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Cote d'Ivoire:

Competitiveness, Cocoa, and The Real Exchange Rate

Zeljko Bogetic
Carlos Espina
John Noer

The World Bank
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Abstract

This paper explores competitiveness of Cote d'Ivoire's economy over a long period of 1960-2003 and its link with cocoa prices. The main conclusions are as follows.

First, using four measures of real effective exchange rate (REER) for the 1960-2002 period, we track the evolution of REER and conclude, inter alia, that until 2003, REER remained well below its 1994 level.

Second, we find that based on our measure of the multilateral REER with dynamic weights, which covers most recorded trade, France no longer dominates Cote d'Ivoire's trade. Instead, Cote d'Ivoire has diversified its set of trading partners. Unfortunately, it has also specialized in one export product, raw cocoa. This paper aims to contribute to the question to what extent do cocoa prices affect Cote d'Ivoire's competitiveness in world trade?

Third, the answer to this question is that cocoa prices are an important determinant of Cote d'Ivoire's competitiveness. Similar to the case of a classic "Dutch Disease," increases in the real world price of a "natural resource" (i.e., cocoa) tend to result in the appreciation of the CFA franc and a loss in competitiveness. Econometric tests further confirm that 1994 was a "break-point" not only for growth and productivity (as documented in the two related papers) but also for trade competitiveness. Recent productivity per worker trends versus wages also seem to indicate slow growth in 1996-2000, without major improvement in competitiveness.

This paper— a product of the Poverty Reduction & Economic Management Unit 4 (AFTP4), Africa Poverty Reduction & Economic Management (PREM) Department—is part of a larger effort in the department to understand the sources and constraints of long-term economic growth in African countries. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at zbogetic@worldbank.org.

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By

Zeljko Bogetic, Carlos Espina and John Noer*

AFRICA REGION
PREM 4

* Lead Economist (AFTP4), and Consultants (Espina, Noer), respectively. Helpful discussions on aspects of issues dealt in this paper with Bob Blake, Emmanuel Akpa, Mamadou Dia, Peter Ngomba, Richard Doffonsou, John McIntire, Nicaise Ehoue and Jean-Paul Chausse are gratefully acknowledged.

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1. Introduction

This paper explores empirically the evolution of competitiveness of Cote d'Ivoire's economy over a long period of 1960-2003 and the link between competitiveness and the key macroeconomic variable—cocoa prices.

The organization of the paper is the following. In Section 2, we define, present, and review four "Edwards" measures of the bilateral and multilateral real exchange rate, one set computed with CPIs, and another with GDP deflators (which we adopt). These descriptive statistics support the commonly-held views that the Cote d'Ivoire CFA was over-valued prior to the 1994 devaluation; and that the devaluation was big enough to "make a difference" in improving competitiveness and triggering the desired economic recovery.

Section 3, starts with a time series of the percentage of total recorded trade "covered" or included in our MREER indices built with trade-weights for twelve representative major trade partners. We review the evolution of Cote d'Ivoire's trade partners over time, which have changed slowly but profoundly between 1960 and 2000. Many small-volume links have eroded the once-large shares of traditional trade partners, especially France. Over the years, Cote d'Ivoire has acquired many new trade partners, some in Africa, and some with emerging non-African non-EEC countries.

In Section 4, we provide evidence that Cote d'Ivoire has concentrated in cocoa production and specialized in raw cocoa exports, rather than diversifying the goods it exports. While the country now has many customers around the world, it is mainly selling them raw agricultural commodities, especially cocoa.

In Section 5, we test the extent to which cocoa prices impact Cote d'Ivoire's real exchange rate. As OLS estimates would be inefficient, inconsistent, and possibly biased in these circumstances, we use fully modified least squares approach, which is robust in the face of endogeneity, serial correlation, and breaks in the data generation process. The results provide evidence that the Cote d'Ivoire CFA is a "commodity currency" in the sense that cocoa prices impact the real exchange rate in a manner consistent with "Dutch Disease".

Section 6, presents recent data on productivity and wage trends by sector. We also provide a tentative measure of unit labor costs, a supplemental measure of competitiveness, for 1996-2000. The data seems to reinforce the notion that the beneficial effects of the 1994 devaluation had worn off by the late 1990s. Section 7, contains concluding remarks.

2. Indices of the Real Exchange Rate

First we present definitions of indices measuring the real exchange rate. Then we present four indices, and compare them to each other.

Defining the Real Exchange Rate

We relied upon Sebastian Edward's definitions[1] of the real effective exchange rate (REER). The concept requires a trade partner. So, we have bilateral rates (BREER) between two specific trading partners, and the multilateral real effective exchange rate (MREER), which includes a representative set of trade partners.

Starting with a "purchasing power parity" (PPP) measure of the real exchange rate, built using consumer price indices (CPI), for the bilateral real effective exchange rate in time period t we have:

$$(1) \quad BREER_t = (E_t \times CPI_t^f)/CPI_t^d$$

Where E_t is the number of CFA or local currency units per unit of foreign currency, the foreign CPI appears in the numerator, and the CPI for Cote d'Ivoire (the local economy) appears in the denominator.

The multilateral REER is a weighted average of bilateral rates. It is built using trade weights, α_{it}, which sum to unity in time period t, obtained by in our case from IMF *Direction of Trade Statistics*. In time period t, for i = 1 to n "representative" trading partners, we have:

$$(2) \quad MREER_t = \sum_i \left[\alpha_{it} (E_t^i \times CPI_t^i)/CPI_t^d\right]$$

Edward's formulation of the REER and the MREER differs from that commonly used by the International Monetary Fund, and we apologize for any confusion. The IMF measure is essentially the inverse of the measure used here. Also, the IMF uses geometric rather than arithmetic weighting when calculating the MREER.

Indices Of The Real Exchange Rate

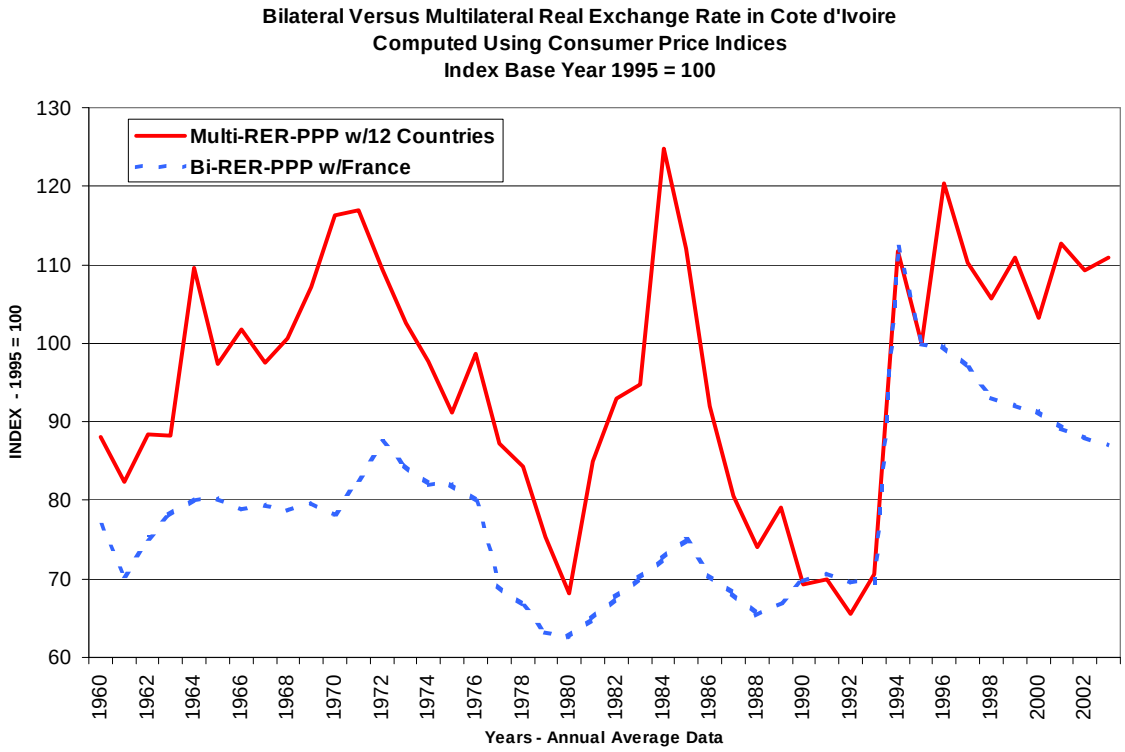
We looked at the bilateral real exchange rate between the Cote d'Ivoire and France. France is the former ruling colonial power and was historically Cote d'Ivoire's largest trading partner; the CFA franc was pegged to the French Franc. For the multilateral real effective exchange rate, we selected twelve of the largest trading partners in recent years, ensuring that we had eight of the top import origins and eight of the top export destinations across a span of recent years. Rather than using a single year upon which to

[1] See Edwards 1988.

base our weights, we calculated *dynamic weights* which change over time as the proportion of trade with each partner within the representative set changes over time.

We built our BREER and MREER measures to be normalized at 1999 = 100 for all REER indices. That is the year following the CFA devaluation, when the CFA was thought by many to be more "fairly valued" that it had been for many years previously. And, 1995 is a common base year.[2]

Figure 1: Indices of Cote d'Ivoire's Bilateral and Multilateral Real Exchange Rate, Based on Consumer Price Indices

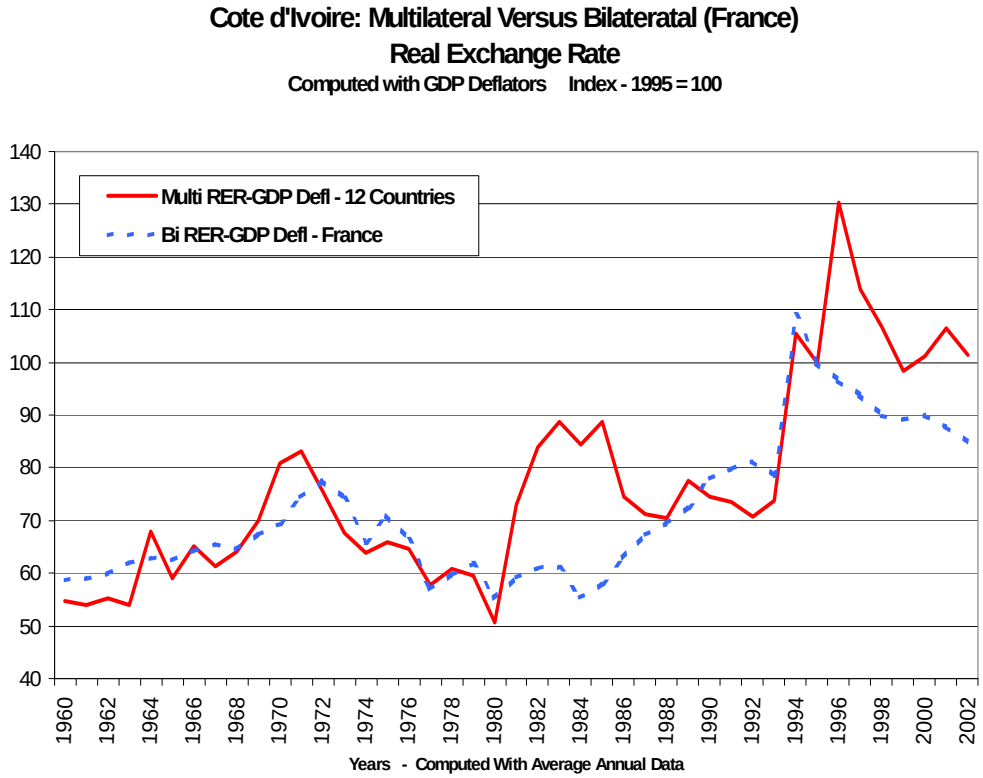


The 1994 CFA devaluation improved competitiveness as measured by the REER. Figure 1 presents our measures of the bilateral and multilateral REER indices based upon consumer price indices. Given the use of the Edwards, rather than the IMF definition, a high index number represents many CFA francs per unit of foreign currency, indicating relative competitiveness. The two measures tend to move together, although in the mid 1980s they diverge. Both measures moved upward by 40 index points in 1993-1994, at the time of the CFA devaluation. By our measure, the CFA may have been less over-valued against its *other* trading partners in the years leading up to devaluation than it was against the French Franc.[3] Since the devaluation, the CPI BREER has declined by twenty index points, while the CPI MREER has not declined much at all.

[2] These are relative and not absolute measures of competitiveness. They track relative competitiveness over time, but not across different sets of trade partners

[3] In part, this depends upon how the two measurements were aligned in 1995, the base year for both. We do not believe that any statements can be made on "relative competitiveness" using these indices.

Figure 2: Cote d'Ivoire's Bilateral and Multilateral Real Exchange Rate, Based on GDP Deflators



The CFA was overvalued prior to 1994. Figure 2 depicts our indices of the REER constructed with GDP deflators. In this case, the apparent over-valuation of the CFA prior to devaluation is more pronounced than with the CPI REER measures Both the bilateral and the multilateral measures have trended down in recent years since 1996, signaling a loss of some of the competitiveness gained in the 1994 devaluation.

The preferred measure is the MREER built from GDP deflators[4]. The CPI includes only final household consumer goods, while the GDP deflator includes all goods produced in the economy[5]. The CPI and GDP deflator measures exhibit similar profiles[6]. As the GDP-deflator based measure includes wholesale goods, raw commodities, and industrial inputs, it would seem to be the preferable measure to use, especially in the case of a commodity exporter. As the multilateral real exchange rate index more closely approximates "the world", the MREER seems much preferable to the BREER.

[4] Ideally, we would like to have a measure of trade-able goods versus non-trade-able goods. Some authors advocate using the foreign wholesale price indices (WPI) versus the domestic CPI. We were unable to access a full set of WPIs for 1960-2002 for all countries in the MREER index to build this measure.
[5] Raw cocoa thus appears in the GDP deflator for Cote d'Ivoire; it dooes not appear in CPIs as it is not a final consumption product.
[6] We present comparisons of the CPI versus GDP-deflator indices in the Annex.

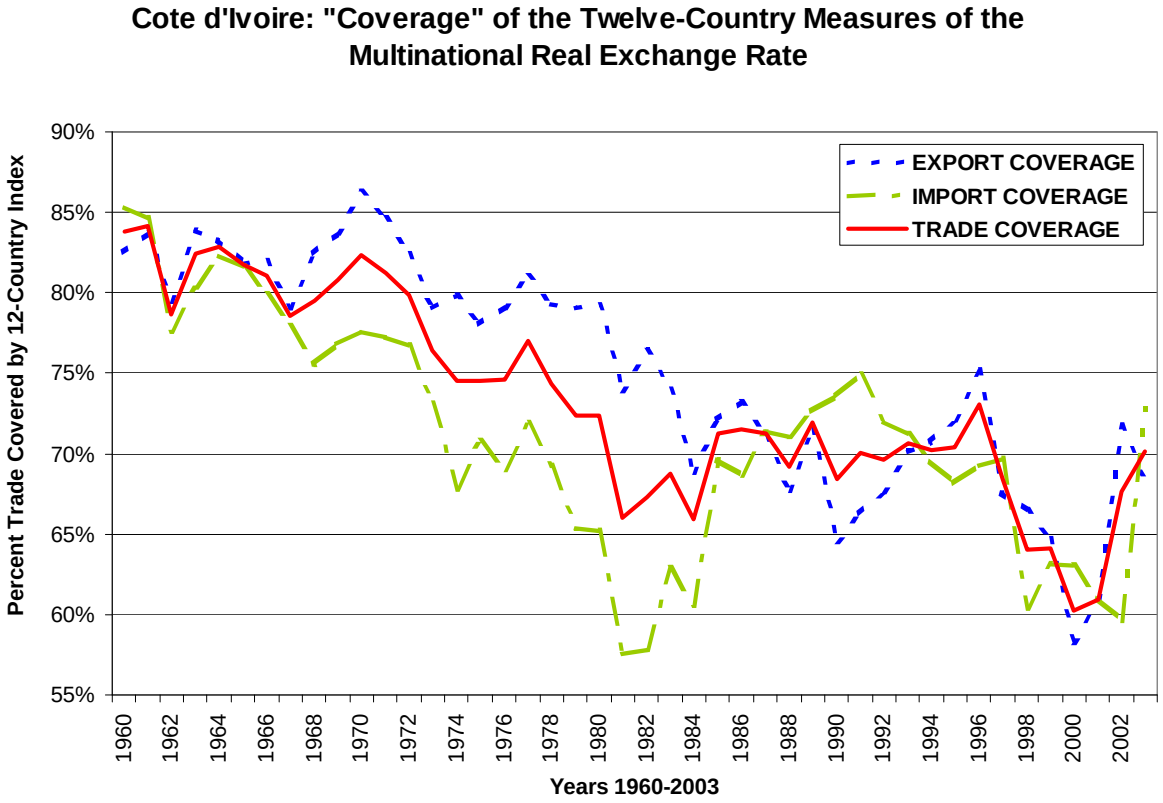
3. Trade Partners and "MREER Coverage"

Measuring the Completeness of MREER Indices

For a country with many trade partners, it can be awkward and difficult to compute an MREER index that includes all partners. However many partners it includes, it will remain a representative index. And, some trade will not enter into the official statistics. MREER indices are approximations, so it is interesting to evaluate how complete the MREER index is. At the same time, we can address the evolution of trade patterns.

Our MREER measure covers most of Cote d'Ivoire's official trade. Figure 3 shows the percentage of official imports, exports, and total trade of Cote d'Ivoire is conducted with the twelve partners in the representative set. While the percentage has declined over the period, it has usually included 70% or more of all trade and always more than 60%.

Figure 3: "Coverage" of MREER Indices – Percent of Cote d'Ivoire's Imports, Exports and Trade with the Twelve Countries Used in the Measure of the Multilateral Real Exchange Rate



Refer to the "pie charts" in the Annex (Figure 14, Figure 15, Figure 16, and Figure 17), which portray the distribution of trade among the twelve partners of the MREER index (plus "other" not in the index) in 1960, versus 2000 (the last "normal" year before conflict broke out). Next, we look at the distribution of trade by partners over time.

Evolving Trade Patterns Over Time

Figure 4: Distribution of Traditional Major Export Destinations Over Time

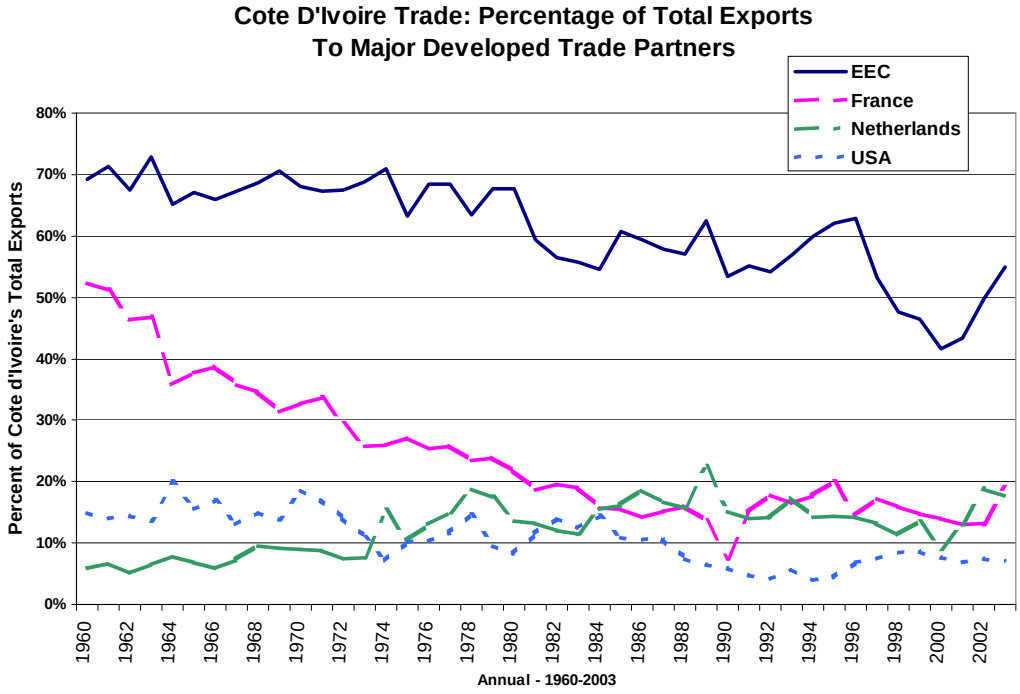
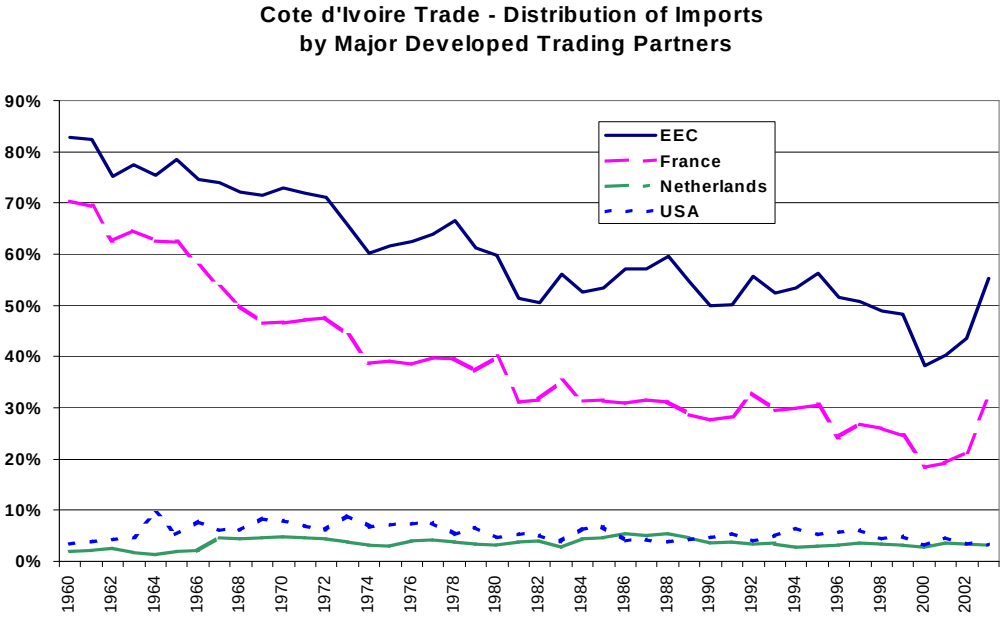


Figure 5: Distribution of Imports From Traditional Trade Partners Over Time



France and Europe no longer dominate Cote d'Ivoire's trade as they once did. In 1960, France took 52% of Cote d'Ivoire's exports and supplied 69% of imports. By 2000, France took 14% of exports and supplied 18% of imports. In 2000, France had been displace by Nigeria as top import trade partner. Nigeria supplied 25% of Cote d'Ivoire's imports in 2000, primarily petroleum. Refer to Figure 4 and Figure 5. In 1960 the European Community (nearly all France) accounted for 70 % of Cote d'Ivoire's imports and over 80% of exports. Even though the EEC is now much larger, in 2000 it accounted for only about half of trade. In 1960, almost all "EEC" trade was with France, but by 2000 most EEC trade was *not* with France.

Cote d'Ivoire developed a variety of smaller trade flows with new partners. "Others", outside the top twelve used in our MREER measure, supplied only 15% of Cote d'Ivoire's imports and took only 17% of its exports in 1960. By 2000, "others" had become the "largest trading partner" and accounted for 38% of imports and 43% of exports. A number of African countries are now in the "top twelve", but did not trade with Cote d'Ivoire in 1960.

Non-traditional trade links have grown with non-African emerging economies, which as a group are now significant. Refer to Figure 6 and Figure 7. Exports to Mainland China, Hong Kong Russia, India, Brazil, Korea and Taiwan (as a group) have grown from nearly zero in 1960 to nearly 12% of total exports in 2000, while imports have grown from one percent in 1960 to as much as 9% in 1994 and then 1998. The trade volume with these new trade partners fluctuates a great deal from year to year, and are less stable than volume with the traditional trade partners.

Overall, Cote d'Ivoire's trade links are expanding and diversifying. Numerous new customers buy Cote d'Ivoire's products, and numerous new suppliers provide her imports. The old picture of Cote d'Ivoire as linked by trade almost exclusively to France is much less true than it used to be.

Figure 6: New Non-Traditional Non-African Non-EEC Export Destinations

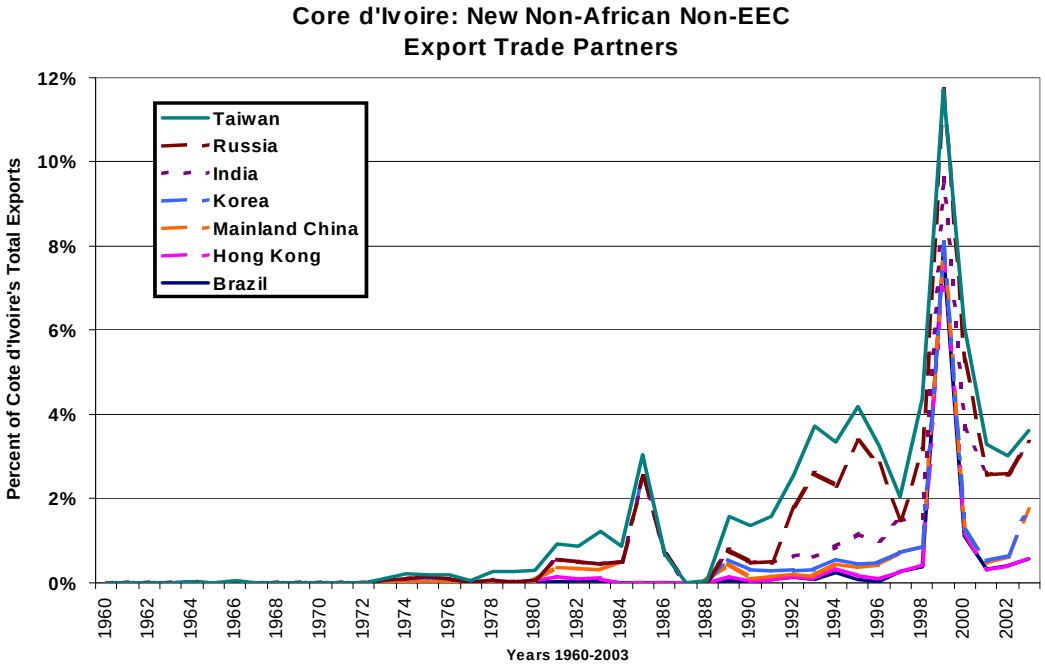
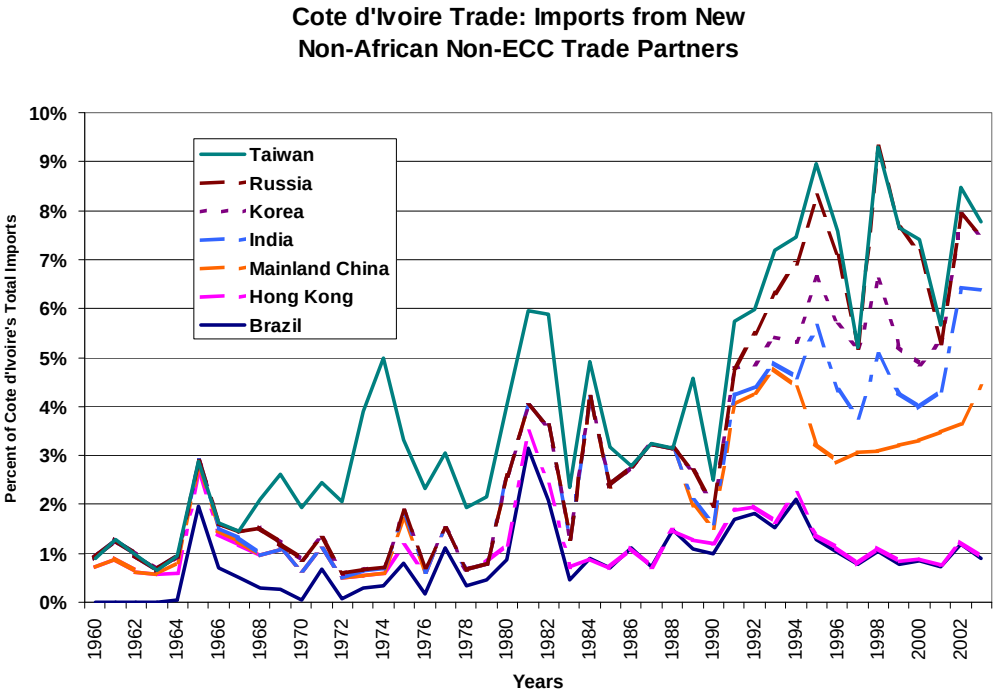


Figure 7: New Non-Traditional Non-African Non-EEC Import Sources



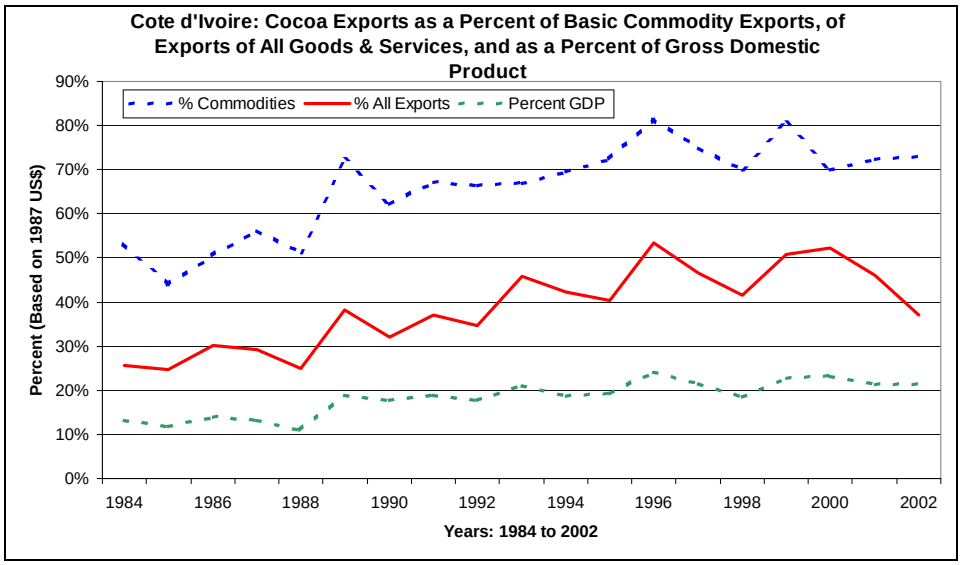
4. Raw Cocoa Dominates Cote d'Ivoire's Trade

While Cote d'Ivoire's trade links have diversified, its export products have not. In the last section, we showed that over the last forty years Cote d'Ivoire has greatly expanded the list of countries that it trades with, and reduced its dependency upon the traditional trade partner, France. Here in this section we re-iterate some of the evidence that the reverse is true so far as the list of export products is concerned.

In fact, Cote d'Ivoire has become heavily specialized in cocoa. Figure 9 (next page) shows four graphs which document this claim. Cote d'Ivoire's cocoa production grew to over 1.4 million metric tons in 2000; it is the world's leading producer. The real price of raw cocoa grew from the early years to a peak in 1976 and then declined; at the same time Cote d'Ivoire's output per worker followed the same boom-and-bust profile. Cocoa prices are volatile. Over the years, Cote d'Ivoire has devoted an ever-increasing amount of land to cocoa output. Cote d'Ivoire's share of world output grew from less than 7% in 1960 to over 41% in 2000.

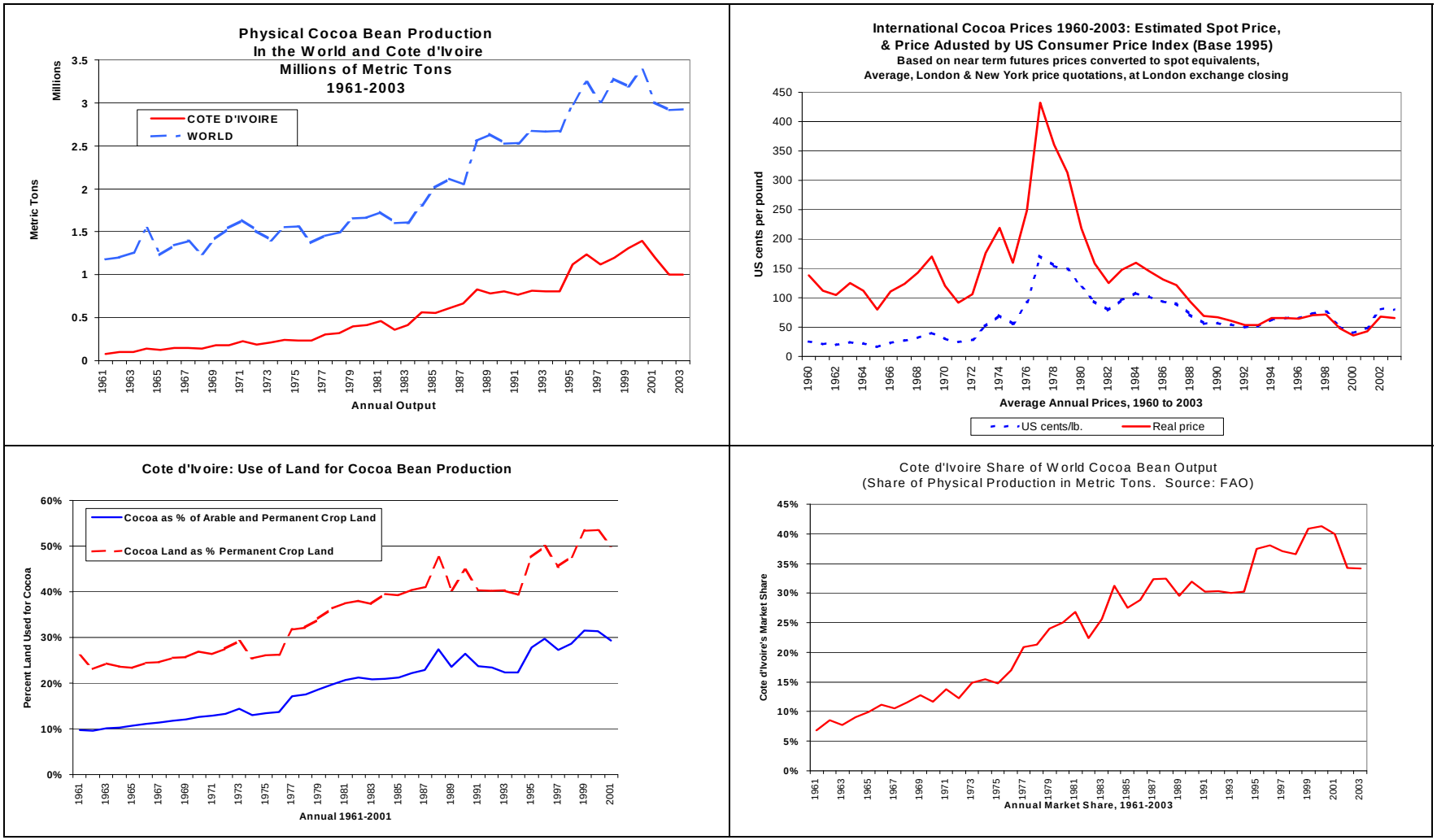
Raw cocoa now dominates the Ivorian economy and exports, even more than in the past. Figure 8 below shows data which supports this claim. By 2000, raw cocoa was 80% of the country's commodity exports, over 50% of all exported goods and services, and 21% of the entire GDP. When one considers that a great deal of output and economic activity in other sectors is cocoa-related, it is clear that this country has become quite dependent upon one raw commodity, cocoa.[7]

Figure 8: Cocoa Exports as a Percentage of Commodity Exports, All Exports (Including Services), and Gross Domestic Product



[7] Cote d'Ivoire's number two export is coffee; coffee and cocoa prices correlate highly on world markets. Number three is cotton, another raw agricultural commodity. They offer little in the way of benefits of diversification from cocoa.

Figure 9: World & Cote d'Ivoire Cocoa Production, World Prices, Cocoa Land Use in Cote' d'Ivoire, and Share of World Market



5. Do Cocoa Prices Move the Real Exchange Rate?

REER, Commodity prices & Measuring Competitiveness.

The real effective exchange rate (REER) is a fundamental competitiveness variable in small open economies and this is true for Cote d'Ivoire. Real effective exchange rate equilibrates international trade and payments by closing excess demand or supply. In the case of a specialized commodity-producing country like Cote d'Ivoire, increases in the (real) world price of its export good, namely cocoa, tend to cause a real appreciation of the CFA franc. Vice versa, cocoa price declines would tend to cause real depreciation. However, if other domestic prices are rigid or adjust slowly, and if the exchange rate is also fixed, the real exchange rate may not adjust rapidly or completely. Does the mechanism work in Cote d'Ivoire?

There are many challenges in measuring competitiveness. According to Harberger [8]the common conceptual measure of REER using the ratio of tradable-to-non tradable prices may not be appropriate if commodity prices are subject to shocks and represent a large share of a given economy. In the case of Cote d'Ivoire we would expect that a large inflow of foreign exchange earnings due to a high price of cocoa would induce a real appreciation of the FCFA. If we were to use a perfect measure of the prices of tradable goods (PT) and the prices of non-tradable goods (PNT[9]), a very high weight of price of cocoa on PT would end up causing an increase in PT and thus an indication of a real depreciation, which would be nonsensical and makes this measure ambiguous. On the other hand, some authors[10] argue that in an economy with perfectly flexible prices and equalized wages across sectors, a real appreciation of the REER will ensue if there is a rise in the world price of the main exportable (here cocoa), caused by the increase in the relative price of the non traded good. It is precisely this vagueness about the dynamics that casts doubts on the appropriateness of usual REER measure for competitiveness.

As Cashin et al (2002) point out, the usual determinants of REER that apply to many developed and developing countries may not apply to commodity-exporting countries like Cote d'Ivoire. Price rigidities, limited capital mobility and slow productivity improvements impede the activation of common channels of REER adjustments, namely real interest rate differentials and balance of payment effects.

We find evidence of Dutch Disease-like syndrome. We test this fundamental relationship. We assume that the main source of real disturbances of the REER for Cote d'Ivoire is the world price of cocoa, and go on to test if there exist a long-run equilibrium relationship between Cote d'Ivoire's REER and real world cocoa prices. The resulting estimates allow us to assess the order of magnitude of an external shock stemming from cocoa prices and how it impacts Cote d'Ivoire's competitiveness. The results strongly

[8] 2004.
[9] Perfect in the sense that these to prices represent undistorted goods, i.e. they assume away all trade restrictions that may in fact be in place.
[10] See Reinhart and Rogogff (2001) and Cashin (2002).

suggest a case of "Dutch Disease." The evidence is that. positive shock to cocoa prices generate a real appreciation of the CFA Franc in Cote d'Ivoire (and, negative shocks cause real depreciation).

Testing REER Fundamentals in Cote d'Ivoire

We seek to test the hypothesis that the fundamental determinant of competitiveness for Cote d'Ivoire is cocoa prices. The measure of competitiveness that we use is the multilateral REER, and a main determinant is the real international price of cocoa[11].

Two testable ***hypotheses*** characterize Cote d'Ivoire's 'fundamentals' in the determination and behavior of its real exchange rate.

- *First, cocoa prices are prime determinants of the REER.* Cocoa prices seem to be the major determinant of real adjustments in the trade sector due to the increased specialization of Cote d'Ivoire in cocoa production, especially since the late 1970's, increasing the country's exposure to external shocks from cocoa prices.

- *Second, a break-point has occurred in the REER process.* Cote d'Ivoire has attempted several structural reforms over the years, as well as a major devaluation in the nominal peg of its exchange rate. These policy shifts coupled with highly volatile terms of trade, lead us to presume that in the period 1960-2002 there has been a major shift in the competitiveness front for Cote d'Ivoire.

Testing the first hypothesis involves a parameter estimate. As for the second, we let the data tell us the timing of such break, if any, through estimating the long-run equilibrium relationship between the MREER and cocoa prices with an econometric procedure that allows for a structural level-shift of unknown timing.

Econometric Strategy and Results

The econometric strategy we implemented was as follows[12]: We first proceeded to test if the cocoa prices and MRER time series are integrated processes of order one, I(1), through Augmented-Dickey Fuller Tests and Phillips-Perron Tests. Our results indicate the both time series are *I(1)* [See test values in the Appendix].

We then assessed if cocoa prices (Granger-) cause the MRER. The test revealed that indeed MRER is Granger-caused by cocoa prices so we pose the cointegrating relation to be:

[11] Cashin (2002) uses the monthly REER published by the IMF and an index of real (1980-2000) commodity prices as the main explanatory regressor. We instead use annual MRER and cocoa prices from 1960 to 2002 (yearly). Even though we have fewer observations, our data spans a longer time period, and thus may be able to pick up richer episodes of economic variability.

[12] See Hansen and Philips (1990), Hansen (1996) and Cashin et al (2002) for a detailed explanation and application of these methods. The first two references are econometric, while the later is an application of the method to commodity prices and real exchange rates.

$$\ln MRER_t = \alpha + \beta \ln CPRICE_t + \varepsilon_t \qquad t = 1,....,T$$

We then test for the stationarity of the residual (Engle-Granger Test), which turned out to be *I(0)* so that the equation above is indeed a cointegrating relation.

Cocoa prices move Cote d'Ivoire's real exchange rate, and are a source of volatility. Refer to the FMLS model results reported in Table 1. The real world price of cocoa is negatively associated with Cote d'Ivoire's real exchange rate. The parameter point estimate for β is of the correct sign, plausible in magnitude, and statistically significant. The evidence here supports the assertion that the Cote d'Ivoire CFA is indeed a "cocoa currency" in Cashin's sense. One single commodity price is an important factor in the country's competitive equilibrium, a consequence of cocoa specialization. By this best estimate, a one percent increase in cocoa prices results in eleven-one-hundredths of one percent (0.108) appreciation in Cote d'Ivoire's multi-lateral real effective exchange rate.[13] This evidence supports the assertion that world cocoa prices are a source of volatility to the competitive equilibrium of the economy of Cote d'Ivoire.

Even though we expect that the competitiveness of Cote d'Ivoire has experienced a major structural change, we are unwilling here to assert the timing of such event. We resorted to the Hansen-Phillips (1996) test for structural break in the presence of *I(1)* processes. In other words, we applied a test of parameter stability once we had established that there is at least one long-run equilibrium relationship between cocoa prices and MREER in Cote d'Ivoire.

The Hansen-Phillips test is based on estimating the following set of regressions:

$$\ln MRER_t = \alpha + \beta \ln CPRICE_t + \varphi_{it} + \varepsilon_t \qquad t = 1,...., N$$

$$\varphi_{it} = \begin{cases} 1 \text{ if } t <= b \\ 0 \text{ if } t > b \end{cases}$$

where lnMRER is the (log of) the multilateral real exchange rate, lnCprice is the log of the real price of cocoa and φ is a dummy variable constructed for every candidate break year *(b)*. We then ran an exhaustive block of equations with level dummies in the year, one for each 'candidate' breakpoint. We then computed the *ADF* statistics for *each* of the residual series (in our case, 42 regressions) and chose our statistic as the largest negative number of these (i.e. *ADF*=min{ ADF1,…., ADF43}*) where we test the null of no level shift in the cointegrating vector of prices.

The statistical evidence: 1994 was a break-point for international competitiveness. This unsurprising and plausible result came from the data alone, and does not arise from a prior hypothesis. Hansen and Phillips (1996) present the asymptotic critical values for the *ADF** statistic as defined above for our level-shift model. The data strongly suggests that

[13] Whether this rate of adjustment is rapid enough or large enough is yet another question, not addressed here.

there is a structural break in the competitiveness variable in the year 1994[14], the year of the devaluation of the FCFA.

The devaluation was big enough to make a difference on the competitiveness front. The policy was sizable enough to make a structural shift in the competitiveness long-run equilibrium relationship with cocoa prices[15]. The MREER shifted upwards (towards greater competitiveness) with respect to the prevailing cocoa price in the structural equation after, 1994[16].

After identifying where the structural break is and according to Hansen and Phillips (1996), the appropriate estimation procedure for the cointegrating parameter, i.e. the marginal impact of a change in cocoa prices on the MRER, should be a fully-modified OLS method. See Table 1. The FMOLS estimation, proposed by Phillips and Hansen (1990) and Hansen and Phillips (1990), was designed to estimate cointegrating relationships, modifying the traditional OLS by allowing us to correct simultaneously for the effect of the serial correlation in the error term and the endogeneity of the regressors[17].

Table 1: Cocoa Prices and the Real Exchange Rate - Fully Modified Least Squares Regression Parameter Estimates and Goodness-of-Fit Measures.

FMOLS Estimates:
Cote d'Ivoire's Multilateral Real Exchange Rate
As Impacted by Real World Cocoa Prices

Structural Break in the MREER series according to Hansen-Phillips Test**:** 1994**.**

PARAMETER ESTIMATES

Constant: 4.963449

LnCocoaPrices: -0.108601

Dummy (zero after 1994): -0.278431

Dependent Variable: lnMREER

STATISTIC OF THE JOINT SIGNIFICANCE TEST for ALL VARIABLES:

40.313583 p-value: 0.000000

STATISTIC OF THE INDIVIDUAL SIGNIFICANCE:

Regressor: Constant Statistic: 1135.883200 p-value: 0.000000

Regressor: LnCocoaPrices Statistic: 4.417987 p-value: 0.035562

Regressor: Dummy Statistic: 13.968075 p-value: 0.000186

[14] The Z* value that we computed is –4.1 and the asymptotic critical value at 10% is –4.3 and –2.5 for 15%. We think that as our sample becomes more informative (i.e. increases in size), the significance will improve.
[15] Cocoa production and exports increased after the devaluation.
[16] That is, the coefficient estimate on the 1960-1994 dummy is negative in sign.
[17] The serial autocorrelation gives rise to inefficiency (i.e. very wide confidence intervals) and the endogeneity causes inconsistency in the OLS estimators.

6. Wages, Growth and Employment

In 1996-2000, nominal value added grew only slightly faster than the wage bill or work force. Table 2 reports statistics[18] on employment, the nominal wage bill, nominal value added (total and per worker) and a rough estimate on unit labor cost for major sectors, with compound average annual growth rates to measure trends, for 1996-2000. Nominal value added grew very slightly faster than either the wage bill or work force. However, value added per worker grew more slowly than inflation, signaling continued declines in real output per worker. The rough estimate of unit labor costs is approximately flat for the period[19]. According to these figures, the traditional pattern is continuing: most of the macro-economy's growth is fueled by labor force growth.

Table 2: Employment, Wages, Value Added, Value Added Per Worker, and Rough Estimate of Unit Labor Cost. All value data in current CFA. Compound Average Annual Growth Rates

EMPLOYMENT	1996	1997	1998	1999	2000	CAAGR
Agriculture	2,444,297	2,459,781	2,627,078	2,714,788	2,824,679	3.68%
Industry	601,870	637,313	675,635	717,154	770,710	6.38%
Services	2,178,418	2,254,525	2,407,793	2,496,090	2,673,677	5.25%
Cote d'Ivoire	5,224,585	5,351,619	5,710,506	5,928,032	6,269,066	4.66%

WAGE BILL	1996	1997	1998	1999	2000	CAAGR
Agriculture	103,857	109,996	124,085	152,244	187,750	15.95%
Industry	305,093	341,462	378,548	449,792	434,369	9.23%
Services	962,337	1,060,918	995,422	961,063	1,080,615	2.94%
Cote d'Ivoire	1,371,287	1,512,376	1,498,055	1,563,099	1,702,734	5.56%

VALUE ADDED	1996	1997	1998	1999	2000	CAAGR
Agriculture	1,527.8	1,595.5	1,798.9	1,768.1	1,906.7	5.70%
Industry	1,268.0	1,618.1	1,649.3	1,742.3	1,640.8	6.66%
Services	2,734.5	2,952.9	3,278.3	3,525.9	3,474.1	6.17%
Cote d'Ivoire	5,530.3	6,166.5	6,726.5	7,036.3	7,021.7	6.15%

Value Added/Worker(000)	1996	1997	1998	1999	2000	CAAGR
Agriculture	625	649	685	651	675	1.94%
Industry	2,107	2,539	2,441	2,430	2,129	0.26%
Services	1,255	1,310	1,362	1,413	1,299	0.87%
Cote d'Ivoire	1,059	1,152	1,178	1,187	1,120	1.42%

Unit Labor Cost	1996	1997	1998	1999	2000	CAAGR
Agriculture	0.067979	0.0689422	0.068979	0.0861045	0.098467	9.71%
Industry	0.240619	0.2110264	0.229518	0.2581547	0.264722	2.42%
Services	0.351922	0.3592833	0.303637	0.2725745	0.311051	-3.04%
Cote d'Ivoire	0.247961	0.2452585	0.222708	0.2221467	0.242497	-0.56%

[18] This data was supplied by Richard Doffonsou of the World Bank field office in Abidjan.
[19] We are warned that data consistency problems make this estimate problematic.

7. Concluding Remarks

We have generated a twelve-partner index of the multilateral REER with dynamic weights that shift over time as trade partner patterns shift; the results indicate that Cote d'Ivoire's competitiveness declined from 1996 to 2002, establishing a downward trend. The index appears to characterize the country's non-competitiveness prior to 1994 and the impact of the devaluation. The set of indices based on the GDP deflator seems better than those based on CPIs on theoretical grounds, and shows the afore-mentioned competitiveness pattern rather clearly. The multilateral REER indices cover most of Cote d'Ivoire's trade, always 60%, usually more than 70%, and as much as 85% in early years. The bilateral REER with France moves somewhat differently from the multilateral REER against twelve major trade partners. Given the dramatic shift in the distribution of trade over the period, it seems clear that a multilateral REER index using fixed weights calculated on a single base year would not be adequate, as it would be very unrepresentative for most years.

Cote d'Ivoire's universe of trade partners has expanded over the last four decades. The commonly held perception that links with France dominate Cote d'Ivoire's trade are no longer true, although the link with France remains an important trade link. The country has diversified sources of imports, and the customer base for exports. The country has moved from relying upon a single trade partner, to trade with much of the world.

Cote d'Ivoire has not, however, diversified its mix of export products and this seems to be a source of its continued external vulnerability. It relies heavily upon cocoa bean exports, and also to a lesser extent upon coffee beans and cotton, that is, volatile agricultural commodities. All these three have volatile international prices which have declined steadily in real terms ever since 1976.

We tested the hypothesis that world cocoa prices impact the competitiveness of Cote d'Ivoire via it's real exchange rate and found evidence of "Dutch Disease", i.e., that upturns in the real price of cocoa cause a change in the real exchange rate and make the country less competitive. Even though it has a nominal fixed exchange rate regime, the Cote d'Ivoire CFA franc's strong link to the key commodity price indicate its characteristics of a "commodity currency" or, more specifically, a cocoa currency, heavily impacted by world commodity prices. We also found evidence that the devaluation of 1994 improved the country's competitive position, shifting the schedule of the real exchange rate with respect to cocoa prices.

We also complemented the analysis by a very preliminary look at recent data on wages, employment, and value added by sector, looking for indications of trends in competitiveness. This indicates that slow growth is continuing, slower than that of inflation combined with labor force growth while wages grew very slightly less than value added.

ANNEXES

Further Comparative Data on Real Exchange Rate Indices

To facilitate comparison of REER indices built with CPIs versus GDP deflators, we provide Figure 11 and Figure 12 below.

Figure 10 Comparison of BREER Indices

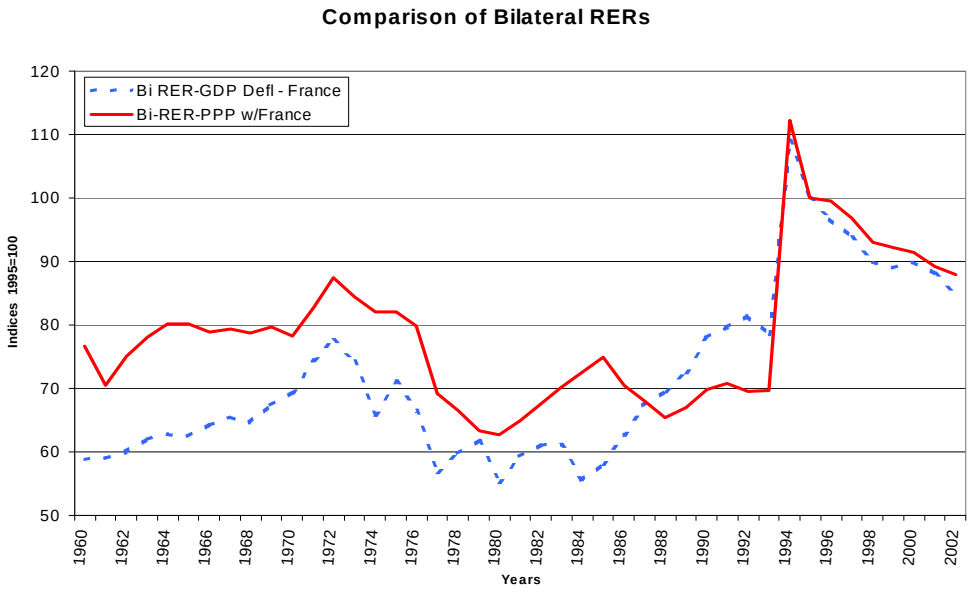
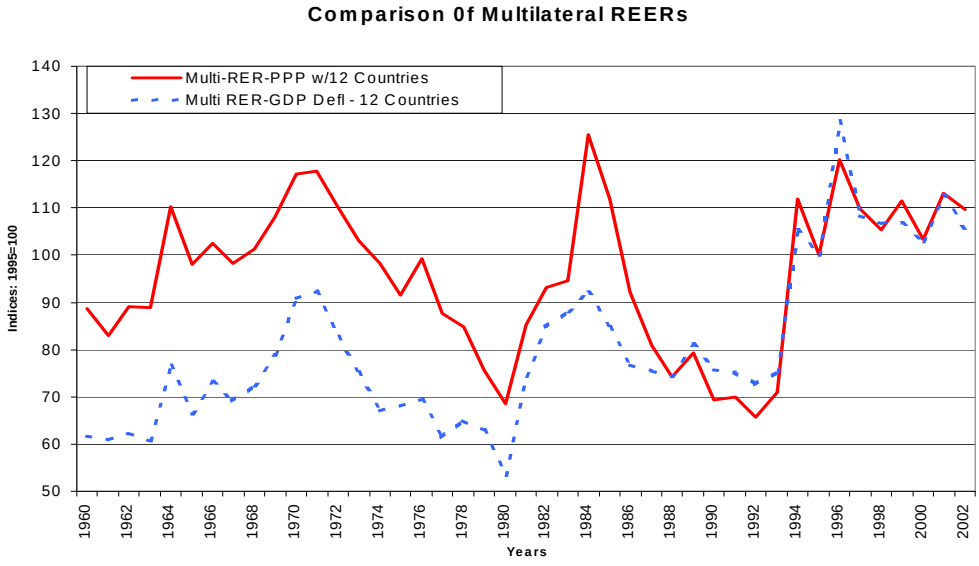


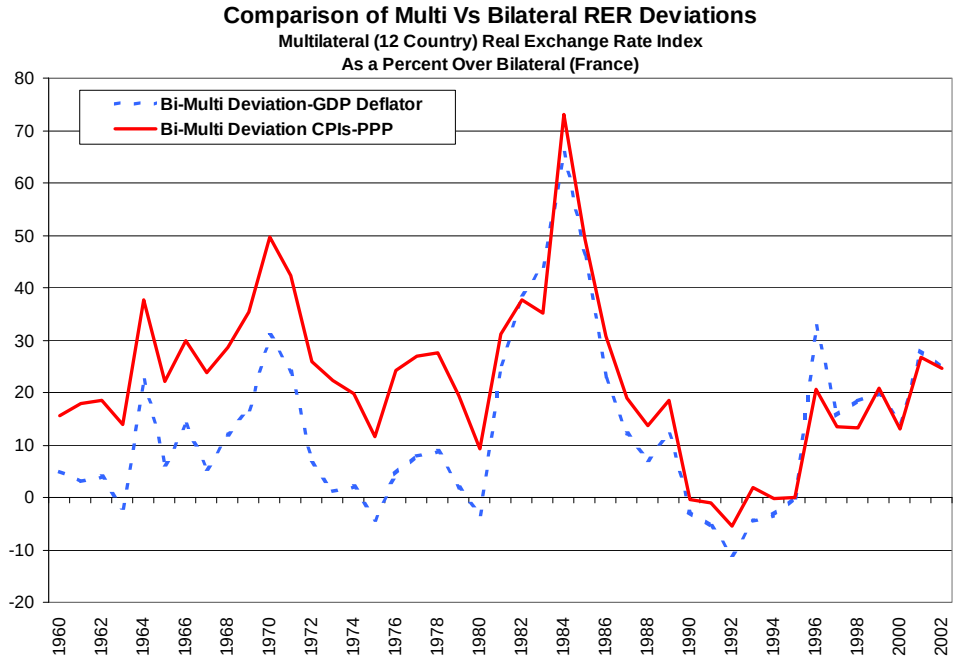
Figure 11: :Comparison of MREER Indices.



The BREER-MREER deviation is similar for both measures. Do the two sets of indices differ in terms of the deviations between bilateral versus multilateral measures of

the REER? The answer seems to be "no". Figure 13 plots the percentage differences[20] of the BREER and MREER for the two sets of indices, one CPI based and the other GDP-deflator based. The two deviation measures track closely. During the period between 1980 and 1990, when the CFA was thought to be over-valued, the both MREER measures rose well above their corresponding BREER measures. They closed at the time of devaluation, by construction. Since devaluation, MREER indices have once again moved to their historic position above BREERs.[21]

Figure 12: The Differences Between Multilateral Versus Bilateral Measures of the Real Exchange Rate (CPI versus GDP Deflator)



[20] Based upon the difference of natural logarithms of the BREER minus the MREER.

[21] Comparative figures showing the two BREERs and two MREERs arefound in the Annex. They track closely.

Further Data of Trade Partners in 1960 and 2000

Figure 13: Export Destinations in 1960

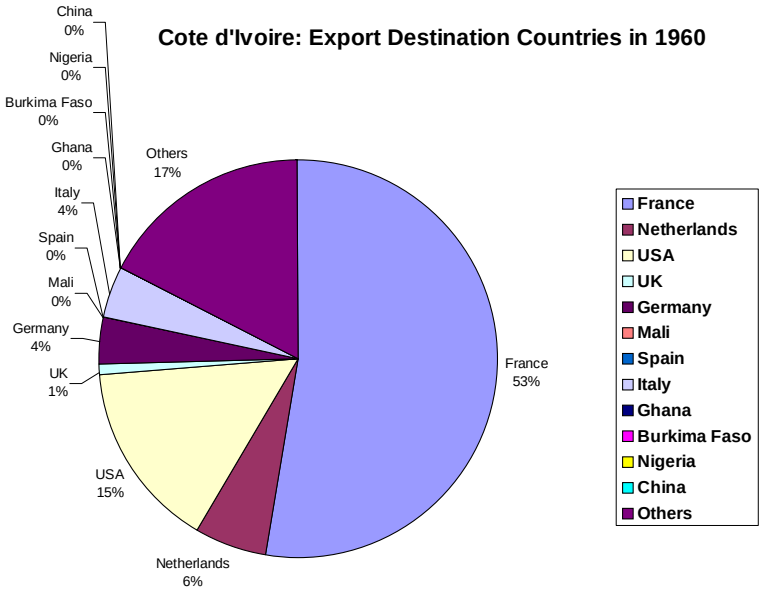


Figure 14: Import Origins in 1960

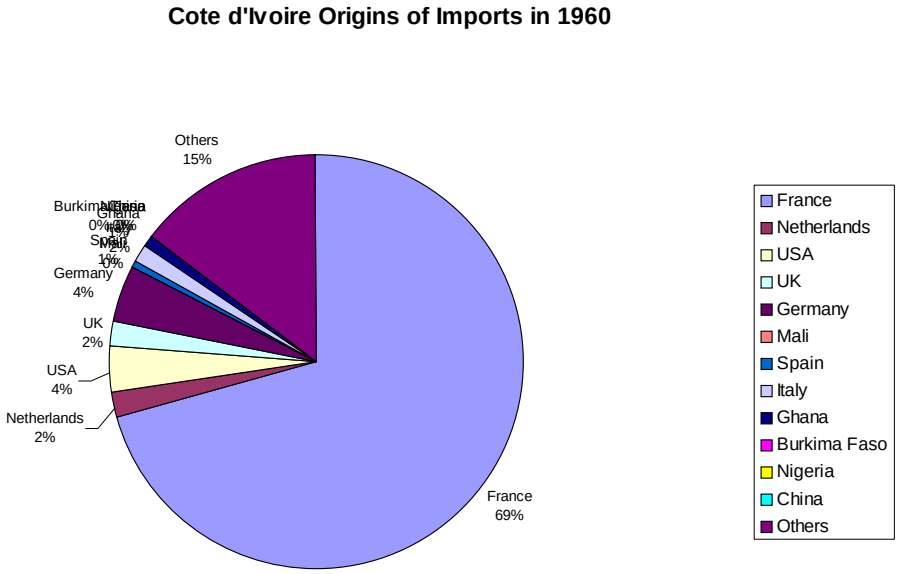


Figure 15: Export Destinations in 2000

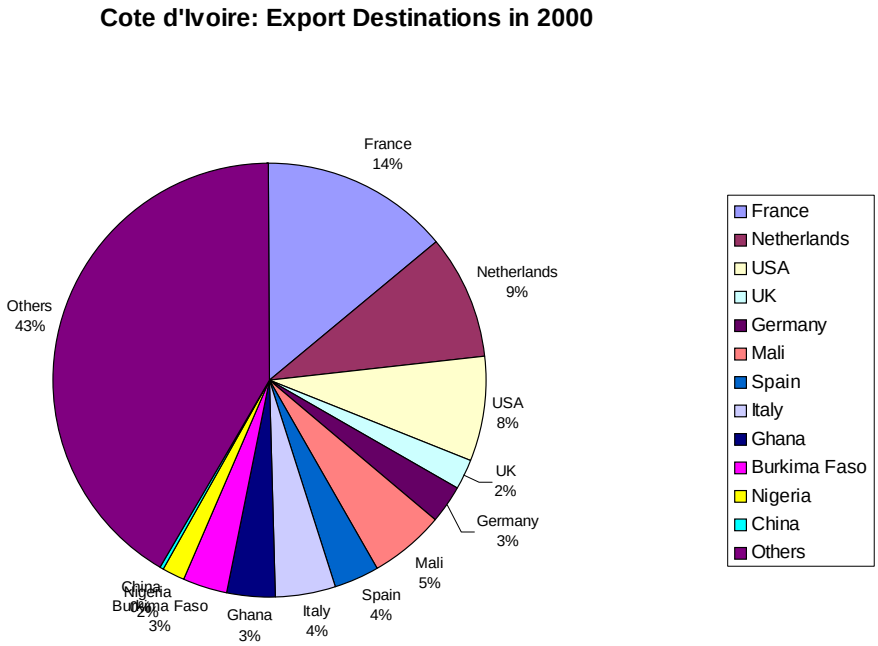
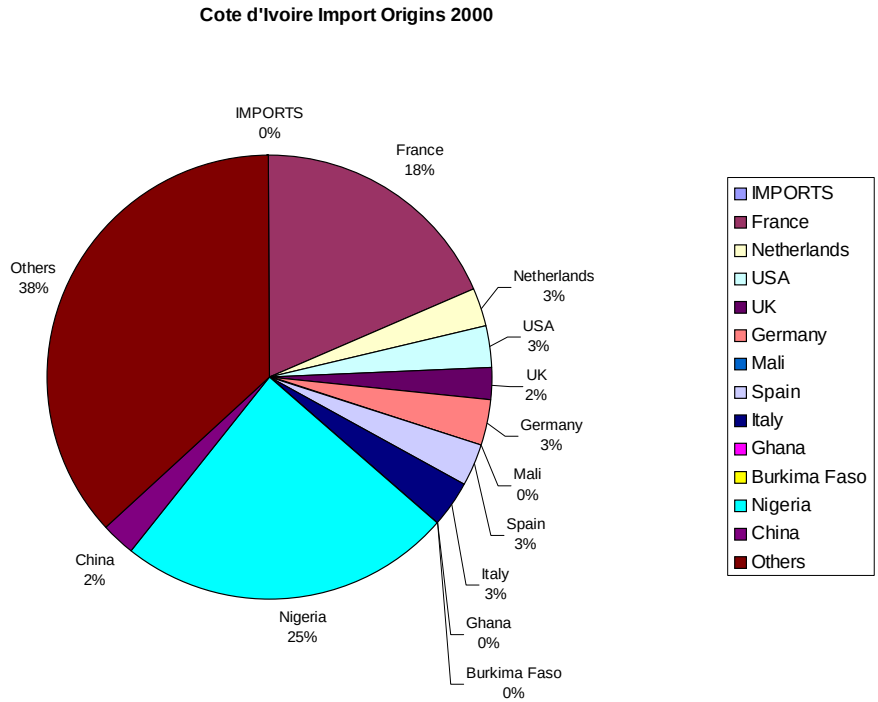


Figure 16: Import Origins in 2000



Productivity by Sectors

Figure 17: Percent Value Added by Sector

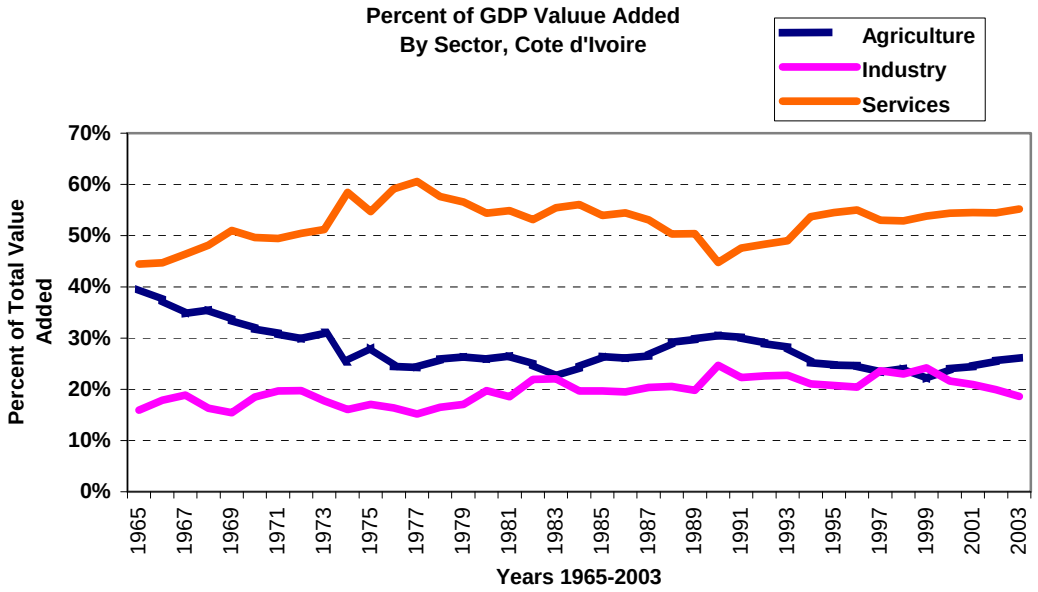
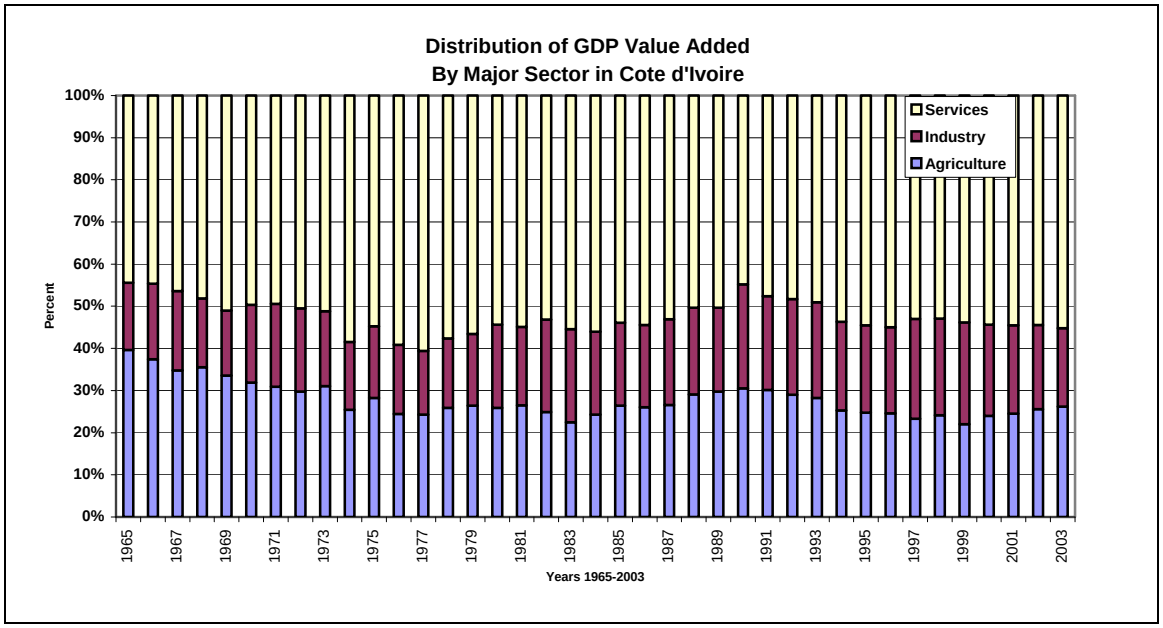


Figure 18: Distribution of Value Added by Sector



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