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AGRICULTURAL POLICY ANALYSIS PROJECT, PHASE II

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THE ROLE OF COFFEE EXPORTS IN THE COSTA RICAN ECONOMY

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ACRONYMS

ICA	International Coffee Agreement
RMSD	Root Mean Square Deviation
MAD	Mean Absolute Deviation
USDA	United States Department of Agriculture
GDP	Gross Domestic Product
IFS	International Financial Statistics
IMF	International Monetary Fund

ABSTRACT

Export diversification has the potential to stabilize export earnings, but if Costa Rica had diversified away from coffee and bananas in favor of the next largest exports, earnings would have been more volatile than actual earnings in recent years. Unilateral relaxation of coffee export controls would benefit Costa Rica, but liberalization by all coffee exporting countries would be harmful due to a reduction in the coffee price. Costa Rica has been harmed by the International Coffee Agreement as the loss in export volume has exceeded the increase in the coffee price.

EXECUTIVE SUMMARY

The paper analyzes three issues related to Costa Rican coffee exports: (1) How does export concentration affect the stability of foreign exchange earnings? (2) How will trade liberalization by coffee importers and exporters affect coffee export earnings? (3) What is the effect of the International Coffee Agreement on Costa Rican coffee exports?

Although export diversification has the potential to stabilize earnings, some diversification schemes would be counterproductive. For Costa Rica diversifying away from coffee and bananas in favor of the next largest exports would have destabilized export earnings relative to their actual values.

Costa Rica would benefit from trade liberalization by coffee importers, but the gains would be small because current tariff rates are low. Relaxation of export restraints by all coffee exporters would be harmful to Costa Rica, but unilateral liberalization would be beneficial. The opposite results are attributable to a large price reduction that would occur when all exporters act, that would be absent when Costa Rica acts alone.

Costa Rica has been harmed by the export quota provisions of the International Coffee Agreement (ICA) which have favored Brazil and Colombia. During periods when quotas have been in effect, Costa Rica has gained less from selling at premium prices in member countries than they have lost from selling at discount prices in non-member countries. In absence of major reform of the ICA, Costa Rica is likely to be harmed in the future by a return to the quota system.

1. INTRODUCTION

The coffee industry plays an important role in the Costa Rican economy. However, some critics have claimed that reliance on coffee is excessive, and greater diversification of production and exports would enhance economic development in the country. Several issues related to the economics of the coffee sector will be analyzed. One is the effect of greater diversification on the volatility of export earnings. A second issue is the effect of trade liberalization by both coffee importers and exporters. Trade liberalization for tropical agricultural products is being discussed in the current Uruguay Round of trade negotiations. A third issue is the effect of the International Coffee Agreement on Costa Rica and other member countries. Disagreement among members led to suspension of export quotas and a prescribed price range in July 1989, and the future of the Agreement remains an open question (Pomar).

2. EXPORT CONCENTRATION

Like those of many low income countries, the exports of Costa Rica are concentrated among a small number of primary products. Coffee has been the major export, and in most years coffee plus bananas have accounted for most of the country's foreign exchange earnings. For example, in 1986 coffee's share of total export earnings was 35 percent and the share for bananas was 19.4 percent (See Table 3). Sugar and beef exports earned an additional 7.2 percent of total export revenue. Thus, two products accounted for 54.4 percent of total earnings, and four products were responsible for 61.6 percent of total exports. In one sense this pattern of specialization simply reflects the comparative advantage of the Costa Rican economy. However, the high degree of specialization makes the total foreign exchange earnings of the country vulnerable to changes in a small number of world markets. In addition, the small size of the domestic market for these products makes the domestic industries sensitive to foreign disturbances. For example, domestic use of coffee and bananas is typically less than 10 percent of Costa Rican production.

Although the world market is important for Costa Rican sales, the country's exports have a negligible impact on world commodity prices. Costa Rica is a prototypical price-taker. Its share of the world's coffee market was 2.4 percent in the period 1982-84 (See Table 2), and the share was 3.4 percent in 1989-90 (See Table 1). Although Costa Rica regularly ranks among the largest ten coffee exporters, its market share is small compared to that of Brazil and Colombia, which usually account for more than 40 percent of the world market (see Table 1). An implication of price-taker status is that unilateral changes in coffee policy by Costa Rica have a negligible impact on the world coffee price, but changes in coffee policy by all other exporters have a large effect on the price earned by Costa Rica. The relative importance of Costa Rica's banana exports is slightly greater, with a 16.6 percent of the world market in 1982-84. The world market shares of Costa Rican sugar and beef have been less than 1 percent (Table 2).

Costa Rican coffee production has increased in recent years (Table 4). Production exceeded 140 thousand bags in five of the six years since 1982, (USDA data) a figure never

reached before that time. Table 4 presents two sets of production figures that are not strictly comparable. FAO reports the figures on a calendar year basis. The USDA reports crop year (October-September) figures in its World Coffee Situation. However, the same trend in production is apparent in both time series. Some of the highest yields in the world have been achieved in Costa Rica recently by replacing older trees with new and improved varieties and planting at increased densities (World Coffee Situation), July 1989, p. 9). The Costa Rican industry appears to be a low cost producer (Bohman and Jarvis), and it shows no signs of contracting.

3. EXPORT CONCENTRATION AND THE STABILITY OF PRICES AND EXPORT EARNINGS

A common criticism of export concentration in Costa Rica and elsewhere, is that concentration leads to instability of export earnings. However, the empirical evidence supporting this proposition is weak (MacBean and Nguyen pp. 136-38). In the case of Costa Rica, one might expect volatile export earnings because of the high volatility of coffee prices. Nominal and real prices of coffee and other major products from 1960-88 are shown in Tables 5 and 6. Expressed in constant 1980 dollars, the highest coffee price during the period was \$2.92 per pound in 1977. This peak price represented an approximate tripling of the 1975 price, but by 1981 the real price had returned to the 1975 level. The lowest prices in the entire period occurred in 1987 and 1988, and they have fallen even more since then.

A common measure of price volatility is the deviation of price from its trend value. MacBean and Nguyen have calculated both the root mean square deviation (RMSD) from trend and the mean absolute deviation (MAD) from trend for 18 major primary products for the period 1962-78. In a ranking of price instability, coffee was found to be the third most volatile product in the group (p. 100). Bananas were one of the least volatile, ranking 17th out of 18. The stability of banana prices can be seen directly from Table 6. Since 1965 the real price of bananas has never been outside the range \$.12 - \$.17 per pound, and since 1983 it has remained within the narrower range \$.12 - \$.14. Table 7 shows the price instability indices for Costa Rica's four major exports for the longer period 1960-88. Coffee and sugar have experienced the most volatile prices, whereas bananas have had the least volatile prices.

For a country with highly concentrated exports, changes in key export prices can have a significant effect on gross domestic product, when other factors are held constant. Column 1 of Table 11 shows the effect of changes in world coffee prices on Costa Rican export earnings, holding the volume of exports constant and expressed as a percentage of GDP. This measure can be interpreted as the impact effect of a change in the coffee terms of trade. During the period 1970-88 there were several years in which coffee prices induced changes of 2 percent of GDP, and the favorable price changes of 1976-77 induced increases in GDP of 6 percent. Comparable effects for bananas and petroleum are also shown, and they are generally smaller than the effects for coffee. In only three years were the banana effects as large as 1 percent of

GDP. The largest petroleum impact (-4.9 percent) occurred in 1974 when petroleum prices quadrupled. For all the products, large changes in one direction were frequently offset by changes in the opposite direction in a few years. There was also some offsetting of price changes within a year. In most cases when there was a large change in the coffee price, there was an offsetting change in the price of petroleum or bananas in the same year.

Changes in the prices of key commodities have the potential to destabilize national income. However, changes alone can be a misleading indicator of changes in income. Export revenue is a more reliable indicator of changes in income, since it includes both price and quantity changes. For example, if a 10 percent decrease in the price of coffee is offset by a 10 percent increase in the quantity of coffee exports, total export earnings will be unaffected by the price change. In fact the volatility of coffee export revenue has been less than the volatility of coffee prices for Costa Rica. This relationship exists because low export volume tends to occur in years of high prices, and high export volume tends to occur in years of low prices. Small crops and low export volume for Costa Rica have tended to occur in years when world coffee supply has also been small. Hence, price and quantity changes have offset each other. For Costa Rica, the value of coffee exports has been less volatile than the export value of sugar, rice, cotton, and cocoa (MacBean and Nguyen).

Additional diversification of a country's exports could increase the stability of its export earnings, but not all diversification schemes will do so. McBean and Nguyen (pp. 138-39) have analyzed the effect of additional diversification away from coffee and bananas, and toward Costa Rica's next five important exports: beef, sugar, cocoa, rice, and cotton. Their simulations included both moderate and extreme degrees of diversification. In both cases the additional export diversification would have destabilized export earnings relative to actual earnings. The reason for the perverse result is that the added diversification would have increased the relative importance of products with more volatile export value. In addition to increasing volatility, a diversification policy that violates comparative advantage is also likely to reduce the average level of income.

4. TRADE LIBERALIZATION FOR COFFEE

In the current Uruguay Round of trade negotiations, countries are considering reducing barriers to coffee trade imposed by importing countries. Also under consideration is reform of tariff structures that discriminate against processed imports. Liberalization by coffee importers would benefit Costa Rica and all coffee exporters, because they would receive a higher price for a larger volume of exports. However, the potential gains are small because current tariffs on coffee are low. Most importing countries do not have competing domestic producers who lobby for high levels of protection. The benefits to Costa Rica and all exporters from liberalization by importers has been estimated by Mabbs-Zeno and Krissoff (1989). Using 1984-86 as the base period, Costa Rican export value would have increased by \$5 million or 1.6 percent, and world

coffee export value would have increased by \$268 million or 2.7 percent (Table 9). Tariff reform would also produce a small increase in coffee processing by exporters.

Export response will occur only after a time lag. Costa Rican demand for its own coffee is rather price inelastic (around -0.1) so most of the export response must come from domestic supply. Some supply response could come from inventories or existing trees, but a major response depends on the planting and maturation of new trees. A price elasticity of new planting of +2.0 after four years has been estimated for Costa Rica by Akiyama and Varangis (p. 13).

The same study also considered the effect of liberalization by coffee exporters. Most exporting countries tax coffee exports in a variety of ways. Some restrictions are specific to the coffee sector, such as holding the domestic producer price below the world price of coffee (see Table 8). This tax is often accomplished by a marketing board. Sometimes this export tax is partially offset by subsidies to inputs and credit. Some economy-wide restrictions also affect coffee exports, especially overvalued exchange rates.

The relative importance of these two sets of policies has also been analyzed by Mabbs-Zeno and Krissoff. When all coffee exporters simultaneously liberalize both sets of policies, total export revenue decreases by \$2,814 million or 26.1 percent. The reason for the decline in revenue is that the percentage decreases in the world price exceeds the percentage increase in the quantity of exports, which is an implication of inelastic world export demand (in the neighborhood of -0.4). When only coffee sector policies are relaxed, total export revenue falls by \$2,054 million, or 72 percent of the change when both sets of policies are altered. Thus, during the 1984-86 period, coffee sector policies of exporters had a greater effect on trade than general economic policies of exporters.

However, these results on the relative importance of sectoral and general economic policies may be sensitive to the time period, country, and product being studied. For example if currency overvaluation is measured by the black market premium, the degree of overvaluation varied substantially in the 1980s for Costa Rica. The premium was over 50 percent in the early 1980s, but it has been below 5 percent in 1989-90. Contrary to these results concerning coffee policies, Mabbs-Zeno and Krissoff found in the same study that general policies were more important than sectoral policies for bananas. This conclusion about the dominance of general policies was also reached by Krueger, Schiff and Valdes in their multi-country study.

Liberalization by all coffee exporters would be harmful to the group, because it would cause a large decrease in the price of coffee. However, unilateral liberalization would benefit Costa Rica by increasing the volume of exports without depressing the world price. The results in Table 9 can be interpreted as a lower bound for the effects of unilateral liberalization. Since the volume of Costa Rican exports increases by 25 thousand tons or 22.7 percent even when there is a large decrease in price, the increase in exports at a constant price would be greater. As a price-taker, Costa Rica benefits from export restrictions of competing countries, but it is harmed when those restrictions are relaxed. Conversely, Costa Ricans can only harm themselves by reducing their own export volume. Although unilateral liberalization of the coffee sector

would benefit Costa Rica, a qualification is that an alternative source of government tax revenue must be found (Cheasty). A broad-based tax with a low-marginal rate would have the smallest distorting effect.

5. INTERNATIONAL COFFEE AGREEMENT

The International Coffee Agreement (ICA) has been in existence since 1962. Its members have accounted for 95 percent of world coffee production and 85-90 percent of world coffee consumption (Poinar). However, the provisions related to export quotas and prescribing a price range have only been in effect intermittently during the periods 1963-72, 1980-86, and 1987-June, 1989. When quotas are in effect two results can be observed. First, a price discount in the non-member market emerges. Second, a typical exporter like Costa Rica sells a larger fraction of its exports in non-member countries (Bohman and Jarvis).

Reliable data on prices in non-member countries are difficult to obtain (Akiyama and Varangis). One reason for the data problem is that many non-member importers have been centrally planned economies that have imported coffee as part of barter arrangements. Table 8 shows export unit values for coffee sold in member and non-member countries as reported by the International Coffee Organization for the period 1968-87. Most of the time in the 1970s when quotas were not in effect no significant discount existed in non-member markets. However, when quotas were re-established in the 1980s, a persistent discount for non-member buyers emerged. For example, in 1983 and 1984 non-member importers paid less than half the price paid by member country importers. The designated price range for sales to member countries for the most recent period was \$1.15-\$1.45 per pound, but the agreement collapsed in July 1989. Since then a single price has emerged, and it has remained below \$1.00 per pound through February 1990. At one point the price was below \$.70 per pound. Partly because of the recent low prices, some exporting countries including Brazil and Colombia, have called for a return to export quotas.

Like all commodity agreements, the ICA faces two problems: (1) determination of total export quotas and (2) allocation of quotas among member countries. If total quotas result in prices higher than would exist in a competitive world market, there will be an excess supply of coffee. For each exporting country taken separately, the price received for another unit sold will exceed the cost of producing another unit. Unless producers are willing to accumulate inventories indefinitely, sales of surplus coffee at discount prices to non-members are inevitable. The opportunity for importers to buy at discount prices provides little economic incentive for importers to be members of the ICA. Even if members have political motives for wanting to assist coffee exporting countries, they can provide aid at a lower cost to them without a coffee agreement. A cash transfer of \$1 to coffee producers has a lower cost to donors than \$1 transferred as a result of a monopoly coffee price.

The excess of price over marginal cost provides each member of cartel an incentive to sell more than its prescribed quota. Each member will be more likely to violate its quota

if the allocation of country quotas is considered to be unfair. The allocation of coffee export quotas has favored large traditional exporters, such as Brazil and Columbia, at the expense of smaller exporters like Costa Rica. The ICA export quotas are based more on historical exports rather than current cost or capacity. Binding quotas are important to a country because they determine what fraction of exports receive a premium price in member countries and what fraction must be dumped in non-member countries at discount prices. As a low cost producer with increasing production, Costa Rica must sell a larger percentage of its coffee at a discount in the non-member market than the favored exporters (Table 10). For example, in 1989 Costa Rica's ICA quota was only 55.5% of its total exports, whereas quotas for Brazil and Colombia were 91.2% and 84.8% of total exports. Indonesia is another country like Costa Rica with an ICA quota of only 47.7% of actual exports. Because of the unfavorable allocation of quotas, Costa Rica and Indonesia have opposed returning to the old quota system. Thus quotas redistribute income among coffee exporters as well as between exporters and importers.

The unfavorable effect of ICA quotas on Costa Rica has been confirmed by Akiyama and Varangis and also by Bohman and Jarvis. For the period 1981-86 when export quotas were binding, Akiyama and Varangis compared Costa Rica's actual export earnings from coffee with what earnings would have been in absence of ICA quotas. They concluded that actual earnings were 9.1% less (\$161 million) than they would have been without quotas. In a look to the future, their simulation for 1990-2000 showed that Costa Rican coffee earnings would be 14.3% less with quotas in place than without them. The explanation for the unfavorable effect of the ICA is that Costa Rica would lose more from a larger volume of sales at discount prices to non-members than it would gain from a smaller volume of sales at premium prices to members.

6. CONCLUSION

Coffee remains the main source of foreign exchange earnings for Costa Rica, and there is no evidence to indicate a decline in its comparative advantage in producing coffee. Policies designed to decrease the importance of coffee will reduce average income in Costa Rica unless they are justified by careful cost-benefit analysis. Although coffee prices are among the most volatile of primary products, Costa Rica's coffee revenue is less volatile than prices because price and quantity changes tend to offset each other. Certain export diversification schemes would have the perverse effect of destabilizing export earnings.

Costa Rican policies that tax coffee exports sacrifice export earnings by reducing the volume of exports without raising the world price. Coffee sector policies reduced the volume of coffee exports by more than general economic policies in the period 1984-86. However, the relative importance of sectoral and general policies depends on the degree of currency overvaluation in the period studied. Simultaneous liberalization by all coffee exporters would

be harmful to Costa Rica, because it would depress world prices. Most of the harm would occur regardless of Costa Rican policy, and Costa Rica would suffer even more if it failed to liberalize exports. The country would gain from liberalization by importers, but the magnitude of the gain would be smaller than the effects of changing export policy. Some additional processing of coffee would result.

The Costa Rican economy has been harmed by the export quotas of the International Coffee Agreement. Small quotas for the country have resulted in a greater loss of revenue from price discounts to non-members than the revenue gain from premium prices received from member importers. The net loss is likely to continue for the next decade if the quota system is restored, unless there is a major reallocation of quotas.

TABLES

Table 1. Exporters of Coffee, 1989-90 (thousand 60 kilogram bags)

Country	Exports	Export Share
Costa Rica	2,440	.034
El Salvador	1,950	.027
Guatemala	2,300	.032
Honduras	1,300	.018
Mexico	3,700	.052
North America	13,453	(.188)
Brazil	17,700	.247
Colombia	10,000	.140
Peru	1,130	.016
South America	30,901	(.432)
Cameroon	1,550	.022
Ethiopia	1,450	.020
Ivory Coast	4,059	.057
Kenya	2,000	.028
Madagascar	770	.011
Uganda	3,100	.043
Zaire	1,150	.016
Africa	17,782	(.248)
India	1,600	.022
Indonesia	5,200	.073
Asia	8,207	(.115)
World	71,573	

Source: USDA World Coffee Situation, July 1989, p. 24.

**Table 2 . Costa Rica's Share of World Exports of Selected Commodities,
1982-84 Average**

<u>Product</u>	<u>Percent</u>
Bananas	16.6%
Coffee	2.4
Sugar	0.2
Beef	0.6

Source: Commodity Trade and Price Trends, 1987-88 edition, Washington:
IMF, p. 14.

Table 3. Principal Commodity Exports of Costa Rica
(Percent of total exports), 1972-86

Year	Coffee	Bananas	Coffee plus bananas	Sugar	Beef
1972	27.7%	29.5%	57.2%	4.7%	10.8%
3	27.8	26.3	54.0	6.2	9.3
4	28.3	22.3	50.1	5.6	7.8
5	19.7	29.2	48.9	8.6	6.6
6	26.0	24.1	50.0	4.2	6.8
7	38.5	15.0	53.5	1.9	5.3
8	35.6	16.6	52.2	1.8	7.0
9	33.2	18.6	52.4	1.8	8.7
1980	24.6	20.1	44.7	4.1	7.1
1	23.9	24.5	48.4	4.3	7.3
2	27.2	26.2	53.4	1.9	6.1
3	26.4	27.5	53.9	2.7	3.7
4	26.6	24.9	51.5	3.5	4.3
5	32.4	21.3	53.7	1.4	5.5
1986	35.0	19.4	54.4	1.0	6.2

Source: International Monetary Fund. IFS Supplement on Trade Statistics, 1988, p.71.

Table 4 . Costa Rican Production of Coffee, 1960-88

Year	Reported* by FAO (thousands of 60 kilogram bags)	Reported by USDA
1960	69.900	54.300
1961	68.900	69.900
1962	54.400	68.400
1963	60.700	61.200
1964	49.500	66.000
1965	61.500	49.500
1966	73.000	61.500
1967	82.000	72.900
1968	74.000	81.000
1969	91.000	75.600
1970	97.000	75.000
1971	95.000	81.000
1972	95.000	80.100
1973	97.000	94.500
1974	84.000	76.560
1975	79.000	79.860
1976	80.000	86.940
1977	87.000	105.300
1978	96.000	91.320
1979	99.000	128.400
1980	109.000	105.120
1981	120.000	138.000
1982	115.000	124.200
1983	123.000	141.000
1984	151.000	90.840
1985	121.000	153.960
1986	NA	142.500
1987	NA	165.480
1988	NA	162.000

*Production Yearbook, calendar years.

**World Coffee Situation, crop years, October-September.

Table 5. Prices of Bananas, Sugar, Beef and Coffee
in Current Dollars, 1960-88

Year	Bananas (cents per lb.)	Sugar (cents per lb.)	Beef (cents per lb.)	Coffee (cents per lb.)
	All origins US Ports	Caribbean New York	All origins US Ports	All origins US Ports
1960	9.15	3.13	33.41	33.81
1961	8.88	2.92	30.93	31.87
1962	8.44	2.98	32.39	31.09
1963	8.09	8.51	30.23	33.22
1964	7.76	5.87	38.14	43.51
1965	7.25	2.12	39.99	41.04
1966	6.99	1.87	46.37	38.20
1967	7.15	2.00	47.22	37.08
1968	6.93	1.99	49.22	37.36
1969	7.24	3.39	55.47	38.53
1970	7.53	3.76	59.16	50.53
1971	6.36	4.53	61.05	44.66
1972	7.33	7.48	67.14	50.40
1973	7.47	9.62	91.19	62.16
1974	8.34	29.94	71.77	67.95
1975	11.15	20.56	60.20	72.48
1976	11.73	11.56	71.71	141.96
1977	12.38	8.11	68.33	229.09
1978	13.00	7.82	96.99	155.00
1979	14.78	9.66	130.82	169.50
1980	17.01	28.67	125.19	150.71
1981	18.20	16.89	112.12	115.82
1982	16.99	8.41	108.39	125.62
1983	19.46	8.47	110.67	127.94
1984	16.76	5.20	103.11	141.24
1985	17.25	4.05	97.67	133.47
1986	17.93	6.05	94.98	170.28
1987	17.09	6.76	108.18	107.32
1988	20.21	10.19	114.17	115.11

Source: IMF. International Financial Statistics Yearbook 1989.

Table 6. Commodity Prices in Constant 1980 Dollars, 1960-88
(Units are cents per pound.)

Year	Bananas	Sugar	Beef	Coffee
	All origins US ports	Caribbean New York	All origins US ports	All origins US ports
1960	0.25	0.09	0.93	0.94
1961	0.24	0.08	0.85	0.88
1962	0.23	0.08	0.87	0.83
1963	0.21	0.23	0.80	0.88
1964	0.20	0.15	0.99	1.13
1965	0.18	0.05	1.01	1.04
1966	0.17	0.05	1.14	0.94
1967	0.17	0.05	1.13	0.88
1968	0.16	0.05	1.12	0.85
1969	0.16	0.07	1.20	0.83
1970	0.15	0.03	1.21	1.03
1971	0.12	0.09	1.18	0.86
1972	0.14	0.14	1.24	0.93
1973	0.13	0.17	1.58	1.08
1974	0.13	0.48	1.14	1.08
1975	0.16	0.30	0.87	1.05
1976	0.16	0.16	0.97	1.93
1977	0.16	0.10	0.87	2.92
1978	0.15	0.09	1.15	1.84
1979	0.16	0.11	1.43	1.85
1980	0.17	0.29	1.25	1.51
1981	0.17	0.15	1.02	1.06
1982	0.15	0.07	0.93	1.08
1983	0.16	0.07	0.91	1.06
1984	0.13	0.04	0.82	1.12
1985	0.13	0.03	0.75	1.03
1986	0.13	0.05	0.71	1.28
1987	0.12	0.05	0.79	0.78
1988	0.14	0.07	0.80	0.81

Source : IMF. International Financial Statistics Yearbook 1989.

Table 7.

Instability Indices of Real Commodity Prices1960 - 1988

	RMSD*	MAD*
Bananas	10.5	7.4
Beef	21.2	17.4
Coffee	34.7	21.3
Sugar	78.2	55.4

$$*RMSD = \sqrt{\frac{1}{n} \sum ([X_i - \hat{X}_i] / \hat{X}_i)^2}$$

X_i actual \hat{X}_i forecast from a linear trend

$$+ MAD = \frac{1}{n} \sum |X_i - \hat{X}_i| / \hat{X}_i$$

$$X_i = \frac{\text{CPI (Bananas, Beef, Coffee, Sugar)}}{\text{PPI USA}} \Bigg|_{1980 = 100}$$

Source: International Financial Statistics Yearbook
1988-89. International Monetary Fund.

Table 8. Producer and Export Prices for Costa Rican Coffee 1968-87

Year	Producer Price Cents per Pound (1)	EUVM ¹ (2)	EUVN ² (3)	Producer Price/ EUVM (4)	EUVM/ EUVN (5)
1968	25.83	38.95	29.87	.663	.77
9	26.12	36.97	32.01	.707	.87
1970	33.69	47.72	47.55	.753	1.00
1	32.06	44.73	44.95	.717	1.01
2	31.54	43.25	29.86	.729	.69
3	43.07	53.59	41.78	.804	.78
4	42.24	65.98	63.56	.640	.96
5	37.93	53.43	53.79	.710	1.01
6	66.99	90.02	94.14	.744	1.05
7	140.09	206.03	232.94	.680	1.13
8	110.34	176.79	176.53	.624	1.00
9	86.48	136.88	130.41	.632	.95
1980	109.88	177.96	177.82	.617	1.00
1	60.39	121.29	90.34	.498	.75
2	64.69	130.97	76.19	.494	.58
3	54.94	122.07	52.22	.450	.43
4	65.01	134.48	55.45	.483	.41
5	67.12	133.42	71.58	.503	.54
6	106.08	185.24	133.74	.573	.72
1987	68.63	123.51	127.73	.556	1.03

*Prices were converted from colones to dollars at the official rate shown in the IFS.

¹Export unit value members (cents per pound).

²Export unit value non-members (cents per pound).

Source: Bohman and Jarvis (1990).

**Table 9. The Effect of Alternative Trade Liberalization on
Coffee Exports of Costa Rica and the World**

	Costa Rica	World
Export value (\$ million)		
Base period (1984-86)	\$314	\$10,795
Importers Liberalize	319	11,083
Exporters Liberalize	252	7,981
Export volume (1000 tons)		
Base period (1984-86)	110	3,709
Importers Liberalize	111	3,571
Exporters Liberalize	136	4,117

Source: Mabbs-Zeno and Krissoff (1989) pp. 15-17.

Table 10. Export Shares Under the International Coffee Agreement, July 1989

Country	ICA* Quota	Country Share of World Quota	Quota/ Exports
Costa Rica	1,354	.024	.555
El Salvador	1,951	.035	1.001
Guatemala	1,719	.031	.747
Honduras	830	.015	.638
Mexico	2,184	.039	.590
Brazil	16,141	.292	.912
Colombia	8,477	.153	.848
Peru	730	.013	.646
Cameroon	1,219	.022	.786
Ethiopia	1,326	.024	.914
Ivory Coast	3,187	.058	.785
Kenya	1,369	.025	.685
Madagascar	632	.011	.821
Uganda	2,109	.038	.680
Zaire	1,046	.019	.910
India	845	.015	.528
Indonesia	2,481	.045	.477
World	55,335		.773

*Thousands of 60 kilogram bags.

Source: USDA World Coffee Situation, July 1989, p. 28.

Table 11. Effect of Price Changes on Costa Rican Export Earnings
as a Percent of GDP, 1970-88

Year	Coffee	Bananas	Petroleum (Libya)
1970	0.0231	0.0027	0.0000
1971	-0.0064	-0.0092	-0.0002
1972	0.0081	0.0102	-0.0001
1973	0.0144	0.0011	-0.0037
1974	0.0070	0.0069	-0.0402
1975	0.0033	0.0248	0.0050
1976	0.0612	0.0031	-0.0016
1977	0.0638	0.0022	-0.0037
1978	-0.0283	0.0020	0.0003
1979	0.0073	0.0059	-0.0224
1980	-0.0057	0.0063	-0.0293
1981	-0.0212	0.0066	-0.0072
1982	0.0077	-0.0058	0.0071
1983	0.0014	0.0114	0.0069
1984	0.0076	-0.0095	0.0005
1985	-0.0044	0.0016	0.0000
1986	0.0244	0.0019	0.0079
1987	-0.0275	-0.0024	-0.0050
1988	0.0049	0.0096	NA

Source: International Monetary Fund, International Financial Statistics Yearbook 1989.

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