OPERATIONS OF EXPORT MONOPOLY AND PRICE STABILISING BOARDS IN EAST AND WEST AFRICA: A REVIEW OF METHODOLOGY AND RESULTS

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ABSTRACT

This paper surveys major research on the effort of Export Monopoly boards in Stabilizing prices and Incomes to domestic producers of various crops in West and East Africa. It does not claim to be exhaustive but it does bring out the major methodological features, results and weaknesses of these studies. In the end, the paper calls for the integration of price – supply relationships in a simultaneous policy model within which to assess the effectiveness of the multiple target stabilisation of marketing board operations.

INTRODUCTION

Marketing Boards were introduced in what was known as British East and West Africa during the second world war. The legal instruments that spell out the functions and powers vested in these boards clearly indicate that these institutions were designed as multipurpose establishments by policy makers. Research on the operation of these institutions has also confirmed this. Over the years, some categorisation of these boards has been made on the basis of their dominant functions and the policy parameters with which they operate.[1] These boards can be labeled (as in (1)) either as 'Advisory and Promotional Boards," or "Regulatory Boards," or "Price stabilising but Non-Trading Boards", or "Non Monopoly Domestic Trading and Price Stabilising Boards," or "Export Monopoly and Price Stabilizing Boards" or "Domestic Monopoly and Price Stabilizing Boards".[2] It is not hard to get examples of each in West and East Africa. In this paper however, we only review the research done on the operations of Export Monopoly and Price Stabilising boards in connection with the goal of domestic stabilisation aimed at minimising undersirable effects of Export instability.

The problem of fluctuations in Export earnings of primary producing countries (East and West African countries being no exceptions) has attracted the attention of researchers for more than two decades and continues to do so despite the feeling by some economists that the topic is exhausted. Export instability refers to the phenomenon of periodic variations along some historically determined growth path of total export earnings on current account which is identified mainly with primary commodity exporting countries of the developing world. The causes of export instability are both structural and random. Primary commodity production is particularly subject to: short-run inflexibility; considerable long-run responsiveness to market prices; variability in crop yields occasioned by weather and other climatic factors such as drought. uneven gestation lags and a bunching, sometimes, of output and asymmetrical response to price changes especially in the case of long lasting tree crops which permit upward output adjustments but downward rigidity with respect to price variations. Superimposed on this is a demand situation which is characterised by: limited income elasticity, cyclical variations in income and output (in developed countries), technological substitutions, changes in government policies e.g. stock piling, surplus disposal programmes, exchange and trade restrictions, speculative activities, expectations, sporadic non-economic events (like Korean War and Suez Crisis) and other purely random and unpredictable factors. The juxtaposition of this demand situation on the supply relationship lends, as may be expected, to notorious instability in prices and hence corresponding variability in

earnings of primary exporters. Many other factors have also been considered as important contributory causes of instability. These include: the degree of commodity concentration of exports (i.e. the ratio of primary commodities in total exports): the degree of reliance on a single or restricted geographic market or geographic concentration, and the degree of market influence and market power of the exporting country in the relevant commodity markets; and not least, the degree of political instability. No matter what the empirical difficulties have been in associating these factors with instability[3] and no matter what the disagreements are among professional economists about the effects of export instability, the fact is that "Export Monopoly and Price Stabilizing Boards" in East and West Africa were set up principally as national efforts to combat undesirable domestic effects of export instability. Tests of their performance have been designed along three lines:

(i) their succees in stabilising producer prices vis a vis world market prices;

(ii) their success in stabilising producer income vis a vis export income;

(iii) The use to which any trading surplus may have been put.

EMPIRICAL EVALUATION OF PERFORMANCE

West Africa

A pioneer study in the field of Marketing Board pricing and stabilization was that by P.T. Bauer in 1954. His methodology and results are best presented in the chapter entitled "The Operation and Consequences of the State Export Monopolies of West Africa", in his most recent book (5, pp.387-422) and in chapter 23 of his well known earlier book (4, pp.300-318). With respect to income stabilisation, in Ghana and Nigeria, Bauer takes the season 1947/48 as the base year. He then calculates the annual percentage changes in actual money incomes of cocoa producers and then compares these with the corresponding annual percentage changes in export receipts (potential money income). These results are reproduced in table 1.

TABLE 1

Actual And Potential Combined Money Incomes of Cocoa Producers in Ghana and Nigeria, 1947-1951.

Year	Actual		Potential	
	£m	As % of 1947/48	£m	As % of 1947/48
1947/48	20.0	100	53.4	100
1948/49	46.4	232	47.1	88
1949/50	31.3	157	56.2	105
1950/51	47.3	237	78.6	147

Source: Bauer, Ibid, p.301

Comparing annual percentage changes of actual and potential income on a year to year basis, Bauer concludes that marketing board operations have destabilised income.

With respect to prices, Bauer reaches the same conclusion after observing that the reduction in the producer price of cocoa in Ghana in 1949 was the second largest such reduction from one season to the next since 1922 in contrast with the following year (1950) when the board made the largest ever recorded price increase.

In addition to accentuating the phenomenon of export instability, Bauer points to several other burdens on producers as a result of marketing board operations. These include the potential loss in income and what he calls an "under realisation factor" (5, p.403). These are summarised in tables 2 and 3.

Bauer points out that the f.o.b. costs shown in column 2 of table 2 contain government export taxes (per ton) and that this tax accounts for a substantial part of the difference between column 2 and column 1 of the Table. He also points out that export taxes reduce the Board's surpluses rather than diminishing producer prices directly, since the rate of export taxation is much influenced by the size of the Board's surpluses. He, however, correctly contends that both in its effects on the economy as a whole, and from the standpoint of the individual producer, an increase in export duty to transfer part of the surplus from a marketing board to the government is purely a paper transaction which substitutes one type of compulsory levy for another. He correctly maintains that column 5 of Table 2 shows the percentage by which producer prices in any one year could have been raised without drafts on reserves.

Bauer's other category of results are contained in table 3. These results introduce one factor in addition to export duty and surpluses which he regards as an additional burden to the producers. He calls this the "underrealization" factor. It is shown in columns 7, 8, and 18. This figure represents differences between market prices and the per unit sales proceeds realized by the Marketing Boards. He argues that where market prices regularly exceed sales proceeds per unit and producers must sell to the state monopolies this difference must also be considered when assessing the effects of state export monopoly on producers.

TABLE 2

SUMMARY OF THE OPERATIONS OF NIGERIAN MARKETING BOARDS
1947-1951

Country, Year and Commodity	Producer Price per Ton in £	f.o.b. cost per ton £	Average f.o.b. Price per ton in £	Surplus Including Interest per Ton in £	Surplus per Ton as % of Producer Price, i.e. (4) as % of (1)	Total Annual Surplus £ Million
	1	2	3	4	5	6
Gold Coast Cocoa						
1947-48	75	85	201	117	156	24.1
1948-49	121	139	136	-0.5	-0.5	-0.1
1949-50	84	110	178	71	86	18.0
1950-51	130	196	269	77	59	20.1
Nigerian cocoa						
1947-48	63	70	195	126	200	9.3
1948-49	120	135	138	8	7	0.8
1949-50	100	117	178	69	69	6.9
1950-51	120	173	268	102	85	11.2
Nigerian palm oil						
1949	40	52	68	16	40	2.5
1950	40	52	65	13	32	2.1
1951	52	65	83	18	35	2.3
Nigerian palm kernels						
1949	26	33	45	12	46	3.2
1950	26	34	41	8	31	2.9
1951	32	41	57	16	50	5.4
Nigerian groundnuts						
1949-50	21	35	48	13	62	3
1950-51	21	41	63	24	114	3.3
Nigerian cotton						
1949-50	37	43	82	39	105	1.2
1950-51	37	56	107	51	138	1.2

Source: Bauer P.T. Ibid p.395.

TABLE 3

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LEVIES ON THE PRODUCERS OF WEST AFRICAN EXPORTS UNDER STATE EXPORT MONOPOLY, 1939-1951 (£ PER TON)

Country & Commodity	Year	Producer Price (1)	Export Duty (2)	Export Duty as % of Producer Price (i.e. (2) as % of (1)) (3)	Surplus of Marketing Organization (4)	Surplus as % of Producer Price, i.e. (4) as % of (1) (5)	Net Sales Proceeds, i.e. (1)+(2)+(4) (6)	Under-realization (7)	Under-realization as % of Producer Price (7) (8)	Total Levies, i.e. (2)+(4)+(7) (9)[1]
Gold Coast										
Cocoa	1939/40-1950/51	46.7	7.2	15.0	27.5	59	81.4	3.0	6	37.7
	1947/48-1950/51	102.5	18.5	18	64.1	63	185.1	n.a.	n.a.	82.6
	1950/51	130.0	51.1	39	72.7	56	253.8	*	*	123.8
Nigeria Cocoa	1939/40-1950/51	47.9	6.0	13	31.6	66	85.5	3.0	6	97.6
	1947/48-1950/51	100.6	14.1	14	71.8	71	186.5	n.a.	n.a.	85.9
	1950/51	120.0	40.0	33	95.0	79	255.0	*	*	135.0
Nigeria Ground-nuts	1942/43-1949/50	14.0	1.5	11	5.6	40	21.1	16.3	116	23.4
	1947/48-1949/50	18.8	3.1	16	14.9	79	36.8	16.1	86	34.1
	1949/50	21.2	3.3	16	13.0	61	37.5	18.0	85	34.3
	1950/51	21.1	6.4	30	22.0	104	49.6	17.0	80	45.4
Nigeria Palm Kernels	1942-1950	14.5	1.2	8	3.9	27	19.6	12.6	87	17.7
	1947-1950	22.15	2.15	10	8.75	40	33.05	14.35	65	25.25
	1949-1950	26.0	2.55	10	9.75	37	38.3	10.75	41	23.65
	1951	32,0	5.3	17	14.2	44	51.5	15.0	47	34.5
NigerianFalm Oil	1943/1950	32.2	1.8	8	7.4	32	32.4	11.4	49	20.6
	1947-1950	34.0	2.9	9	14.8	44	51.7	12.9	38	30.6
	1949-1950	40.0	4.3	11	14.3	36	58.6	10.4	26	29.0
	1951	52.0	7.8	15	17.8	34	77.8	46.0	88	71.6

Sources: Bauer, P.T., Ibid. pp.399-400 -- amalgamated and slightly modified Tables 4 and 5

[1] This column is not in Bauer's original tables.

TABLE 3 -- Continued

Net Commercial Values, i.e. (6)+(7) (10)	Producer Price as % of Sales Proceeds, i.e. (1) as % of (6) (11)	Export Duty as % of Proceeds i.e. (2) as % of (6) (12)	Surplus as % of Sales Proceeds, i.e. (4) as % of (6) (13)	Duty & Surplus as % of Sales Proceeds, (2)+ (14)	Producer Prices as % of Commercial Values i.e. (11) as % of (10) (15)	Export Duty as % of Commercial Values. i.e. (2) as % of (10) (16)	Surplus as % of Commercial Values, i.e. (4) as % of (10) (17)	Under-Realization as % of Commercial Values (7) as % of (10) (18)	Total Levies as % of Commercial Values (9) as % of (10) (19)
84.4	57	9	34	43	55	9	33	4	45
185.1	55	10	35	45	55	10	35	n.a.	45
253.8	51	20	29	49	51	20	29	*	49
88.5	56	7	37	44	54	7	36	4	46
186.5	54	8	38	46	54	8	38	n.a.	46
255.0	47	16	37	53	47	16	37	*	53
37.4	66	7	27	34	37	4	15	44	63
52.9	51	8	40	49	36	6	28	30	64
55.5	57	9	35	43	38	6	23	32	62
66.6	43	13	44	57	32	10	33	26	68
32.2	74	6	20	26	45	4	12	39	55
47.4	67	7	26	33	47	5	18	30	53
49.05	68	7	25	32	53	5	20	22	47
66.5	62	10	28	38	48	8	21	23	52
43.8	72	6	23	28	53	4	17	26	47
64.6	66	6	29	34	53	4	23	20	47
69.0	68	7	24	32	58	6	21	15	42
123.6	67	10	23	33	42	6	14	37	58

Ogunsheye (15) contended that Bauer's methodology was faulty and so he went ahead to re-appraise the record of the marketing boards in Nigeria between 1947 and 1960 with respect to price and income stabilisation. He used the Coppock - type (9) log - variance method in his calculation of indices. Indices yielded by this method provide de-trended approximations of the average year to year variations. Indices of fluctuations were computed for world market prices and producer prices of cocoa, groundnuts, palm oil, palm kernels and cotton. The results are summarised in table 4.

TABLE 4

Indices of Fluctuations of Prices of West African Produce[1]

Commodity	Country	Period	Index of Fluctuations World Price	Index of Fluctuations Producer Price	Index of Fluctuations Port Price	Percentage Difference[2]
1	2	3	4	5	6	(4)-(5)
Cocoa	Gold Coast	1924-1940		57.5		
Cocoa	Nigeria	1924-1940		45		
Cocoa	Ghana	1947-48/1959-60	Accra f.o.b. 35.8	27.7		+ 22.6
Cocoa	Nigeria	1947-48/1959-60	Lagos f.o.b. 37.9	27.7	27.7	+ 26.9
Cocoa	Ivory Coast	1949-50/1959-60	Le Havre 37.7	50.1		- 32.9
Groundnuts	Nigeria	1949-50/1959-60	U.K. ports 18.2	18.8	17.8	+ 3.3
Groundnuts	Senegal	1949-50/1959-60	French ports 9.4	18.8		-100
Palm Oil	Nigeria	1949-50/1959-60	U.K. ports 16.2	14	13.5	+ 13.6
Palm Kernels	Nigeria	1949-50/1959-60	U.K. ports 38.5	8.5	8.2	+ 77.9
Cotton	Nigeria	1949-50/1959-60	U.K. ports 14.8	12.5		+ 15.5

1. The indices measure de-trended average year to year variations.

2. A + sign denotes stabilisation;
   A - sign denotes destabilisation.

Source: Olunsheye, Ibid. p.134

From these results, Ogunsheye concludes that:

(i) Marketing boards were most successful in reducing the price instability of palm Kernels; this instability having been reduced on the average by 80%;

(ii) For cocoa, the boards in Ghana and Nigeria reduced instability of producer prices by 20% and 25% respectively;

(iii) For palm oil and cotton, the Nigerian Boards reduced fluctuations by 14.3% and 16.6% respectively.

(iv) For groundnuts, the Nigerian Marketing Boards were ineffective either way; in Senegal and Ivory Coast, the Marketing Boards seem to have accentuated the instability of producer prices.

In the case of income stability Ogunsheye compared the fluctuations in net proceeds of the marketing boards with the fluctuations in producer money incomes on the one hand and producers' real income on the other. The results are shown in table 5.

TABLE 5

Indices of Fluctuations in the Incomes of Producers, Nigeria

Commodity	Net Marketing Board Proceeds	Producers' Money Income	Producers' Real Income
Cocoa	24	44.0	28.4
Groundnuts	63.9	82.0	92.4
Palm Oil	18.3	12.2	19.3
Palm Kernels	18.7	14.6	13.0

Source: Ogunsheye, Ibid. p.135

From the results in table 5, Ogunsheye concludes that:

(i) For palm Kernels, the boards stabilised farmer money and real incomes;

(ii) For palm oil, the boards neither stabilised nor destabilised money or real producer incomes;

(iii) For cocoa and groundnuts the average fluctuation in the money and real incomes of producers seem to have been accentuated by marketing board operations.

Adamu (3) uses the same data as Ogunsheye (15) and Helleiner (11) in testing hypotheses about price and money income. Firstly he considers producer prices and export prices as two populations; each with alternative F and t distributions and, equal variance in each of the alternative distributions. As a decision rule, he postulates that if stabilisation policy of the boards was effective, there would be significant difference in the estimated variances of the two populations. The same procedure was adopted for producer money incomes and marketing board proceeds (Gross and Net) as a measure of the effectiveness of the boards to stabilise producers' incomes.

In his methodology, Adamu fits a regression line of the form $A_t = a_o + a_1X_1 + \text{---} + a_qX_q$ as a predictor of V_t (t = 1947/48, --- 1961/62), the observation in each of the populations. At a second stage, he adjusts each V_t in the series by the expression

$\sigma^2 = \frac{1}{n-q} \Sigma(V_t - A_t)^2$, where n-q is the degrees of freedom of

the estimate (the estimate here being the variance). After adjusting each observation, he then redefines the systematic component of the measures by fitting a regression line on the adjusted series in each population and then estimating its variance. Call this S^2, then an index I_t is calculated for each corresponding pair of S^2 measures in the populations, t = 1947/48 —→ 1961/62 (e.g. if S_1^2 is the variation of the 1950/51 world price observation and S_2^2 thevariation of the 1950/51 producer price observation, then $I = S_1^2/S_2^2$. The same operation applies to the 1950/51 producer income and export income populations. I_t is assumed to have an F distribution with n - q degrees of freedom. The f - test is then used by comparing the calculated value of F with the tabulated F for specific value of type 1 error. If the calculated value is higher than the tabulated value, Adamu would conclude that there is significant difference between the two variances S_1^2 and S_2^2. And this would imply that the marketing board's policy of price stabilisation was effective and vice versa.

The major results of Adamu's exercise are presented in tables 6, 7, 8 and 9. Using Ogunsheye's data (15) he obtains the results in tables 6, 8 and 9. Using Helleiner's data (11) he obtains the results in table 7.

TABLE 6

Analysis of the price data

	Test for Means			Test for stability									
				Unadjusted			Fitting linear trend						Final Results
	Mean Price £/ton	d.f	t	S_1^2	d.f.	F	S_2^2	d.f	F	S^2	d.f	F	Trend fitted
Cocoa W	227.62			4750.83	12		4481.32	11		3659.13	10		quadratic
Pr	142.37	24.	5.05**	1444.70	12	5.29*	1034.43	11	4.33*	380.66	10	9.6**	quadratic
G.Nut W	72.06			129.65	11		142.68	10		129.65	11		no trend
Pr	37.44	21	8.11**	78.03	10	1.51	24.58	9	5.80**	24.58	9	5.27	Linear
Kernel w	57.42			176.45	11		188.37	10		176.45	11		no trend
Pr	28.57	22	7.35**	8.56	11	20.61**	9.40	10	20.07**	8.56	11	20.61	no trend
P. Oil w	80.50			92.27	11		96.80	10		92.27	11		no trend
Pr	46.94	22	9.85	46.55	11	1.96	50.12	10	1.93	46.55	11	1.98	no trend
	pence/lb												
Cotton w	6.88			2.78	10		0.56	9		0.56	9		linear
Pr	5.50	20	2.51**	0.55	10	5.05**	0.34	9	1.65	0.34	9	1.65	linear

Definitions: * Significant at 5% level only. ** Significant at 1% level
d.f degrees of freedom
t calculated value of 't' for 't' test
S_1^2 estimated variance for unadjusted data
S_2^2 estimated variance after fitting a linear trend
S^2 estimated variance finally used
F calculated value of F for F' test
W World market price
Pr Producer price

Source: Adamu, Ibid. p.334.

TABLE 7

Analysis of the price data[1]

	Test for Means			Test for stability									
				Unadjusted									Final Result
	Mean Price £ Per ton	d.f	t	S_1^2	d.f	F	S_2^2	d.f	F	S^2	d.f	F	Trend Fitted
Cocoa w	216.81		**	4244.44		*	4559.90	13		2815.24	12	**	quadratic
Pr	142.58	28	3.85	1387.26	14	3.06	1373.74	13	3.32*	389.59	12	7.23	quadratic
G. Nut w	42.93		**	49.99	14	not sig	50.85	12		49.99	13	*	no trend
Pr	30.03	26	4.37	52.56	13		15.12	12	3.37*	15.12	12	3.31	Linear
Kernel w	42.44		**	50.45		*	54.16	12		50.45	13		no trend
Pr	29.64	26	5.96	14.40	13	3.50	14.74	12	3.67*	14.40	13	3.50	no trend
P. Oil w	61.29		**	115.60	13		123.46	12		111.32	11		quadratic
Pr	51.86	26	2.22	113.26	13	1.02	121.20	12	1.02	57.60	11	1.93	quadratic
Cotton w	72.62		**	272.39	11	**	90.04	10		90.04	10		linear
Pr	52.82	22	3.97	52.82	11	5.18	32.27	10	2.82	32.27	10	2.82	linear

1. See note under table 6.

Source: Adamu, Ibid. p.335

TABLE 8

Analysis of the income data (PPI v. API)[1,2]

	Test for Means			Test for stability									
				Unadjusted			Fitting linear trend						Final Result
	Mean	d.f.	t	S_1^2	d.f	F	S_2^2	d.f	F	S^2	d.f	F	Trend Fitted
	£m												
Cocoa PPI	24.20	28	3.53**	41.81	14	1.40	32.32	13	2.05	21.03	12	3.68**	quadratic
API	16.49			29.84	14		15.79	13		5.71	12		quadratic
G.Nut PPI	17.74	26	1.76	40.44	13	not	16.995	12	1.41	16.995	12	1.41	linear
API	13.32		**	47.78	13	sig	12.03	12		12.03	12		linear
Kernel PPI	16.21	28	3.53	15.88	14	1.74	13.15	13	1.80	8.89	12	3.35*	quadratic
API	11.65		*	9.15	14		7.32	13		2.65	12	not	quadratic
P. Oil PPI	10.27	28	2.16	6.43	14	not	6.46	13	not sig	2.98	12		quadratic
API	8.09			8.85	14	sig	9.02	13		4.38	12	sig	quadratic
Cotton PPI	5.48	22	1.57	2.49	11	not	2.04	10	not sig	2.04	10	not	linear
API	4.27			4.66	11	sig	2.10	10		2.10	10	sig	linear

1. See notes under table
2. P.P.I. = Potential producer Income;
   API = Actual producer income

Source: Adamu, Ibid., p. 335.

TABLE 9

Analysis of the income data (NMBP v. API)[1,2]

	Test for Means			Test for stability									
				Unadjusted			Fitting linear trend						Final Result
	Mean	d.f	t	S_1^2	d.f	F	S_2^2	d.f	F	S^2	d.f	F	Trend fitted
Cocoa NmBP	19.90	28	1.91	18.14	14	not sig	13.16	13	not sig	13.16	13	2.30	linear
API	16.49			29.84	14		15.79	13		5.71	12		quadratic
G.Nut NmBP	15.43	26	0.90	29.01	13	not sig	12.82	12	1.07	12.82	12	1.07	linear
API	13.32			47.78	13		12.03	12		12.03	12		linear
Kernel NmBP	14.41	28	2.36*	11.29	14	1.23	10.16	13	1.39	8.14	12	3.07*	quadratic
API	11.65			9.15	14		7.32	13		2.65	12		quadratic
P. Oil NmBP	9.82	28	1.48	4.68	14	not sig	4.78	13	not sig	2.55	12	not sig	quadratic
API	8.09		8.85	8.85	14		9.02	13		4.38	12		quadratic
Cotton NmBP	4.78	22	0.68	2.03	11	not sig	2.15	10	1.02	2.03	10	not sig	linear
API	4.27			4.66	11		2.10	10		2.10	10		linear

1. NMBP = Net marketing Board Proceeds
   API = Actual Producer Incomes
2. See notes under table.

Source: Adamu, Ibid. p.336.

From these results, Adamu concludes that only in the case of palm Kernels does the marketing system seem to have stabilised both prices and income. Furthermore, in the case of groundnuts, price stability was accompanied by income instability and in the case of Palm Oil and Cotton, both price and income were destabilised.

Grene (10) computed indices of producer prices and of (f.o.b. Accra) export prices for the period 1947/8 to 1958/59. In his approach, this observation period was divided into two sub-periods (1947/48 to 1952/53; and 1952/53 to 1958/59) and average annual percentage changes were calculated for each sub period and for each price series (i.e. export and producer price series). The results are shown in table 10.

TABLE IO

Average Percentage Changes in Cocoa Prices in Ghana

(Formerly Gold Coast)

Period	Producer Price	f.o.b. Accra Export Prices
1947/48 - 1952/53	44	23
1952/53 - 1958/59	8	37

Source: Gree, Ibid.

Green, therefore, concluded like Bauer did that the board destabilised prices during the 1947/48 - 1952/53 period but reached the opposite conclusion with respect to the 1952/53 - 1958/59 period.

Gerald K. Helleiner (11) studied the price-income instability in relation to various Marketing Board exports in Nigeria. He used two indices of instability: (i) average annual percentage change and (ii) average annual percentage deviation from a five-year centered moving average. The results he obtained on price and income stability are tabulated in Tables 11 and 12. From table 11, he observes that the average year-to-year percentage change (I_1) in money producer prices of cocoa (14.2%) was considerably lower than that in world prices (22.5%). The average deviation from the moving average (I_2) was also far less for money producer prices (10.4%) than for world prices (21.6%). The other crops (palm oil, palm kernels, groundnuts and cotton) experienced even

TABLE 11

MEASURES OF INSTABILITY OF PRICES OF MAJOR NIGERIAN MARKETING BOARD EXPORTS

	Money Producer Price		Implicit World Price		Real Producer Price	
	I_1 Average Annual Change %	I_2 Average Annual Deviation %	I_1 Average Annual Change %	I_2 Average Annual Deviation %	I_1 Average Annual Change %	I_2 Average Annual Deviation %
Cocoa (1947-48 to 1961-62)	14.2	10.4	22.5	23.8	16.4	10.3
Groundnuts (1949-50 to 1961-62)	7.6	7.9	20.6	11.1	12.9	8.8
Palm Oil (1949 to 1961)	7.9	5.3	12.7	11.6	9.5	4.9
Palm Kernels (1949 to 1961)	4.2	4.1	12.4	11.8	4.3	3.4
(1949-50 to 1960-61)	3.8	5.6	10.6	7.8	11.6	4.2

Source: Helleiner, Gerald, Ibid.

TABLE 12

MEASURES OF INSTABILITY OF INCOMES FROM MAJOR NIGERIAN MARKETING BOARD EXPORTS? BY CROP

	Producers' Actual Money Income		Producers' Potential Money Income		Producers' Actual Real Income	
	I_1 Average Annual Change %	I_2 Average Annual Deviation %	I_1 Average Annual Change %	I_2 Average Annual Deviation %	I_1 Average Annual Change %	I_2 Average Annual Deviation %
Cocoa (1947-48 to 1961-62)	23.1	14.4	18.9	17.0	21.7	14.0
Groundnuts (1949-50 to 1960-61)	29.9	24.9	27.8	19.9	31.1	22.4
Palm Oil (1949 to 1961)	11.6	14.5	13.4	10.4	15.9	11.0
Palm Kernels (1949 to 1961)	8.8	8.6	15.9	10.6	13.0	8.2
Cotton (19-50 to 1960-61)	26.3	21.0	22.6	13.9	32.2	22.0

Source: Helleiner, Gerald, Ibid.

more producer price stability than cocoa.

From Table 12, he notices that the Marketing Boards have, on balance, been relatively ineffective in their pursuit of the objective of stable producer incomes (whether money or real) from exported agricultural produce. With the exception of income from palm kernel, producer income would not have been more unstable had the Nigerian Marketing Boards not been set up. He then concludes that contrary to expectations, success with producer price stabilization has not brought with it success with producer income stabilisation.

The United Nations economic organs have also always been interested in the Operations of East and West African Export Monopoly boards. A Food and Agricultural Organisation sponsored study (1) covered, among other things, the price and income stabilisation role of marketing boards in the cocoa industries of Ghana and Nigeria. The results of this study are presented in Figs. 1 and 2. They show that in Ghana, the Cocoa Marketing Board succeeded in stabilizing producer prices to a great degree. However, what is also shown is one often-overlooked fact, that export taxes, rather than the Board's trading surpluses, exerted the greatest influence on the stability of producer price. In Fig 1, it is also seen that producer prices have been more stable in Ghana than in Nigeria.

East Africa

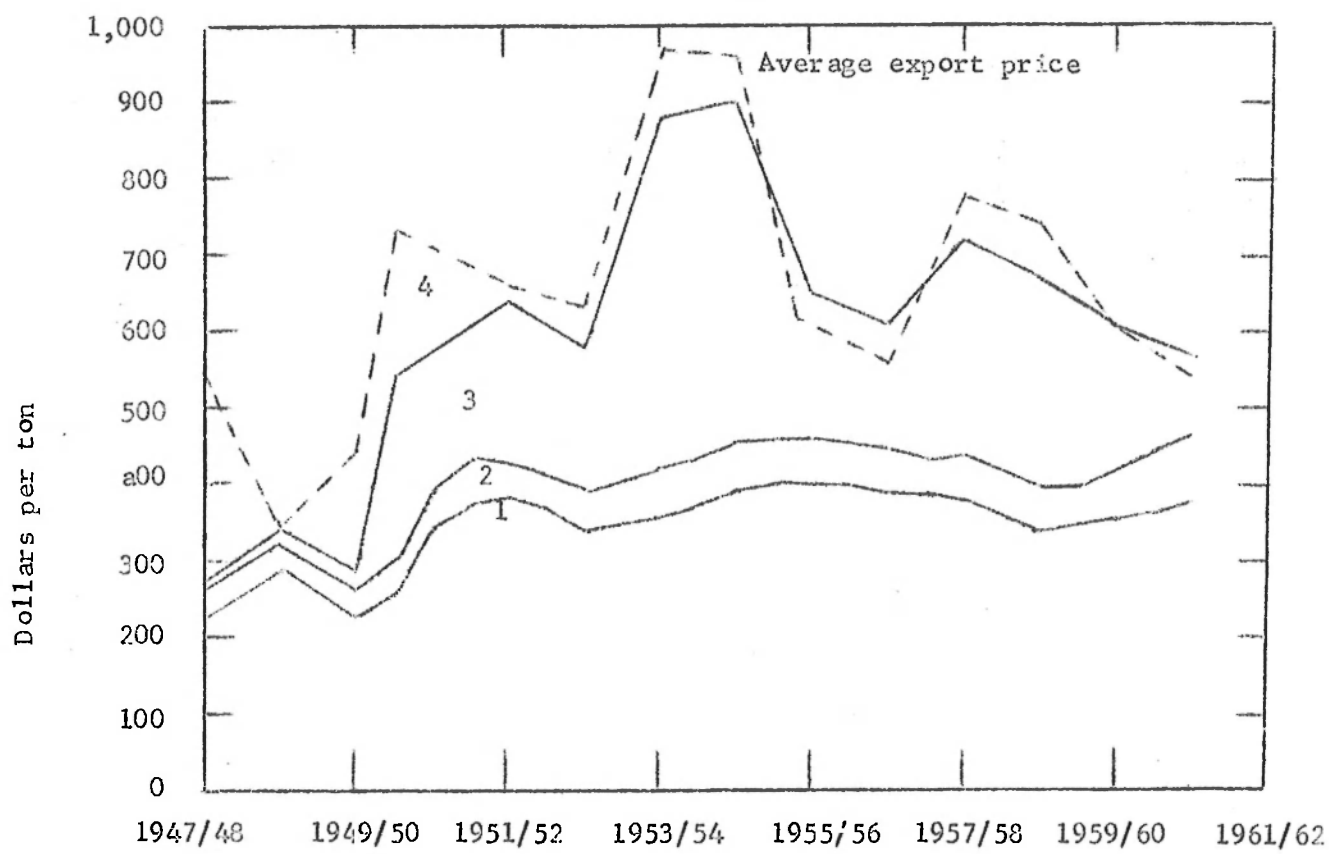
A notable study of the stabilization role of marketing boards was undertaken in Uganda by A. McBean (14). He analyzed empirically the instability of Uganda's coffee and cotton export proceeds, producers' income and export unit prices. His results are tabulated in Table 13.

From his data and analysis, the average instability for coffee growers' income was 19.6% (using annual percentage deviation from trend), while the corresponding figure for coffee export earnings is 16.6%. The use of annual percentage change gave 28% and 23.5% instability for coffee producers' incomes and export earnings respectively.

In the case of cotton, average annual percentage change yielded an instability of 16.6% for incomes and 19.0% for export proceeds. Use of average annual deviations from trend resulted in instabilities of 13.6%

FIG.1

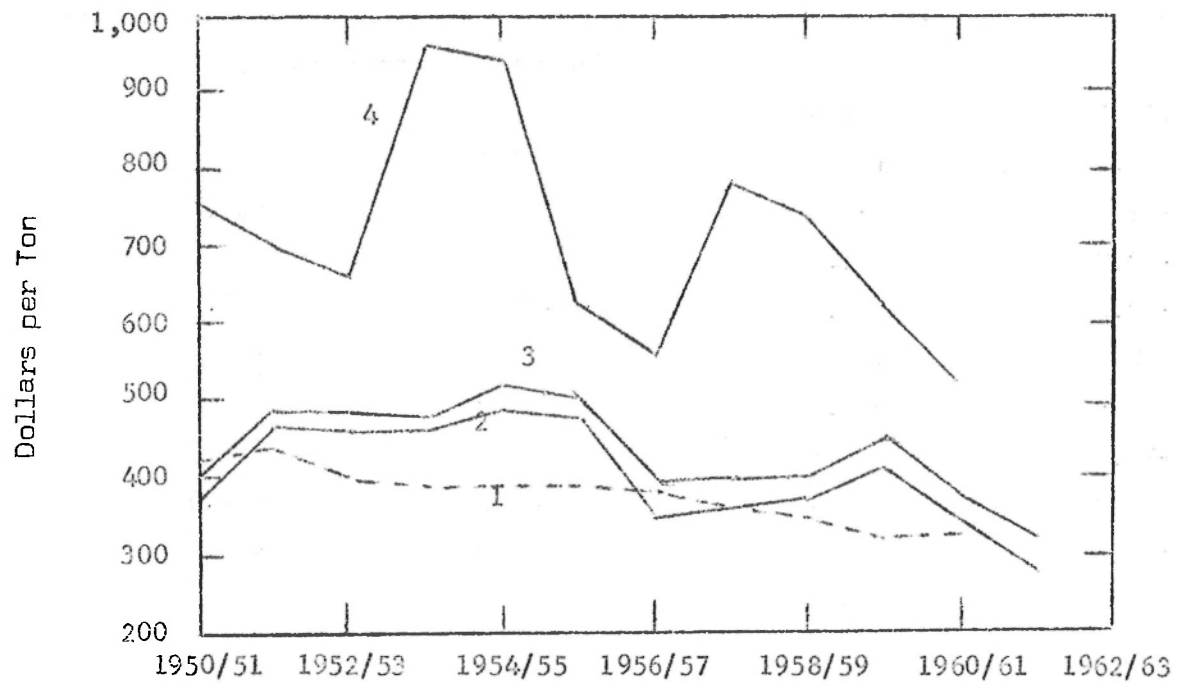
PRODUCER PRICE OF COCOA IN GHANA IN RELATION TO EXPORT TAXES, EXPORT PRICES AND MARKETING COSTS, 1947/48 TO 1960/61



1 = Producer Price per ton
2 = Marketing Costs per ton
3 = Export Duty
4 = Marketing Board Surplus/Deficit per ton

FIG.2

PRODUCER PRICES FOR COCOA, GHANA AND NIGERIA, COMPARED WITH EXPORT PRICES, 1950/51 TO 1961/62



1 = Ghana Average Producer Price
2 = Nigeria Producer Price, Grade II
3 = Nigeria Producer Price, Grade I
4 = Ghanaian Export Price (weighted Average).

TABLE 13

UGANDA COTTON EXPORT PROCEEDS AND PRODUCERS' INCOME

1948-1961

Million £

Year	Exports	Incomes	Percentage Change in Exports	Percentage Change in Incomes	% Deviation in Exports	% Deviation in Incomes
1948	7.5	1.8			From 5-year moving average	
1949	17.3	7.0	+56.6	+74.3		
1950	16.7	7.6	-3.5	+ 7.9	-16.5	-3.8
1951	28.8	10.7	+42.0	+29.0	+31.5	+12.6
1952	29.9	12.3	+ 3.7	+13.0	+32.3	+12.9
1953	16.8	10.7	-43.8	-13.0	-25.7	- 9.3
1954	20.9	13.3	+19.6	+19.5	+ 1.5	+ 9.0
1955	16.4	11.9	-21.5	-10.5	- 9.9	- 4.8
1956	19.3	13.0	+15.0	+ 8.5	+ 4.9	0
1957	17.5	13.5	- 9.3	+ 3.7	+ 1.2	+ 6.3
1958	18.1	13.2	+ 3.3	- 2.2	+ 6.5	+ 5.6
1959	15.4	12.1	-14.9	- 8.3	- 6.7	- 3.2
1960	14.9	10.9	- 3.2	- 9.9		
1961	16.7	12.9	+10.8	+15.5		
Average (ignoring sign)			19.0	16.6	13.8	6.8

Source: A. McBean, Ibid., p. 143.

and 6.8% for exports and incomes respectively.

He concludes, therefore, that whereas the Lint Marketing Board has had some success in moderating fluctuations, the Coffee Marketing Board did the opposite. The study, however, does not address itself to the stability of producer prices vis a vis world market prices.

Brown (6) tried, among other things, to assess the effect of the Malawi Farmers' Marketing Board on price and income stability of cotton, groundnuts and tobacco farmers. His results are summarized in Tables 14 and 15.

It is observed that farmers' weighted average and grade prices for seed cotton and groundnuts have experienced prolonged periods of constancy in the face of fluctuating export prices. On the other hand, tobacco prices are not equally stable. He attributes the fluctuations in the weighted average prices of fire-cured (Northern) tobacco not to the Board's inability to absorb world market price fluctuations, but to changes in quality due to natural phenomena beyond the farmer's control, changes in grading standards and grading inefficiencies.

Concluding Remarks

The recent empirical evidence attesting to the risk averseness of African farmers (18) raises further interest in the microeconomic implications of export instability and domestic stabilisation measures as executed by export Monopoly and Price stabilising Boards. From the foregoing review, a number of issues stand out. Firstly, we must observe that there is no general concensus regarding the success or failure of marketing board operations in stabilising either prices or incomes. The only notable exception here is palm Kernels where all researchers agree that both prices and incomes have been relatively stable. In most of the West African studies, the data used is the same but different results are arrived at as a result of differences in methodologies employed in data analysis. The methodology employed has ranged from Bauer's non rigorous comparison on a yearly basis of annual percentage changes in producer and export income series to Adamu's statistical analysis of variance. Which

TABLE 14

FARMER, DOMESTIC AND EXPORT PRICES: 1956-1966

Pence Per Pound

	Seed Cotton		Cotton Lint		Groundnuts			Tobacco		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Grade 1 Purchase Price	Weighted Average Purchase Price	Export Price (Weighted Average) f.o.b. Beira Grade 1	Purchase Price	Weighted Average Purchase Price	Export Price Weighted Average	Purchase Price Weighted Average	% of Change	Auction Price Limbe Weighted Average	% of Change
1956	5.0	3.84	28.87	4.0		6.59	9.26	+1.3	17.10	-11.6
1957	6.0	5.06	27.82	4.0	3.98	7.00	11.01	+18.9	19.04	+11.3
1958	6.0	5.28	24.83	4.0	3.98	6.87	11.64	+ 5.7	15.63	-17.9
1959	6.0	5.57	23.69	4.0	4.00	6.27	7.39	-36.6	10.42	-33.3
1960	6.0	5.45	24.58	$4\frac{1}{2}$-$5\frac{1}{2}$	4.99	7.16	6.58	-11.0	16.04	+53.9
1961	6.0	5.42	25.93	$3\frac{1}{2}$-$5\frac{1}{2}$	4.82	6.74	9.15	+39.0	20.24	+26.2
1962	6.5	5.76	25.46	$3\frac{1}{2}$-$5\frac{1}{2}$	4.99	5.93	11.90	+30.0	19.95	- 1.4
1963	6.5	5.76	26.10	4-5	4.61	6.52	9.88	-17.0	17.53	-12.2
1964	6.5	6.14	25.56	$4\frac{1}{2}$-5	4.73	7.80	9.74	- 1.4	19.46	+11.0
1965	6.5	5.98	24.28	5.0	5.00	8.64	11.45	+17.6	19.91	+ 2.3
1966	6.0	5.18	23.10	6.0	5.83	8.10	11.03	-3.7	20.23	+ 1.6
1967	6.0	4.92	23.17	6.0	5.95	6.66	10.92	-1.0	14.04	-30.0

Source. Brown, C.P., Ibid ., p. 39.

TABLE 15

FARMER AND MARKETING BOARD RECEIPTS
1957 - 1966

(£'000)

Year	Cotton						Gro		
	Farmer Receipts	% Change	MB Receipts		%Change		Farmer Receipts	% Change	
			a	b	a	b			a
1956	104	--	233	231(c)	--	--	--	--	--
1957	181	+74.0	294	293(c)	+26.2	+26.8	460	--	808
1958	243	+34.2	369	333(c)	+12.6	+13.6	426	-7.4	631
1959	466	+91.8	640	661(c)	+73.4	+98.5	428	+0.5	708
1960	569	+12.1	828	451(c)	+29.4	-31.8	858	+100.0	1,237
1961	538	- 5.5	816	758	- 1.5	+68.1	1,049	+22.3	1,375
1962	914(d)	+70.0	1,311	957	+60.7	+26.2	1,504(d)	+43.4	1,762
1963	510(d)	-44.3	807	1,272	-38.4	+33.3	1,062(d)	-29.4	1,552
1964	763	+49.6	1,010	902	+25.0	-29.1	768	-27.7	1,259
1965	1,126	+47.7	1,556	1,214	+54.2	+34.5	1,050	+36.6	1,942
1966	641	-44.0	947	1,242	-39.1	+ 2.3	2,260	+115.3	2,971
1967	534	-15.4	949	880	+ 0.2	-29.2	2,360	+ 4.4	2,896

Summary:		Cotton	Groundnuts	Tobacco
	Average Fluctuation in Farmer Receipts, 1960-67 -	37.3%	47.7%	50.2%
	Average Fluctuation in Boards Receipts, Adjusted-	29.3%	42.8%	28.2%
	Unadjusted-	31.1%	31.9%	33.6%

Source: Brown, C.P., Ibid., pp. 40, 41.

TABLE 15:--- Continued.

Groundnuts					Tobacco			
MB Receipts	% Change		Farmer Receipts	% Change	MB Receipts		% Change	
b	a	b			a	b	a	b
--	--	--	864	--	1,557	1,557(c)	--	--
808(c)	--	--	1,020	+08.0	1,748	1,748(c)	+12.3	+12.3
422(c)	-21.9	-47.8	1,283	+25.8	1,734	1,734(c)	-0.9	-0.9
854(c)	+12.0	+111.8	928	-27.7	1,093	1,093(c)	+37.0	-37.0
1,172(c)	+75.0	+ 31.0	673	-27.6	1,375	1,375(c)	+25.9	+25.9
986	+11.2	- 15.9	578	-14.0	1,167	1,167	-15.11	-15.1
1,831	+28.1	+ 85.9	1,150(d)	+99.0	1,884	1,884	+61.4	+61.4
1,714	-11.9	- 6.5	1,437(d)	+25.0	2,347	2.059	+24.6	+ 9.3
1,504	-18.9	- 12.3	768	-46.7	1,812	2.100	-22.8	+ 2.0
1,708	+54.2	+11.4	1,925	+150.8	3,106	3,106	+71.4	+47.9
1,356	+53.0	-20.7	1,422	-26.1	2,412	2.372	-22.3	-23.7
3,504	- 2.5	+158.4	1,601	+12.6	1,798	1,450	-25.5	-39.9

technique is appropriate, of course, depends on what type of data there is to work with. Unfortunately, it also tends to depend on the academic background of the scholars.

A second important point that emerges from the review is the simultaneous nature of targets. As Helleiner (11) observed, stabilising one target variable, may undesirably destabilise another. This underlines the necessity to develope a multiple target simultaneous policy model within which to design and execute policy. In the context of price and income stabilisation of various crops, the design of such a model would invariably entail the analysis and specification of underlying price-supply relationships, This point brings us to what this researcher thinks has been the weakest aspect / of the studies reviewed. These studies implicitly assume a zero elasticity of supply so that "potential producer income" is always regarded as either gross or net marketing board proceeds. This is unsatisfactory as any other sample of producer prices apart from the observed one would change production patterns (in the light of positive supply response) and therefore, potential producer income would be neither gross nor net observed marketing board proceeds. Furthermore, if any of the countries concerned is a dominant supplier of the commodity on the world market (as in the case of Ghanaian Cocoa) then changes in producer prices will not only affect supply but are also likely to affect export prices. In the case of increases in producer prices, the resultant positive output effect (and therefore potential producer income effect) may be neutralised by declining export prices due to increased supply and vice versa. In this respect also, marketing Board proceeds would be an incorrect measure of potential producer incomes.

Export taxation and the accumulation of surpluses by export monopoly boards per se is not something to be critical about. As noted earlier, their virtue depends on what the policy goals are. Nevertheless, controversy has also traditionally centered on the use to which marketing board trading surpluses have been put. In this connection, we sight Walker and Ehrlich (17) and Helleiner (12).

Helleiner studied the marketing board problem in Nigeria in the context of their fiscal role. His conclusion is that the fiscal role of the boards has been vital in Nigeria's economic development.

David Walker and Cyril Ehrlich, in their study of marketing boards in Uganda, were interested not in their stabilization of prices and incomes, but in the disposal of trading surpluses. They contend that a greater proportion of these funds was used for consumption rather than investment purposes by the government, contrary to the spirit in which the fund was established. These studies, however, underscore the necessity to undertake far reaching cost - benefit analysis exercises before reaching any qualitative conclusions as to whether or not marketing board trading surpluses were optimally appropriated.

Footnotes

1. See in particular (1).

2. For the essential ingredients of the operation of boards in each category, again see (1)

3. See for example the positions taken by Coppock (9) and MacBean (14) on the one hand and Schiavo-Campo (16) on the other. The former contend that it is difficult to associate factors such as size of the country, geographic concentration etc. in any general way with instability. The latter, on the other hand found statistically significant relationships between instability, economic size and other structural factors.

4. See the diverging positions represented in (7), (9) and (14). The Coppock studies (9) reveal a weak adverse association between indices of instability and selected macroeconomic variables (growth performance indicators). On the other hand MacBean's results (14) show that no such adverse relationship can be established. Then the Caine-Hirschman thesis (7) and (13) is that export instability, far from being disruptive, may in fact be benefitial as it may induce adaptations and innovative economic responses which may stimulate economic growth.

REFERENCES

1. Abbot, J.C. and Creupelandt Agricultural Marketing Boards: Their Establishment and Operations. Rome: F.A.O. Marketing Guide No. 5, 1966.

2. Acquah, Paul. A Macroeconometric Analysis of Export Instability in Economic Growth (the Case of Ghana and the World Cocoa Market). Unpublished Ph.D. Dissertation, University of Pennsylvania, 1972.

3. Adamu, S.O. "On the Stabilisation Policy of the Marketing Boards in Nigeria, 1948-1962" Nigerian Journal of Economic and Social Studies, Vol. 12 No. 3, November 1970.

4. Bauer, P.T. West African Trade, Cambridge Cambridge,University Press 1954.

5. _____, Dissent on Development: Studies and Debates in Development Economics. Cambridge Mass. Harvard University Press, 1972.

6. Brown, C.P. "The Malawi Farmers' Marketing Board". Eastern Africa Economics Review Vol. 2 Nol 1, June 1970.

7. Caine, Sir Sidney. "Instability of Primary Produce Prices - A Protest and a Proposal." Economic Journal, Vol. LXIV, September 1954.

8. _____, "Stabilising Commodity Prices" Foreign Affairs, Vol. 37 No. 1, October 1958.

9. Coppock, J.D. International Economic Instability. (New York: McGraw Hill, 1962).

10. Green, R. H. The Economic Bulletin Vol 5, No. 1 pp. 16-32.

11. Helleiner, G. "Marketing Boards and Domestic Stabilisation in Nigeiria" Review of Economics and Statistics, Vol. 48 No.1, 1966.

12. _____, G. "The Fiscal Role of the Marketing Boards in Nigerian Economic Development" Economic Journal, Vol. 74, 1964.

13. Hirschman, Albert. "Stabilisation and Development of Primary Producing Countries: A Comment" Kyklos Vol. XII, Fasc 3, 1959.

14. McBean, A. Export Instability and Economic Development, London. George Allen and Unwin, 1966.

15. Ogunsheye, Ayo. "Marketing Boards and the Stabilisation of Producer Prices and Incomes in Nigeria". The Nigerian Journal of Economic and Social Studies, Vol 7, No. 2, 1965.

16. Schiavo-Campo and Erb, Guy. "Export Instability, Level of Development and Economic Size of Less Developed Countries", Bulletin of the Oxford University Institute of Economics and Statistics, November, 1969.

17. Walker, D. and Ehrlich, Cyril. "Stabilisation and Development Policy in Uganda : An Appraisal" Kyklos, Vol XII, Fasc 3, 1959.

18. **Wolgin,** Jerome. Farmer Response to Price in Smallholder Agriculture in Kenya: An Expected Utility Model. Yale University, Unpublished Ph.D. Dissertation, 1973.