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AGRICULTURAL POLICY ANALYSIS PROJECT, PHASE II

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**EGYPT: AN EVALUATION OF
PRICES OF MAJOR AGRICULTURAL
COMMODITIES IN RELATION TO
WORLD PRICES**

TECHNICAL REPORT NO. 101

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Prepared for USAID/Cairo
By the Agricultural Policy Analysis Policy Phase II (APAP II)
and the Ministry of Agriculture, Arab Republic of Egypt

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PREFACE

Prior to 1987, the Government of Egypt (GOE) subsidized most farm inputs and maintained controlled farmgate prices for major commodities. These and other policy measures discouraged production and caused inefficient allocation of resources within the agricultural sector. In 1987, under the auspices of the USAID-sponsored Agricultural Production and Credit Project (APC) in the Ministry of Agriculture, the GOE embraced long-term policy reform goals. The GOE'S Agricultural Policy Reform Program calls for the removal of price and crop area controls, crop procurement quotas and farm input subsidies. To date, the GOE has eliminated domestic price controls on all crops except cotton, rice and sugarcane.

The Agricultural Policy Analysis Project, Phase II (APAP II) provided a two-person team to assist the Ministry of Agriculture in fulfilling the Benchmark 6, Tranche III requirements of the APC Project. This task entailed an evaluation of the recent price performance of both controlled and decontrolled crops, with emphasis on the three major cash crops: cotton, rice and sugarcane. Specifically, world price equivalents at the farmgate were calculated for each commodity and compared to the actual prices received by the farmers for the 1984/85 - 1987/88 period. This technical document is the result of those efforts.

Benchmark 6 is one of six components of the Agricultural Policy Reform Program. The other benchmarks include survey verifications that GOE-endorsed agricultural policy reforms were implemented, analyses of the economic impact of these reforms, and agricultural impact studies of proposed policy reforms for the price controlled crops and the farm input supply system. The final Tranche III report synthesizes the results of all six benchmarks.

This report was prepared by Dr. Martin E. Abel of Abel, Daft & Earley, Ms. Theresa Bradley of Abt Associates and Dr. Ahmed Abo-Rawash, Mrs. Azza Emara, and Mr. Adnan Nassar, Economists in the Office of the Undersecretary for Agricultural Economics and Statistics, Ministry of Agriculture. Dr. Hassan Kheder, Undersecretary for Agricultural Economics and Statistics, Ministry of Agriculture, provided guidance and supervision, and Dr. Mohammed El-Sentrecy of Ain-Shams University and Dr. Adel Beshay of the American University of Cairo participated as advisors. Dr. Mohammed Omran, USAID/Cairo, provided valuable assistance in the conduct of the study.

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SUMMARY AND POLICY OVERVIEW

Recent Price Performance

The performance of domestic farm prices for major crops relative to their world price equivalents was mixed during the 1984/85-1987/88 period. The crops examined were cotton, sugarcane, rice, wheat, maize, and soybeans, and their ratios of prices received by farmers to their world price equivalents valued at market exchange rates are summarized in the following table.

RATIOS OF PRICES RECEIVED BY FARMERS TO THEIR WORLD PRICE EQUIVALENTS VALUED AT MARKET EXCHANGE RATES

	<u>1984/85</u>	<u>1985/86</u>	<u>1986/87</u>	<u>1987/88</u>
Cotton				
Extra-long staple (ELS)	.37	.41	.30	.28
Long staple (LS)	.41	.48	.34	.34
Sugarcane <u>1/</u>	1.17	1.01	.80	.64
Sugarcane <u>2/</u>	.48	.45	.44	.46
Rice				
Procurement Price	.48	.55	.61	.56
Open Market Price	.76	1.21	1.44	.88
Weighted Average Price	.60	.93	.91	.59
Wheat	.70	.87	.84	.79
Maize	.83	.94	1.20	1.01
Soybeans	.63	.68	.83	.86

1/ Using actual world prices of raw sugar.

2/ Using a "normal" world price of raw sugar of \$265/ton.

The farm price of cotton was extremely low and actually declined relative to the world price during the four-year period when market exchange rates are used, and this was so despite the fact procurement prices were increased. Farm prices are consistent with world prices only when one uses the official exchange rate. Thus, it appears the government taxes cotton producers through capturing the difference between the official and market exchange rates.

For sugarcane, farm prices were above world prices measured in terms of the market exchange rate at the beginning of the period but declined to below the world

price by the end of the four-year period. However, world sugar prices were abnormally low during the 1984/85-1987/88 period. If a more representative long-term "normal" price is used for sugar, prices received by farmers for sugarcane were substantially below their world price equivalents. World sugar prices in early 1989 were nearly at this long-term "normal" price level.

The situation for rice was mixed. The government's procurement price increased during the 1984/85-1988/89 period, but it was still well below the world price of rice. However, the gap did narrow. On the other hand, the open market price of rice received by farmers was, on average, near the world price equivalent for the 1984/85-1987/88 period. The weighted average of procurement and market prices was significantly below the world price, but by a smaller magnitude than for cotton and for sugarcane using a "normal" world reference price.

Increases in domestic producer prices for wheat resulted in a slight narrowing of the gap between domestic and world prices. Farmer prices were about 15 percent below the latter during most of the 1984/85-1987/88 period. This gap is certainly smaller than those for cotton, sugarcane, and rice, but it is still significant. There was no tendency for the price gap to narrow during the four-year period.

Progress has been made in liberalizing domestic maize prices. In fact, by the end of the four-year period domestic farm-level prices were well above world levels, representing a subsidy to producers. The main reason for this situation appears to be inadequate foreign exchange to support imports at a level necessary to equalize domestic and world prices.

Steady progress throughout the period was made in moving farm-level soybean prices to world price levels.

Projecting the Impact of Price Liberalization

Analyzing the impact of complete price liberalization on production, consumption, and trade is a complex task. First, one needs an idea of where world prices will be in the future. They are likely to be above the 1984/85-1987/88 levels for some crops such as sugar, wheat, maize, soybeans, and rice, but possibly below for cotton. This would be especially true for cotton if price liberalization in Egypt resulted in an expansion of cotton production and exports sufficient to negatively influence world prices.

Second, relative crop prices will be realigned by complete price liberalization. Using the latter part of the 1984/85-1987/88 period as a reference point to illustrate this result, cotton, sugarcane, rice, and wheat prices would rise, maize prices would decline, and soybean prices would remain unchanged. Clearly, cotton, sugarcane, rice, and wheat prices would rise relative to those for maize and soybean. But cotton, sugarcane, and rice would also rise relative to wheat, and cotton and sugarcane prices would rise relative to rice.

The impact of changes in both absolute and relative prices of the major crops studied has also to be evaluated in terms of the complex crop rotations Egyptian farmers follow for these and other crops such as berseem, other oilseeds (peanuts and sesame) and fruits and vegetables. Farmers ultimately look at profitability of their total farm operations and this profitability is influenced by both commodity prices and crop rotation considerations.

Finally, inputs used to produce some crops are highly subsidized. If price

liberalization also involves eliminating input subsidies, the price and production effects of these actions also need to be considered. The impact of eliminating input subsidies will vary among crops in relation to relative input use intensity.

I. INTRODUCTION

This study examines the relationship between prices received by farmers for major crops and their world price equivalents over the 1984/85-1987/88 period. These world prices are also called border prices and shadow prices by economists. The primary focus is on cotton, rice, and sugarcane--commodities whose domestic prices are still controlled in a major way--but prices of other major crops such as wheat, maize, and soybeans are also examined. The analysis provides a basis for evaluating recent agricultural policy reforms, especially those aimed at increasing the domestic procurement or market prices of some crops and bringing them closer to their world price equivalents at farm level.

The Egyptian economy still depends heavily on the agricultural sector to finance its development. During 1975-85, the transferred economic surplus from the agricultural sector to other sectors was estimated to be approximately L.E. 300 million.¹ Thus, agricultural policies are a key component in achieving the government's goal of improving the economic and social welfare of the whole Egyptian society.

In order for the agricultural sector to play a positive role in the economy, its resources must be used efficiently. Because prices in a competitive economy respond quickly to changes in demand and supply conditions, they transmit essential information to market participants on how to efficiently allocate resources in production and on how consumers should allocate their incomes among goods and services. When producers and consumers are allowed to respond to competitive prices, resources are allocated efficiently and this enhances economic growth. Government policies can block this mechanism of signaling information, cause inefficient allocation of resources, and retard economic growth.

Over the past few years, land use devoted to certain major crops has been decreasing in response to low farmgate prices relative to their world price equivalents and to other domestic agricultural prices. The government has raised prices of cotton, rice, sugarcane and other crops to reverse recent declining trends in plantings. To evaluate the effectiveness of these changes in price policy, one has to compare these movements in domestic prices relative to world market prices, and that is what study does.

II. METHODOLOGY AND TOOLS USED IN THE STUDY

Definition

A world price equivalent, sometimes also called either a border or shadow price, represents the price of a commodity that would prevail in a country in the absence of any distortions or interventions in the domestic market. World price equivalents are used in economic analysis as a standard against which domestic prices are measured to determine the degree to which the domestic market is distorted. When the ratio of the

¹Mohammed M. Badr, "The Impact of Cotton Price Liberalization", Zakazik University, presented to the Minister of Agriculture in January 1989.

domestic to the world equivalent price deviates from the value of one, this gap measures the net effect of all distortions in the market place, and not just government price interventions. For instance, a distortion can be generated by government policy interventions such as tariffs or taxes, or by non-policy factors such as monopolies or incomplete markets. A ratio of domestic to world prices received by producers that is greater than one implies producers are being subsidized; a ratio less than one indicates producers are being taxed.

Although studying relative prices overtime is a useful policy analysis tool, it is a partial equilibrium technique since it only measure price distortions in a single market context. Another drawback of this technique is that the impact of some policy interventions are not incorporated into the analysis. For example, governments often intervene in marketing activities through licensing, fuel subsidies and import restrictions. Some of these interventions affect all sectors of the economy. Some also affect goods and services which are not traded internationally and it is, therefore, not possible to derive world price equivalents for them.

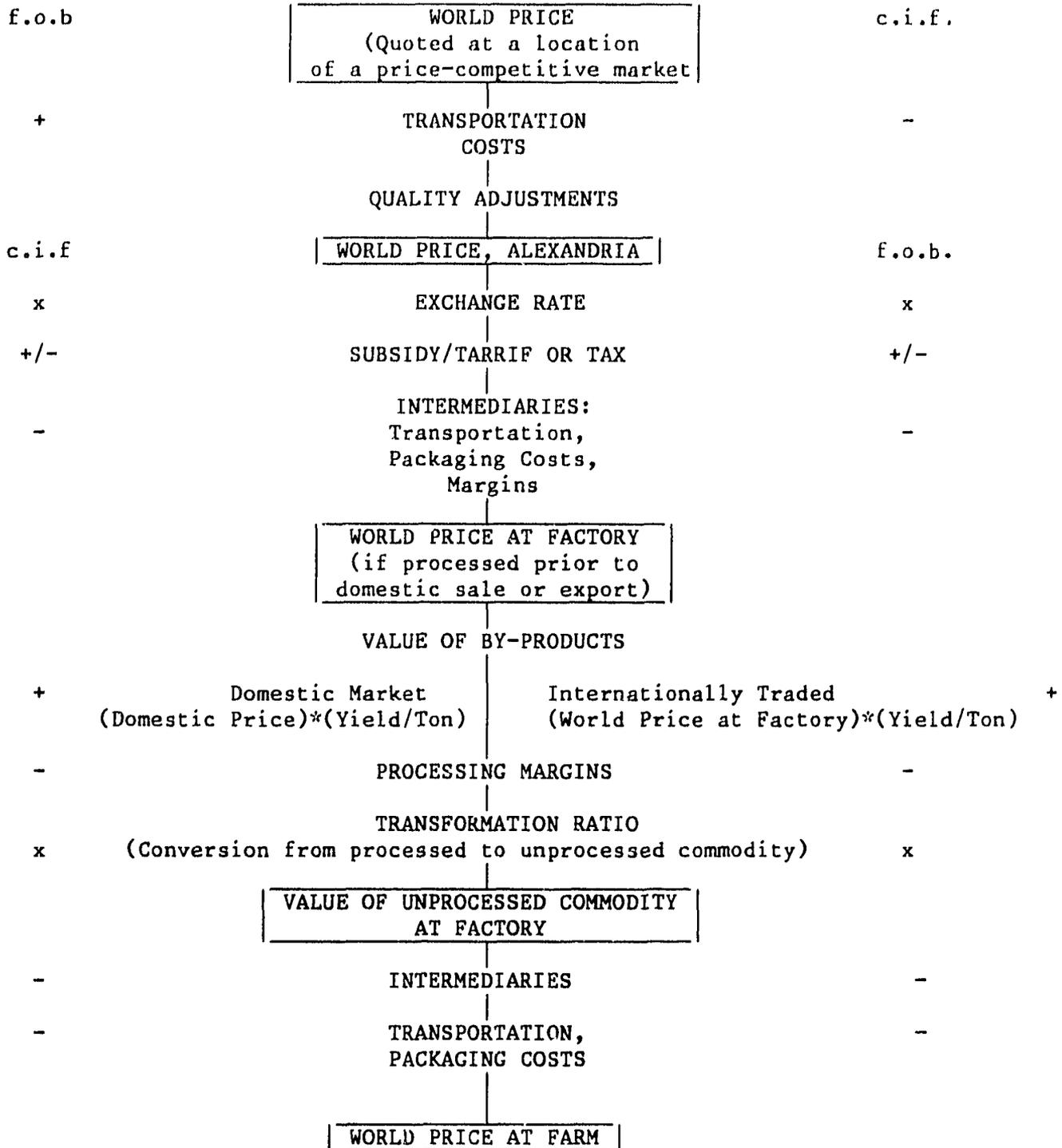
Procedure

Chart II.A represents the procedure used to calculate the world price equivalent at the farm level for a processed agricultural commodity produced in Egypt. Assuming that the agricultural commodity is processed into several joint products before trading on the international market, as in the case of cotton and sugarcane, the calculation begins with the world price of each joint product. If the border price at Alexandria is not available, the world price for the product, quoted at a price-competitive market outside of Egypt is used and adjusted for transportation cost (added if imported into Egypt; subtracted if exported) and for quality differences with the domestic commodity to obtain the c.i.f. or f.o.b. border price at Alexandria. If the joint product is not traded on the international market, its domestic price is used as a proxy for its world price. Given this border price, an exchange rate is used to express the price in domestic currency. In this study, calculations are made using both official and market exchange rates. Ideally, all subsidies, tariffs, and intermediary costs such as transportation incurred between the import/export location and the processing location should be deducted to arrive at the world price equivalent of the product at the processor. Similar adjustments should be made between the processor and the producer. In this study it has not always been possible to account for all of the subsidies or other distortions.

CHART II.A
PROCEDURE TO CALCULATE THE WORLD PRICE EQUIVALENT AT FARM LEVEL

NET IMPORTER

NET EXPORTER



Once this procedure is completed for each of the joint products, the prices of joint products are weighted by their respective yields to get the processed value per unit of raw products from the farm to the processing plant.

This world farm price equivalent is compared to the domestic price paid to the farmer which is adjusted for any subsidies that have already been deducted in arriving at the price farmers receive.

Several points should be noted concerning the specific methodology used.

1. Exchange Rates: Both the official and market exchange rates were used in deriving world equivalent prices at the farm level. These rates differ markedly. The market exchange rate more nearly approximates an equilibrium rate and is the one that most accurately reflects equivalent world prices in the domestic market. However, the official exchange rate is used by the government in some instances where it controls the marketing and processing of crops. When the official exchange rate is highly over-valued, as in the case of Egypt, domestic prices will be biased downward by a substantial amount.
2. Transportation Costs: Domestic transportation costs appear to be very low and to reflect large fuel subsidies which are provided to the whole economy. Transportation cost estimates for different commodities were obtained from different sources and are not necessarily consistent among commodities. However, these differences are probably not large enough to fundamentally alter the results.
3. Input Subsidies: In the case of some crops such as cotton, the government provides farmers with highly subsidized fertilizer, pesticides, and other inputs. The cotton prices farmers received have been adjusted for some of these subsidy costs, but not all of them. We have added these input (subsidy) costs back into the actual prices received by producers to get a price that is comparable to the world price equivalent at the farm level and to farm level prices for other commodities that do not receive similar input subsidies. These adjustments were made only for cotton where good information is available. They were not made for other crops that also use subsidized inputs because the necessary data to do so were not available.

In addition, there are general subsidies available to all crops such as free irrigation water. Not taking these subsidies into account results in prices actually received by farmers being below their true value, and creates distortions among crops to the extent that the intensity of use of subsidized inputs varies among crops.

4. Use of Averages: Average prices were used in the analysis. Further analysis could adjust prices for different periods within a crop year for specific locations and specific types and qualities of a commodity.
5. Estimates: Data were not available for some of the components of the analyses. Thus, these data were estimated and such estimates are indicated by an asterisk (*) in the tables that appear throughout this report.

Computerized Spreadsheets

The calculations for this study were made by using a spreadsheet format on an Apple computer. Use of computerized spreadsheets minimizes the chances of errors in calculations; provides a convenient method to revise the analysis, recalculate results and expand the analysis to other crops; and facilitates the development of graphics to interpret various results.

III. SPECIFIC CROP ANALYSES

A. Cotton

1. Background

Within the agricultural sector, cotton is considered one of the most important crops.² Approximately one million feddans, which represents about 17 percent of the total planted area in Egypt, is devoted to cotton production. The production value of cotton reached L.E. 700 million during the 1985/86 season, and represented 11 percent of total agricultural production.

Cotton plays an essential role in the Egyptian economy. As a main link among the agricultural, industrial, and commercial sectors, cotton production provides income either directly or indirectly to many Egyptians. For instance, in 1985-86 the marketing of cotton and the manufacture of cotton products employed 500,000 workers.

Cotton by-products are also important. Cottonseed oil produced domestically accounts for 20 percent of total vegetable oil consumption and cottonseed meal is an important animal feed. The textile industry uses about 265,000 tons of lint cotton annually to produce about a billion meters of cloth.

Finally, cotton is an important source of foreign currency. The revenue from cotton exports exceeded U.S. \$420 million in 1985/86.

Tables III.A.1 - III.A.3 illustrate the derivation of the world price equivalents at the farm level for extra-long staple (ELS) and long staple (LS) cotton varieties in the 1984/85-1987/88 period. At the gin, one seed cotton kantar, which is equivalent to 157.5 kilograms, produces 50 kg of cotton lint, 105 kg of cotton seed, 2 kg of scow and 0.5 kg of dust. Thus, world price equivalents at the gin for all of these products which are marketed must be calculated and summed together, giving weight to their respective yield.

We begin with Table III.A.1 which provides the calculations used to get world price equivalents for cottonseed at the gin. Since Egypt does not trade cottonseed meal on the world market, the calculation for its world price equivalent at the cottonseed processor is based on the assumption that Egypt would export it to the United Kingdom, which is a major importer of cottonseed meal. Thus, the price for cottonseed meal is calculated by

²For statistics reported in this section see Mohammed M. Badr, "The Impact of Cotton Price Liberalization", Zakazik University, presented to the Minister of Agriculture in January 1989.

taking the U.K. price and subtracting ocean transportation costs from Alexandria. Transportation costs from the processor to Alexandria are deducted to arrive at the world price equivalent for cottonseed meal at the processor.

A similar calculation is done for cottonseed oil. Since Egypt imports cottonseed oil, its c.i.f. price, Alexandria, is calculated by adding transportation costs from Rotterdam to Alexandria to the reported Rotterdam price. Transportation costs from the port to the processor are added to arrive at the world price equivalent at the processor. This analysis assumes that cottonseed oil is refined near seed processing facilities. There is vegetable oil refining capacity at Alexandria, but this is probably used mainly to refine imported oils.

These two prices are weighted by their respective yields from cottonseed to get a product value per ton of cottonseed, and the cottonseed crushing margin is subtracted to obtain the world price equivalent for cottonseed at the processor. Subtracting transportation costs from the gin to the processor gives the world price of cottonseed at the gin. This information is used in the analyses for ELS and LS cotton presented in Tables III.A.2. and III.A.3.

In the case of lint cotton, a border price, f.o.b. Alexandria, is calculated in pounds per metric kantar for lint cotton by averaging across varieties within both the ELS and LS categories. Transportation and marketing costs from the gin to the port are deducted to arrive at a world price equivalent for lint at the gin. Unlike cotton, scarto and cottonseed are not traded internationally. For scarto, its domestic price is used to approximate its world price equivalent at the gin. For cottonseed, the world prices derived in Table III.A.1 are used.

Next, the world price equivalent for seed cotton at the gin is calculated by summing the calculated prices for lint, scarto, and cottonseed, each weighted by their respective yields from seed cotton, and subtracting ginning costs. Finally, transportation costs from the farm to the gin are deducted to obtain the world price equivalents for seed cotton at the farm level.

Given that input costs for the farmer are heavily subsidized by the government, the procurement price for cotton is adjusted by adding to it the subsidy values for fertilizers and pesticides. Finally, we calculate the ratio of the adjusted procurement price to the world equivalent farm price for both the ELS and LS varieties of seed cotton.

2. Description of Results

Cottonseed

The derivation of the world price equivalents for cottonseed at the gin is presented in Table III.A.1 and these prices are used to derive farm-level prices for seed cotton.

Official data on cottonseed crush margins (line 46) appear to be unrealistically low by world standards. As an alternative, we have also used crush margins that more closely approximate world processing costs and these are presented in line 47.

The derived world equivalent prices of cottonseed at the gin vary markedly with the exchange rate that is used. This is what one would expect given the large differences between the official and market rates of exchange. For consistency, world prices of

cottonseed valued at the official exchange rate are used to calculate the world price equivalent of seed cotton also valued at the official exchange rate, and the prices of cottonseed valued at the market exchange rates are used to derive the world equivalent prices of seed cotton also valued at the market exchange rates.

Finally, we have elected to use derived cottonseed prices based on the higher, more realistic crush margin levels, i.e., the prices that appear in lines 61 and 62 in Table III.A.1.

ELS and LS Cotton

The derivation of the world price equivalents at the farm level for extra-long staple (ELS) and long staple (LS) cotton are presented in Tables III.A.2 and III.A.3, respectively.

In the analysis of lint cotton we have assumed the same product yield values from seed cotton (lint, seed, and scarto) for both ELS and LS cotton. Yields probably vary between the two types of cotton, but we could not obtain separate yield data for each type. However, our assumption probably does not alter the final results in any significant way.

For both ELS and LS cotton, the procurement price adjusted for input subsidies closely approximates the world price equivalent at the farm level valued at the official exchange rate. This is not surprising since the government uses the official rate in valuing cotton domestically.

However, the adjusted procurement price of cotton is substantially lower in relation to the world price equivalent at the farm level measured with market exchange rates. During the 1984/85-1987/88 period, the ratio of the adjusted procurement price to the world price equivalent at the farm level averaged only .34 for ELS cotton and .39 for LS cotton.

Furthermore, the domestic procurement price declined relative to the world price despite the fact that the government increased its procurement price during the 1984/85-1987/88 period, i.e., cotton production became less profitable. Most of that deterioration was caused by the divergence between the official and market rates of exchange. The world equivalent prices at the farm measured at the official rate tracked procurement prices reasonably well so the ratio of these two sets of prices remained relatively constant.

The relationship between domestic and world prices measured in term of both the official and market exchange rates are presented graphically in Chart III.A.1 for ELS cotton and Chart III.A.2 for LS cotton.

3. Policy Implications

Clearly, the government has been taxing cotton production very heavily and this explains in large measure why cotton production has been declining. The mechanism for collecting this tax is the differential exchange rate system that is used. While the government increased the procurement price of cotton over the 1984/85-1987/88 period, the differential between the official and market rates of exchange increased and so, too, did the tax on cotton producers as measured by the relationships between procurement prices and the world equivalent prices at the farm level.

	A	B	C	D	E	F	G	H	I	J
1	PRICE FOR COTTONSEED (1)									
2										
3	TITLE	UNIT	1984/85		1985/86		1986/87		1987/88	
4	WORLD PRICE C.S.M., U.K. (2)	U.S\$/TON	146.00		98.00		120.00		145.00	
5										
6	TRANSPORTATION COSTS									
7	C.S.M. FROM ALEX. TO U.K. (3)	U.S\$/TON	18.00		19.00		19.00		20.00	
8										
9	WORLD PRICE C.S.M., ALEX.	U.S\$/TON	168.00		79.00		101.00		125.00	
10										
11	EXCHANGE RATES									
12	OFFICIAL RATE	L.E./U.S.\$	0.70		0.70		0.70		0.70	
13	MARKET RATE	L.E./U.S.\$	1.82		1.90		2.19		2.30	
14										
15	WORLD PRICE C.S.M. ALEX.									
16	OFFICIAL RATE	L.E./TON	89.60		55.30		70.70		87.50	
17	MARKET RATE	L.E./TON	207.36		150.10		221.19		287.50	
18										
19	TRANSPORTATION COSTS									
20	C.S.M. FROM PROCESSOR TO ALEX.	L.E./TON	15.00		15.00		15.00		15.00	
21										
22	WORLD PRICE C.S.M. AT PROCESSOR									
23	OFFICIAL RATE	L.E./TON	74.80		40.30		55.70		72.50	
24	MARKET RATE	L.E./TON	192.36		135.10		206.19		272.50	
25										
26	WORLD PRICE C.S.O., ROTT, (4)	U.S\$/TON	836.00		710.00		489.00		497.00	
27										
28	TRANSPORTATION COSTS									
29	ROTTERDAM TO ALEX	U.S\$/TON	18.00		19.00		19.00		20.00	
30										
31	WORLD PRICE C.S.O. ALEX.	U.S\$/TON	854.00		729.00		508.00		517.00	
32	OFFICIAL RATE	L.E./TON	597.80		510.30		355.60		381.90	
33	MARKET RATE	L.E./TON	1383.48		1385.10		1112.52		1189.10	
34										
35	TRANSPORTATION COSTS									
36	C.S.O. FROM PROCESSOR TO ALEX	L.E./TON	15.00		15.00		15.00		15.00	
37										
38	WORLD PRICE C.S.O. AT PROCESSOR									
39	OFFICIAL RATE	L.E./TON	612.80		525.30		370.60		376.90	
40	MARKET RATE	L.E./TON	1398.48		1400.10		1127.52		1204.10	
41										
42	GROSS VALUE, COTTONSEED CRUSH (5)									
43	OFFICIAL RATE	L.E./TON	135.80		105.41		87.05		95.90	
44	MARKET RATE	L.E./TON	320.20		293.84		281.92		325.39	
45										
46	COTTONSEED CRUSH MARGIN (I)	L.E./TON	4.00		5.00		6.00		8.00	
47	COTTONSEED CRUSH MARGIN (II)	L.E./TON	20.00		23.00		26.00		28.00	
48										
49	WORLD PRICE COTTONSEED AT PROCESSOR									
50	OFFICIAL RATE (I)	L.E./TON	131.80		100.41		81.05		89.90	
51	MARKET RATE (I)	L.E./TON	316.20		288.84		275.92		319.39	
52	OFFICIAL RATE (II)	L.E./TON	115.80		82.41		61.05		67.90	
53	MARKET RATE (II)	L.E./TON	300.20		270.84		255.92		297.39	
54										
55	TRANSPORTATION COSTS									
56	FROM GIN TO PROCESSOR	L.E./TON	5.00		5.00		5.00		5.00	
57										
58	WORLD PRICE COTTONSEED AT GIN									
59	OFFICIAL RATE (I)	L.E./TON	126.80		95.41		76.05		84.90	
60	MARKET RATE (I)	L.E./TON	311.20		283.84		270.92		314.39	
61	OFFICIAL RATE (II)	L.E./TON	110.80		77.41		56.05		62.90	
62	MARKET RATE (II)	L.E./TON	295.20		265.84		250.92		292.39	
63										
64	[1] Egypt does not trade cottonseed.									
65	[2] Egypt does not trade cottonseed meal (C.S.M.).									
66	[3] Estimated by freight rates for grains shipped on small vessels.									
67	[4] Egypt imports cottonseed oil (C.S.O.).									
68	[5] 1 tonne cottonseed = 465 tonnes C.S.M. + 165 tonnes C.S.O.									

	A	B	C	D	E	F	G	H	I	J
1	PRICE FOR ELS COTTON (1)									
2	(EGYPT IS A NET EXPORTER OF LINT COTTON)									
3										
4										
5	TITLE	UNIT	1984/85		1985/86		1986/87		1987/88	
6	WORLD PRICE, LINT COTTON									
7	ALEXANDRIA	U.S\$/M.K.	132.10		143.40		175.10		212.30	
8										
9	EXCHANGE RATES									
10	OFFICIAL RATE	L.E./U.S.\$	0.70		0.70		0.70		0.70	
11	MARKET RATE	L.E./U.S.\$	1.60		1.90		2.19		2.30	
12										
13	WORLD PRICE, ALEXANDRIA									
14	OFFICIAL RATE	L.E./M.K.	92.47		100.38		122.57		148.61	
15	MARKET RATE	L.E./M.K.	211.36		272.46		383.47		488.29	
16										
17	TRANSPORTATION COSTS									
18	FROM GIN TO ALEX.	L.F./M.K.	0.75		0.75		0.75		0.75	
19										
20	WORLD PRICE AT GIN									
	OFFICIAL RATE	L.E./M.K.	91.72		99.63		121.82		147.86	
	MARKET RATE	L.E./M.K.	210.61		271.71		382.72		487.54	
	YIELD K.G./M.K. SEED COT.	YIELD/S.K.	50.00		50.00		50.00		50.00	
	LINT PRODUCTS									
	PRICE SCARTO	L.E./M.K.	50.00		100.00		150.00		200.00	
	YIELD K.G./M.K. SEED COT.	YIELD/S.K.	2.00		2.00		2.00		2.00	
	PRICE COTTONSEED (2)									
	OFFICIAL RATE (II)	L.E./M.T.	110.80		77.41		56.05		62.90	
	MARKET RATE (II)	L.E./M.T.	295.20		265.84		230.92		292.39	
	YIELD K.G./M.T. SEED COT.	YIELD/S.K.	105.00		105.00		105.00		105.00	
	JOINT PRODUCTS PER M.T. SEED COTTON									
	OFFICIAL RATE	L.E./S.K.	105.39		111.76		133.71		162.46	
	MARKET RATE	L.E./S.K.	243.61		303.62		415.07		526.24	
	PROCESSING MARGIN									
	OFFICIAL RATE COTTON	L.E./S.K.	6.61		11.45		12.59		14.50	
	WORLD PRICE SEED COT. AT GIN PER M.T. SEED COTTON									
	OFFICIAL RATE	L.E./S.K.	96.74		100.31		121.12		147.96	
	MARKET RATE	L.E./S.K.	235.00		292.17		402.48		511.74	
44	STB									
	OFFICIAL RATE	L.E./S.K.	0.76		1.02		1.03		2.00	
	COTTON AT THE FARM									
	OFFICIAL RATE	L.E./S.K.	95.96		99.29		120.09		145.96	
	MARKET RATE	L.E./S.K.	234.24		291.15		401.45		509.74	
	PRICE									
	OFFICIAL RATE	L.E./S.K.	75.80		108.54		109.57		129.58	
	[3]									
	OFFICIAL RATE	L.E./S.K.	10.88		10.95		11.60		13.15	
	PRICE + SUB.									
	OFFICIAL RATE	L.E./S.K.	86.68		119.49		121.17		142.73	
	(Price + SUB.) to (W. Pr. at Farm)									
	RATIO		0.90		1.20		1.01		0.98	
	RATIO		0.37		0.41		0.30		0.28	

Yield across the following varieties: Giza 45, 68, 71, 76 and 77.

(scarto) is equivalent to 1 m.k. of lint (scarto)

seed.

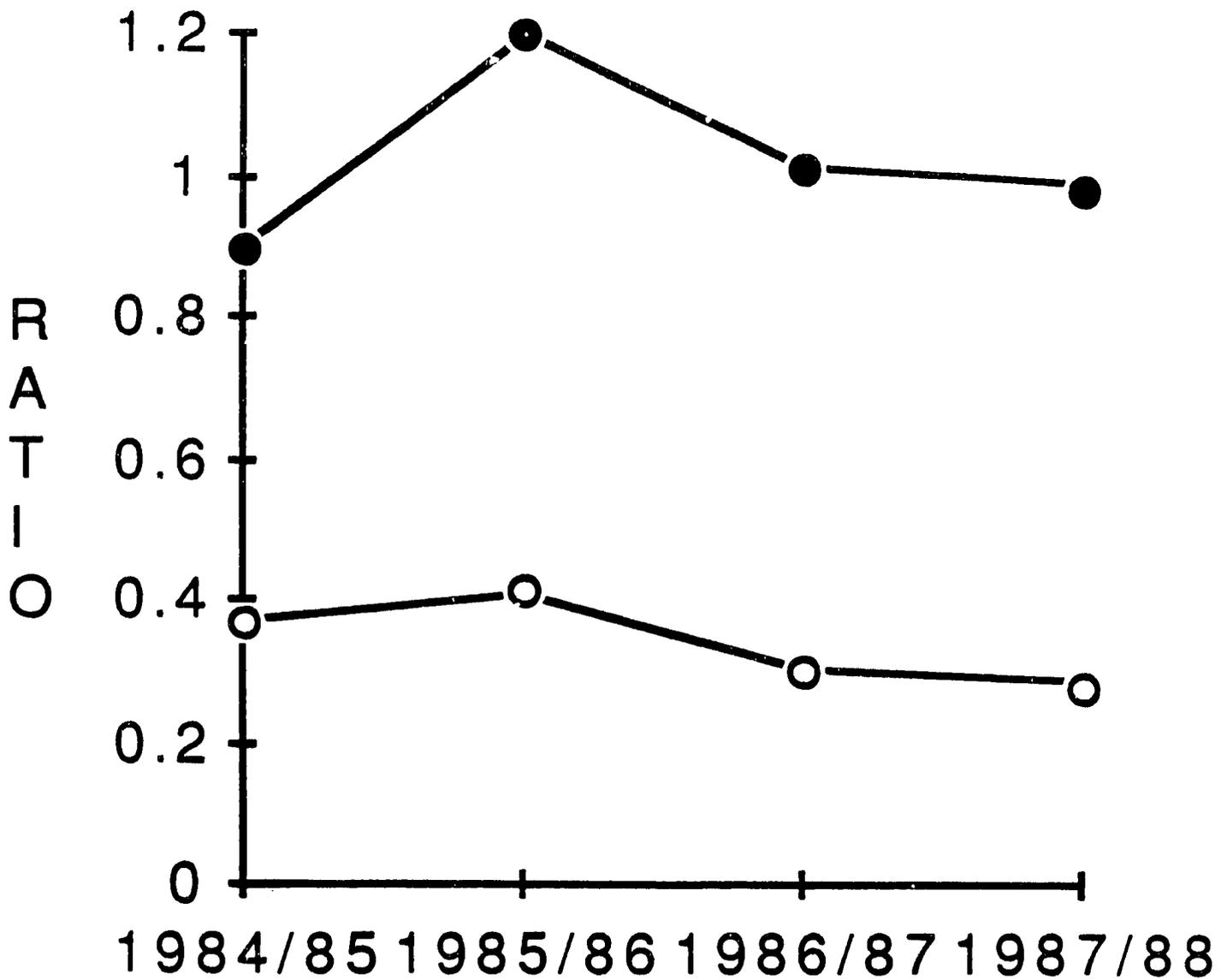
and pesticide subsidies given to the farmer. The fertilizer price is quoted at 15.5% nitrogen.

for further discussion of this point.

Table II.A.3

	A	B	C	D	E	F	G	H	I	J
1	PRICE FOR L3 COTTON (1)									
2	(EGYPT IS A NET EXPORTER OF LINT COTTON)									
3										
4										
5	TITLE	UNIT	1984/85	1985/86	1986/87	1987/88				
6	WORLD PRICE, LINT COTTON									
7	ALEXANDRIA	U.S\$/M.K.	103.80	109.30	139.90	155.60				
8										
9	EXCHANGE RATES									
10	OFFICIAL RATE	L.E./U.S.\$	0.70	0.70	0.70	0.70				
11	MARKET RATE	L.E./U.S.\$	1.60	1.90	2.19	2.30				
12										
13	WORLD PRICE, ALEXANDRIA									
14	OFFICIAL RATE	L.E./M.K.	72.52	78.51	97.93	108.92				
15	MARKET RATE	L.E./M.K.	165.76	207.67	306.30	357.88				
16										
17	TRANSPORTATION COSTS									
18	FROM GIN TO ALEX.	L.E./M.K.	0.75	0.75	0.75	0.75				
19										
20	WORLD PRICE AT GIN									
21	OFFICIAL RATE	L.E./M.K.	71.77	75.76	97.18	108.17				
22	MARKET RATE	L.E./M.K.	165.01	206.92	305.63	357.13				
23	LINT YIELD K.G./M.K. SEED COT.	YIELD/S.K.	50.00	50.00	50.00	50.00				
24										
25	OTHER JOINT PRODUCTS									
26	DOMESTIC PRICE SCARTO	L.E./M.K.	50.00	100.00	150.00	200.00				
27	SCARTO YIELD K.G./M.K. SEED COT.	YIELD/S.K.	2.00	2.00	2.00	2.00				
28										
29	WORLD PRICE COTTONSEED (2)									
30	OFFICIAL RATE (II)	L.E./M.T.	110.80	77.41	56.05	62.90				
31	MARKET RATE (II)	L.E./M.T.	295.20	265.84	250.92	292.39				
32	YIELD K.G./S.K. SEED COT.	YIELD/S.K.	105.00	105.00	105.00	105.00				
33										
34	VALUE ALL JOINT PRODUCTS PER S.K. SEED COTTON									
35	OFFICIAL RATE	L.E./S.K.	85.40	87.89	109.07	122.77				
36	MARKET RATE	L.E./S.K.	198.01	236.83	337.98	395.83				
37										
38	SEED PROCESSING MARGIN									
39	PER S.K. SEED COTTON	L.E./S.K.	3.61	11.45	12.59					
40										
41	WORLD PRICE SEED COT. AT GIN PER S.K. SEED COTTON									
42	OFFICIAL RATE	L.E./S.K.	78.79	76.44	96.48					
43	MARKET RATE	L.E./S.K.	169.40	227.38	325.39					
44										
45	TRANSPORTATION COSTS									
46	FROM FARM TO GIN	L.E./S.K.	0.76	1.02	1.03					
47										
48	WORLD PRICE SEED COTTON AT THE FARM									
49	OFFICIAL RATE	L.E./S.K.	78.03	75.42	95.45					
50	MARKET RATE	L.E./S.K.	188.64	226.38	324.38					
51										
52	PROCUREMENT PRICE	L.E./S.K.	67.10	97.42	98.18					
53										
54	INPUT SUBSIDIES (3)	L.E./S.K.	10.88	10.95	11.60					
55		L.E./M.T.	69.08	69.52	73.85					
56										
57	PROCUREMENT PRICE + SUB.	L.E./S.K.	77.98	108.37	109.78					
58										
59	Ratio of (Proc. Pr. + Sub.) to (W. Pr. at Farm)									
60	OFFICIAL RATE	RATIO	1.03	1.44	1.15					
61	MARKET RATE	RATIO	0.41	0.48	0.34					
62	[1] - Averaged quality across the following varieties: Giza 69, 75, 80, 81 and Dandara.									
63	- 50 kg of lint (scarto) is equivalent to 1 m.k. of lint (scarto)									
64	[2] This price is derived.									
65	[3] The sum of fertilizer and pesticide subsidies given to the farmer. The fertilizer price is quoted as 15.5% nitrogen.									
66	See the text for further discussion of this point.									

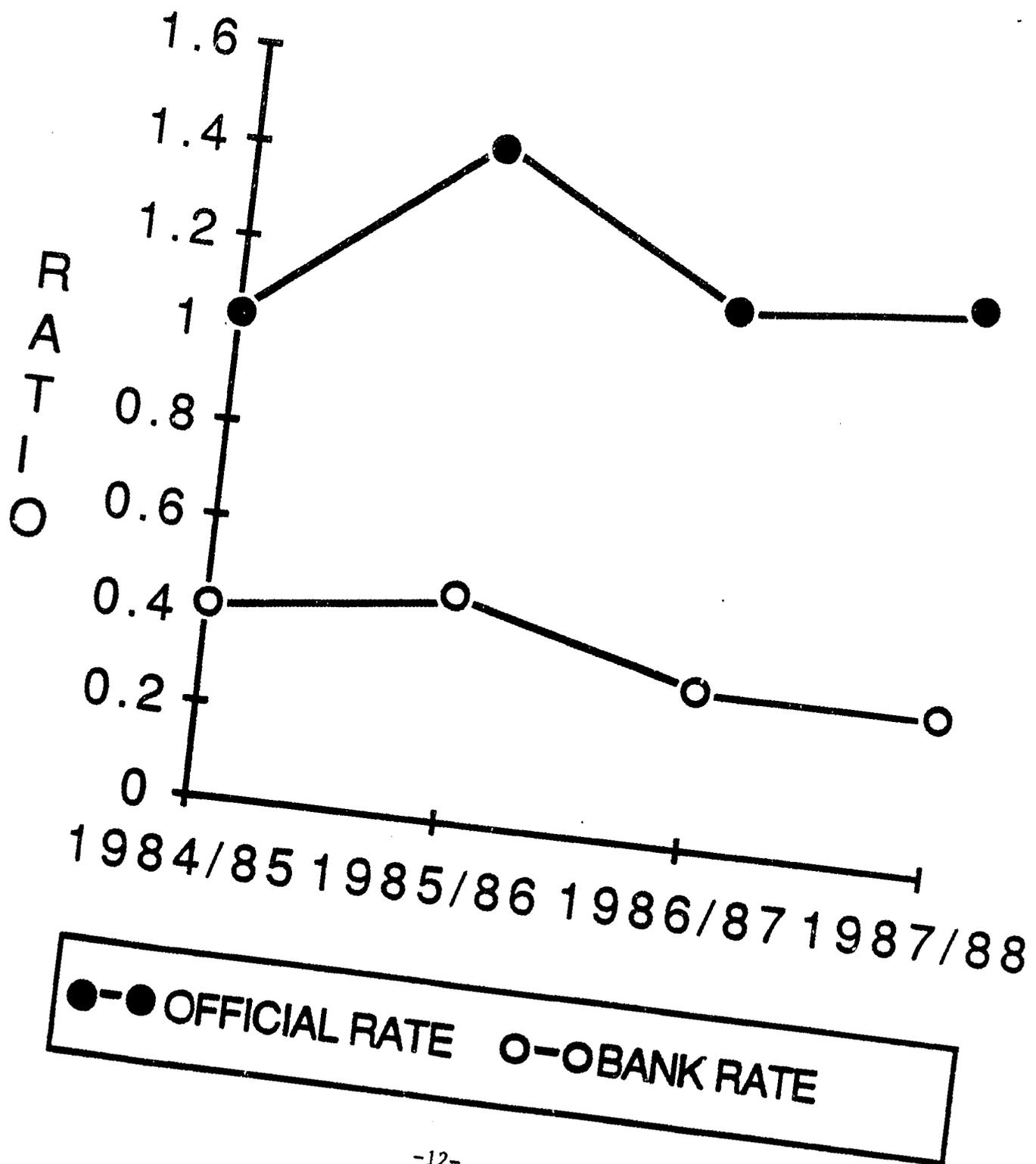
COTTON ELS: RATIO OF PROCUREMENT PRICE TO WORLD PRICE EQUIVALENT AT FARMGATE



●-● OFFICIAL RATE ○-○ BANK RATE

Chart III.A.2

COTTON LS: RATIO OF PROCUREMENT PRICE TO WORLD PRICE EQUIVALENT AT FARMGATE



From a policy standpoint it is important to know if the four-year historical period being examined is reasonably representative of the longer-term level of prices. Chart III.A.3 presents annual Egyptian export prices for ELS and LS cotton since 1970. It would appear that prices in the 1984/85-1987/88 period were high relative to average prices over a longer period of time. In the 1984-87 period, Egyptian export prices for ELS and LS cotton averaged \$3,164/ton and \$2,833/ton respectively. The average prices for these two types of cotton in the 1983-1987 period were \$2,836/ton and \$2,381/ton. Prices received by farmers in the 1984/85-1987/88 period were well below the farm level equivalent of the lower average prices for the 1973-87 period.

One can not ignore the impact on world prices of a major expansion in Egyptian production and exports due to domestic price liberalization, i.e., moving the farm price up to its world price equivalent. Egypt accounts for a large share of world ELS trade and a significant share of world LS trade. A large increase in Egyptian exports would, in themselves, depress world prices of these types of cotton. These price effects need to be taken into account since they will ultimately determine the equilibrium levels of cotton production in and exports from Egypt and foreign exchange earnings from this crop. Estimates of the price elasticities of export demand facing Egypt for ELS and LS cotton, price elasticities of domestic demand, and the production responses to prices are required to estimate the fuller implications of decontrolling cotton prices.

B. Sugarcane

I. Background

Sugar is a significant food commodity for many countries, and it is traded worldwide. Sugar can be made from sugarcane or sugar beets, but cane is the primary source of sugar in Egypt.

According to 1987/88 estimates, 10.8 million tons of sugarcane were produced using about 260 thousand feddans and yields averaged 41.5 tons per feddan. Ninety five percent of the total crop land devoted to sugarcane is located in the five governorates of Kena, Aswan, Menya, Suhag, and Kalioubia. The Egyptian sugar and distillation company has eight factories in Abou Kerkas, Gerga, Deshma, Kous, Armet, Edfou, and Kom Embo. There is also a refinery in Hawandia in Giza, which is the only location in Egypt where sugar is refined.

As illustrated in Chart III.B.1, one ton of sugarcane in Egypt produces approximately 110 kg of raw sugar, 33 kg molasses, and 260 kg of dry bagas. The molasses is an input in the production of alcohol, acetic acid, and a number of other industrial products, is exported, and is used for feed.

The world price equivalents for molasses at the sugar factory are derived first. We start with the world price of molasses at New Orleans, where molasses prices are regularly reported. Molasses prices in N.W. Europe are approximately the same as in New Orleans. Since most of Egypt's molasses exports are to Europe, we can obtain an Alexandria price by subtracting ocean freight from Alexandria to Europe from the New Orleans price (same as N.W. European price). The world price in U.S. dollars is then converted to Egyptian pounds using both the official and market exchange rates. Next, transportation costs from the sugar factory to Alexandria are subtracted to get a world price equivalents ex factory. Finally, since world prices are quoted for molasses of 52.5 percent sugar content and Egyptian molasses contains 33 percent sugar, a conversion of

WORLD PRICE FOR EGYPTIAN COTTON

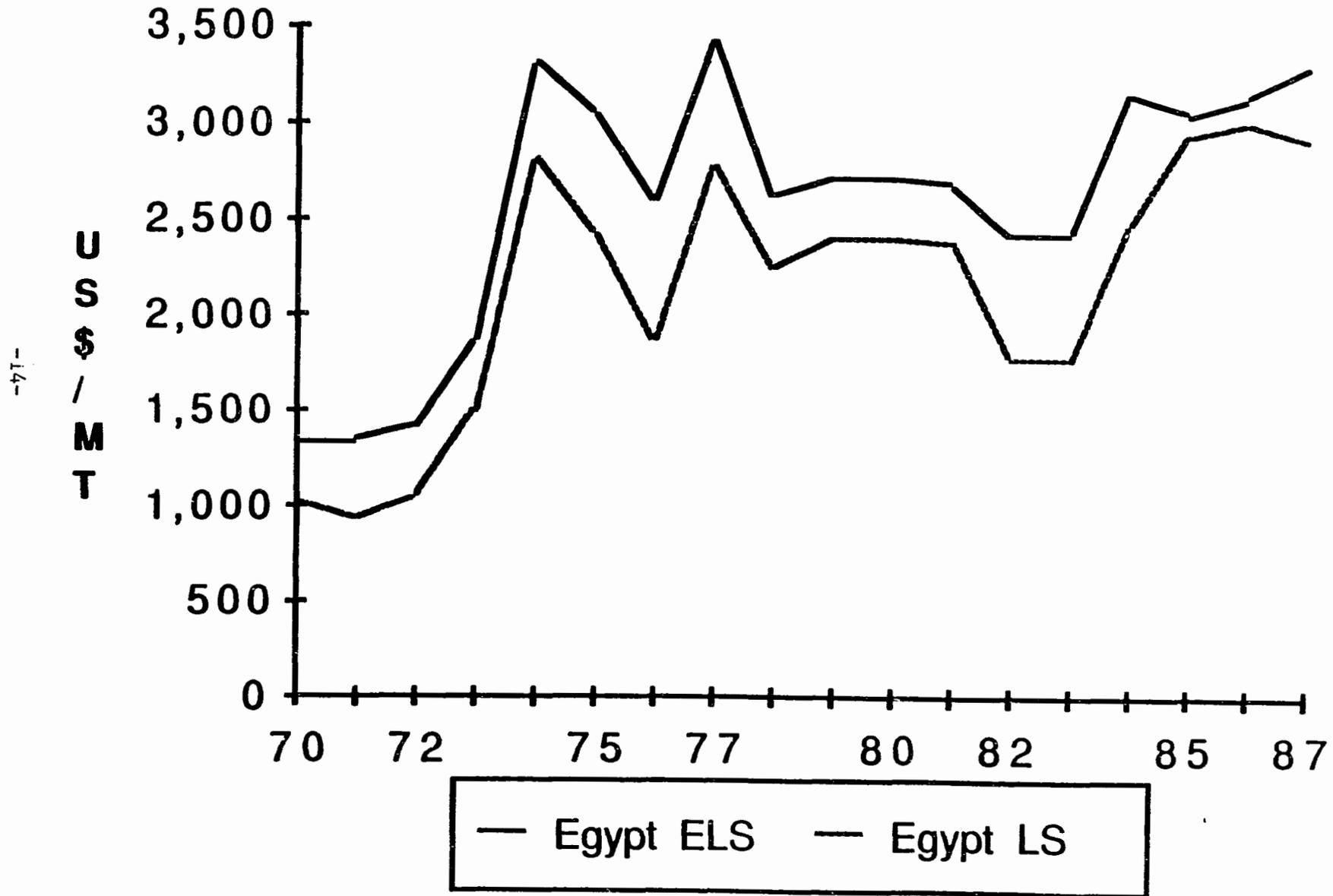
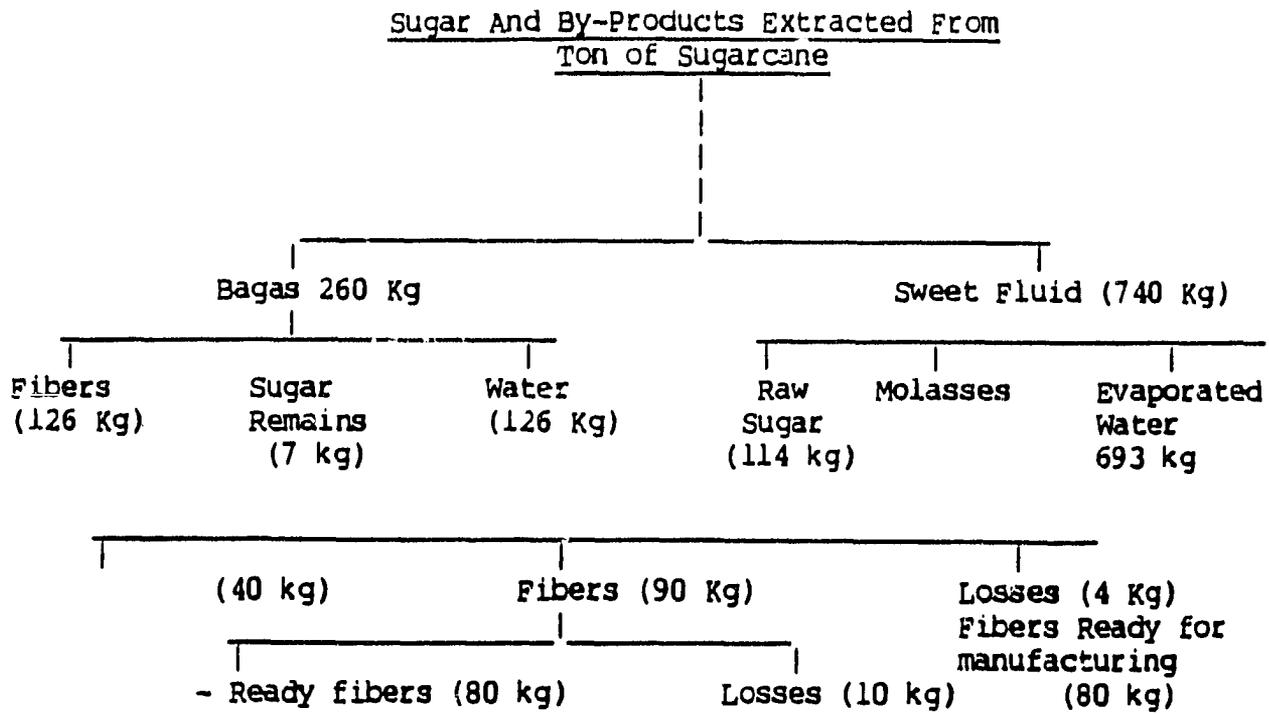


Chart III.B.1



world prices to the Egyptian sugar content level is made.

Egypt is a net importer of sugar. Thus, we start with Caribbean raw sugar prices and add ocean freight to get to Alexandria. World prices at Alexandria are converted into Egyptian pounds, transportation costs from Alexandria to Hawandia, the only refinery, are added. Finally, transportation costs from the main domestic sugar producing areas to the refinery are subtracted from the world price equivalent of raw sugar at Hawandia to get the world equivalent price at the factory level.

Prices of the three joint products (raw sugar, molasses, and bagas) are weighted by their respective yields from sugarcane to derive the world price equivalent of sugarcane at the factory measured in terms of product value. Processing margins and transportation costs from farm to factory are deducted to arrive at the world equivalent prices of sugarcane at the farm level.

Obtaining information concerning processing margins was difficult. Due to lack of data, this study obtained estimates of the processing margin for 1986/87 from the World Bank study on import intensity and the 1987/88 figure was estimated from information from one factory in Deshma. The 1984/85 and 1985/86 figures were derived by extrapolating backwards from the 1986/87 data point using the wholesale price index (W.P.I.) for all commodities.

Unlike in the case of cotton, the prices received by farmers for sugarcane have not been adjusted for input subsidies. We do not have a measure of the number of inputs used in sugarcane production that are subsidized nor the subsidy level for each input. To the extent to which there are input subsidies, the prices received by farmers for sugarcane used in this analysis are too low.

While world prices of all commodities fluctuate over time, movements in sugar prices are extreme as shown in Chart III.B.2. About every 7-10 years there is a very sharp increase in sugar prices followed by a fairly prolonged period of very low prices. For purposes of longer-run policy analysis one has to decide on what would be a "normal" level for sugar prices.

It is clear in Chart III.B.2 that the 1984-87 period corresponded to a period of extremely low prices in the sugar price cycle, averaging \$121/ton. Prices began to recover in 1988. From a longer-term planning standpoint, a price of \$265/ton would be more reasonable. This is a price that would yield a normal rate of return over costs to many world sugar producers.

Note also that swings in molasses prices are not extreme over time and that world prices (N. Orleans) in the 1984/85-1987/88 period used in this study are not out of line with the longer-term average price.

To help gain a better perspective in the relationship between sugarcane prices received by Egyptian producers and world prices, we perform two sets of calculations. One compares prices received by farmers with actual world price equivalents for sugarcane in the 1984/85-1987/88 period. The other derives world equivalent prices of sugarcane based on an average world price of raw sugar of \$156/ton which is about where prices are now. The latter gives a truer representation of domestic sugarcane procurement prices relative to world price from a longer-term policy standpoint.

2. Description of Results

Molasses

World molasses prices were relatively stable over the 1984/85-1987/88 period. Translating these prices into their equivalent values at the sugar factory results in stable prices if one uses the official exchange rate but rising prices using market exchange rates (lines 35 and 36, respectively, in Table III.B.1).

The world price equivalents of molasses at the factory are used in the analyses of sugar prices. For consistency domestic molasses prices valued at the official exchange rate are used to derive domestic sugar prices also using the official exchange rate. Similarly, molasses prices valued at the market exchange rates are used in the analysis of domestic sugar prices also valued at the market exchange rates.

Sugar

Because of the extreme volatility in world sugar prices, we have derived world price equivalents of sugarcane in two ways, as discussed earlier. One used actual world sugar prices in the 1984/85-1987/88 period, and the results are presented in Table III.B.2 and Chart III.B.3. An alternative set of calculations assumes a world price of sugar of \$265/ton in all years, and these results are presented in Tables III.B.3 and Chart III.B.4.

In the case of using actual world sugar prices, farm prices of sugarcane were more than three times world equivalent prices in the 1984/85-1987/88 period when measured at the official exchange rate. When market exchange rates are used, however, the ratio of farm prices of sugarcane to their world price equivalents declined from 1.17 in 1984/85 to .64 in 1987/88 despite the fact that prices received by farmers increased over the period. This increase, however, did not keep pace with the increase in world sugar prices and the depreciation in the market exchange rate. Thus, even in a period of low world sugar prices, Egyptian sugarcane producers received significantly less than the world price equivalents for sugarcane during most of the 1984/85-1987/88 period.

As one might suspect, the situation for domestic producers is much worse when one uses an average world price of raw sugar of \$265/ton. As a matter of reference, world sugar prices have been near this level during the first part of 1989.

The ratio of price equivalents measured at the official exchange rate increased from 1.22 in 1984/85 to 1.87 in 1987/88. However, when the market exchange rate is used, the price received by farmers was only about 46 percent of the world price equivalent, indicating that domestic prices were very low relative to a more "normal" world price and to where world prices have been in early 1989.

3. Policy Implications

It appears sugarcane prices in Egypt have been significantly below world prices equivalents in recent years. This discrepancy is even larger in terms of a long-term world planning price.

Chart III.B.2

SUGAR & MOLASSES PRICES

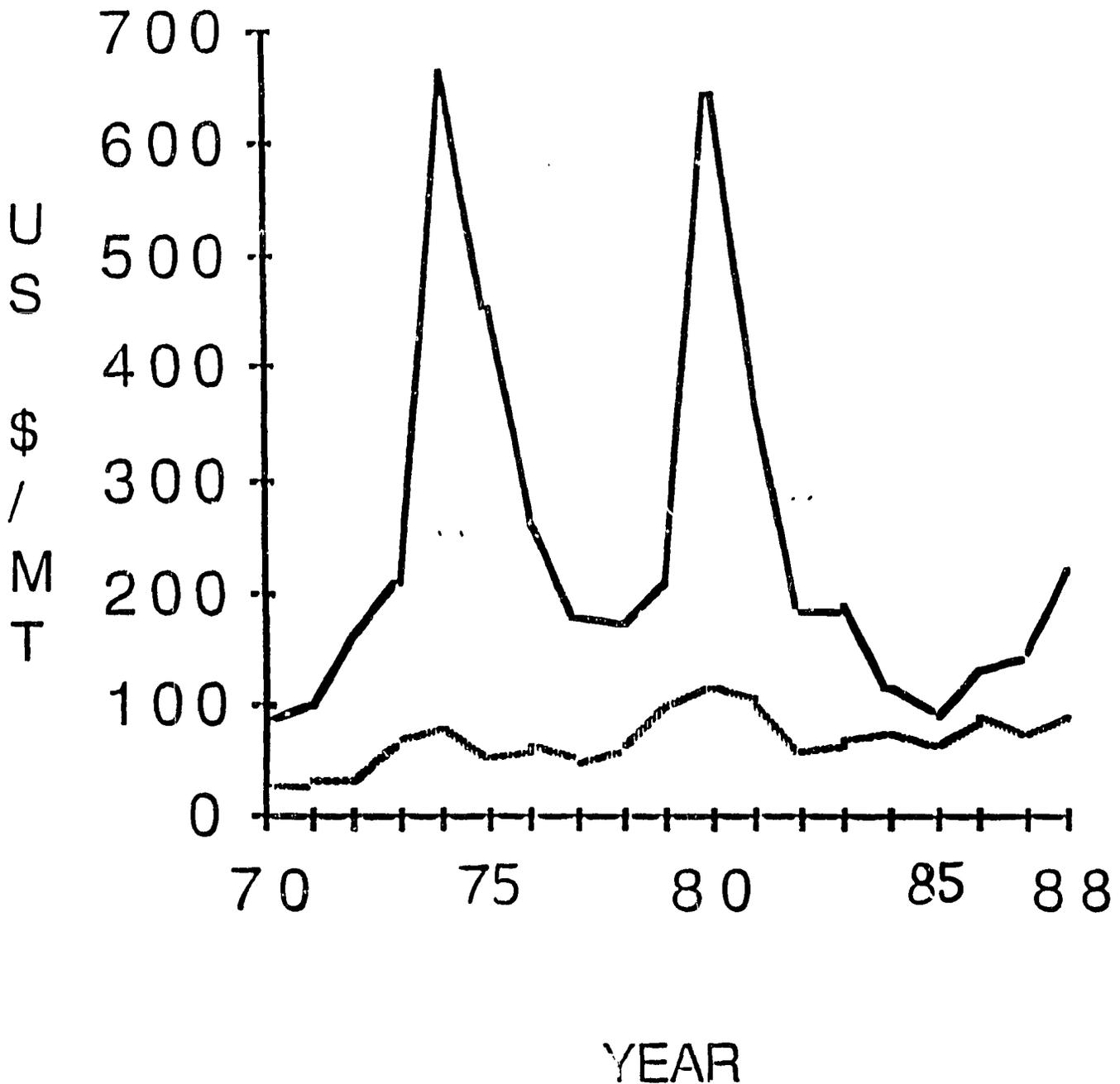
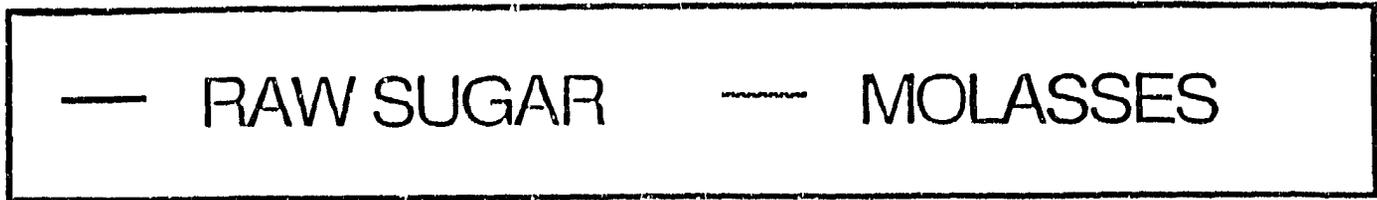


Table III.B.1

	A	B	C	D	E	F	G	H	I	J
1	WORLD PRICE FOR INEDIBLE MOLASSES [1]									
2										
3										
4										
5										
6	TITLE	UNIT	1984/85		1985/86		1986/87		1987/88	
7	WORLD PRICE, N. ORLEANS									
8	(52% SUGAR CONTENT) [2]	U.S\$/TON	70.00		75.50		80.00		80.00	
9										
10	TRANSPORTATION COSTS									
11	FROM ALEXANDRIA TO N. EUROPE	U.S\$/TON	20.00	*	20.00	*	20.00	*	20.00	*
12										
13	WORLD PRICE, ALEXANDRIA	U.S\$/TON	50.00		55.50		60.00		60.00	
14										
15	EXCHANGE RATES									
16	OFFICIAL RATE	L.E./U.S.\$	0.70		0.70		0.70		0.70	
17	MARKET RATE	L.E./U.S.\$	1.60		1.90		2.19		2.30	
18										
19	WORLD PRICE, ALEXANDRIA									
20	OFFICIAL RATE	L.E./TON	35.00		38.85		42.00		42.00	
21	MARKET RATE	L.E./TON	80.00		105.45		131.40		138.00	
22										
23	TRANSPORTATION COSTS									
24	FROM FACTORY TO ALEX.	L.E./TON	12.00		14.00		15.00		16.00	
25										
26	WORLD PRICE AT FACTORY [3]									
27	OFFICIAL RATE	L.E./TON	23.00		24.85		27.00		26.00	
28	MARKET RATE	L.E./TON	68.00		91.45		116.40		122.00	
29										
30	SUGAR CONTENT									
31	IN EGYPTIAN MOLASSES	PERCENT	33.00		33.00		33.00		33.00	
32										
33	WORLD PRICE AT FACTORY									
34	ADJUSTED FOR SUGAR CONTENT									
35	OFFICIAL RATE	L.E./TON	14.46		15.62		16.97		16.34	
36	MARKET RATE	L.E./TON	42.74		57.48		73.17		76.69	
37										
38	[1] -Egypt is an exporter of inedible molasses.									
39	-Crop year prices are an average of the corresponding two calendar years.									
40	[2] World prices for molasses are quoted with a 52.5% sugar content.									
41	[3]									

PRICE FOR SUGARCANE [1]							
	TITLE	UNIT	1984/85	1985/86	1986/87	1987/88	
1							
2							
3							
4	WORLD PRICE RAW SUGAR, CARI [2]	U.S\$/TON	101.50	111.00	140.50	186.50	
5							
6	TRANSPORTATION COSTS						
7	CARIBBEAN TO ALEXANDRIA	U.S\$/TON	25.00	25.00	25.00	30.00	
8							
9	WORLD PRICE RAW SUGAR, ALEX	U.S\$/TON	126.50	136.00	165.50	216.50	
10							
11	EXCHANGE RATES						
12	OFFICIAL RATE	L.E./U.S.\$	0.70	0.70	0.70	0.70	
13	MARKET RATE	L.E./U.S.\$	1.60	1.90	2.19	2.30	
14							
15	WORLD PRICE RAW, ALEX.						
16	OFFICIAL RATE	L.E./TON	88.55	95.20	115.85	151.55	
17	MARKET RATE	L.E./TON	202.40	258.40	362.45	497.95	
18							
19	TRANSPORTATION COSTS						
20	ALEX TO HAWANDIA TO FACTORIES	L.E./TON	8.84	9.04	9.44	9.84	
21							
22	WORLD PRICE AT FACTORY						
23	OFFICIAL RATE	L.E./TON	79.71	86.16	106.41	141.71	
24	MARKET RATE	L.E./TON	193.56	249.36	353.01	488.11	
25	RAW SUGAR YIELD/TON SUGARCANE	YIELD/TON	0.11	0.11	0.11	0.11	
26							
27	OTHER JOINT PRODUCTS [3]						
28	INEDIBLE MOLASSES						
29	MOLASSES YIELD/TON SUGARCANE	YIELD/TON	0.03	0.03	0.03	0.03	
30	WORLD PRICE OF MOLASSES [4]						
31	OFFICIAL RATE	L.E./TON	14.48	15.62	16.97	16.34	
32	MARKET RATE	L.E./TON	42.74	57.48	73.17	76.69	
33	BAGASS						
34	BAGASS YIELD/TON SUGARCANE	YIELD/TON	0.26	0.26	0.26	0.26	
35	DOMESTIC PRICE OF BAGASS	L.E./TON	5.00	5.00	5.00	5.00	
36							
37	VALUE OF ALL JOINT PRODUCTS [5]						
38	OFFICIAL RATE	L.E./TON	10.86	11.64	13.99	17.99	
39	MARKET RATE	L.E./TON	24.78	31.62	43.96	59.48	
40							
41	PROCESSING MARGIN (general wpi*)	L.E./TON	3.14	3.56	4.16	2.89	
42							
43	NET VALUE OF SUGARCANE						
44	OFFICIAL RATE (general wpi)	L.E./TON	7.72	8.08	9.83	15.10	
45	MARKET RATE (general wpi)	L.E./TON	21.63	28.06	39.80	56.58	
46							
47	TRANSPORTATION COSTS						
48	FROM FARM TO FACTORY	L.E./TON	1.00	1.20	1.80	3.20	
49							
50	WORLD PRICE SUGARCANE AT THE FARM						
51	OFFICIAL RATE (general wpi)	L.E./TON	6.72	6.88	8.03	11.90	
52	MARKET RATE (general wpi)	L.E./TON	20.63	26.86	38.00	53.38	
53							
54	DOMESTIC FARMGATE PRICE	L.E./TON	24.20	27.20	30.50	34.00	
55							
56	Ratio of (Dom. Farm Pr.) to (W. Pr. at Farm)						
57	OFFICIAL RATE	RATIO	3.60	3.95	3.80	2.86	
58	MARKET RATE	RATIO	1.17	1.01	0.80	0.64	
59							

[1] Egypt imports refined and raw sugar.

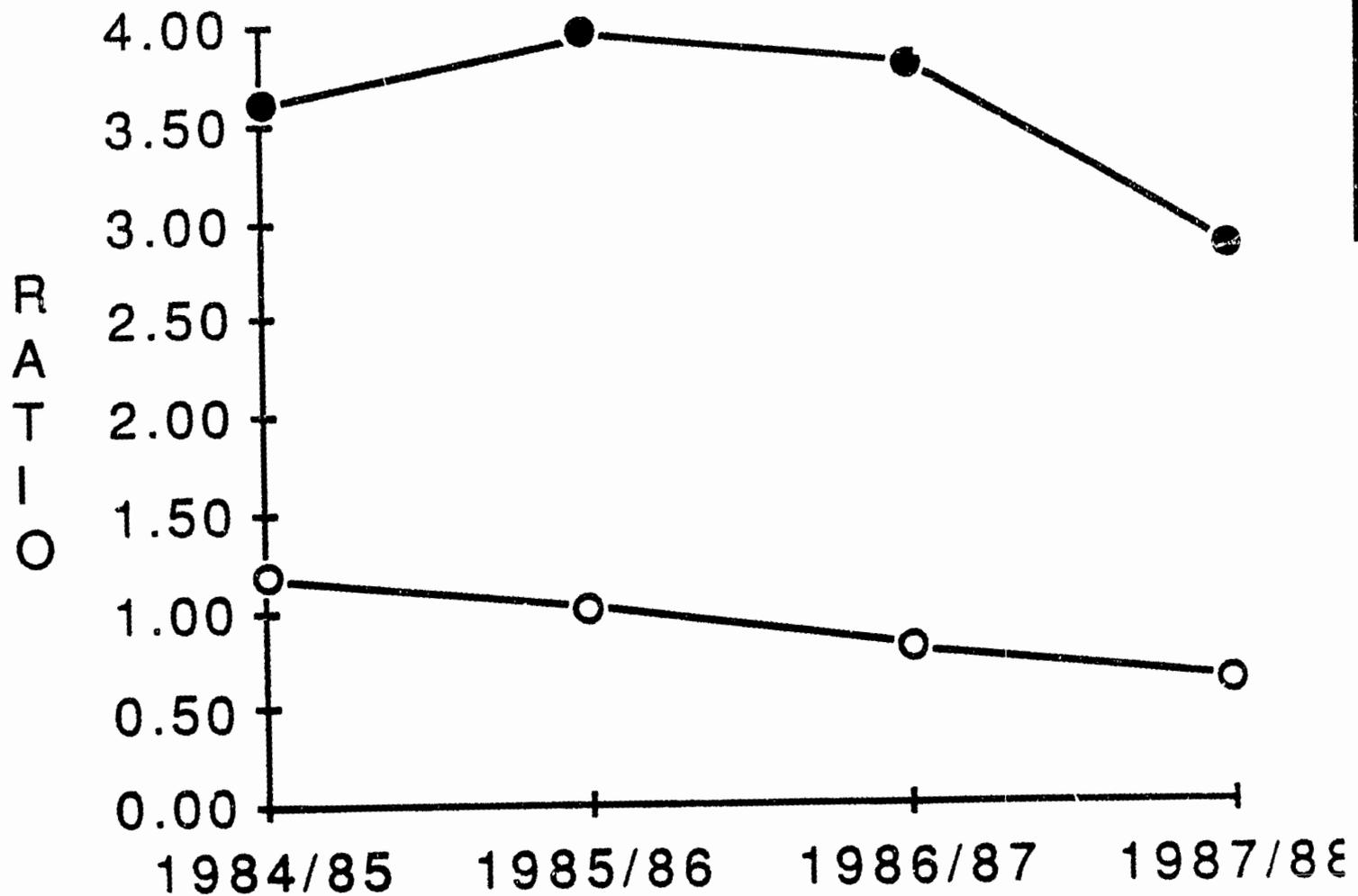
[2] Crop year prices are an average of the corresponding two calendar years.

[3] Edible molasses is produced separately, and is not a joint product of raw sugar.

[4] These world prices are derived.

[5] In tons of sugar cane.

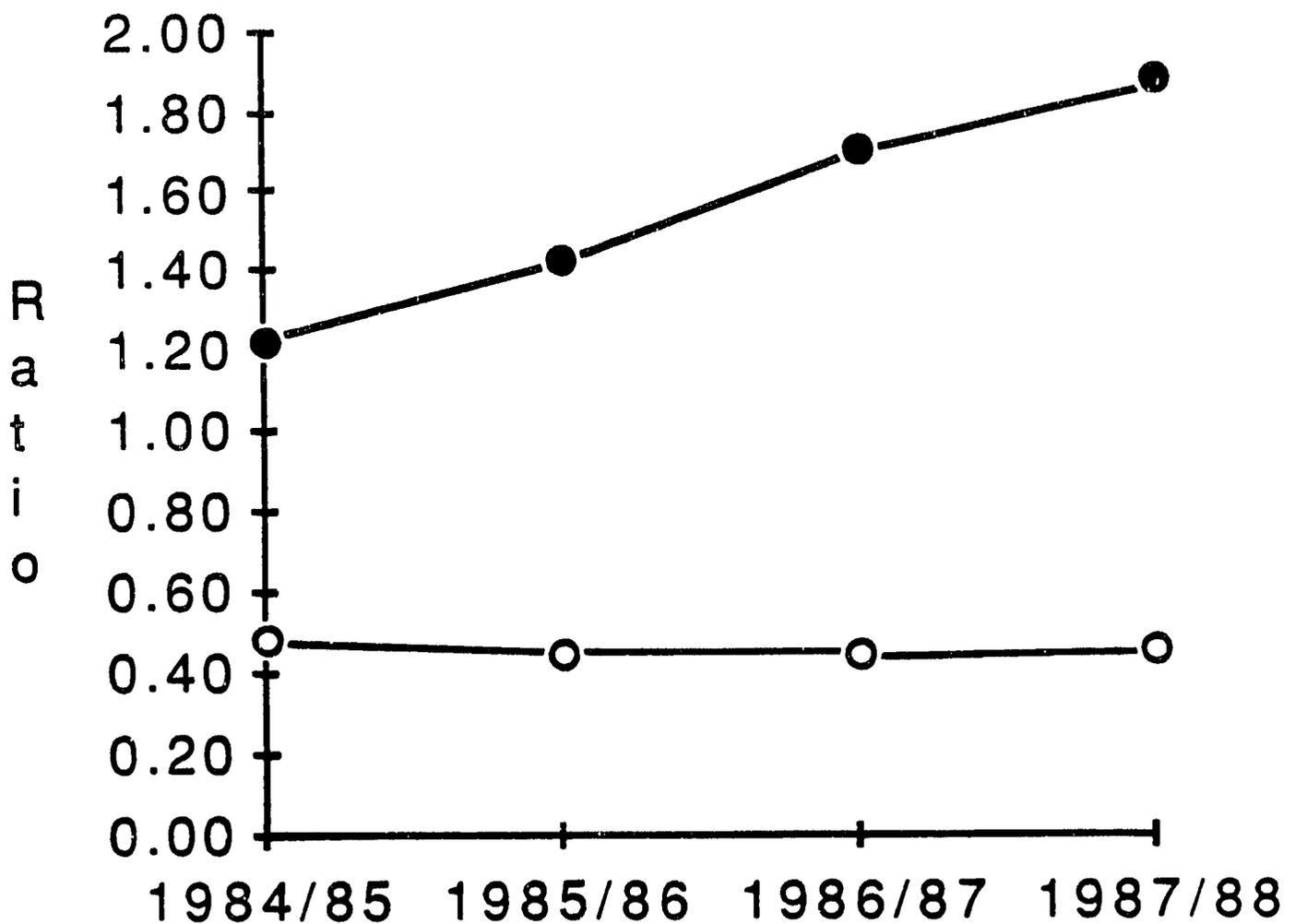
**SUGARCANE: RATIO DOMESTIC TO
WORLD PRICE EQUIVALENT AT
FARMGATE**
(Estimated with WPI, All Products)



●-● OFFICIAL RATE ○-○ BANK RATE

	TITLE	UNIT	1984/85	1985/86	1986/87	1987/88
3	WORLD PRICE RAW SUGAR, CARI [2]	U.S\$/TON	265.00	265.00	265.00	265.00
5						
6	TRANSPORTATION COSTS					
7	CARIBBEAN TO ALEXANDRIA	U.S\$/TON	25.00	25.00	25.00	30.00
8						
9	WORLD PRICE RAW SUGAR, ALEX	U.S\$/TON	290.00	290.00	290.00	295.00
10						
11	EXCHANGE RATES					
12	OFFICIAL RATE	L.E./U.S.\$	0.70	0.70	0.70	0.70
13	MARKET RATE	L.E./U.S.\$	1.60	1.90	2.19	2.30
14						
15	WORLD PRICE RAW, ALEX.					
16	OFFICIAL RATE	L.E./TON	203.00	203.00	203.00	206.50
17	MARKET RATE	L.E./TON	464.00	551.00	635.10	678.50
18						
19	TRANSPORTATION COSTS					
20	ALEX TO HAWANDIA TO FACTORIES	L.E./TON	8.84	9.04	9.44	9.84
21						
22	WORLD PRICE AT FACTORY					
23	OFFICIAL RATE	L.E./TON	194.16	193.98	193.56	196.66
24	MARKET RATE	L.E./TON	455.16	541.36	625.66	668.66
25	RAW SUGAR YIELD/TON SUGARCANE	YIELD/TON	0.11	0.11	0.11	0.11
26						
27	OTHER JOINT PRODUCTS [3]					
28	INEDIBLE MOLASSES					
29	MOLASSES YIELD/TON SUGARCANE	YIELD/TON	0.03	0.03	0.03	0.03
30	WORLD PRICE OF MOLASSES [4]					
31	OFFICIAL RATE	L.E./TON	14.46	15.62	16.97	16.34
32	MARKET RATE	L.E./TON	42.74	57.48	73.17	76.69
33	BAGASS					
34	BAGASS YIELD/TON SUGARCANE	YIELD/TON	0.26	0.26	0.26	0.26
35	DOMESTIC PRICE OF BAGASS	L.E./TON	5.00	5.00	5.00	5.00
36						
37	VALUE OF ALL JOINT PRODUCTS [5]					
38	OFFICIAL RATE	L.E./TON	23.91	23.93	23.93	24.26
39	MARKET RATE	L.E./TON	54.60	64.98	75.04	80.06
40						
41	PROCESSING MARGIN (general wpi*)	L.E./TON	3.14	3.56	4.16	2.89
42						
43	NET VALUE OF SUGARCANE					
44	OFFICIAL RATE (general wpi)	L.E./TON	20.77	20.37	19.77	21.37
45	MARKET RATE (general wpi)	L.E./TON	51.46	61.42	70.88	77.16
46						
47	TRANSPORTATION COSTS					
48	FROM FARM TO FACTORY	L.E./TON	1.00	1.20	1.80	3.20
49						
50	WORLD PRICE SUGARCANE AT THE FARM					
51	OFFICIAL RATE (general wpi)	L.E./TON	19.77	19.17	17.97	18.17
52	MARKET RATE (general wpi)	L.E./TON	50.46	60.22	69.08	73.96
53						
54	DOMESTIC FARMGATE PRICE	L.E./TON	24.20	27.20	30.50	34.00
55						
56	Ratio of (Dom. Farm Pr.) to (W. Pr. at Farm)					
57	OFFICIAL RATE	RATIO	1.22	1.42	1.70	1.87
58	MARKET RATE	RATIO	0.48	0.45	0.44	0.46
59						
60	[1] Egypt imports refined and raw sugar.					
61	[2] Crop year prices are an average of the corresponding two calendar years.					
62	[3] Edible molasses is produced separately, and is not a joint product of raw sugar.					
63	[4] These world prices are derived.					
64	[5] In tons of sugar cane.					

**SUGARCANE: RATIO DOMESTIC
PRICE TO WORLD PRICE
EQUIVALENT AT FARMGATE
(Estimated with WPI, All Pr.)**



●-● OFFICIAL RATE ○-○ BANK RATE

Moving domestic sugarcane prices up to their world price equivalent would, in itself, provide incentives to increase sugarcane production. However, the magnitude of the production response will also depend on how sugarcane prices change relative to prices for competing crops.

C. Rice

1. Background³

In the 1984/85-1987-88 period Egypt planted an average of about 1,050 thousand feddans to rice and production averaged about 2.4 million metric tons. Yields are high at nearly 6 metric tons per hectare because over 95 percent of the crop is planted to high-yielding varieties.

Egypt is a net exporter of rice, but most of the crop is consumed domestically. Exports have declined over time and have been low and erratic in recent years. During the 1984/85-1987/88 period annual exports ranged from 16,000 to 105,000 tons and averaged 54,500 tons. The major export markets during this period were the Middle East, Eastern Europe and non-EC countries in Western Europe. Exports to Eastern Europe and the USSR take place under special trade arrangements.

Egypt produces and exports both long- and short-grain rice. Data for 1987/88 indicate that these two types of rice were exported in about equal quantities with the price of short-grain averaging about \$10/ton more than long-grain rice.⁴ It is not clear whether or not this mix of exports by type of rice is stable over time.

Since Egypt's exports are relatively small, reported export prices may not accurately reflect world prices. First, the volume is probably not uniform enough over a crop year to provide a good representation of the season average price. Second, the quantity involved in individual export sales varies significantly; e.g., a range of 20 to 4,000 tons in 1987/88 was indicated in a list of selected export sales. Sales of small quantities typically are made for higher prices which reflect added handling and shipping costs per ton.

In order to get a reasonable approximation of the world price of rice for Egypt, we have decided to start with the world price at Bangkok, Thailand since that country is normally one of the largest exporters and its price closely approximates free market conditions.

Since the Middle East is a major rice importing area and also a major market for Egypt, we have taken this market as a price reference point. Ocean freight from Thailand to the Middle East is added to the f.o.b. rice price in Bangkok. Then freight from Egypt to the Middle East is subtracted from the delivered price of Thai rice in that

³ Part of this section draws upon John Parker, Egypt: Rice Market Fundamentals, Economic Research Service, U.S. Department of Agriculture, June 6, 1988.

⁴ This statistic is based upon an incomplete time series collected by the Ministry of Agriculture over the 1984/85-1987/88 time period and may not reflect the long term price differential of short to long-grain rice in Egypt.

market to get an export price at Alexandria.

The next adjustment made is to reflect the fact that short-grain rice appears to sell for about \$10/ton more than long-grain. Assuming Egypt exports these two types of rice in about equal quantities, this would result in an export price at Alexandria for all rice about \$5/ton above the prices derived from Thai rice prices.

The following adjustments are then made in the export price f.o.b. Alexandria:

- Transportation costs from the rice mill to Alexandria are subtracted.
- The value of milled rice is combined with the value of rice husks (bran), with the latter valued in terms of domestic prices. The two are combined into a weighted average value using appropriate milling yields.
- The cost of milling is subtracted from the product value (rice plus husks) to get the value of rough rice at the mill.
- Finally, subtracting transportation costs for getting rough rice from the farm to the mills yields the world rice price equivalent at the farm level.

As with the other commodities, all of the above calculations are done using both the official and market rates of exchange.

Farmers receive two prices for their rice. One is an open market price. The other is a price set by the government for the rice it procures. Both prices are reported as well as a weighted average of the two based on the proportions of the crop purchased by the government and that sold into the domestic market. We have used prices for long-grain base only. The free market price of rice is the same for long- and short-grain varieties, but procurement prices differ slightly. Also, the percent of each type of rice procured by the Government differs. The differences in procurement prices and the percent of the crop procured between the two types of rice do not appear large enough to significantly affect our results by ignoring them.

The government, open market, and weighted average producer prices are compared with the equivalent world prices at the farm level.

We have not adjusted the government procurement price of rice for input subsidies which producers receive for fertilizer, pesticides, and other purchased inputs because it was difficult to get complete data on them. Thus, the reported government prices underestimate the real value received by farmers from government rice purchases because important input subsidies are not taken into account.

2. Description of Results

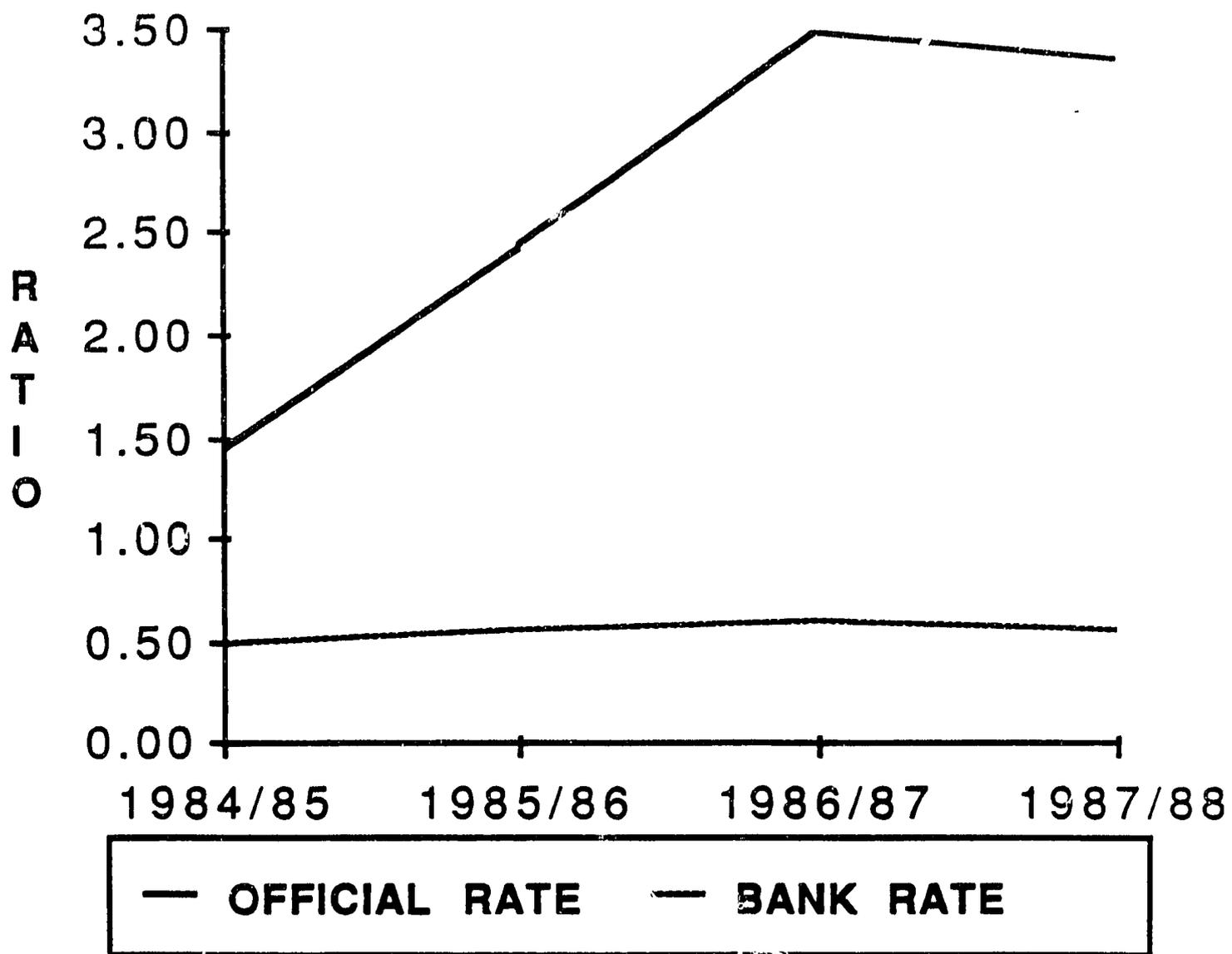
The results for rice are presented in Table III.C.1 and Chart III.C.1. and III.C.2.

During the 1984/85 period both the government procurement and the open market price for rice increased substantially. The procurement price averaged about 55 percent of the equivalent world price using the market exchange rates. On the other hand, market prices for rice averaged about 107 percent of world prices, being below world prices in some years and above in others. The weighted average price received by farmers was substantially below the world price in 1984/85 and 1987/88 but nearly equal to the world price in the other two years.

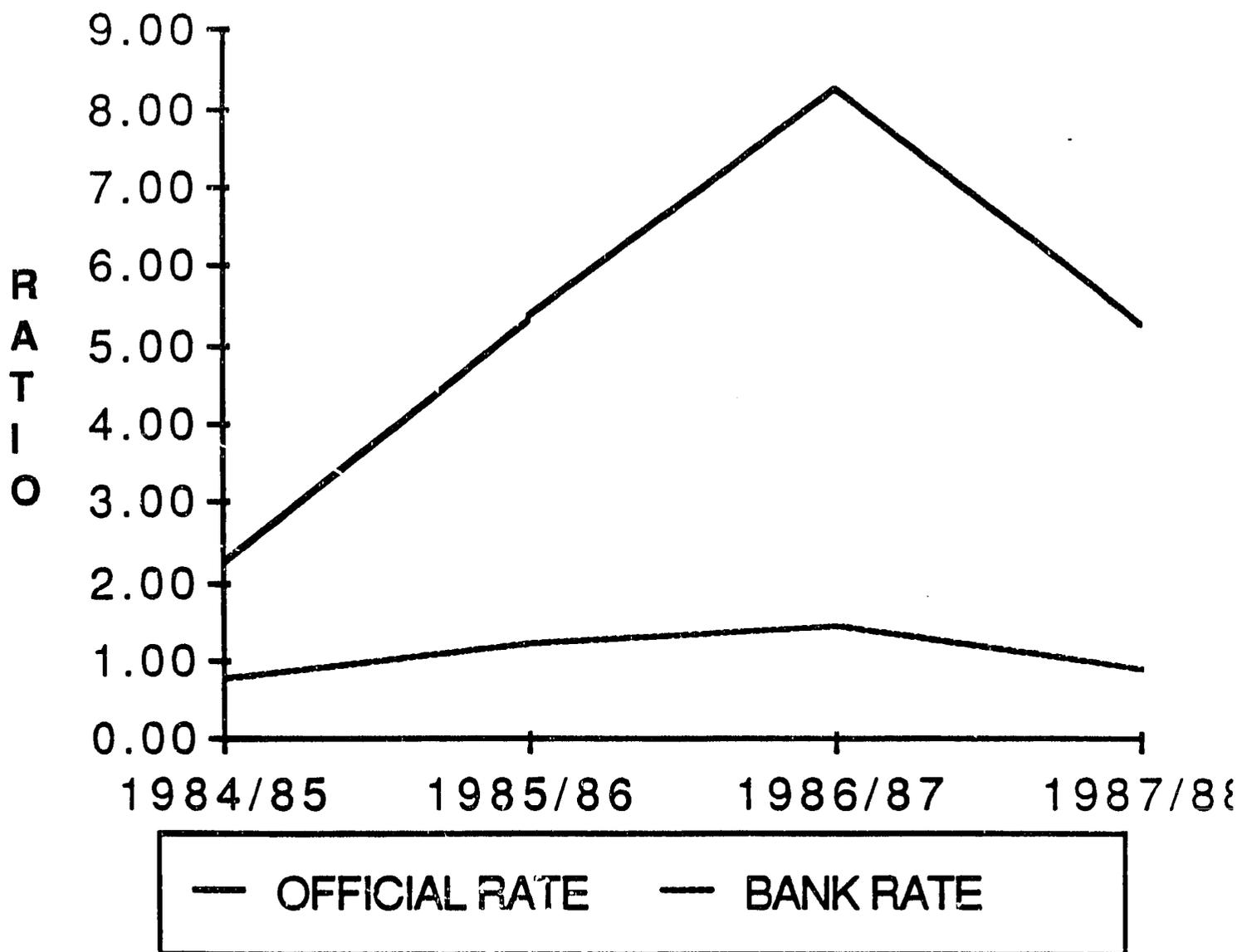
Table III.C.1

	A	B	C	D	E	F	G	H	I	J
1	PRICE FOR RICE (1)									
2										
3	TITLE	UNIT	1984/85		1985/86		1986/87		1987/88	
4	WORLD PRICE, BANGKOK 5% broken (2)	U.S./TON	234.50		213.50		220.00		265.00	
5										
6	TRANSPORTATION COSTS									
7	BANGKOK TO MIDDLE EAST	U.S./TON	15.00		15.00		15.00		15.00	
8										
9	TRANSPORTATION COSTS									
10	ALEXANDRIA TO MIDDLE EAST	U.S./TON	25.00		25.00		25.00		25.00	
11	ADJ. FACTOR FOR TYPE	U.S./TON	5.00		5.00		5.00		9.00	
12										
13	WORLD PRICE, ALEXANDRIA	U.S./TON	239.50		218.50		225.00		270.00	
14										
15	EXCHANGE RATES									
16	OFFICIAL RATE	L.E./U.S.\$	0.70		0.70		0.70		0.70	
17	MARKET RATE	L.E./U.S.\$	1.60		1.90		2.19		2.30	
18										
19	WORLD PRICE, ALEXANDRIA									
20	OFFICIAL RATE	L.E./TON	187.65		152.95		157.50		189.00	
21	MARKET RATE	L.E./TON	383.20		415.15		492.75		521.00	
22										
23	TRANSPORTATION COSTS									
24	FROM RICE MILL TO ALEX.	L.E./TON	7.30		7.30		7.30		7.30	
25										
26	WORLD PRICE AT MILL									
27	OFFICIAL RATE	L.E./TON	160.35		145.65		150.20		181.70	
28	MARKET RATE	L.E./TON	375.90		407.85		485.45		613.70	
29										
30	JOINT PRODUCT									
31	DOMESTIC PRICE OF HUSK	L.E./TON	11.60		8.25		10.56		10.16	
32	HUSK YIELD/TON UNMILLED RICE	YIELD/TON	0.33		0.33		0.33		0.33	
33										
34	MILLING MARGINS									
35	PER TON OF UNMILLED RICE	L.E./TON	37.95		47.94		55.64		64.58	
36										
37	VALUE UNMILLED RICE AT MILL (3)									
38	OFFICIAL RATE	L.E./TON	73.31		52.37		48.48		60.51	
39	MARKET RATE	L.E./TON	217.73		228.04		273.10		349.95	
40										
41	TRANS. COST FROM FARM TO MILL (4)	L.E./TON	0.76		1.02		1.03		2.00	
42										
43	WORLD PRICE UNMILLED RICE AT FARM									
44	OFFICIAL RATE	L.E./TON	72.55		51.35		47.45		58.51	
45	MARKET RATE	L.E./TON	216.97		227.02		272.07		347.95	
46										
47	FARMGATE PRICE UNMILLED RICE									
48	GOVERNMENT	L.E./TON	105.00		125.00		165.00		195.00	
49	OPEN MARKET (5)	L.E./TON	164.63		274.50		392.00		306.00	
50	WEIGHTED AVERAGE	L.E./TON	130.56		211.50		247.25		206.00	
51										
52	RATIO OF GOVERNMENT PRICE TO W. P. AT FARM									
53	OFFICIAL RATE	RATIO	1.45		2.43		3.48		3.33	
54	MARKET RATE	RATIO	0.48		0.55		0.61		0.56	
55										
56	RATIO OF OPEN MARKET PRICE TO W. P. AT FARM									
57	OFFICIAL RATE	RATIO	2.27		5.35		8.26		5.23	
58	MARKET RATE	RATIO	0.76		1.21		1.44		0.88	
59										
60	RATIO OF WEIGHTED AV. PRICE TO W. P. AT FARM									
61	OFFICIAL RATE	RATIO	1.80		4.12		5.21		3.52	
62	MARKET RATE	RATIO	0.60		0.93		0.91		0.59	
63	(1) Egypt exports rice, 3-5% broken.									
64	(2) Thai prices are reported on a calendar year basis. crop year prices are an average of the two corresponding calendar years.									
65	(3) 1 TON UNMILLED RICE = (.67) TON MILLED RICE + (.33) TON HUSK.									
66	(4) Same transport cost as for cotton.									
67	(5) Open market prices are the average price for Nov., Dec., Jan. and Feb. for each FY except 1987/88									
68	average price is for Nov. and Dec. only because data for Jan. and Feb. not available.									

**RICE: RATIO OF QUOTA PRICE TO WORLD
PRICE EQUIVALENT AT FARM.**



RICE: RATIO OF FREE MARKET PRICE TO
WORLD PRICE EQUIVALENT AT FARM.



3. Policy Implications

Government procurement of rice at below world prices has depressed the average price received by farmers sharply in some years but only modestly in others. Eliminating government procurement would help rectify this situation.

But there is another consideration as well as that indicated by the domestic market price for rice. In some years the export of rice by the government combined with inadequate imports has forced domestic market prices above their world price equivalents and below in other years. This seems to indicate that coordination of imports and exports is required to get more congruence between domestic and world prices.

D. Wheat

1. Background

Egypt is a major importer of wheat. Soft red winter (SRW) wheat is a common variety imported. We use the U.S. Gulf price for SRW as an indicator of world prices. Ocean freight costs are added to derive a c.i.f. price of wheat at Alexandria. This price is then converted into Egyptian pounds using both official and market exchange rates. Transportation costs are added to the Alexandria price to arrive at a world price equivalent at Cairo, the single major consuming area.

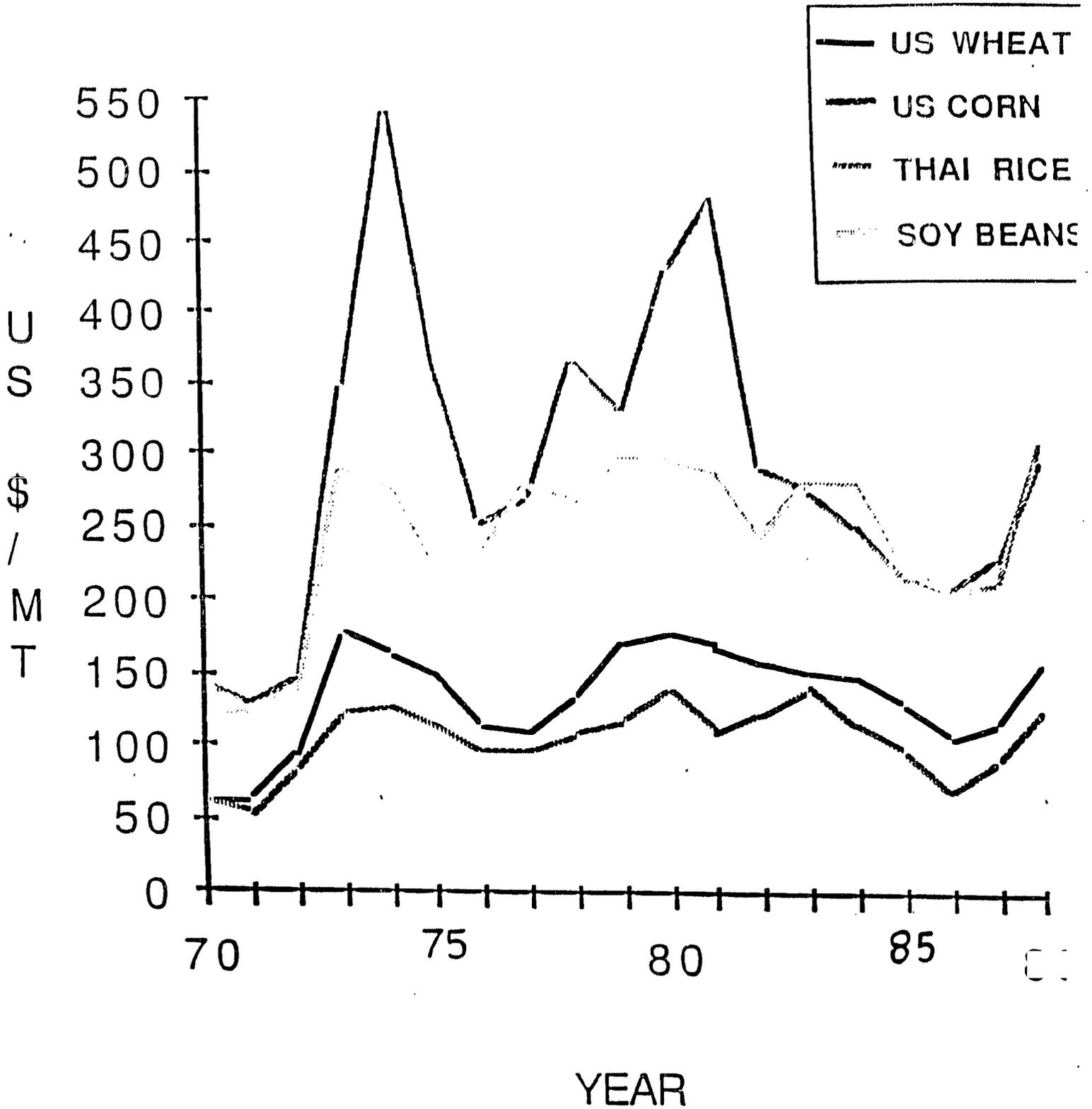
World equivalent prices at Cairo are then compared with the average price received by Egyptian producers. Since Cairo does not represent the "center" of wheat production in Egypt, this comparison is not strictly correct. For example, of the about 1.2 million acres in wheat in 1986, 56 percent was in Lower, 18 percent in Middle and 26 percent in Upper Egypt. Thus, slightly more than one-half of the wheat area was north of Cairo and slightly less than one-half was south of it. The errors caused by comparing two sets of prices at a Cairo location are not likely to be large, however. The distribution of production suggests that the farm price in the Cairo area is slightly higher than the national average farm price.

Another point to consider is how representative world prices of wheat and other major crops such as maize (corn) and soybeans in 1984/85-1987/88 were in relation to a longer-term perspective for these crops. Prices for these commodities for the 1970-88 period are shown in Chart III.D.1. It appears that prices in the 1984/85-1978/88 period were low relative to the longer-term trend and they are expected to be higher in the future. They may not average as high as the 1988 crop year price shown in Chart III.D.1 because that year reflects an extreme drought in the United States and Canada.⁶

⁵ The value of straw, a joint product of wheat used for fodder, was not estimated in this analysis because we are comparing the domestic price of wheat directly to its world price. This omission is relevant to policy analysis only if one is computing relative crop values.

⁶ For a discussion of price trends see Martin E. Abel and John Beach, Calculating Border Prices for Grains, Oilseeds, and Oilseed Products, APAP Staff Paper No. 22, Abt Associates, Washington, D.C., July 1988 as updated.

WORLD GRAIN & SOYBEAN PRICES



2. Analytical Results

Egypt has been able to keep its farm prices somewhat below the world price equivalents measured in terms of market exchange rates (Table III.D.1 and Chart III.D.2). Generally, prices received by farmers improved relative to world prices measured at the market exchange rate over the 1984/85-1987/88 period. The difference between the two prices measured by the ratio of prices received by farmers to their world price equivalents averaged about 0.85 in the latter part of the 1984/85-1987/88 period. This 15 percent difference between the two prices is significant, but it is not nearly as large as the differences for some other major crops such as for cotton and rice, and for sugarcane when a "normal" world price for raw sugar is used.

3. Policy Implications

It appears that the increases in prices received by farmers for wheat during the 1984/85-1987/88 period were able to narrow the gap between them and world prices somewhat. Still, government interventions have kept the farm price about 15 percent below its world price equivalent and this undoubtedly acted as a mild deterrent to increasing wheat production.

E. Maize

1. Background

Egypt produces about 4 million tons and imports about 2 million tons of maize annually. Total maize area was about 1.15 million acres in 1986. Of that total, 64 percent was in Lower, 24 percent in Middle and 12 percent in Upper Egypt.

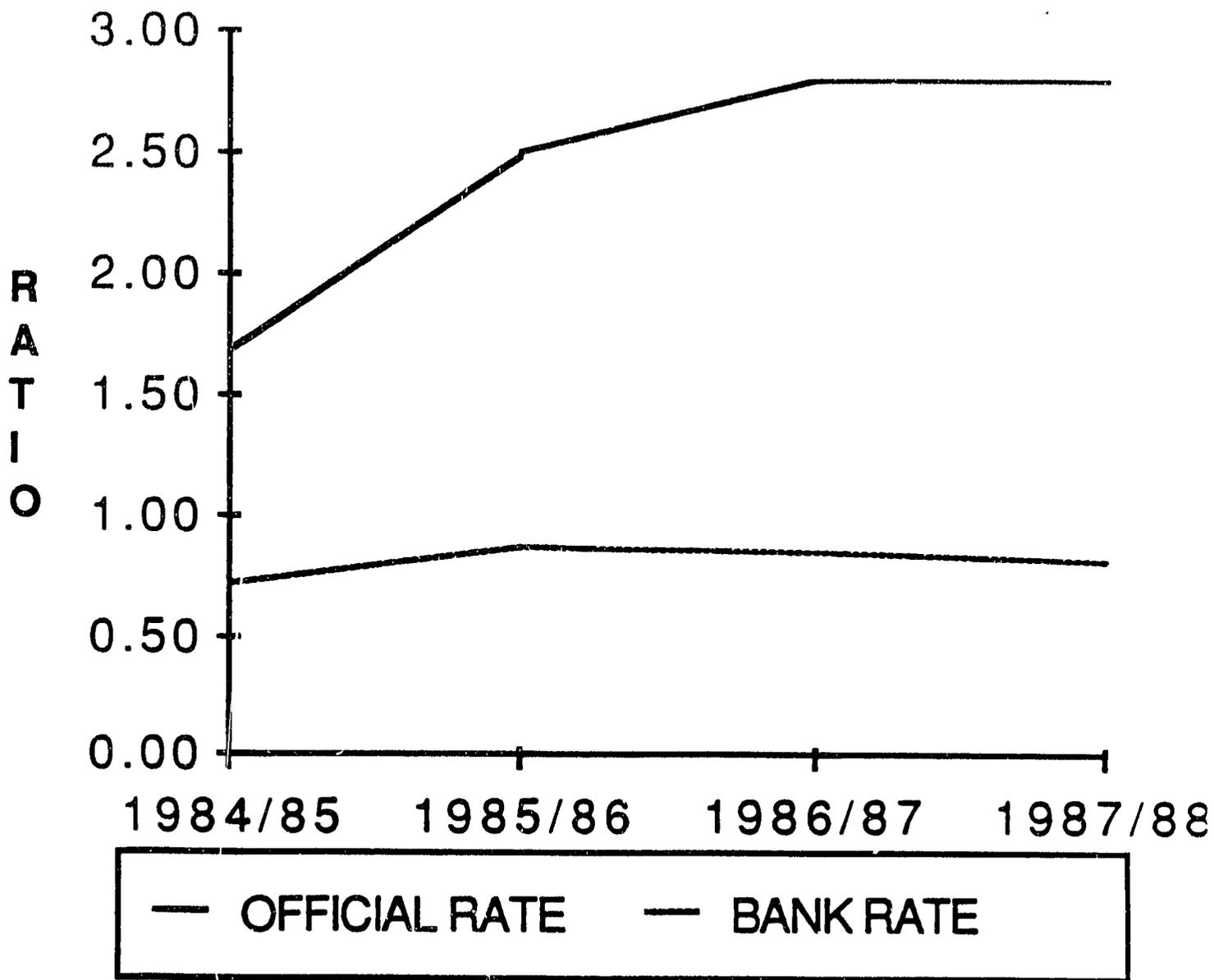
The procedure for arriving at world price equivalents for maize in Egypt is similar to that for wheat. We start with the U.S. Gulf maize price, add ocean freight to Alexandria, convert the Alexandria price to Egyptian pounds using both official and market exchange rates, and add transportation costs to get world equivalent prices for the Cairo area which is a major consumption center. The derived world prices at Cairo are then compared with the average price received by farmers. However, one needs to recognize that Cairo is not really at the center of maize production and the world equivalent prices for maize and those received by farmers are less congruent than in the case of wheat. However, the analysis is not likely to be biased in any large way because internal transportation costs are low relative to the world price of maize. Still, the distribution of production suggests that the farm price in the Cairo area should be above the national average.

2. Analysis of Results

The average maize price received by farmers increased consistently in the 1984/85-1987/88 period. Producer prices were near or above world price equivalents using the market exchange rate for most of the period (Table III.E.1 and Chart III.E.1).

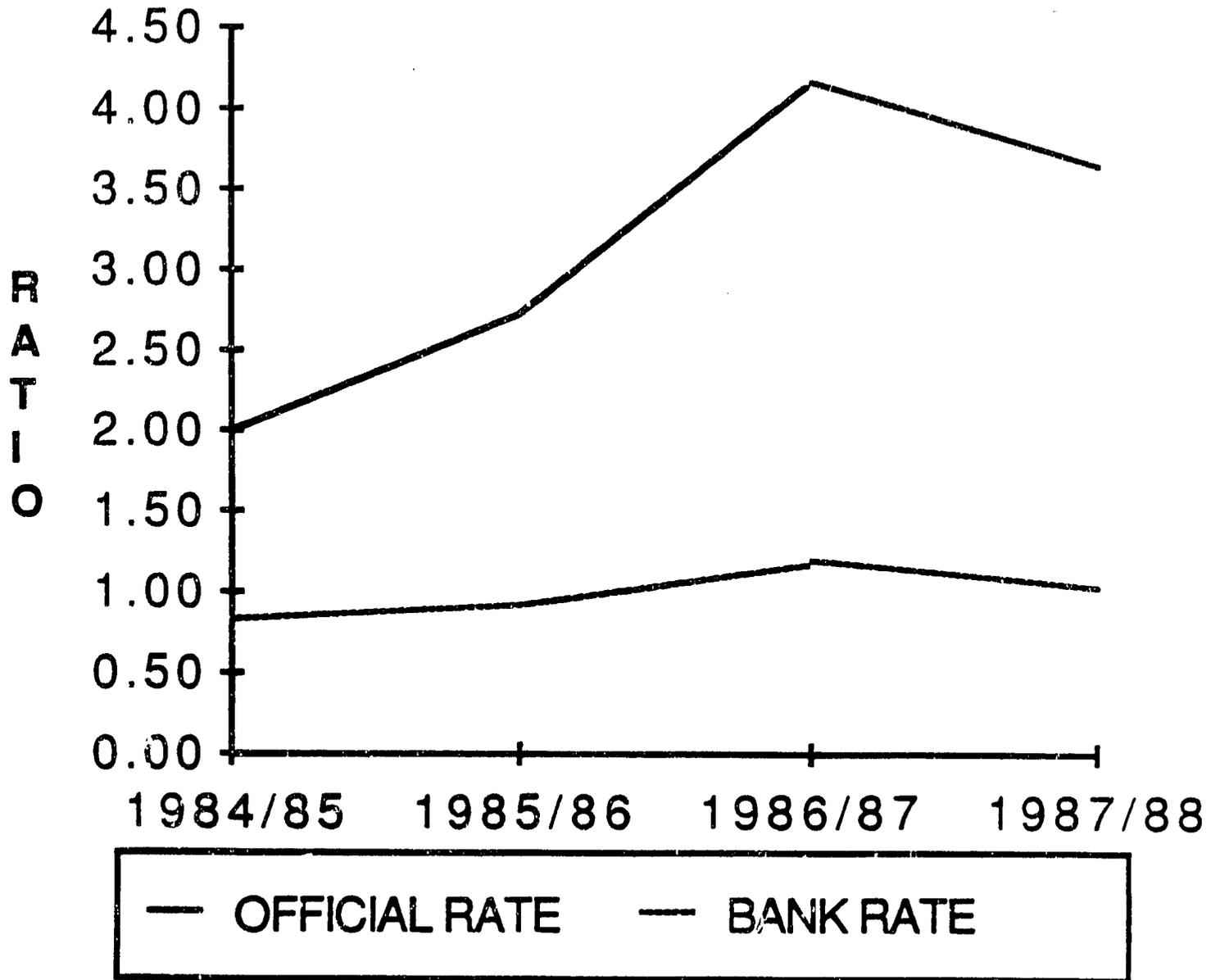
	A	B	C	D	E	F	G	H	I	J
1	PRICE FOR WHEAT Egypt imports wheat, variety No. 2 SAW									
2										
3										
4										
5										
6	TITLE	UNIT	1984/85		1985/86		1986/87		1987/88	
7	WORLD PRICE, U.S. GULF	U.S\$/TON	139.00		126.00		111.00		115.00	
8										
9	TRANSPORTATION COSTS									
10	U.S. GULF TO ALEXANDRIA	U.S\$/TON	18.50		14.75		15.00		20.00	
11										
12	WORLD PRICE, ALEXANDRIA	U.S\$/TON	157.50		140.75		126.00		135.00	
13										
14	EXCHANGE RATES									
15	OFFICIAL RATE	L.E./U.S.\$	0.70		0.70		0.70		0.70	
16	MARKET RATE	L.E./U.S.\$	1.60		1.90		2.19		2.30	
17										
18	WORLD PRICE, ALEXANDRIA									
19	OFFICIAL RATE	L.E./TON	110.25		98.53		88.20		94.50	
20	MARKET RATE	L.E./TON	252.00		287.43		275.94		310.50	
21										
22	TRANSPORTATION COSTS									
23	FROM ALEX. TO MARKET (CAIRO)	L.E./TON	8.35		8.35		8.35		9.81	
24										
25	WORLD PRICE, CAIRO AREA									
26	OFFICIAL RATE	L.E./TON	101.90		90.18		79.85		84.69	
27	MARKET RATE	L.E./TON	243.65		259.08		267.59		300.69	
28										
29	PRICES RECEIVED BY FARMERS	L.E./TON	171.73		224.93		223.47		237.40	
30										
31	RATIO OF AVER. PR. TO W. PR.									
32	OFFICIAL RATE	RATIO	1.69		2.49		2.80		2.80	
33	MARKET RATE	RATIO	0.70		0.87		0.84		0.79	

WHEAT: RATIO OF FARM PRICE TO WORLD PRICE AT FARM.



	A	B	C	D	E	F	G	H	I	J
1	PRICE FOR MAIZE									
2										
3										
4										
5										
6	TITLE	UNIT	1984/85		1985/86		1986/87		1987/88	
7	WORLD PRICE, U.S. GULF	U.S\$/TON	117.00		99.00		72.00		94.00	
8										
9	TRANSPORTATION COSTS									
10	U.S. GULF TO ALEXANDRIA	U.S\$/TON	18.50		14.75		15.00		20.00	
11										
12	WORLD PRICE, ALEXANDRIA	U.S\$/TON	135.50		113.75		87.00		114.00	
13										
14	EXCHANGE RATES									
15	OFFICIAL RATE	L.E./U.S.\$	0.70		0.70		0.70		0.70	
16	MARKET RATE	L.E./U.S.\$	1.80		1.90		2.19		2.30	
17										
18	WORLD PRICE, ALEXANDRIA									
19	OFFICIAL RATE	L.E./TON	94.85		79.63		60.90		79.80	
20	MARKET RATE	L.E./TON	216.80		216.13		190.53		262.20	
21										
22	TRANSPORTATION COSTS									
23	FROM ALEX. TO MARKET (CAIRO)	L.E./TON	8.35		8.35		8.35		9.81	
24										
25	WORLD PRICE, CAIRO AREA									
26	OFFICIAL RATE	L.E./TON	86.50		71.28		52.55		69.99	
27	MARKET RATE	L.E./TON	208.45		207.78		182.18		252.39	
28										
29	DOMESTICE PRICE AT FARM	L.E./TON	172.79		194.38		219.00		254.64	
30										
31	RATIO OF AVER. PR. TO W. PR.									
32	OFFICIAL RATE	RATIO	2.00		2.73		4.17		3.64	
33	MARKET RATE	RATIO	0.83		0.94		1.20		1.01	

MAIZE: RATIO OF FARM PRICE TO WORLD PRICE AT FARM.



3. Policy Implications

In the case of maize, it appears that the government not only liberalized the market to allow producers to receive the equivalent of world prices, but actually provided a subsidy to producers by allowing farm prices to rise above world levels. This subsidy resulted from the inability of the government to allocate sufficient foreign exchange for maize imports on an orderly basis to keep domestic prices at their world price equivalents. This illustrates how impediments at the border for a traded crop influence domestic prices even though the commodity is freely traded, or nearly so, in the domestic market.

B. Soybeans

1. Background

Egypt produces and imports soybeans. Crushing facilities are located in the Alexandria area where the soybeans are imported.

Production of soybeans takes place all up and down the Nile. In 1986 about 110 thousand acres were planted. Of this total, 33 percent was in Lower, 57 percent in Middle, and 10 percent in Upper Egypt. Minya is the largest producing governorate accounting for 46 percent of national area. Therefore, we use Minya as our proxy for the center of national production.

World prices of soybeans are derived by adding appropriate ocean freight costs to U.S. Gulf prices. The Alexandria price is then converted to Egyptian pounds. World equivalent prices at Minya are derived by subtracting transportation costs from that point to Alexandria where the crushing facilities are located.

2. Analytical Results

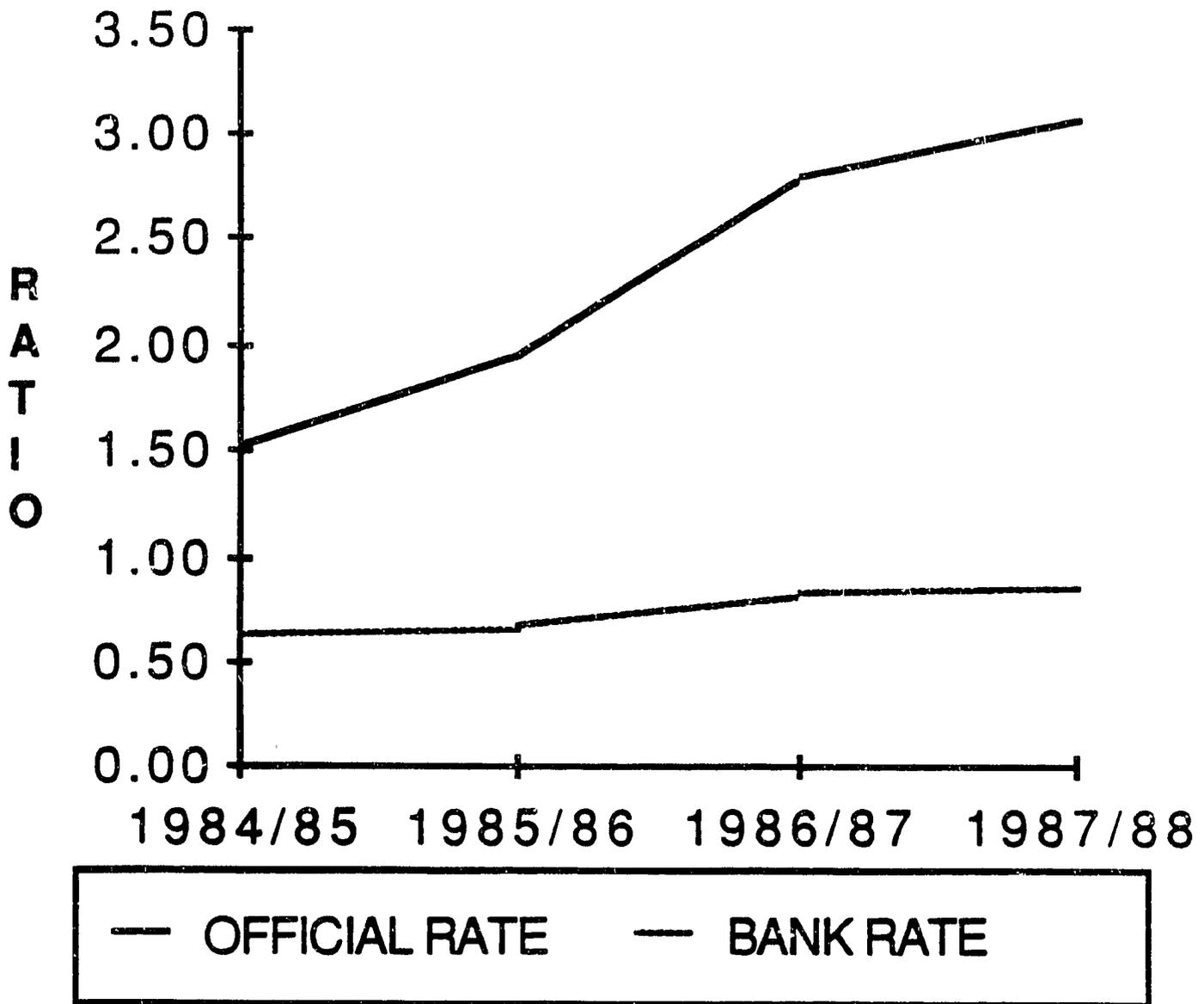
During the 1984/85-1987/88 period the world price of soybeans was high in the first year and significantly lower in the last three years of the period. At the same time, the average farm price of soybeans rose consistently over the four-year period.

The ratio of farm prices to their world price equivalents increased steadily from 0.63 in 1984/85 to .86 in 1987/88.

3. Policy Implications

It appears that the government has allowed market forces to increasingly determine soybean prices. This policy trend resulted in soybean prices received by farmers by 1987/88 being nearly consistent with world prices.

**SOY BEANS: RATIO OF FARM PRICE
TO WORLD PRICE AT FARM.**



SOURCES OF INFORMATION

Abel, M. E., and Beach, J. Calculating Border Prices for Grains, Oilseeds, and Oilseed Products, APAP I Staff Paper No. 22, Abt Associates, Washington, D.C., July 1988.

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Technical Authority of the Supreme Council of the Cotton Sector.

IV. CONCLUSIONS

This study highlights the complexities of deriving world price equivalents at the farm level for agricultural commodities, especially for those where joint products are involved. For example, calculating the world price equivalent farmgate price of raw cotton requires a thorough understanding of the markets of cottonseed oil, cottonseed meal, lint cotton, and scarto, a low quality lint. Moreover, conducting the analysis and interpreting the results requires an understanding of both the world and domestic markets of each commodity. For the case of sugarcane, results and their policy implications differ significantly if the analyst uses the actual series of world prices for sugar, which is very sensitive to temporary market shocks, or if a more appropriate series based on long-term trends in the world market is used.

Given the estimate of the gap between the actual and world price equivalent farmgate price for each commodity, the next step in the analyses is to project the impact of price liberalization on production, consumption and trade. However, because domestic and international commodity markets are complex, this is a difficult task. First, one needs an idea of where world prices will be in the future. They are likely to be above the 1984/85-1987/88 levels for some crops such as sugar, wheat, maize, soybeans, and rice, but possibly below for cotton. This would be especially true for extra long staple (ELS) cotton if price liberalization in Egypt resulted in an expansion of cotton production and exports sufficient to negatively influence world prices.

Second, relative crop prices will be realigned by complete price liberalization. Using the latter part of the 1984/85-1987/88 period as a reference point to illustrate this result, cotton, sugarcane, rice, and wheat prices would rise, maize prices would decline, and soybean prices would remain unchanged. Clearly, cotton, sugarcane, rice, and wheat prices would rise relative to those for maize and soybean. But cotton, sugarcane, and rice would also rise relative to wheat, and cotton and sugarcane prices would rise relative to rice.

The impact of changes in both absolute and relative prices of the major crops studied has also to be evaluated in terms of the complex crop rotations Egyptian farmers follow for these and other crops such as berseem, other oilseeds (peanuts and sesame) and fruits and vegetables. Farmers ultimately look at profitability of their total farm operations and this profitability is influenced by both commodity prices and rotation considerations.

Finally, inputs used to produce some crops are highly subsidized. If price liberalization also involves eliminating input subsidies, the price and production effects of these actions need to be considered as well. The impact of eliminating input subsidies will vary among crops in relation to relative input use intensity.

This report can serve as a foundation for a study of price liberalization effects both as a methodological and conceptual framework, and as a guide to realistically calculate the farm-level equivalent of world agricultural commodity prices.

V. SOURCES OF INFORMATION

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