unless cocoa producers are strictly risk-neutral, it is logical to conclude that producer price volatility necessarily decreases producer utility.

Frequent fluctuations in world cocoa prices also have secondary effects along the cocoa supply chain that implicitly affect cocoa producers. Cocoa buyers and official lending institutions require large margins in the face of volatile prices (Varangis and Larson 1996, 5). In both Côte d'Ivoire and, to a lesser extent, Ghana, third party buyers serve as a link between producers and grinders, purchasing the dry cocoa beans from producers and ensuring their delivery to the nearest port. These agents, if not affiliated with a large grinding company, operate on very tight margins. If they are unable to move the dried beans quickly, they face tremendous risk. In response to volatile cocoa prices, these buyers are forced to squeeze producers in order to increase their margins and reduce their risk exposure. Similarly, banks and other lending institutions are reluctant to lend to individual cocoa-dependent producers at reasonable interest rates, since their ability to repay is tied directly to future cocoa prices (Varangis and Larson 1996, 5).

5. Income stabilization past and present

Price and income stabilization for cocoa producers and producers of other agricultural commodities has been an explicit goal among producing nations and international actors for some time. Until the late 1980s, the mechanisms used by policy-makers reflected the emphasis on centralized control that gained popularity in the 1950s. State-led marketing boards focused on guaranteeing in-country producer prices, directed commodity purchasing and export, and commodity-producing countries formed international agreements to stabilize and defend world prices. More recently, donors have attempted to provide aid to commodity-dependent countries facing negative price shocks. As developed countries began to push for market liberalization in the late 1980s and early 1990s (a.k.a. structural adjustment), the old, centralized mechanisms have been deconstructed and free market champions have pushed for greater use by developing country producers of market-based tools to hedge price risk in lieu of state-supported minimum pricing. Yet producer income stability remains a very real problem. Rather than discard past stabilization policies out of hand, it is important to examine them in detail in an attempt to glean some lessons that can be applied to future efforts.

Cocoa prices are affected simultaneously by multiple endogenous and exogenous factors, making it difficult to ascertain the effectiveness of price stabilization policies. In order to draw some educated conclusions about policy effectiveness, we first develop a timeline of major policies affecting cocoa production and prices in Côte d'Ivoire and Ghana (see Appendix C). This affords the opportunity to perform a simple regression analysis and observe visual correlations between policies and cocoa price volatility.

5.1. State intervention – Côte d'Ivoire's Caisse de stabilization

Details and performance

Created from the combination of colonial-era stabilization funds for coffee and cocoa, CAISTAB exerted significant control over cocoa production and export from 1964 until 1999. The fund's explicit goals were to provide cocoa producers with stable prices and to increase the absolute price paid for Ivorian cocoa, although the specifics of these goals changed through the years (McIntire and Varangis 1999, 1). Not technically a part of the Ivorian government, CAISTAB operated as a public company which regulated the cocoa sector through an annually-determined cost schedule, called the baréme, which effectively set prices and margins throughout Côte d'Ivoire's cocoa sector (see Box 1 for details about how CAISTAB developed the baréme and determined producer prices). CAISTAB issued licences to private buying companies, but did not actually buy, sell, or physically control the cocoa at any point. When international cocoa prices were higher than expected,

Box 1: CAISTAB baréme calculation

1) Determine CIF reference price
2) Subtract estimated freight and insurance cost

= FOB price

3) Subtract export tax
4) Subtract CAISTAB operating cost
5) Subtract marketing costs, including "reasonable return" for agents
6) **Subtract Farmgate Price**

= Stabilization Margin

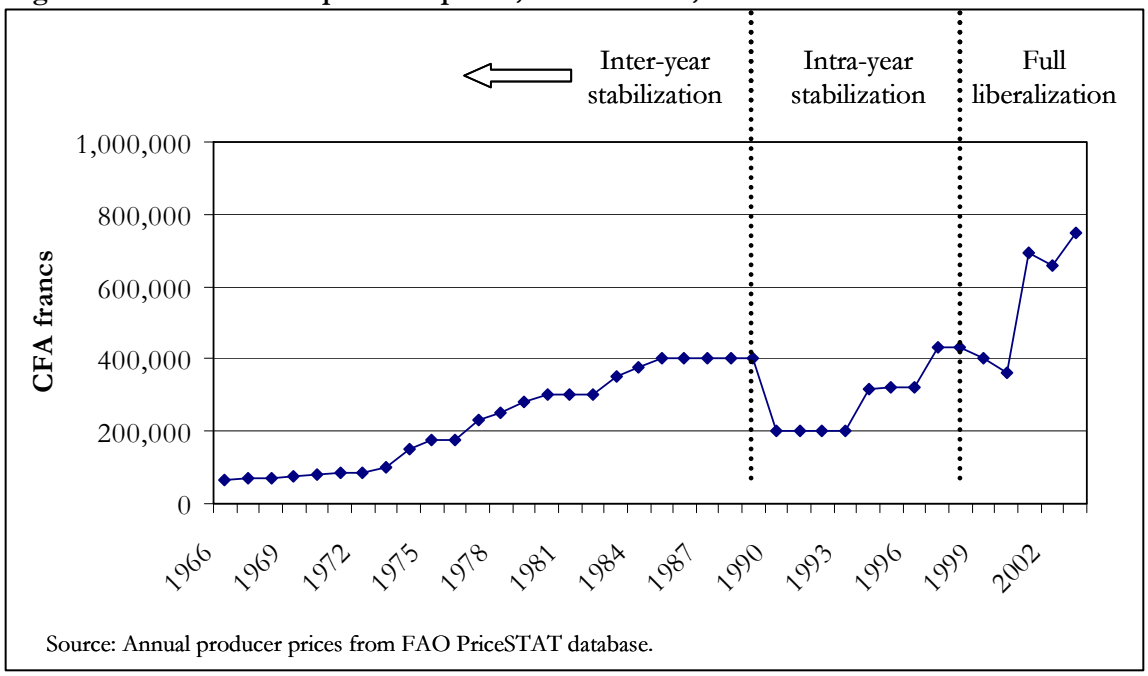
Note: In theory, the stabilization margin was supposed to be zero, but that was rarely the case in reality.
Source: Adapted from McIntire and Varangis 1999, 3

CAISTAB could accumulate a surplus—a positive stabilization margin—but lower-than-projected prices resulted in a negative stabilization margin, which CAISTAB was obligated to cover.

CAISTAB was able to offer nominal, year-over-year price stability through 1990, until an extended run of low world cocoa prices made the policy unsustainable (McIntire and Varangis 1999, 3). Since cocoa production is dominated by smallholders and legal contracts are not well enforced in Côte d'Ivoire, only CAISTAB's assurances of crop quality and quantity allowed Ivorian cocoa to be sold forward, as much as 18 months ahead of harvest (McIntire and Varangis 1999, 7). CAISTAB thus reduced producer price risk and spread forward sales throughout the year, rather than having sales concentrated during the harvest season. It accomplished this through a system in which contracts for specific quantities of cocoa and execution dates were sold to licensed exporters, who then sold a corresponding contract on one of the major commodity markets in London or New York (McIntire and Varangis 1999, 6).[6]

Through the years, CAISTAB developed severe inefficiencies, including bloated operating costs and some degree of political capture. In developing the baréme, CAISTAB often overestimated the freight and insurance costs, leading to a lower starting f.o.b. price from which it calculated farmgate prices (McIntire and Varangis 1999, 5). Compounding this consistent error, marketing costs and export taxes were extremely high, equalling nearly 25 per cent of the producer price during the 1998/1999 season (Gilbert and Varangis 2003, 19). These marketing costs were double those experienced in cocoa-producing countries with liberalized marketing systems (McIntire and Varangis 1999, 13). Furthermore, a lack of transparency in how the baréme was calculated made the system ripe for political infringement. During the 1980s, the late Ivorian President Houphouet-Boigny forced CAISTAB to pay above-market prices to producers in order to retain political support from small farmers (Crawford 1993).

Figure 8: Nominal cocoa producer prices, Côte d'Ivoire, 1966–2003



Source: Annual producer prices from FAO PriceSTAT database.

[6] These contracts were allocated through private negotiations up until 1996, after which they were distributed through an electronic auction system.

Although CAISTAB was able to succeed for many years in providing nominal inter-year price stability to cocoa producers (see historical nominal prices in Figure 8), growing inefficiencies made the practice unsustainable when cocoa prices remained low for an extended period in the 1980s. CAISTAB was forced to abandon the goal of inter-year price stabilization in 1990, in favour of intra-year price stabilization that did little for producers since their major concern was price variation between annual harvest periods (McIntire and Varangis 1999, 3, 22).

On the positive side, CAISTAB's quality control assurance mechanisms allowed Ivorian cocoa to enjoy a quality price premium on the world market (Fold 2002, 229). This premium translated into a higher c.i.f. reference price and was thus partially passed down to producers. However, at least one empirical study has questioned whether producers reaped any reward from the price premium, arguing that the benefits gained by producers in terms of stability did not outweigh the lower absolute prices they received due to CAISTAB operating costs (McIntire and Varangis 1999, 22).

Liberalization

Continued solvency problems throughout the 1990s forced Côte d'Ivoire to heed donors calling for economic liberalization. In return for a World Bank agricultural structural adjustment loan, Côte d'Ivoire began to liberalize CAISTAB operations in 1995 (Anonymous 1995). As part of the deal, CAISTAB was still allowed to set producer prices, but liberalized domestic transportation and began the process of deregulating cocoa exports. In 1999, CAISTAB was abolished completely and replaced by a much smaller, less powerful organization with no ability to set cocoa prices (ul Haque 2004, 8; Losch 2002, 214).

Instead of continuing price stabilization efforts, the focus of the cocoa liberalization program was to remove inefficiencies in cocoa marketing and thus increase producer prices by affording producers a greater share of the f.o.b. price. Empirical results regarding absolute price levels have been mixed, but as one would expect, producer price volatility has increased (ul Haque 2004, 14). Among other factors, the increased volatility reflects the move away from forward sales to the spot market necessitated by CAISTAB's dissolution (McIntire and Varangis 1999, 14). The movement to spot sales has caused cocoa sales to become concentrated in a few months out of the year, resulting in a rush for product and a decline in quality of Côte d'Ivoire's cocoa bean exports (Losch 2002, 222). This new trend has cost Côte d'Ivoire its premium on the world cocoa market (Fold 2002, 229). In addition, little mention is given of the value of lost services that accompanied CAISTAB's demise, such as distribution of inputs, market intelligence and research.

5.2. State intervention – Ghana's Cocoa Board

Details and performance

Created in 1946 by the colonial government, Ghana's cocoa marketing board (COCOBOD) has mainly resisted liberalization. However, its goals have changed through the years, reflecting both necessity and donor pressures. As noted in Section 2, COCOBOD differs from CAISTAB in that it functions as a state entity, its subsidiaries physically buying cocoa from domestic producers and exporting it at set prices. Initially, COCOBOD sought to provide inter-annual price stability to cocoa producers while also increasing total production. These goals clashed however, and Ghana's cocoa production languished under stable, but extremely low, producer prices through the 1970s (Fold 2002, 231). Along with some institutional reforms required by a World Bank structural

adjustment program, COCOBOD's emphasis shifted from inter-annual price stabilization to intra-annual stabilization and expanding total production (World Bank 1983, 59). Increasing production remains one of COCOBOD's major goals, along with marketing efficiency (measured in terms of producer share of f.o.b. prices). These goals may again seem inconsistent, but reflect a response to pressure from donors for greater liberalization in Ghana's cocoa sector (COCOBOD 2007).

COCOBOD currently sets producer prices in advance of the harvest season based on forward sales and price forecasts for the upcoming year (Fold 2002, 231). The prices are set by the Producer Price Review Committee, which is composed of representatives of key stakeholder groups and chaired by Ghana's Minister of Finance (COCOBOD 2007). Although COCOBOD touts the transparency of this group, government representatives, such as the Minister of Finance and the Bank of Ghana, are still in a position to influence producer prices. Furthermore, the fact that COCOBOD is a government entity blurs the distinction between export taxes and marketing costs.

Like CAISTAB, COCOBOD became severely bloated during the 1970s and 1980s. The organization's operating costs, borne directly by Ghanaian cocoa farmers, grew to the point where producer prices were considered extremely low relative to export prices and also when compared to prices received by cocoa producers in other countries (ul Haque 2004, 8). As of 1998, cocoa taxes and marketing costs were approximately 30 per cent of the producer price (Gilbert and Varangis 2003, 19).

COCOBOD has been largely successful in stabilizing nominal producer prices, especially when compared to the price volatility experienced by Ivorian cocoa producers following the dissolution of CAISTAB (refer to figure 7 for a comparison of nominal producer price volatility in Ghana and Côte d'Ivoire). Ghana has struggled with inflation for decades, but even real producer price volatility has declined relative to Côte d'Ivoire in recent years, as calculated by Gilbert and Varangis (2003). Furthermore, Ghanaian producer prices now reflect a much higher share of f.o.b. prices than they did in the 1980s (Gilbert and Varangis 2003, 14).

Interestingly, Ghana has maintained a reputation for consistent, high-quality cocoa, resulting in a premium of around GBP 60 per tonne (Fold 2002, 231). This reputation for high quality cocoa, ensured by COCOBOD's rigorous, multi-stage quality control system, affords Ghana the continued ability to sell much of its upcoming harvest through forward contracts 6–18 months in advance (Fold 2002, 231). However, traditional quality control methods, based on physical characteristics of the cocoa beans, may be losing importance as grinders develop technology to detect and correct for some variation in bean quality when producing intermediate products (Fold 2002, 233).

Liberalization

Although COCOBOD still controls cocoa export activities, it has undertaken some liberalization steps. In doing so, Ghana has demonstrated it is possible for a state marketing board to make dramatic efficiency improvements unilaterally. In 1983, COCOBOD gave up on inter-year price stabilization and put together a phased plan for complete liberalization (World Bank 1983, xvii). Since then, Ghana has decided against fully liberalizing the cocoa sector, but internal purchasing and transportation were privatized in 1992, and buyers have been allowed to directly export up to 30 per cent of their cocoa purchases since 2001. COCOBOD still sets producer prices, controls licensing of the

private buying companies, and acts as the buyer of last resort for regions not served by the licensed buying companies.

The Ghanaian government streamlined COCOBOD between 1983 and 1995. COCOBOD's workforce was reduced from over 100,000 to 10,500 and non-core activities were moved to other government ministries, such as the Ministry of Food and Agriculture (ul Haque 2004, 8; COCOBOD 2007). The Ghanaian government defends its decision to limit privatization on the basis of COCOBOD's quality control function (ul Haque 2004, 8). This rationale is supported by evidence that Ivorian cocoa prices have declined in the past few years, relative to prices of Ghanaian cocoa, due to poor quality control (OTAL 2004). In 1996, an independent group of consultants commissioned by the World Bank recommended maintaining the existing system, only to have their findings rejected by the Bank (Wrong 1996). Some chocolate manufacturers, such as Cadbury, also support the current, partially-liberalized, state because they depend on the quality and consistency of Ghanaian cocoa beans (Fold 2002, 233).

Based on anecdotal evidence, Ghanaian cocoa producers seem to support the organizational changes and limited liberalization steps undertaken by COCOBOD, but still do not entirely trust the organization's methods (see Appendix D for interview responses). On the other hand, in a 2001 survey, 61 per cent of the surveyed Ghanaian cocoa producers preferred selling their crop to COCOBOD over the newly-allowed private licensed buying companies. The primary reasons cited were "Accountability/trust" and "Pays promptly" (Teal and Vigneri 2004, 7).

5.3. International commodity agreements

Details

Both Ghana and Côte d'Ivoire have participated in efforts to regulate cocoa supplies at an international level through the International Cocoa Agreement (ICCA), the first of which went into effect in 1972 (Adebusuyi 2004, 4). The first three ICCAs (1972–1986) attempted to utilize a buffer stock to stabilize world cocoa prices within a negotiated band. The buffer stock was capped at 250,000 tonnes, which was equivalent to about six weeks' worth of demand (ul Haque 2004, 7). In addition, the fourth ICCA (effectively only functional from 1987 to 1988) contained an export control clause intended to support the buffer stock in the case that the maximum buffer stock was attained, but this clause was never activated (Gilbert 1996, 8). Although the ICCA was supported by 30 producing and consuming countries, Côte d'Ivoire and the United States, respectively the world's largest cocoa producer and a major chocolate consumer, did not sign on to the first three ICCAs (ul Haque 2004, 15). This severely hampered these versions of the ICCA in that the U.S. did not contribute to Agreement financing and Côte d'Ivoire continued to increase cocoa production, undermining the price stabilization goal. Although an International Cocoa Agreement is still technically in effect, the ICCA has not included binding price stabilization mechanisms since 1988 (Adebusuyi 2004, 6; Gilbert 1996, 8).

Performance

The International Cocoa Agreement did not effectively stabilize world prices. Its ineffectiveness was largely caused by insufficient funding, poor timing, a lack of adherence to stabilization goals and a lack of discipline among agreement members (ul Haque 2004, 4, 7). The first ICCA came into force in 1972 amid rising prices, with no existing buffer stock. With no means to soften spiking world prices in the mid-1970s and little will to do so among producers, who were enjoying the high prices, the ICCA was a doomed from the

start. When prices began to drop after 1977, member countries digressed from their stated goal of stabilization and began a trend of consistently attempting to support price bands "divorced from market forces" (ul Haque 2004, 16). At the same time, Côte d'Ivoire and Ghana were pursuing policies intended to promote expansion of cocoa production, which were surely inconsistent with the high price bands agreed upon at the international level. When world cocoa prices experienced sustained lows in the 1980s, the buffer stock quickly reached its cap, at which point it became ineffective. The ICCA goal of stabilizing world cocoa prices was subsequently abandoned in 1988 (Adebusuyi 2004, 6; ul Haque 2004, 7; Gilbert 1996, 8).

The real world observations noted above are supported by the policy regression analysis in Appendix B, which shows that the ICCA's effect on world cocoa price volatility is not significantly different than zero. Interestingly, the analysis also suggests that the ICCA had a statistically significant effect on world price levels and explains 36 per cent of world price movement between 1968 and 2001. This could, however, simply be a reflection of the unfortunate fact that the ICCA went into effect during a period of historically high cocoa prices and was suspended during a prolonged slump in world prices. Evidence indicating that commodity price slumps are generally longer in duration than price spikes begs the question of whether any mechanism created to defend world cocoa prices can be successful in the long term (Cashin et al. 1999, 41).

5.4. Compensatory finance

Details

One of the few income stabilization mechanisms not associated with commodity prices, compensatory funds are financed by international organizations. The funds provide grants or loans to commodity-dependent countries to stabilize national revenues when export revenues fall drastically due to exogenous price shocks (Gibbon 2005, 12). Prominent examples include the International Monetary Fund's (IMF) Compensatory Finance Facility (CFF) and the EU's STABEX and FLEX schemes.

The CFF was initiated by the IMF in 1963 to help any country deal with external shocks affecting their export earnings. Strict eligibility requirements and costly financial terms and conditions have caused the fund to go largely unused since 2000 (CEC 2003, 23).

STABEX was introduced in by the EU as part of the first Lomé agreement, and was available to any African, Caribbean and Pacific (ACP) country. The fund's intent was "to mitigate harmful consequences of instability and to safeguard the purchasing power of populations affected by a fall in income" (CEC 2003, 24). Eligibility for compensation was based on a drop in export revenues from trade with the EU compared to the six-year average. Such a drop would trigger an automatic compensation payment to the affected government to use for diversification efforts and to benefit producers in the affected sector (CEC 2003, 24). With the signing of the Cotonou agreement in 2000, STABEX was replaced by the FLEX program, which had more stringent eligibility requirements that took into account a broader range of economic health indicators (Gibbon 2005, 12).

Performance

In the context of cocoa producer incomes, international compensatory finance has not been an effective stabilization tool. The CFF is meant to provide balance of payment assistance at the national level and despite the stated goals of STABEX/FLEX, less than eight per cent of compensatory payments made through the EU programs were passed on

to producers as direct income support. The rest goes to programs that indirectly support producers, such as extension and diversification promotion programs (CEC 2003, 24). Both the CFF and STABEX/FLEX funds suffered from slow disbursements, which in some cases made the funds pro-cyclical, providing support after commodity prices had gone up again. An extended period of low prices among many commodities, including cocoa, during the late 1980s and early 1990s caused a severe financial crisis for STABEX. Between 1990 and 1992, the fund was only able to cover 40 per cent of eligible claims (UNCTAD 2003, 37). This period of financial difficulty was a major reason the EU, a significant donor to Ghana and Côte d'Ivoire, began to press for structural adjustment in the two countries (Gilbert and Varangis 2003, 10).

5.5. Key lessons

Market liberalization among the major cocoa-producing countries is a relatively new trend, making it difficult to draw definitive conclusions about how liberalization affects commodity prices. However, waiting 50 years for a natural experiment to occur is not an option. Therefore, we must make some observations based on the data and evidence available for the cocoa sector in Ghana and Côte d'Ivoire:

- **Liberalization has had a negative effect on Ivorian cocoa producers** – By removing some of the cushion between producers in Côte d'Ivoire and world commodity markets, liberalization has exposed Ivorian producers to greater inter- and intra- annual price volatility. The dissolution of CAISTAB has led to a negative trend in cocoa export quality that has cost Ivorian cocoa its historical price premium on the world market. It has also removed the most stable intermediary between producers and market-based risk management tools, such as forward contracts and derivatives. Smallholders do not have the expertise or information required to hedge their cocoa price risk on the market without an intermediary that can provide technical expertise and assurance that a contract can be fulfilled.
- **Ghana has demonstrated that centralized marketing authorities can be streamlined without being completely dismantled** – Ghana's COCOBOD has succeeded in streamlining its operations—reducing its workforce tenfold, increasing transparency and participation in the price-setting process, and reorganizing non-core activities into more appropriate government ministries. At the same time, producers have gained share in f.o.b. prices and experienced relatively greater income stability than their counterparts in Côte d'Ivoire. Furthermore, Ghana has retained its reputation as the highest-quality cocoa exporter, and the price premium that distinction entails.
- **Smallholders lack the financial support and supply coordination/aggregation capability necessary to utilize forward contracts** – COCOBOD's backing of Ghanaian cocoa crop quality and quantity allows Ghanaian cocoa to be sold forward, while Ivorian cocoa sales are made primarily on the spot market around harvest time. COCOBOD (and CAISTAB, in the past) were trusted counterparts in forward contracts because buyers knew the groups could deliver on contracts, both in terms of quantity and quality. As national entities, the two marketing organizations also had the resources and credit access necessary to cover shortfalls.
- **World price stability may not be achievable in the long run** – Due to poor financing and inopportune timing, the ICCA did not achieve its price stabilization goal. The nature of commodity booms and slumps makes it unlikely that an international buffer stock mechanism can work in the long-run. However, OPEC

has been effective at times and the International Tin Agreement succeeded in its goals for 25 years (Gilbert 1996, 52). These examples show us that international coordination can be successful for a time, under the right conditions.

- **Inter-annual producer price stability has proven difficult to maintain** – Both Ghana and Côte d'Ivoire gave up on achieving inter-annual price stability due to high volatility in world prices. The state entities were unable to absorb the price risk associated with assuring producer prices beyond the 6–18 month horizon afforded by forward contracts.
- **Compensatory finance mechanisms, as implemented in the past, do not directly impact individual producers** – To date, compensatory finance has been targeted at countries in which entire sectors are in distress. Eligibility has often been difficult to prove, making support payments slow in coming. The compensatory finance mechanisms are not meant to directly compensate producers for the income declines they experience during negative price shocks.

Most price interventions have developed problems over time, due primarily to insufficient financing or failures to perceive and adapt to real-world conditions. However, short- and medium-term producer income stabilization may be attainable with the right policies.

6. Options and analysis

Income instability will continue to infringe on cocoa producers' well-being if the status quo continues. Production diversification is the only sure way to achieve long-term income stability, but cocoa price volatility impedes the planning and investment necessary for diversification. Although the absolute prices producers are receiving have risen in the past few years, long-term trends indicate that prices will fall again in the near future. What producers need is income stability—a window of opportunity, so to speak.

How can policy-makers provide income stability, at least in the medium term? Several options, both old and new, are identified and analyzed in this section, keeping in mind the hard-earned lessons of past experience. Although the body of literature on some of these policy tools is large, most discussions deal with tools across regions or commodity groups and do not give attention to complementary policies. It seems that the specific conditions faced by cocoa producers in Ghana and Côte d'Ivoire may require a combination of traditional and non-traditional tools. In order to identify feasible policy options, potential options are analyzed along the following dimensions:

1. **Focus on producer income stability** – Does the tool or policy directly or indirectly contribute to the goal of stabilizing cocoa producer incomes?
2. **Implementation feasibility** – Is the tool or policy feasible given the current supply chain structure and international focus on open markets?
3. **Producer accessibility** – Is the tool or policy accessible by a large share of cocoa producers in Ghana and Côte d'Ivoire?
4. **Sustainability** – Is the tool or policy sustainable, at least in the medium term?

6.1. Option 1: State-led producer price stabilization

Rebuild some of the cocoa sector services in Côte d'Ivoire that were formerly coordinated by CAISTAB, including extension services, quality control measures and some level of supply consolidation or coordination capability. Ensure that funding for these activities is derived from some measure of performance, such as a portion of the premium Ivorian cocoa gains on the world market due to improved quality. Engage chocolate manufacturers to redefine relevant quality measures in order to regain some market power from the multinational grinding companies.

These services could be provided by a state monopoly or through a rationalized version of the existing regulated, public and private companies created in CAISTAB's wake. A higher level of independence from the government and greater transparency would help the new organization avoid some of the political capture that affected CAISTAB. In 2000 and 2001, the Ivorian government created several small organizations to help fill the institutional gap left by the dissolution of CAISTAB, such as the Autorité de Régulation du Café et du Cacao (ARCC) and the Bourse du Café et du Cacao (BCC) (ITF 2002, 12). The ARCC is charged with licensing exporters and buyers, implementing international agreements, advising the government on policy improvements, maintaining statistics and liaising with the BCC in establishing a guaranteed minimum producer price. The BCC regulates cocoa and coffee exports and is charged with defining a mechanism for guaranteeing a minimum,

remunerative producer price. It is unclear whether the BCC has defined such a price guarantee mechanism, although rising cocoa prices may have relieved BCC of the necessity for the time being. Quality control services are subcontracted to two private firms, SGS and Cornelder, which grade the beans prior to export (ITF 2002, 20).

The goals of this centralized organization could also go beyond extension services and quality control to a return to price stabilization along the supply chain. In that case, transparency and flexibility in the price determination mechanism would be critical. COCOBOD's model of including key stakeholders in the price discussion and selling much of the upcoming crop through forward contracts could serve as a guide for setting up such a pricing system in Côte d'Ivoire. Most importantly, the new organization must learn from past mistakes and recognize that pricing policies cannot be divorced from market forces. Both high prices and increasing supplies cannot coexist given the long run inelastic demand for cocoa (McIntire and Varangis 1999, 8).

Focus on income stability – Since CAISTAB's dissolution, cocoa producers in Côte d'Ivoire have experienced greater volatility in cocoa producer prices and lost the premium their product used to receive on the world market. Meanwhile Ghana's COCOBOD has exhibited some success in creating a sustainable organization that has been able to keep producer prices relatively more stable while preserving the historical price premiums. These facts alone provide a strong argument for resuming some centralized services in Côte d'Ivoire. However, in the context of income stabilization, the effectiveness of state-level mechanisms hinges on whether inter-annual price stabilization is one of the organization's goals. As we have seen in the past, producers would benefit most from inter-annual stabilization, but this goal has proven to be unsustainable without external financing.

Extension services, quality control measures and supply coordination mechanisms do not directly contribute to stabilizing cocoa producer incomes, although improved quality control should lead to an increase in mean prices for Ivorian cocoa on the world market. Supply coordination and control can however be coupled with other tools, such as price insurance, forward contracts and/or risk hedging instruments, to help producers achieve more stable cocoa incomes.

Implementation feasibility – "The need for a public body to assure cocoa quality and provide other public goods (market intelligence, research and extension) is now being widely appreciated" (ul Haque 2004, 19). Indeed, given the international focus on market liberalization, there is a surprising amount of support for some level of state-led intervention. UNCTAD, Ivorian producers and even industry stakeholders, such as Cadbury, a major chocolate manufacturer, have voiced support for the value of state-led action in the cocoa supply chain (UNCTAD 2003, 47; Losch 2002, 224; Fold 2002, 233). However, the support generally focuses on extension services, producer access to risk hedging tools and quality control services, and does not extend to explicit price intervention.

The institutional framework for a central cocoa organization still exists in Côte d'Ivoire, and there has already been some movement in the Ivorian government to take action. In July 2001, it engaged HSBC, a British commercial bank, to study several options for reinstating a minimum producer price, "…including the creation of a private stabilization system, managed by the trade, and based on average anticipated sales and hedging risks on the futures market" (Losch 2002, 224). As noted above, several organizations were created after CAISTAB was dissolved, but each entity charges a fee for services and contains

several layers of bureaucracy. Rationalizing these organizations and revisiting the way they are financed should be feasible, as long as full-scale price intervention measures are not reintroduced in Côte d'Ivoire.

Producer accessibility – Re-aligning and regulating public services in the cocoa sector would, by definition, ensure access by all cocoa producers. Universal access should be a mandate of any state-led action in the cocoa sector and is necessary for effective supply coordination and quality control measures.

Sustainability – As COCOBOD has demonstrated in Ghana, state-led public services in the cocoa sector can be sustainable when the organization providing the services is streamlined and cognizant of the market forces at work in the long- and short-terms. Rationalizing Côte d'Ivoire's cocoa services and basing financing, at least in part, on benefits the services bring to cocoa producers should improve on Ghana's model and create the conditions necessary for long-term sustainability.

If, however, the organization's goal is extended to inter-annual cocoa price stabilization, it would face a financing problem due to volatility in world prices. Both Ghana and Côte d'Ivoire were forced to discontinue nominal, inter-annual price stabilization eventually due to the high costs associated with an extended period of low cocoa prices. Alternatives to full-scale price stabilization, such as a flexible export tax system or partial stabilization to soften price movements, would increase the intervention's lifespan, but may still prove unsustainable in the long run.

Conclusion – State-led intervention may be most successful in terms of cocoa price stabilization, and thus, producer income stabilization, if implemented in conjunction with other types of policy mechanisms. A semi-centralized body that touches all or most of a country's cocoa production provides a national intermediary between producers, markets and downstream processors, which is required for mechanisms such as international coordination, market-based risk hedging and price insurance. It also makes utilization of forward contracts and coordination with potential supply chain allies a possibility.

6.2. Option 2: International supply coordination

Rejuvenate the International Cocoa Agreement. In the short term, producing countries could utilize provisions in the 2001 ICCA allowing for the coordination of national cocoa supply policies. Such discussions would allow members to discuss emerging issues, develop coherent responses to trends and challenges in the cocoa sector, and perhaps lay the groundwork for another attempt at world price stabilization (Adebusuyi 2004, 24). In the longer term, ICCA members could reinstitute a buffer stock system backed by the common vision and full participation that was lacking in the first attempt.

Although observers have tended to dismiss international commodity agreements as unworkable, some international price interventions have worked at times, given the right sets of conditions. Despite the previous failures, cocoa seems to provide a nearly perfect scenario for international coordination (ul Haque 2004, 16):

1. Four of the largest producers are in the same geographical region and control 69 per cent of world production, making it relatively easy to monitor production and export levels.

2. Côte d'Ivoire has the production capacity to serve as "swing producer" as Saudi Arabia does in OPEC.
3. There are some climactic and structural barriers to entry into cocoa production (i.e., cocoa trees grow in a narrow latitude band and take two to five years to mature).
4. Brazil and Malaysia, formerly strong cocoa producers, have lost interest in cocoa because their production costs are relatively high and cocoa is much less important to their economies than to the West African countries.

Even with these advantages, any form of collective action among producing countries to affect world cocoa prices would require three important developments. First, participants must have the means with which to coordinate their own national supplies and exports. "If there is no national market coordination, then there can be no meaningful national commitments to action in the context of new ICAs" (Gibbon 2005, 20). Second, the agreement must be flexible and allow for periodic revisions. If price stabilization is undertaken, the target price bands must be realistic and defensible. Members will need to meet periodically to adjust the price targets so they reflect market realities. Finally, in order to constitute a credible movement, producing countries will have to make an investment in either processing or storage facilities (or both) (Losch 2002, 211). Since cocoa beans cannot be stored in tropical conditions for long periods of time, producing countries cannot credibly pursue supply control measures without processing the beans into intermediate products or improving their storage capabilities.

Focus on income stability – International price stabilization efforts, under the conditions noted above, would directly affect world cocoa prices, and thus stabilize producer incomes. If the ICCA is only used as a forum for discussion, there may be some level of price smoothing due to quicker, more coherent supply-side reactions to trends and challenges facing the cocoa industry. However, the effects on cocoa prices and producer incomes would be indirect.

Implementation feasibility – Here again, international responses would vary based on the level of supply coordination undertaken by cocoa-producing countries. Consumer countries signed on to the 2001 ICCA, which included provisions for supply coordination among producing countries, so they are clearly not averse to some level of discussion and coordination (see Appendix E for more information about the goals and signatories of the 2001 ICCA). There are also growing movements in consumer countries advocating for "fair" or "remunerative" prices for commodity producers (ul Haque 2004, 15). However, a push for overt price stabilization at the international level would face opposition among the developed countries (Gibbon 2005, 20). Support among consuming countries is not technically required for producers to pursue price stabilization, but a buffer stock scheme would be expensive and thus may not be effective without financial support from the developed countries.

Producer accessibility – Any stabilization in world cocoa prices would be enjoyed by all cocoa producers. This is a great benefit to producers, but also a potential problem in that stable world prices may create incentives for production in countries both inside and outside of the ICCA. Keeping the target prices relatively near actual world prices would minimize this free rider effect.

Sustainability – International coordination has proven historically difficult to sustain for several reasons. Voluntary supply controls among cocoa-producing countries were

ineffective and there was never enough agreement among producers and consumers to make price stabilization work. Building the storage or processing capacity to credibly withhold cocoa supplies would be expensive and risky. In order for a price stabilization scheme to work, it must be flexible. If it is too flexible though, prices do not end up being more stable than they would have been without the intervention. Due to these tensions, it seems that an international buffer stock scheme will either be unsustainable or ineffective in the long run.

Conclusion – Cocoa provides a unique opportunity for international supply coordination and/or price stabilization. However, implementing an international buffer stock under the auspices of a new ICCA would require international financial support and a move back toward some level of national supply coordination on the part of member countries, most of which have completely liberalized cocoa marketing activities. Furthermore, explicit intervention in world prices would likely face strong opposition from developed countries. Using the ICCA as a forum for discussing industry trends and challenges would be more palatable to developed countries. It may also provide some reduction in world price fluctuations, although these effects would be limited and indirect.

6.3. Option 3: Market-based risk management tools

Implement programs to link individual producers and producer groups to market-based risk management tools in Côte d'Ivoire and Ghana. These tools can take many forms, but we will focus on the three most commonly-discussed alternatives: forward contracts, options and price risk insurance. The tools could be offered by private intermediaries, producer groups, or central marketing authorities. As an alternative to offering the tools directly to cocoa producers, they could also be utilized by a central marketing authority to support government-led price stabilization or price insurance programs (Sarris 2002, 25). The intermediary organizations would also be charged with providing the market information and technical expertise necessary for producers to utilize the market-based tools.

Small production volumes; insufficient market information and expertise; and a lack of capital make it difficult for small cocoa producers to access risk management tools on their own (Varangis and Larson 1996, 16). Central marketing organizations like COCOBOD and CAISTAB historically provided one type of intermediary, both of which utilized forward contracts. At the same time, their price-setting policies removed any incentive for alternative forms of risk management in the two countries. Since CAISTAB's dissolution however, Ivorian cocoa producers have not had access to forward contracts and have been directly exposed to spot prices on the world cocoa market, although there is some evidence that CAISTAB's high operating costs more than offset the benefits to farmers of forward sales (McIntire and Varangis 1999, 8). Pilot projects have been planned in both Ghana and Côte d'Ivoire to implement different types of market-based tools—put options and participatory options in Côte d'Ivoire, and Price Risk Insurance in Ghana—but it is unclear whether these projects have been successful yet (ICCO 2005b, 5; ITF 2002, 10).

Forward contracts are agreements to buy or sell a specified amount of a commodity on a given date at a predetermined price (Varangis and Larson 1996, 36). Forward contracts were utilized by both COCOBOD and CAISTAB for years prior to the market liberalization movement and are still used by COCOBOD in order to support intra-annual set producer prices. These contracts require reliable counterparts, since each party essentially assumes the risk of the other party's ability to deliver on the contract. Without a

centralized body or established producer group, individual producers are unable to utilize forward contracts.

Put options are the most common derivative instrument discussed in the context of price risk. A put option gives the buyer the right, but not the obligation, to sell a specified amount of the underlying asset for a specified price at any point in a defined time period (Gibbon 2005, 15). This tool requires the buyer to pay an up-front premium, but then guarantees a floor price for the underlying commodity (e.g., cocoa).

Price insurance operates as a minimum price guarantee for a specific quantity of cocoa and over a set period of time, as specified in the insurance contract. Producers must pay a premium, but are allowed to obtain a price above the minimum (Sarris 2002, 6). The main differentiator between price insurance and a put option is that insurance is backed by an insuring organization rather than being sold on a commodities exchange (Gibbon 2005, 15).

Focus on income stability – All of the tools discussed above provide some form of income stabilization to cocoa producers in that each mechanism effectively ensures a minimum producer price. The question becomes whether or not the price is communicated far enough in advance to affect producers' production and consumption decisions. In each case, the tool is limited by the length of its underlying contracts, which generally last up to two years, and options with contract lengths beyond three months tend to be prohibitively expensive for small cocoa producers (Gibbon 2005, 16; ul Haque 2004, 14). Contracts lasting less than one year do not address cocoa price volatility between annual crop cycles, which is what producers need to plan for future diversification efforts. However, a series of interlocking contracts could provide relatively stable minimum prices over a longer period of time. This would require a large supply and high degree of sophistication on the part of the intermediary.

Implementation feasibility – There is a great deal of international support for market-based risk management tools, since they utilize market forces and leverage the existing international financial framework. Even if Côte d'Ivoire moved back toward more centralized control in order to create a national provider of price insurance and/or risk hedging instruments and information, developed countries would probably not object as long as the Ivorian goal focused on universal access to market-based tools.

Producer accessibility – Any form of price insurance would have to be offered at the national, if not the international, level due to the insurer's need to pool risk. If price insurance or either of the other major tools were offered through COCOBOD or a renewed centralized organization in Côte d'Ivoire, producer access would also be high. Sarris (2002, 25) demonstrates that the poorest and most cocoa-dependent producers would gain the greatest benefits from price insurance, so it is imperative that such mechanisms be accessible to the poorest cocoa producers.

However, uncoordinated programs by international donors or the national governments through private intermediaries or producer groups would result in much lower accessibility. Producer groups have largely failed to fill the institutional gap in Côte d'Ivoire, and only one major producer cooperative plays a role in Ghana's cocoa sector (Akiyama et al. 2003, 27; Lyon 2004). Furthermore, private intermediaries would likely focus on the most accessible producers or those who belong to producer groups and thus already have access to ancillary services.

Sustainability – The programs themselves would be sustainable, assuming that the market tools are used responsibly to hedge risk rather than as profit-generating investments. Program consistency is important, because producers will not change their behaviours significantly (e.g., diversify production into new crops with which they are less familiar) if they are not sure the risk management tools will be available in future years (Sarris 2002, 2).

Conclusion – Lack of accessibility and technical expertise have long been cited as critical obstacles to the widespread use of market-based risk management tools by small agricultural commodity producers. Despite international support, accessibility is the major issue in our specific case as well. Without recreating a state-led national intermediary in Côte d'Ivoire, it will be difficult for Ivorian cocoa producers to utilize market-based tools.

6.4. Option 4: Standards-based niche markets/alternative trade networks

Provide support for producer groups engaging in niche marketing and alternative trade networks. Ensure credit access through loan guarantees, assist existing groups with up-front certification fees, provide organizational/strategic planning assistance, and help ensure a favourable international policy environment for such groups. Refrain from providing operational funding to producer groups, since this tends to create dependence (Lyon 2004). Two major initiatives fall under this umbrella: fair trade networks and organic certification.

Fair trade provides an alternative purchasing network which can be utilized by certified producer groups.[7] Certified cocoa purchased through the fair trade network is guaranteed a minimum price or a price premium if the market price is above the minimum. The premium is pooled at the cooperative level and distributed among members in the form of direct payments and community projects (ICCO 2005a, 4). Cooperatives are not able to sell their entire cocoa harvest through fair trade networks, so they often pay all farmers the same rate and then distribute the collective benefits of the fair trade portion to all members of the cooperative (ICCO 2005a, 5).

As of 2003, fair trade cocoa constituted only 0.1 per cent of the world cocoa trade (ICCO 2005a, 6). During that year, Kuapa Kokoo in Ghana, the largest African fair trade supplier, sold only three per cent of its collective harvest through the fair trade network. Although demand for fair trade products, including cocoa, has shown strong growth, expansion of the fair trade network may eventually lead to the same market distortions that have plagued price support systems in the past. For instance, the fair trade producer price minimum and premium levels did not change between 1994 and 2005 despite changing market conditions. The system's lack of flexibility could create severe supply distortions if the network grows too large, which would have negative implications for cocoa producers not included in the fair trade network (Abbott et al. 2005, 12).

Organic certification attests that a product is grown in accordance with some guidelines of responsibility that include environmental health and sustainability. Approximately 400

[7] The major fair trade organizations, FLO International, International Federation for Alternative Trade, Network of European World Shops, and European Fair Trade Association, have adopted a unified definition of "fair trade": *Fair trade is an alternative approach to conventional international trade. It is a trading partnership which aims at sustainable development for excluded and disadvantaged producers. It seeks to do this by providing better trading conditions, by awareness-raising and by campaigning* (Abbott et al. 2005, 12).

certification organizations are in existence, and nearly all developed countries have national standards for organic products. Differences among these national requirements make it difficult for producers in developing countries to maximize the benefits gained from organic certification (ICCO 2006, 3).

In 2005, certified organic cocoa accounted for 0.5 per cent of the world cocoa trade (ICCO 2006, 7). Demand for organic chocolate is growing at a strong rate and suppliers have had difficulty keeping pace. Demand for organic products differs from demand for fair trade products in that it is borne out of concerns about food quality and safety rather than social conscience (ICCO 2006, 1). As such, organic certification offers a value-added service that addresses consumer concerns.

Focus on income stability – The fair trade movement, in its purest form, directly addresses cocoa income stability by guaranteeing a minimum price for cocoa purchased through fair trade networks. In contrast, certified organic cocoa beans generally command a price premium over conventional cocoa, but do not receive a fixed premium or a set minimum price (ICCO 2006, 5). Therefore, organic certification does not directly address producer income stability.

Implementation feasibility – There is growing support for fair trade and organic products in developed countries, as highlighted by strong growth in fair trade and organic sales. Although traditional stakeholders in the cocoa supply chain may dislike this trend, the movement is still too small to have an appreciable effect on the large cocoa grinders and chocolate producers. If demand for "alternative" chocolate (e.g., fair trade and organic) continues to grow in developed countries, however, mainstream chocolate manufacturers may develop their own proprietary "sustainable production" programs intended to capture some of the alternative trade demand, as has happened in the coffee sector. Critics argue that these proprietary programs are primarily focused on generating positive PR (Gibbon 2005, 18). If the trend of proprietary programs takes off in the cocoa sector it will, if nothing else, fragment the market further and make it more difficult for small producers to navigate the certification requirements necessary to take advantage of alternative trade networks.

Producer accessibility – Accessibility is the major stumbling block facing fair trade and organic certification initiatives. By definition, these markets are small and require some type of differentiating certification or product quality that excludes many producers. These certifications can be prohibitively expensive, in terms of direct certification costs and costs incurred to bring production practices in line with certification requirements (see Appendix F for sample costs and requirements). Furthermore, fair trade and organic certifications are usually carried out on the producer side through a cooperative producer group. Since producer groups have not filled the institutional gap created in Côte d'Ivoire by the dissolution of CAISTAB and still have little incentive to exist in Ghana, a great majority of cocoa producers in our countries of interest lack access to fair trade and organic markets. Of the 15 cocoa producer organizations certified by the Fairtrade Labeling Organization (FLO), 12 are located in Latin America and the Caribbean (ICCO 2005a, 2). Likewise, 70 per cent of the organic certified cocoa beans exported in 2005 came from South America and neither Ghana nor Côte d'Ivoire produced any organic cocoa beans (ICCO 2006, 10).

Sustainability – Strong demand will help organic and fair trade cocoa networks remain sustainable into the foreseeable future. From 1994 to 2003, fair trade cocoa exports increased from 207 tonnes to 2,643 tonnes, and demand shows no sign of declining (ICCO

2005a, 12). In 2006, demand for organic cocoa was increasing faster than supplies (ICCO 2006, 7). However, attempts to turn fair trade into a mainstream force could cause production distortions that end up lowering the prices of bulk cocoa. Since the price premium for organic cocoa is set by market forces, it will not create the same distortions as the fair trade system, although organic certification does not directly address price instability. In the long run, organic certification may prove to be the more sustainable of the two initiatives, since it provides a value-added service to consumers who are concerned about food safety.

Conclusion – Fair trade and organic certification are the two most visible and successful versions of alternative trade networks and niche markets in the cocoa sector. Fair trade networks deal directly with producer price uncertainty, but cannot be scaled up to the point where they are accessible by a large share of cocoa producers in Ghana and Côte d'Ivoire.

7. Policy recommendations

Cocoa producers in Ghana and Côte d'Ivoire need a window of income stability in order to effectively plan for and implement diversification strategies. This window must be accessible to a large share of producers, especially those left without any support system in the wake of Ivorian cocoa market liberalization. The current period of relatively high cocoa prices will end soon, necessitating decisive action. No single policy can address the income stability problem; instead, national and international policy-makers should undertake or support the following, complementary, policy actions:

- Reinstitute comprehensive, state-led quality control mechanisms and a supply-aggregating organization in Côte d'Ivoire, and institute insured minimum producer prices in Ghana and Côte d'Ivoire. This last element can be accomplished through forward sales and greater use of derivative instruments (e.g., put options) available through the international commodity markets. The government is the only intermediary in either Ghana or Côte d'Ivoire that has broad interaction with a large share of cocoa producers and can provide market-based price insurance relatively quickly. Furthermore, the Ghanaian and Ivorian cocoa authorities should seek to engage the large chocolate companies to redefine cocoa quality standards and explore ways in which the cocoa producers and chocolate manufacturers can mitigate the market power enjoyed by the multinational grinding companies.
- Rejuvenate and place more emphasis on the International Cocoa Agreement as a forum for discussion and coordination. This will help producing countries soften price shocks through preventative planning. It will also help foster a collaborative environment, which is a prerequisite for any future international supply coordination.
- Support producer groups seeking to take advantage of niche markets and alternative trade networks. Harmonize standards governing alternative trade networks and cocoa/chocolate quality standards in major chocolate consumer countries to reduce the cost born by producers of utilizing these alternative marketing systems.

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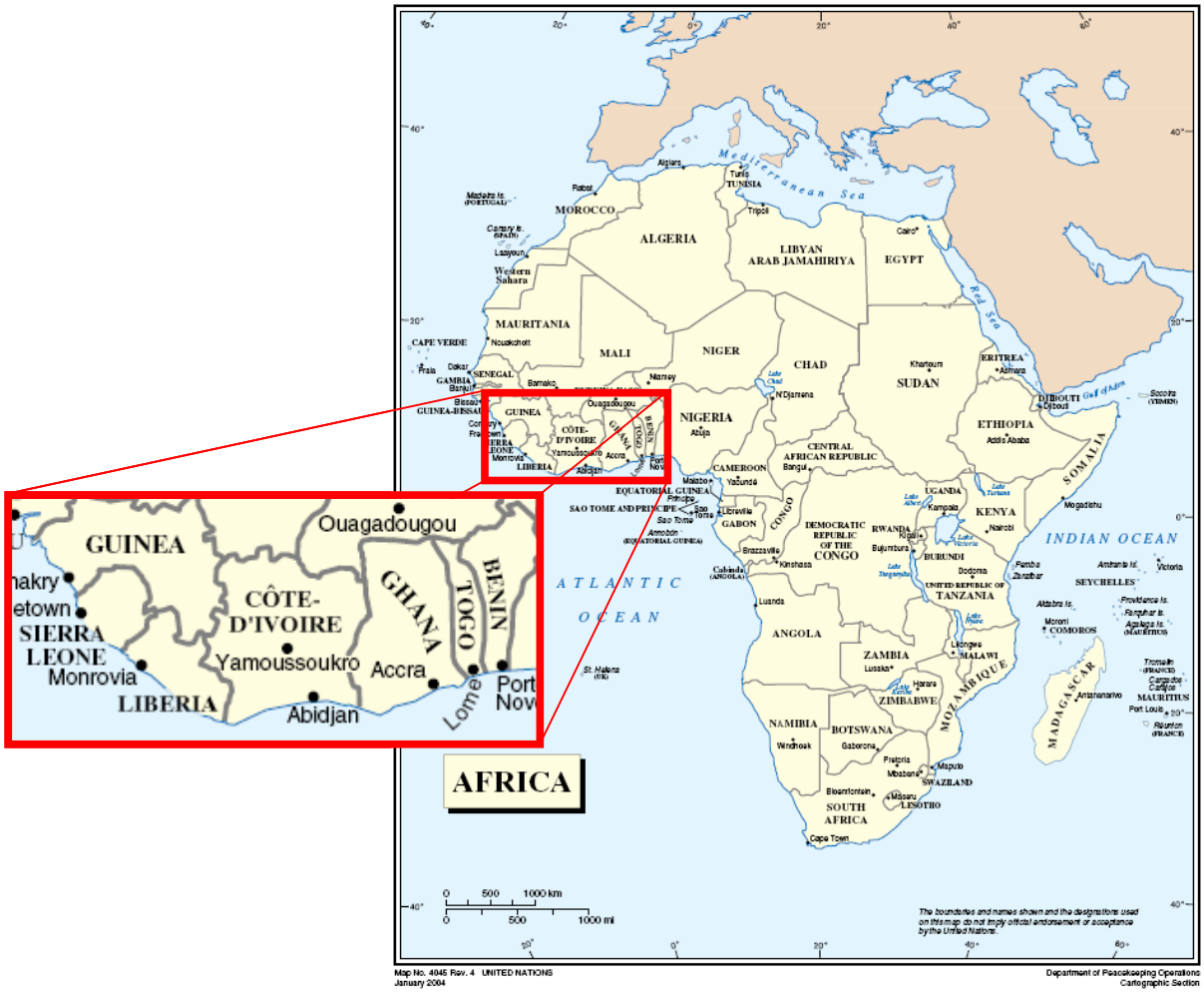
Appendix A: Map of Africa



Source: United Nations <
http://www.un.org/Depts/Cartographic/map/profile/africa.pdf>

Appendix B: Regression analysis results

Test 1 – Effects of volatility on producer and world cocoa prices

Hypothesis: Volatility lowers output and raises cocoa prices Dependent variable = Real producer price (base 2003)		
	Côte d'Ivoire (CFA francs)	**Ghana (cedis)**
Producer price volatility (real terms)	-35,317.68 (95,107.59)	170,840.9 (427,108.3)
1-year lag	-69,605.61 (94505.44)	15,537.9 (528,989.7)
2-year lag	-73,273.2 (94495.16)	426,110.1 (636,518.7)
3-year lag	-45,217.09 (96692.75)	1,215,542** (613,348.9)
4-year lag	58,095.17 (98,699.03)	1,002,140 (643,423.3)
5-year lag	51,092.8 (100,576)	776,746.4 (688,086.3)

*Significant at 5 per cent
**Significant at 10 per cent

Appendix B: Regression analysis results (cont.)

Test 2 – Effects of national and international policies on cocoa prices

Hypothesis: State cocoa policies affect real producer price volatility **Dependent variable = Real producer price volatility**		
	Côte d'Ivoire	**Ghana**
Inter-year stabilization	-0.1380 (0.2295)	-0.06 (0.1415)
Full price liberalization	0.0207 (0.2531)	N/A
R-squared	0.0389	0.0056
Observations	34	34
Hypothesis: State cocoa policies affect nominal producer price volatility **Dependent variable = Nominal producer price volatility**		
	Côte d'Ivoire	**Ghana**
Inter-year stabilization	-0.3335* (0.1507)	0.0610 (0.0697)
Full price liberalization	0.0964 (0.1661)	N/A
R-squared	0.2232	0.0233
Observations	34	34
Hypothesis: International Cocoa Agreement (ICCA) affected real world cocoa prices **Dependent variable = Real world cocoa price (base = 2000 USD)**		
ICCA in effect	905.0799* (208.0099)	
R-squared	0.3577	
Observations	36	
Hypothesis: International Cocoa Agreement (ICCA) affected world price volatility **Dependent variable = Volatility in real world cocoa prices (base = 2000 USD)**		
ICCA in effect	-0.1557 (0.1295)	
R-squared	0.0408	
Observations	36	

*Significant at 5 per cent

**Significant at 10 per cent

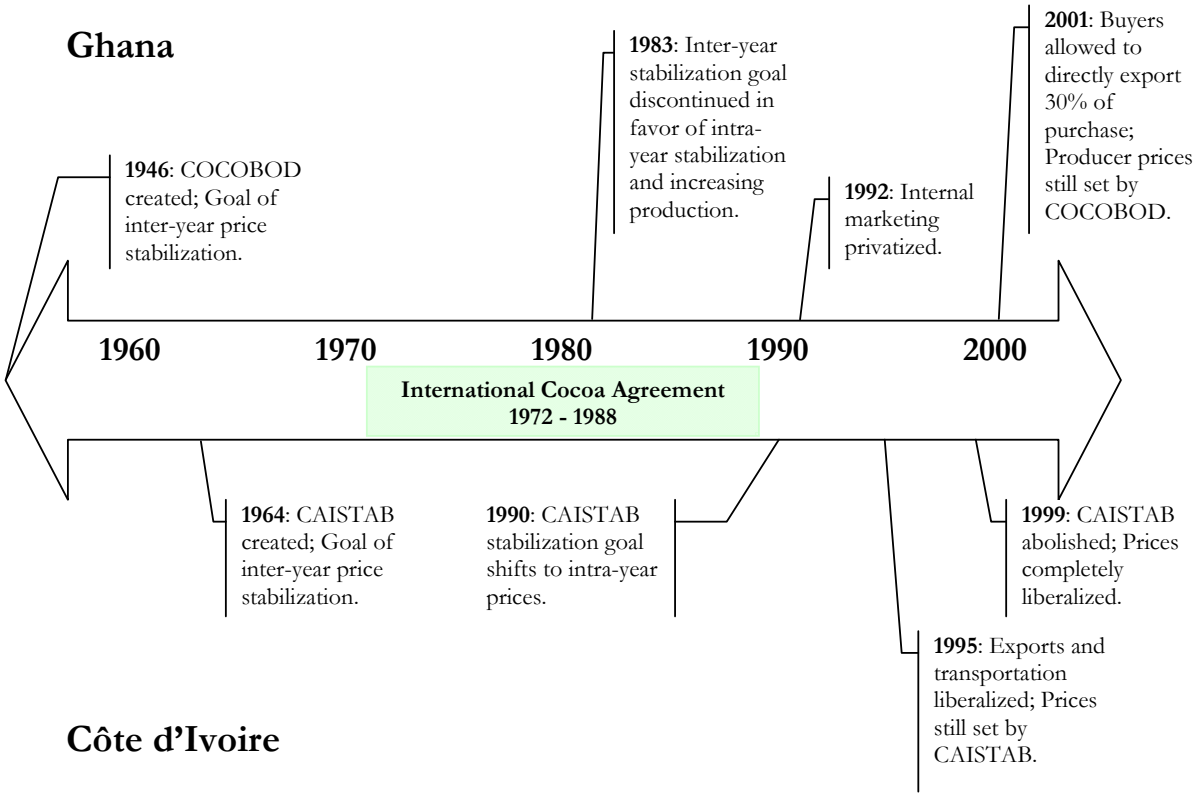
Note: This model uses annual average producer prices, as reported by Ghana and Côte d'Ivoire, so intra-annual stabilization effects cannot be tested.

Appendix B: Regression analysis results (cont.)

Policy variables used in Test 2 above

	Côte d'Ivoire Policies (1="In place"; 0="Not in place")			Ghana Policies (1="In place"; 0="Not in place")			International
	Inter-year Stabilization	Intra-year Stabilization	Full price liberalization	Inter-year Stabilization	Intra-year Stabilization	Full price liberalization	Int'l Cocoa Agreement
Year	CIINTERSTAB	CIINTRASTAB	LIBERAL	GHINTERSTAB	GHINTRASTAB	GHLIBERAL	ICA
1968	1	0	0	1	0	0	0
1969	1	0	0	1	0	0	0
1970	1	0	0	1	0	0	0
1971	1	0	0	1	0	0	0
1972	1	0	0	1	0	0	1
1973	1	0	0	1	0	0	1
1974	1	0	0	1	0	0	1
1975	1	0	0	1	0	0	1
1976	1	0	0	1	0	0	1
1977	1	0	0	1	0	0	1
1978	1	0	0	1	0	0	1
1979	1	0	0	1	0	0	1
1980	1	0	0	1	0	0	1
1981	1	0	0	1	0	0	1
1982	1	0	0	1	0	0	1
1983	1	0	0	1	0	0	1
1984	1	0	0	0	1	0	1
1985	1	0	0	0	1	0	1
1986	1	0	0	0	1	0	1
1987	1	0	0	0	1	0	1
1988	1	0	0	0	1	0	1
1989	1	0	0	0	1	0	0
1990	1	0	0	0	1	0	0
1991	0	1	0	0	1	0	0
1992	0	1	0	0	1	0	0
1993	0	1	0	0	1	0	0
1994	0	1	0	0	1	0	0
1995	0	1	0	0	1	0	0
1996	0	1	0	0	1	0	0
1997	0	1	0	0	1	0	0
1998	0	1	0	0	1	0	0
1999	0	0	1	0	1	0	0
2000	0	0	1	0	1	0	0
2001	0	0	1	0	1	0	0
2002	0	0	1	0	1	0	0
2003	0	0	1	0	1	0	0

Appendix C: Timeline of major cocoa policy changes



Compiled from: ul Haque 2004, Alence 2001, World Bank 1983, COCOBOD 2007, Wallis 1999, McIntire and Varangis 1999, Anonymous 1999

Appendix D: Responses of Ghanaian cocoa producers

Responses are based on informal, anonymous interviews with four cocoa farmers in Humjibre, Ghana, conducted during March/April 2007. Interviews conducted and reported by Mr. Clement Donkor of the Ghana Health and Education Initiative (GHEI).

1) **How did changes in COCOBOD policies in 2001 affect you? Have you noticed a change in how prices have behaved since 2001?**

   Respondent #1: "Since the liberalization of the cocoa industry, prices are still low."

   Respondent #2: "The only positive side is the break of monopoly. There's some efficiency in handling and marketing of cocoa. It has saved the government of economic losses, yet we don't reap the benefit of our toil."

   Respondent #3: "The mass spraying exercise, even though well intentioned, is not capable of covering all farms. Spraying is often not done on time. It has not had the desired impact. I think the government or those that buy our cocoa are cheating us."

   Respondent #4: "Let us see how prices have behaved and you will know. They say cocoa price is high on the international market."

2) **What other crops do you grow, besides cocoa? Is it easy for you to grow other crops for income when cocoa prices are low?**

   Respondent #1: "Plantains, cassava, yams and sometimes vegetables."

   Respondent #2: "Maize, plantains, cassava."

   Respondent #3: "I do intercropping when cultivating cocoa so I sell plantains, cassava and sometimes maize. The irony is that these crops, apart from maize, cannot be preserved. It is during the peak of the cocoa season that harvest is high, so prices are low. Cultivation of other crops is heavily dependent on the weather."

   Respondent #4: "I have too many mouths to feed. I struggle almost all year round. It is not easy to grow other plants because of lack of market, and the weather."

3) **What share of your income from cocoa do you use to buy food and other necessities?**

   Respondent #1: "I spend 60 per cent on the family and invest the rest in my farm."

   Respondent #2: "I use about 70 per cent."

   Respondent #3: "It is hard to determine. I rely on cocoa money for everything."

   Respondent #4: "I use about 70 per cent."

4) **When cocoa prices are high, what do you do with the extra income?**

Respondent #1: "I divide the extra income into 3 and invest 2 parts in the family and the other part for extra income."

Respondent #2: "I use the extra income in housing."

Respondent #3: "I save to offset the cost of my children's education."

Respondent #4: "I want to accrue to enable me to buy a car."

Appendix E: Objectives of the 6th International Cocoa Agreement, 2000

Objectives:

1. The objectives of the Sixth International Cocoa Agreement are:
    a. To promote international cooperation in the world cocoa economy;
    b. To provide an appropriate framework for the discussion of all matters relating to all sectors thereof;
    c. To contribute to the strengthening of the national cocoa economies of Member countries, in particular through the preparation of appropriate projects to be submitted to the relevant institutions for financing and implementation;
    d. To contribute to a balanced development of the world cocoa economy in the interest of all Members through appropriate measures, including:
        i. Promoting a sustainable cocoa economy;
        ii. Promoting research and the implementation of its findings;
        iii. Promoting transparency in the world cocoa economy through the collection, analysis and dissemination of relevant statistics and undertaking of appropriate studies; and
        iv. Promoting and encouraging consumption of chocolate and cocoa-based products in order to increase demand for cocoa in close cooperation with the private sector.
2. In pursuing these objectives, Members shall, within the appropriate framework, encourage the greater participation of the private sector in the work of the Organization.

Source: Quoted directly from the text of the 6th International Cocoa Agreement.

For more information, see the complete document at:
http://www.unctad.org/en/docs//tdcocoa9d7&c1.en.pdf

Signatories to the 6th International Cocoa Agreement:

- Cocoa exporting countries – Cameroon, Côte d´Ivoire, Gabon, Ghana, Malaysia, Nigeria, Togo, Brazil, Dominican Republic, Ecuador, Papua New Guinea, and Trinidad and Tobago

- Cocoa importing countries – European Community members (Austria, Belgium/Luxembourg, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, United Kingdom), Russian Federation, Slovak Republic and Switzerland

Appendix F: Sample alternative trade certification requirements

Fairtrade Labeling Organization (FLO) producer certification fees

Initial Certification			
Category	**Individual Farmers**	**Farmer Groups**	**Cost (Euros)**
A	**<500 tonnes**		**2,000**
B	**>500 tonnes**	**<10 tonnes**	**2,800**
C		**10–30 tonnes**	**3,600**
D		**31–100 tonnes**	**4,400**
E		**>100 tonnes**	**5,200**
Renewal Certification (annual fee)			
Basic fee	**500 euros/yr**		
Value fee (in addition to basic)	**0.45 per cent of the f.o.b. value of cocoa sold to fair trade network; per cent cut in half if over 500 tonnes**		

Source: ICCO, "Facts and Figures on Fair-Trade Cocoa," 2005.

General requirements for organic certification

- Cocoa beans must grow on land which has been free of prohibited substances for three years prior to harvest. Cocoa beans grown on land which is "in transition" to organic (during the first three years after switching from conventional farming, for instance) cannot be labeled organic.
- Production methods are strictly regulated (fertilizers, soil conditioners, pesticides).
- 95 per cent of the ingredients (not counting added water and salt) in a chocolate product must be organically produced and the processor must be a certified organic handler in order for the finished product to be labeled as organic. However, special provisions allow labeling to state that a product is "100 per cent Organic", if the product contains 100 per cent organically produced ingredients, "Made with Organic Ingredients" (or a similar statement), if the product contains at least 70 per cent organic ingredients, and "Has some organic ingredients" (or a similar statement), if the product contains less than 70 per cent organic ingredients.

Source: Quoted directly from ICCO 2006, "A Study on the Market for Organic Cocoa," page 4.