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AND THE POTENTIAL LEVEL OF THE  
PRODUCER PRICE

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MARKETING COSTS AND THE PROCESSING OF CASHEWNUTS IN TANZANIA:  
AN ANALYSIS OF THE MARKETING MARGIN AND THE POTENTIAL LEVEL  
OF THE PRODUCER PRICE\*

This paper is concerned with the marketing and processing cost side of contemporary problems confronting the cashew-nut economy in Tanzania. Its perspective is closely related to the findings of an earlier paper which examined the reasons for the deterioration of cashewnut production between 1974 and 1979. The point of reference common to both papers is the need for a substantial increase in the level of the price paid to growers. The detailed analysis of cost structures reveals that, contrary to previous projections, there exists a sufficient surplus within the future marketing margin to raise the producer price to a level in the region of T.Shs. 2.50 per kilo. This conclusion is partly dependent on an effective control of the future costs of processing cashewnuts, consistent with the reasonably efficient utilisation of the technology employed. It is argued that the potential producer price of T.Shs. 2.50 should be implemented instead of the level already decided of T.Shs. 1.80 per kilo for the 1980/81 crop season, and that without such a price increase the already serious crisis in the cashew economy could assume catastrophic proportions in the mid-1980s.

A. INTRODUCTION

The subject of the present paper is the formation of costs between the growers and exportation for raw cashew nuts and cashew products in Tanzania. This is a continuation of the analysis of contemporary problems of the Tanzanian cashewnut economy begun in an earlier paper which dealt with the causes of the rapid decline in raw nut harvests since the 1973/74 crop season. Its principal objective is to examine the potential which exists to increase the producer price of cashew to a level which would bring about a genuine and sustained reversal of the deterioration in production.

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The approach taken here to cost formation and the level of the producer price differs in some important respects from that which has characterised the official price policy procedure for cashew in recent years. There has been an increasing tendency, observed especially since the cooperative marketing system was dismantled in 1976, to regard the producer price as a residual obtained by first subtracting all other costs of the marketing authority from estimated gross sales proceeds at exportation. This approach appears to involve the largely uncritical acceptance of marketing cost projections presented by the crop authority itself, and it represents a significant shift away from growers in the relative weight attached to different claims on the marketing margin.

A central argument of this paper, substantiated by the findings of the empirical analysis, is that the residual determination of the producer price has very serious defects as a methodology for agricultural pricing policy, not only in the case of cashewnuts but more generally for export crops in Tanzania. Although the experience of cashew may represent an untypical example of the degree to which pricing policy has in general shifted towards such an approach, it nevertheless serves as a caution against any further trends in that direction.

The principal deficiency of the residual approach is the lack of constraint on the growth of crop authority marketing costs. The authority is able to transfer the burdens of both necessary and unnecessary increases of marketing cost onto the producer, in the form of price levels much lower than would be indicated by the independent consideration of the economic conditions of production. The future cost projections of crop authorities which enter the price policy procedure (the so-called "annual crop costings") are typically based on past accounts which may in themselves represent sub-optimal levels of efficiency in the performance of the marketing function. This occurs partly because audited accounts are usually several years in arrears, and partly because no effective mechanism exists for corrective action based on such accounts. When the crop costings are then used as a determining argument in the setting of the producer price, the crop economy becomes locked into a continuous process whereby past deficiencies of the marketing function are reinforced into the future through the acceptance and absorption of all predicted cost increases.



A more satisfactory approach to the annual determination of the producer price, and one closer to the spirit in which official procedures were originally established, would involve the joint consideration of the respective merits of a) the claim of the producer to an adequate return, taking into account trends in the cost-of-living and the relative position against competing crops, and b) the claim of the crop authority to a sufficient margin to cover necessary marketing costs. The latter evidently requires detailed attention to be given to ascertaining the validity of marketing cost estimates. This is one of the main areas of concern in the present paper.

The study of marketing costs in the contemporary cashew-nut industry in Tanzania is slightly complicated by recent increases in domestic processing capacity and the consequent transition to exporting kernels and processing by-products rather than raw nuts. This added complexity is not such as to make analysis based on past performance impossible or meaningless, as has been suggested in one source (MDB 1979, p. 24). It simply means that processing is entered as a new sub-category of cost in the structure of total marketing costs, and that suitable adjustments be made to other cost components to reflect the cessation of raw nut exports. Where the residual determination of the producer price is concerned, the uncritical projection of past processing costs is open to the same dangers as those already mentioned for marketing cost more generally. Indeed it turns out to be the case that the accurate specification and control of processing cost becomes the most important single element in defining the capacity of the cashew economy to increase the producer price to an adequate level.

The analysis which follows approaches the central question of capacity to increase the producer price in four successive stages. A first stage examines the historical evolution of the gross marketing margin, which establishes the maximum limits within which growth in marketing costs takes place (in the absence of any subsidisation of the marketing function). This also serves to define the relationship, fundamental to pricing strategy for any export crop, of international price trends for raw cashewnuts and cashew kernels to the trend of grower prices. The second stage examines the evolution of traditional marketing costs (i.e. excluding processing) with

particular emphasis on categories of cost which should be reduced or eliminated by the cessation of raw nut exports. The third stage is concerned with the processing strategy, and especially with the attempt to make some sense out of the uncontrolled spiralling upwards of the unit costs of processing.

The fourth stage of the analysis involves the revision of marketing cost projections for the 1980/81 crop season, taking into account the results of previous sections. This yields an estimate of the surplus which should be generated under the assumption that marketing costs, especially processing, are kept within reasonable proximity to the efficient performance of the functions they contain (which in the case of processing means operating much closer to the technical specifications of processing factories than is the case at present).

The final section of the paper focuses on the level of the producer price which emerges from the joint consideration of results obtained both on the marketing cost side and the production side. On the production side this represents some extension of issues which are explored in greater detail in the earlier paper on production, and to which reference should be made for the full force of the argument for a higher producer price.

One further aspect of the subsequent analysis is drawn to the reader's attention. This concerns the atmosphere of sensitivity which is bound to accompany any serious attempt to tackle the topic of marketing efficiency and marketing cost. It is not infrequent to encounter the sentiment that costs as a topic are somehow taboo and this has evidently tended to discourage research and public discussion in an area of critical importance to the success of development strategy in Tanzania. It is only, however, through the analysis of costs that a balanced view can be obtained about competing claims on the total resources generated from crop production and exportation. It also follows that the present analysis should not be interpreted as a special attack on the particular marketing authority involved, which in this case is the Cashewnut Authority of Tanzania (CATA).

## B. THE EVOLUTION AND DETERMINANTS OF THE GROSS MARKETING MARGIN FOR CASHEWNUTS

The gross marketing margin for cashewnuts is defined here as the difference between the average gross realisation at exportation and the average price received by growers. The former is obtained by calculating a raw nut equivalent value per ton for total exports of raw nuts, kernels, and by-products of cashew processing. The latter is an average of the producer prices for Standard and Undergrade nuts, weighted according to the approximate proportion in which the two grades are purchased.

This definition differs from that traditionally used in the cashewnut industry, based on the sales side on the unit export value of raw nuts only. It embodies the fact that changes in the level of the average export realisation are determined not solely by the export price trend for raw nuts, but also by the shift towards exporting a progressively larger proportion of the output of the industry in the form of kernels and processing by-products. It is of considerable interest in the further development of this paper to distinguish the separate effects on the size of the gross marketing margin of international price trends on the one hand and the implementation of the processing strategy on the other. This is because the economic rationale of the processing strategy is founded on the assumption that the increase in export value achieved by processing will more than compensate the additional costs incurred (i.e. that processing value-added should be higher than processing costs).

The basic data on the evolution of the gross marketing margin for cashewnuts between 1970/71 and 1978/79, with projections to 1980/81, are contained in Table 1. This represents both an extension and a revision of similar information put forward in the earlier paper on production (Ellis, p. 35); the chief difference being the re-calculation of the average export value to include the raw nut equivalent value of exports of kernels and cashew nut shell liquid (CNSL). The latter is the most important by-product of processing and the only one for which it is possible to obtain regular figures on export value. Another by-product not included in the present discussion for want of adequate data is cashew waste, which is exported to Europe as an animal feed ingredient.



Some additional observations on the derivation of the average export value figures of Table 1 are necessary to ensure that their meaning is not shrouded in obscurity. Conceptually such figures would be simply obtained by adding together the published export values of the different outputs of the cashew industry and dividing by the quantity of raw nut production. Such a direct calculation is unfortunately not possible, however, for two reasons: a) production figures are based on crop years while export value data corresponds to calendar years; and b) unpredictable lags occur between the procurement of raw nuts and their subsequent exportation in either raw or processed form. For these reasons the derivation of the average value has to be approached indirectly. The accepted method of so doing is to assume a fixed relationship of kernel weight to raw nut weight, thus permitting the retrospective calculation of a national volume of raw nuts for a given volume of kernel exports. The fixed coefficient which underlies the raw nut equivalent values of Table 1 is that kernel recovery is 22.5% by weight of raw nut inputs to processing.<sup>2</sup>

Table 1 shows a substantial increase in the level of the average export value between 1971 and 1979, from T.Shs. 1,309 per ton to T.Shs. 4,665 per ton (a total percentage change of 256%). Given the relatively small increases in the producer price affected over the same period, this has implied a truly phenomenal rate of growth in the size of the gross marketing margin. While the average price paid to growers was raised from T.Shs. 910 per ton to T.Shs. 1,640 per ton (up 80%), the gross marketing margin grew from T.Shs. 399 per ton to T.Shs. 3,025 per ton (a total percentage change of 658%). This also involved a decline in the producer share of the export value from over 60% in the early seventies to 29% in 1977/78, followed by a slight recovery to 35% in 1978/79. If these trends are examined in real terms it is found that while the grower price has experienced a substantial deterioration throughout the last decade (Ellis, pp. 11-12), the real gross marketing margin has more than doubled.<sup>3</sup>

TABLE 1. EVOLUTION OF THE GROSS MARKETING MARGIN IN THE TANZANIAN CASHEWUT INDUSTRY, 1971-1979, WITH PROJECTIONS TO 1980/81

Year	Average Export Value <sup>a</sup>	Gross Marketing Margin (%)	Average Producer Price <sup>b</sup>	Share of producer in export value %
1970/71	1,309	399	910	69.5
1971/72	1,376	466	910	66.1
1972/73	1,381	471	910	65.9
1973/74	1,858	948	910	49.0
1974/75	1,927	897	1,030	53.5
1975/76	2,250	1,220	1,030	45.8
1976/77	3,002	1,932	1,070	35.6
1977/78	3,855	2,735	1,120	29.1
1978/79	4,665 <sup>c</sup>	3,025	1,640	35.2
1980/81	5,862 <sup>d</sup>	4,122	1,740	29.7

SOURCE: MDB 1979, pp. 15, 27.

NOTES: <sup>a</sup> Average Export Value-calculated from the f.o.b. value and volume data of Table 2 below and from Appendix A, assuming a recovery rate of kernels from raw nuts of 22.5% (for 1980/81 see note <sup>d</sup>): raw nut equivalent value which corresponds to the calendar year of the later of the two years shown;

<sup>b</sup> Assumes 80% Standard grade and 20% Undergrade;

<sup>c</sup> Estimated from actual sales of Jan-May 1979;

<sup>d</sup> MDB projection which assumes recovery rates by weight of 20.5% and 7% for kernels and CNSL respectively.

The major preoccupation of much of the rest of the paper is how marketing costs can possibly have risen so rapidly as to entirely absorb the phenomenal expansion of the marketing margin. As substantiated shortly below, the external conditions affecting the fortunes of the cashewnut industry have been quite exceptionally favourable during most of the past decade. It is consequently difficult to imagine at this stage of the enquiry how the trends observed have not resulted in large and embarrassing surpluses for the marketing authority over the last few years.

The historical trends shown in Table 1 are expected to continue through to 1980/81, after which they should stabilise. The export value will continue to increase with the completion of the switch from raw nut to kernel exports and the expectation of slightly higher prices of kernels and CNSL in the early nineteen-eighties (MDB 1979, p. 27). When this is taken in conjunction with the minor increase in the producer price which has already been decided for that year, it results in a further projected increase in the marketing margin. The share of the producer will consequently fall back to between 29% and 30% of the average export value.

The increase in the average export value between 1971 and 1979 is almost wholly attributable to the rising trend of international prices for raw nuts and processed products; the contribution of the shift to processing a larger proportion of the total raw nut output being disappointingly low. Corresponding to the increase of average export value of 256% (already cited) were price increases of 226%, 190% and 695% for raw nuts, kernels and CNSL respectively (Table 2). In this period the proportion of total raw nut output which was processed increased from just over 10% to an estimated 50% (Appendix A). It is a relatively straightforward exercise to show that approximately 90% of the growth in the average export value was due to the international price trends and only 10% to the increase in the proportion of the nuts being processed.<sup>4</sup> This results from the fact that over the period as a whole the raw nut price increase was greater than that of kernels, thereby resulting in an overall decline in the value added from processing.

TABLE 2. F.O.B. EXPORT PRICES OF CASHEW PRODUCTS FROM TANZANIA, 1971-1979, WITH PROJECTIONS TO 1980/81 (T.Shs./Ton)

Year	Raw Nuts	Kernels	CNSL <sup>a</sup>
1971	1,246	7,166	1,069
1972	1,331	7,733	988
1973	1,285	8,819	722
1974	1,723	11,527	3,317
1975	1,817	11,030	1,715
1976	1,976	12,531	1,729
1977	2,511	21,929	3,806
1978	3,640	18,680	3,774
1979 <sup>b</sup>	4,066	20,750	8,500
1980 <sup>c</sup>	-	24,885	10,373

SOURCES: EAC, Annual Trade Reports, 1971 to 1976; MDB 1979, pp. 9-10, 27; CATA.

NOTES: <sup>a</sup> Code 422 90 9 "Mixed vegetable oils n.e.s." in Annual Trade Reports;

<sup>b</sup> Based on actual sales, Jan-May 1979; kernels price assumes an average c. and f. price of US \$ 1.24 per lb. for the year;

<sup>c</sup> MDB estimates.

The value added achieved by processing cashewnuts in Tanzania has in fact been rather erratic and unpredictable over the decade of the seventies (Table 3). The percentage value from kernel sales fluctuated between 30% in 1971 and 96% in 1977, subsequently falling to 15% in the last two years due to the increase of raw nut prices to historically unprecedented levels. Similarly, the combined value-added of both kernels and CNSL fluctuated erratically between 33% and 104%, declining in the last two years to between 20% and 30%.

TABLE 3. VALUE ADDED BY PROCESSING CASHEWNUTS IN TANZANIA,  
1971-1979<sup>a</sup>

Year	T.Shs./Ton		Percentage Value Added	
	Kernels	Kernels and CNSL	Kernels	Kernels and CNSL
1971	366	406	29.4	32.6
1972	409	441	30.7	33.1
1973	699	739	54.4	57.5
1974	871	992	50.6	57.6
1975	665	713	36.6	39.2
1976	845	947	42.7	47.9
1977	2,423	2,615	96.5	104.1
1978	563	802	15.5	22.0
1979	603	1,198	14.8	29.5
Average (1971-79)	827	984	38.0	45.2

SOURCE: BAC, Annual Trade Reports, 1971 to 1976;  
MLB 1979, pp. 9-10, 27. CATA. See Table 2.

NOTE: <sup>a</sup> Calculated from the f.o.b. volume and value data of Appendix A.

The current levels of value added by processing are nowhere near sufficient to cover the domestic costs of processing cashewnuts. Indeed the level of T.Shs. 1,198 per ton estimated for kernels and CNSL taken together in 1979 is approximately half the contemporary cost of processing one ton of raw nuts (for discussion of this issue the reader is referred to the section on processing below). These figures put in severe doubt the economic rationale of the processing strategy, the external capital commitment to which (Ellis, p. 2) was based on much more optimistic levels of value added and much lower estimated levels of processing cost in Tanzania.

The average percentage value added for kernels and CNSL over the period under discussion as a whole was 45%. This compares with World Bank projections used in the appraisal reports for the Phase I and Phase II cashewnut development projects of 92% and 101% respectively (World Bank, 1974 and 1978). If the

historical average of 45% is applied to the expected future prices of kernels and CNSL shown in Table 2, it yields an estimated future value-added level of around T.Shs. 1,800 per ton in 1980/81. This is still not sufficient to cover estimated unit costs of processing.

Some observers have concluded from the evidence cited that Tanzania should abandon its processing strategy and revert to the exclusive exportation of raw nuts. This conclusion is probably premature. The average value-added figure is unfavourably affected by levels of raw nut price towards the end of the decade which do not reflect any meaningful relationship to processing costs in any of the major producing countries. In effect, they represent a substantial subsidisation of the processing sector in India, which, given India's dominant position in world kernel supply, has driven up raw nut prices and depressed international kernel prices.<sup>5</sup> This has pushed both sets of prices off their underlying market trends and has distorted the long run relationship between them. It would be necessary only for the raw nut price to decline to around T.Shs. 3,500 per ton (which gives a 1980/81 value-added of 65% or T.Shs. 2,300 per ton) for the processing strategy to become viable again at levels of processing cost suggested later in this paper. This interpretation remains, however, critically dependent on the effective control of future domestic processing costs, which are at present spiralling upwards out of any conceivable relation to future value added.

The examination of factors surrounding the evolution of the gross marketing margin yields two main conclusions of relevance to the further development of the analysis. The first is that the contemporary Tanzanian cashewnut economy has been operating within unusually favourable external conditions in terms of the substantial and sustained price increases experienced for all cashew products over the last decade. These price increases have been almost wholly retained by the marketing system in the form of a phenomenal rate of growth in the gross marketing margin, with only a minor proportion of them being passed to the grower in the form of a higher producer price. The second is that the past decade has been characterised by an erratic and eventually deteriorating relationship of kernel to raw nut prices in terms of the value-added which has been



realised from further processing. This has put a severe strain on the rationality of the large investments already committed to new processing capacity, which can only be compensated in the future by the strict control of domestic processing cost.

### C. THE ANALYSIS OF MARKETING COSTS

#### 1. Categories of Marketing Cost

The marketing of cashewnuts in Tanzania has traditionally involved three distinct categories of marketing cost. For the purposes of the present analysis these are designated as primary procurement costs; crop secondary costs; and administrative costs. The assignment of different sub-categories of cost of one or other of these divisions has been quite erratic during the recent history of the industry, both with respect to past actual cost accounts and to annual crop costings. For this reason the content of each of the three categories is given a brief introductory description as follows:

##### 1) Primary procurement

This category contains all those costs which are directly incurred in the collection of raw nuts from villages and their transport to regional godowns or processing factories. The past and present subcategories of cost which enter here are CATA branch costs (which replaced former payments to primary cooperative societies and unions between 1973 and 1976); the village levy; a shrinkage allowance to compensate for loss of weight between villages and godowns (usually set at 4% of the prevailing grower price); bags and twine; and transportation from villages to godowns.

##### 2) Crop secondary costs

This category contains costs which are associated with the downstream handling of raw nuts and/or kernels, including financial charges which accrue to such functions. On the financial side this includes crop finance (interest payments on the loans required for crop purchase), cash insurance (on cash in transit to villages), and crop insurance (on crop in transit). On the physical side it includes raw nut handling, rebagging, shrinkage, and storage prior to exportation. It also

contains f.o.b. and transshipment charges in ports, the export tax on raw nuts (10% in recent years) and quality claims from overseas purchasers.

3) Administrative costs

This contains all the main central overhead costs, i.e., Head Office expenses; overdraft and bank charges; long-term loan servicing; and deductions for internal capital formation. It also latterly includes a fixed deduction per ton of raw nut purchases which is supposed to be used for the maintenance and improvement of feeder roads in the cashew producing zones.

The phasing into operation of new processing factories from early 1979 onwards implies that a fourth category of cost, processing, now enters the overall cost structure. In the past, the two factories which came into operation in the 1960s were operated as autonomous entities and their costs did not directly enter the sphere of the marketing authority. As will become apparent in due course, processing costs are expected to become the largest single cost category in the future working of the cashew economy. For this reason the unit cost of processing is given detailed and separate examination, taking into account the deterioration in the relationship of processing cost to processing value added.

The analysis of the first three categories of marketing cost directs attention to the following characteristics of the evolution of costs over the last decade:

- a) the growth in total unit marketing cost and its relationship to the expansion of the gross marketing margin observed in the previous section;
- b) the identification of those cost sub-categories which have risen particularly rapidly;
- c) the identification of costs which are reduced or eliminated by the shift to processing the totality of output.

2. The Increase in Unit Marketing Costs Between 1968/69 and 1978/79

Thanks to the detailed work on cashew marketing cost undertaken by Westergaard (1968 and 1969) a decade ago, it is

possible, in conjunction with intervening cost information published by CATA or the Marketing Development Bureau of Kilimo, to construct quite an accurate picture of the evolution of costs in the 1970s. The growth of marketing costs between 1968/69 and 1978/79 is shown for selected years in Table 4. This also contains the related data on grower's price and the average value of sales of the marketing authority, permitting the statement of the surplus or deficit experienced in each year.

TABLE 4. EVOLUTION OF UNIT MARKETING COSTS IN THE TANZANIAN CASHEW INDUSTRY, SELECTED YEARS 1968/69-1978/79 (T.Shs./Ton)

Year	Crop Authority Costs			Average Sales Realiza- tion	Surplus or (Deficit)
	Marketing Costs	Growers Price	Total Costs		
1968/69	459.34	780.00	1,239.34	1,350.00	110.66
1973/74	580.75	910.00	1,490.75	1,318.17	(172.58)
1974/75	794.04	1,030.00	1,824.04	1,832.72	3.68
1975/76	955.91 <sup>a</sup>	1,030.00	2,028.91	1,975.88	(53.03) <sup>a</sup>
1978/79	2,722.50 <sup>b</sup>	1,640.00	4,362.50	4,591.50 <sup>c</sup>	229.00

SOURCE: MDB, 1977, 1978, 1979; CATA; Westergaard 1968, 1969. The reader is also referred to Appendix B.

NOTES: <sup>a</sup>Excludes additional costs (losses) appearing in the final accounts due to stock adjustments (T.Shs. 127.31) and losses on the now redundant semi-mechanical processing plant at Mbagala (T.Shs. 94.19): total losses in 1975/76 were T.Shs. 22.6 million equivalent to T.Shs. 274.53 per ton;

<sup>b</sup>Includes T.Shs. 1,100 per ton for processing half of total output.

<sup>c</sup>Estimated on the basis of actual sales, Oct. 1978 to May 1979.

The first question which is settled beyond any doubt by these figures is whether or not the growth of marketing cost has kept pace with the rapid expansion of the marketing margin. The answer is that annual increases in cost have often even exceeded corresponding increases of the gross marketing margin, resulting in substantial losses in some years (not only those shown in the table either). The reader should not be deflected from the appreciation of this by apparent differences between

the average sales value shown here and the average export value of the earlier section. This is simply a result of the shift in the data base of the exercise from the calendar year of total exports to the financial year and actual operating performance of the crop authority.

Marketing cost grew quite slowly up to 1973/74, and this corresponds to equivalently slow rates of change of the average sales realisation and the marketing margin in the early 1970s. Between 1973/74 and 1978/79, however, it more than quadrupled, entirely absorbing and sometimes overtaking the corresponding rate of change of the marketing margin. The magnitude of this increase is, of course, in part attributable to the entry of processing cost as a new category in 1978/79; but then so also does the sales value for that crop year contain the exportation by the marketing authority of kernels and processing by-products. Moreover, even if the processing cost component were excluded, the traditional components of marketing cost still rose from T.Shs. 581 to T.Shs. 1,622 per ton in five years, or nearly tripled. All of this needs to be set against the evolution of the producer price, which, as noted before, increased by only 80% in the last half decade.

The suspicion arises in examining these figures that marketing costs always and inevitably rise to absorb, or even more than absorb, the gross marketing margin available. This is in spite of the fact that the growth of the latter is determined by international cashew price trends which, conceptually at least, are exogenous to internal cost formation.

### 3. The Evolution of the Marketing Cost Structure Between 1973/74 and 1978/79

The disaggregated analysis of traditional unit marketing costs is shown in full in Table 5. This contains the costing information of 1973/74, 1975/76 (the latest year for which final audited accounts are available), and 1978/79. The cost structure of the earlier two years is derived directly from finalised cost accounts, with only minor adjustments to ensure comparability between years and to exclude a few items which are not relevant to the discussion of recurrent annual expenditures (such as stock adjustments or non-repeated activities). The structure for 1978/79 is based on the CATA advanced costings of that year,

adjusted to take account of a much lower volume of output than was originally anticipated. The full explanation of the derivation and sources of this table is contained in Appendix B, leaving only obvious sources of possible obscurity to be explained in the course of the discussion.

TABLE 5. THE STRUCTURE AND EVOLUTION OF UNIT CASHEW MARKETING COSTS, 1973/74 - 1978/79

Cost Category	1973/74 T.Shs/Ton	1975/76 T.Shs/Ton	1978/79 (Esti- mated) T.Shs/Ton	Increase 1973/74 to 1978/79 %
1. <u>Primary Procurement</u>	<u>352.65</u>	<u>499.76</u>	<u>705.00</u>	<u>100</u>
Branch Costs	29.86	1157.30	221.35	641
Village Levy	8.15	40.33	100.00	122
Shrinkage 4%	36.40	41.20	65.60	80
Bags & Twine		57.94	118.75	
Transportation	278.24	101.68	200.00	15
Other (unspecified)		101.31	-	
2. <u>Secondary Crop</u>	<u>143.04</u>	<u>323.54</u>	<u>446.96</u>	<u>212</u>
Crop Finance	24.02	82.43	77.90	224
Crop Insurance	1.87	9.94	1.23	97
Crop Insurance		2.46		
Raw Nut Handling	20.12	21.98	40.00	99
FOB Charges	24.95	46.71	115.82	364
Quality Claims	1.11	0.60	6.25	463
Export Tax	70.97	161.68	203.30	186
3. <u>Administrative</u>	<u>85.06</u>	<u>175.61</u>	<u>469.84</u>	<u>452</u>
Head Office Expenses	35.28	112.43	160.00	354
Bank Charges	-	9.16	77.50	n.a.
Feeder Road Levy	-	-	20.00	n.a.
Long-Term Loan Servicing	-	4.13	32.33	
Capital Deductions	49.78	49.89	180.00	327
Total Costs	580.75	998.91	1,622.50	179
Tons of Raw Nuts	143,339	82,370	60,000	-58

SOURCES and NOTES: Appendix B.

The observations which follow focus attention on the two separate concerns of the source of cost increases on the one hand and potential areas of cost saving on the other. The former is largely concerned with the effect on unit overhead costs of the reduced volume of output, while the latter is especially related to reductions of cost which should follow the cessation of raw nut exports.

a. The sources of the overall increase in traditional unit marketing cost

The overall increase of traditional unit marketing costs between 1973/74 and 1978/79 was 179%. This is clearly mainly attributable to the growth of unit administrative costs which equalled 452% over this period (a more than fivefold increase). Primary procurement costs experienced a rate of increase substantially below the total, and crop secondary costs slightly above, at 100% and 212% for each category respectively. The fundamental origin of the growth in unit costs is thus located in the unit overhead expenses of central administration. The latter roughly doubled their share of total unit cost, from 14.6% in 1973/74 to 29% in 1978/79.

The overhead or fixed costs of the crop authority consist not only of the central administrative costs as categorised in Table 5. In addition to a) Head Office costs (salaries, operating costs, and depreciation), b) capital deductions (provisions for internal capital formation), c) long term loan servicing, and d) bank charges (mainly interest on accumulated overdraft); there is also e) the branch costs in the primary procurement category. The unit costs of all these sub-categories vary inversely with the volume of raw nuts handled, and hence a significant proportion of their total increase as shown in Table 5 is explained by the decline of raw nut throughput from 143,349 tons to 60,000 tons over the period under consideration. Indeed total (as against unit) costs in these five sub-categories rose from T.Shs. 16.5 million in 1973/74 to T.Shs. 40.3 million in 1978/79, yielding a percentage growth of 144% (instead of the 484% increase in their unit level).



The foregoing demonstrates a conclusion which is given justified emphasis in the further development of the argument of this paper: that the containment or reduction of future unit costs is very significantly contingent on the reversal of the decline in production. Since such a reversal is in turn considered to be contingent on the provision of a much more attractive price to growers, the resistance of the marketing authority towards raising the producer price--argued on the basis of unit cost levels alone--clearly has rather weak logical foundations.

The level of the Head Office expenses of the crop authority has moved in recent years as follows:

1973/74--T.Shs.	5,057,353
1974/75--T.Shs.	10,589,838
1975/76--T.Shs.	9,260,859
(E) 1978/79--T.Shs.	9,600,000 <sup>7</sup>

These figures give the impression that the entire increase of Head Office costs since 1973/74 occurred in the space of one year, and that subsequently such costs have been brought under control and even slightly reduced. This is not the case. Approximately half the figure for 1974/75 corresponds to a provision for bad and doubtful debts, and roughly T.Shs. 1 million of the amount for 1975/76 is the same. Underlying Head Office costs have in fact been rising quite continuously and steadily throughout the last half decade at a compound annual rate of 13.7% per annum.

The unit capital deduction of T.Shs. 180 shown for 1978/79 in Table 5 is an estimate by the author based on present and future commitments of CATA with respect to capital formation and long-term <sup>debt</sup> servicing. This is a far more generous estimate than the authority itself made in 1978/79 costings (variously put at between T.Shs. 24 and T.Shs. 71 per ton) due a) to an upward revision of income and hence on the ability to put aside capital for future commitments, and b) to the very substantial annual loan repayments which CATA will start to incur from 1980/81 onwards, and which at their height will be difficult to meet from current income. The reader is referred to Appendix B for the calculations underlying the 1978/79 figure for capital deductions.

There are certain further observations about the growth of marketing cost which belong under the present heading. The apparently quite low rate of increase of primary procurement costs

is attributable in part to the elevation of such costs in the base year (1973/74) by the transition from the cooperative procurement system to CATA. In particular, certain rather ill-defined cost categories appearing in accounting information between 1973 and 1976 involve payments to cooperatives not only for cashew procurement but possibly also for the purchase of other crops in which CATA was briefly involved in the mid-1970s.<sup>8</sup> This means that underlying procurement costs may have grown at a slightly faster rate than is suggested by the figures of Table 5. As already noted CATA branch costs are an overhead sub-category, the unit costs of which would reduce significantly with increased raw nut throughput.

The principal sources of the increase in crop secondary costs are in crop finance and f.o.b. charges. The former of these merits some additional attention since it is one of the sub-categories of cost which is sometimes obscured, either by lumping it together with other (overhead) financial costs or by submerging it in a general category of Head Office expenses. In the days of the NAPB (i.e. up to 1973/74), this category corresponded to the interest cost for 3 months on the NAPB into-store price (Westergaard 1969, Appendix 4). The period for such borrowing has subsequently lengthened to 4 months in 1973/74 and 6 months in 1975/76. Hence the 1978/79 costing for this category is based on a six-month overdraft at 9.5% of the grower price. Precisely how it has become necessary to double the period of bridging between crop purchase and the income from sales remains obscure, but this is evidently an area in which a future reduction in cost should be possible since processing factories will be bringing in sales revenue continuously throughout the year.

b. Cost savings from the cessation of raw nut exports

Within the categories of primary procurement and secondary crop costs there are certain areas of significant reduction in cost which should result from the phasing out, completed in 1979, of raw nut exportation. These are associated in part with the direct elimination of costs strictly only incurred in raw nut sales, and in part with reductions to be expected by deliveries to factories instead of to exportation.

In primary procurement a first component which should be eliminated (or at any rate reduced to a much lower level) is the shrinkage allowance of 4% of the grower price. The validity of this percentage cost has always been doubtful. It was originally introduced as an additional payment to primary cooperative societies to compensate for a supposed loss of weight by drying of 3-4% between their payment to growers and their deliveries into NAPB go-downs. Westergaard (1968, p. 14) found no evidence of weight loss due to drying in transit, but rather that apparent losses were caused by spillage, pilferage, or dishonest produce receipts. He reached the conclusion, with which this author agrees, that the institutionalisation of such losses via a fixed deduction was a negative policy with nothing to recommend it in terms of increasing the efficiency of procurement. Its validity under contemporary conditions becomes even more doubtful since raw nuts are rehumidified prior to processing, implying a weight gain prior to the calculation of the performance of processing factories.<sup>9</sup>

Cost savings in primary procurement should also occur for bags and twine and transportation. The former because of the elimination of rebagging prior to exportation and the potential to re-use bags which formerly disappeared overseas along with the nuts they contained. The latter because processing factories are dispersed throughout the main producing locations, allowing the rationalisation of the collection system in line with shorter distances and a more even distribution of return journeys.

In the crop secondary costs category, the downstream handling of raw nuts is completely eliminated. This has in the past included the labour used in handling and rebagging, storage prior to exportation and a further shrinkage allowance. The export tax on raw nuts, which is equivalent to nearly 13% of total traditional costs in 1978/79, disappears altogether. That part of f.o.b. costs which is attributed to port and stevedoring charges calculated on a weight basis should reduce due to the much lower weight of kernels compared to their raw nut equivalent.

The results of the analysis of the evolution of marketing costs may be summarised briefly as follows:

- a) Total marketing costs have increased substantially in the last half decade, with the effect of entirely absorbing and sometimes exceeding the phenomenal expansion of the gross marketing margin noted earlier;
- b) The magnitude of this rate of increase is largely caused by the growth of overhead costs, the unit levels of which vary inversely with the level of raw nut procurement. Total overhead and fixed costs (including CATA branch costs) have risen in relation to variable costs as follows (percentages of the unit cost structure of Table 5):

	<u>1973/74</u>	<u>1975/76</u>	<u>1978/79</u>
Overhead Costs	19.8	33.3	42.6
Variable Costs	80.2	66.7	57.4
Total	100.0	100.0	100.0

These figures direct attention quite forcefully to the reduction in marketing costs per ton which would result from an increase in the tonnage of raw nuts handled.

- a) There are a number of areas in which costs should be significantly reduced by the cessation of raw nut exports. Cost sub-categories which are eliminated are shrinkage in primary procurement, downstream handling of raw nuts, and the export tax on raw nuts. In the 1978/79 cost structure these were equivalent to 19.0% of traditional costs. Cost sub-categories which should diminish (or, given inflation, at least not rise as fast as in the past) are bags and twine, transportation, and f.o.b. costs. These accounted for 26.8% of traditional costs in the 1978/79 estimates.

#### D. THE PROCESSING STRATEGY AND PROCESSING COSTS

Before proceeding to the central question of the future levels of marketing cost, a more complete discussion on the economics of processing cashewnuts in Tanzania is required. This is firstly because the contemporary processing strategy has come to dominate discussions about the future prospects of the Tanzanian cashew economy; and secondly because the unit level of processing cost becomes a critical determinant of the capacity of the marketing authority to pay a higher price.<sup>10</sup>

The historical genesis of the processing strategy can be summarised fairly succinctly. The traditional world trading pattern for cashewnuts, whereby Tanzania and Mozambique were raw nut suppliers to the manual processing industry in India, became progressively more disadvantageous to the former two countries in the 1950s and 1960s. The totally dominant position of India in the kernel market permitted it simultaneous monopoly buying and selling powers in world cashew trade, and resulted in the continuous widening of the margin between raw nut purchase prices and the sale price of kernels.<sup>11</sup>

The potential for domestic processing came under increasing discussion in Tanzania in the mid-1960s. The first processing factory to be constructed was an experimental one built in Dar es Salaam by an Italian company, Oltremare S.A., in 1965. This had an initial nominal capacity to handle 9,000 tons of raw nuts per annum, subsequently upgraded in 1972 to 12,500 tons. It was followed in 1968 by another pilot factory, this time constructed in Mtwara by a Japanese company, Cashco, with a nominal capacity of 8,000 tons. Both these factories were representative of attempts by external private companies to develop and market a new and highly sophisticated technology for converting raw nuts into kernels. For this reason, their history has been punctuated by frequent incidence of breakdown and replacement of machinery, and they have seldom operated near their combined nominal capacity of 20,500 tons of raw nuts. It may also be noted here that intermittent attempts to establish a viable hand-processing capacity in Tanzania have never been successful (see for example, World Bank 1974, p: 5).

In the decade of the seventies the move towards processing most of the domestic cashew crop was greatly accelerated with the so-called Phase I and Phase II processing programmes. The Phase I programme dates from 1974 and involved the construction of five factories under World Bank loans with a total nominal capacity of 40,000 tons, and one factory financed under a loan of the Bank of Sicily with a capacity of 12,000 tons. These factories, two of which came into operation in early 1979 and the rest of which are expected to be commissioned by mid-1980, all utilise the Italian Oltremare technology. The Phase II programme was initiated in 1978 and involves a further three factories with a total capacity of 30,000 tons financed by the World Bank,

and one further factory of 10,000 tons financed by the Bank of Sicily. The three World Bank factories will be equipped with updated Cashco machinery; the Bank of Sicily financed factory, as might be expected from its financing, will be an additional Oltremare plant. The total capital cost of both programmes taken is estimated at T.Shs. 600 million of which approximately T.Shs. 420 million is in the form of external loans (Ellis, p. 2).

As a consequence of the Phase I and Phase II programmes the total nominal processing capacity is expected to grow from 53,000 tons at the end of 1979, to 73,000 tons by the end of 1980, and to 113,000 tons during 1981. The effective (as against the nominal) capacity under Tanzanian operating conditions is probably lower than that suggested in manufacture's specifications, due primarily to down-time for breakdowns and shortages of inputs. One source puts the effective total capacity at 97,000 tons (MDB, 1979, p. 4). At current levels of raw nut output the capacity utilisation would be 60% of the latter figure, and any further deterioration of production would, of course, reduce this factor still further.

The economic rationale of the processing strategy throughout the foregoing developments has been the realisation of higher foreign exchange earnings and higher domestic value added from the cashewnut industry. Of critical importance is that processing cost should be lower than value added, permitting a sufficient margin to repay the external loans required for factory construction. The World Bank in its project appraisal reports calculated the financial rate of return to its Phase I factories at 22% per annum, and that of its Phase II factory development at 12% per annum. The corresponding economic internal rates of return, derived from social cost-benefit analysis, were 32% and 16% respectively.<sup>12</sup>

The current conditions under which the Phase I factories are coming into operation and the Phase II factories are being constructed represents a drastic and very serious deterioration of virtually all factors underlying such optimistic calculations. It has been seen earlier that the actual value-added from processing has been nowhere near as favourable as was predicted in project documents, and that it has fallen to a very low level indeed in the last two years. There is also the very serious problems of capacity utilisation which could only be resolved by



a rapid reversal of the decline in raw nut output. To these must now be added an alarming rate of increase in estimated processing cost of the last few years. It is with this, and especially with the assessment of how processing cost can be contained, that the remainder of this section is concerned.

There is no lack of published evidence on actual and projected unit costs of processing. As can be imagined, given the large capital sums involved, the World Bank examined this matter very thoroughly in connection with both its Tanzanian project appraisals and, separately, as a concomitant of its wider interest in cashew processing.<sup>13</sup> In addition, there is the historical record of existing processing factories, and projections made by the Marketing Development Bureau of Kilimo and CATA itself.

A selection of the most relevant available figures on total processing cost is collected together in Table 6. A first point to note about this table is that its period of reference spans only the four years between 1976/77 and 1980/81. This applies equally to the World Bank project estimates of 1974, which referred to future costs at implementation, as to actual and projected costs published since then. The second point is on the very wide disparity of the figures shown. The variation is from T.Shs. 501 per ton actually experienced by the Oltremare plant at Kilifi in Kenya in the first 10 months of 1977, to T.Shs. 2,730 per ton estimated recently by the MDB for 1980/81. The latter is  $5\frac{1}{2}$  times the former. Finally, there are notable inconsistencies: a) between different World Bank estimates made separately in 1977 and 1978; and b) between different CATA estimates made at various stages on 1978/79 costs.

These figures are indicative of the veritable minefield of doubt and inaccuracy which surrounds the level of processing cost. Yet the objective situation is not nearly as complex and unsusceptible to concrete analysis as the inconsistencies would suggest. The actual cost figures given for various factories in 1977 and 1978 are specific enough, as are the technical coefficients and input cost levels which underlie them. Moreover, certain comparative characteristics of the two different kinds of plant in operation are sufficiently well-documented to approach the estimation of average future costs at a reasonable level of basis in reality.

The chief problem of the alternative estimates of processing cost is the failure to make the analytical distinction between the statement of what costs should be if plants are operated within reasonable proximity to their technical specifications, and the statement of what costs will be if plants continue to run sub-optimally or depart even further from efficient operation. The latter, which in particular characterises the MDB projection for 1980/81, embodies the serious disadvantage of not allowing for any correction of past deficiencies. Worse than that, it tends to promote and reinforce such deficiencies into the future by the very suggestion that the estimates so obtained are a serious basis for economic policy discussion. This point is not simply a philosophical curiosity related to the conflict between realism and idealism in economic policy. It is quite possible to make provision in future projections for an acceptable level of departure from optimal performance without going overboard in the acceptance of disastrous inefficiency.<sup>14</sup>

A revised projection of average processing cost for 1980/81 is contained in Appendix C of this paper. This is based in part on a re-examination of the 1977/78 accounting data of the Tanita I factory in Dar es Salaam, and in part on a review of the massive amount of evidence on the technical characteristics and costs of the different plants contained in various documents of the World Bank and elsewhere. The outcome of that exercise is an estimated unit cost of processing in 1980/81 of T.Shs. 2,200 per ton.

This estimate does not depend on the achievement of super-efficient performance, nor even on levels of capacity utilisation or labour productivity which might be regarded as uncharacteristic of Tanzanian conditions. It assumes only that there is a reasonable attempt to approximate the operating conditions for which the technology was designed, and that costs incurred are actually identified in the purposes to which they are designated. The interested reader who refers to Appendix C will observe that the estimate embodies quite generous interpretations about the validity of past accounting information, as also about the level of labour productivity achievable under current conditions.

TABLE 6. THE UNIT COST OF PROCESSING CASHEWNUTS IN TANZANIA:  
ALTERNATIVE ACTUAL AND ESTIMATED FIGURES

Source	Status	Processing Factory Actual or Type	Reference Year (or period)	Processing cost T.Shs./Ton
WB (1974)	Projection	Oltremare	Late 1970s	808.75
WB (1977)	Actual	Kilifi <sup>a</sup>	Jan.-July 1977	501.00
	Actual	Mtwara	Nov.1975-Oct 1976	717.00
	Actual	Tanika I	Nov.1976-Jul 1977	1,062.00
WB (1977)	Projection	Cashco	Early 1980s	1,541.85
	Projection	Oltremare	Early 1980s	1,722.90
WB (1978)	Projection	Phase II	Early 1980s	1,490.00
GATA(1979)	Estimate	Mtwara	1978/79	1,369.08
	Estimate	Tanika I	1978/79	2,034.22
	Estimate	Average <sup>b</sup>	1978/79	1,867.10
MDB (1979)	Actual	Tanika I	1977/78	2,201.00
GATA(1979)	Projection	Average <sup>b</sup>	1980/81	2,319.60 <sup>c</sup>
MDB (1979)	Projection	Average <sup>b</sup>	1980/81	2,730.00

SOURCE: As cited in the left-hand column; full citations are given in the Reference Section of this paper.

NOTES: <sup>a</sup> Oltremare factory opened at Kilifi, Kenya in 1976.

<sup>b</sup> Weighted average according to future distribution of Oltremare and Cashco factories in Tanzania.

<sup>c</sup> Excludes a provision made by GATA for long term loan repayments.

E. MARKETING COSTS AND MARKETING MARGIN IN 1980/81: A  
REVISION OF PREVIOUS PROJECTIONS

A revised estimate of total marketing cost in 1980/81 is given in Table 7 along with the previously cited Marketing Development Bureau and CATA projections for that crop season. This takes into account the analysis of traditional marketing costs made earlier, and the re-examination of future processing costs given in full in Appendix C. All estimates assume, at least initially, a production volume of 70,000 tons. This is undoubtedly a rather optimistic estimate if no prior decision is taken to increase the producer price further than has been proposed so far. The CATA projection shows the operation of the residual procedure mentioned in the introduction to this paper, with total costs working out so as to exactly permit the agreed producer price. The main points of similarity and difference between the projections are identified by main cost category as follows:

1. Primary procurement cost

All three estimates concur in the village levy and in the unit costs of branch administration. The latter implies reducing branch costs from T.Shs. 13.3 million in 1978/79 to T.Shs. 10.4 million in 1980/81, an admirable proposal advanced by CATA itself. On those categories where there is disagreement the revised estimate: a) eliminates the shrinkage allowance, b) reduces bags and twine on the basis of a price of T.Shs. 10 per bag and assuming re-usage rate of 25% (the December 1979 cost of bags was T.Shs. 9.30), c) reduces transportation costs in line with the MDB. These taken together give a total revised primary procurement cost of T.Shs. 508.55 per ton.

2. Secondary Crop Costs

The CATA and MDB projections are not complete with respect to this category, mainly because they subsume certain of its components in Head Office costs. The revised estimates eliminate, as discussed earlier, raw nut handling and the export tax. Crop and cash insurance are based on the standard rates applied to an average growers price of 1,740 per ton (See Appendix B for these rates). Crop finance is the interest for 4 months on the grower price at 9.5% per annum.

TABLE 7. PREVIOUS AND REVISED ESTIMATES OF THE MARKETING COST STRUCTURE FOR CASHEWNUTS IN TANZANIA, 1980/81 (T.Shs./Ton)

Description	CATA Estimate	MDB Estimate <sup>a</sup>	Revised Estimate
Growers Price <sup>b</sup>	1,760.00	1,740.00	1,740.00
1. Primary Procurement	<u>552.00</u>	<u>610.00</u>	<u>508.55</u>
Branch Costs	147.80	147.80	147.80
Village Levy	100.00	100.00	100.00
Shrinkage %	-	65.20	-
Bags & Twine	130.00	130.00	83.75 <sup>c</sup>
Transportation	174.00	167.00	167.00
2. Secondary Crop	n.s.	n.s.	<u>183.00</u>
Crop Finance		n.s.	55.10
Crop Insurance	58.20	n.s.	1.30
Cash Insurance		n.s.	2.60
FOB Charges	n.s.	75.60 <sup>d</sup>	124.00
3. Administrative	<u>569.70</u>	<u>384.40</u>	<u>531.45</u>
Head Office Expenses	241.30 <sup>e</sup>	249.80 <sup>e</sup>	142.85
Bank Overdraft	48.60	48.60	48.60
Feeder Road Levy	20.00	n.s.	254.00 <sup>g</sup>
L.T. Loan Servicing	57.80	60.00	66.00 <sup>g</sup>
4. Processing	2,646.20 <sup>f</sup>	2,730.00	2,800.00
Total Costs	5,585.90	5,540.00	5,163.00
Expected Sales	5,585.93	5,862.00	5,862.00
Expected Surplus	Zero	322.00	699.00

SOURCES: MDB (1979, pp. 24-34); CATA. Own estimates explained in text.

NOTES: <sup>a</sup> Altered only to take into account the increase of the grower price decided in the 1980/81 price review;

<sup>b</sup> Assumes 80% Standard Grade except in CATA estimate;

<sup>c</sup> Assumes 10/= per bag and a 25% re-usage rate;

<sup>d</sup> Transport of kernels;

<sup>e</sup> Contains f.o.b. charges;

<sup>f</sup> Contains T.Shs. 326.60 specified as factory margin;

<sup>g</sup> The Capital levy and l.t. loan servicing taken together sum to T.Shs. 320 per ton, the basis of which is given in Appendix B, para 2 c.

n.s. = not specified.

The estimate for f.o.b. charges includes both the MDB projection of kernel transshipment charges (T.Shs. 76) and the port costs for handling kernels (projected at T.Shs. 48 per raw nut ton or T.Shs. 220 per ton of kernels). The total revised secondary crop costs are T.Shs. 183.00 per ton.

### 3. Administrative Costs

The revised estimate is based on the assumption that Head Office costs are held at T.Shs. 10 million (of which approximately T.Shs. 4 million in salaries, T.Shs. 6 million on operating costs and depreciation). This is 4% above the corresponding cost in 1978/79. All estimates coincide on the per ton level of interest on accumulated overdraft. The revised estimate increases substantially the joint cost per ton of capital reserve and long term loan financing. The necessity for this is indicated, as mentioned before, by the burden of loan repayments which CATA will confront in the mid-1980s (see Appendix B, para 2.c.). The capital reserve could equally well be excluded from costs and appear instead in the form of a larger surplus, but this would serve no purpose other than to put additional emphasis on the flexibility which in fact exists to raise the producer price.

### 4. Processing Costs

This is revised downwards from the other projections, in line with the analysis of the preceding section and Appendix C. It is considered absolutely indispensable to the future viability of the Tanzanian cashew economy that processing costs are in the future closely monitored and controlled.

These revisions result in a total marketing cost, including payments to growers, of T.Shs. 5,163 as compared to the T.Shs. 5,540 of the MDB and the T.Shs. 5,586 of CATA. The principal sources of the difference are the more precise specification of individual cost components within the traditional cost categories, and the downward revision of processing cost made on the assumption that factories operate within reasonable proximity to their technical specifications. When taken in conjunction with the estimated average sales value in 1980/81 (which follows MDB), the revised estimate yields a surplus of



T.Shs. 699 per ton as compared to the T.Shs. 322 per ton of the MDB and zero for CATA.

F. THE POLICY RECOMMENDATION, SUPPORTING CONSIDERATIONS, AND CONCLUSIONS

It is argued here that the surplus derived from the detailed analysis of cost structures should be immediately translated into an increased price to growers of 70 cents per kilo, bringing the producer price for first grade cashewnuts in the 1980/81 season to T.Shs. 2.50 per kilo instead of the T.Shs. 1.80 per kilo which was decided in the 1979 price review. There are three main elements which enter this policy recommendation. The first of these refers to the response of growers to a price increase of the magnitude suggested, and relates back to the analysis of the decline in production given in the earlier paper. The second refers to the distribution of marketing cost between overhead and variable components, and the sensitivity of the unit cost structure to increases in the volume of raw nut production. The third concerns financial control and advanced budgeting as instruments for containing the growth of costs in the marketing system, especially in processing.

1. The Responsiveness of Output to Price

The previous paper on the causes of the decline in production demonstrated how the progressive deterioration of the last five years is highly correlated with the decrease in the real producer price and in the relative price attractiveness of the cashew compared to other crops. Hence, for example, the 60% decline of production between 1973/74 and 1978/79 corresponds to a) a decrease in the real producer price over the 1970s of between 47% and 65% up to 1977/78, and b) a decrease in the relative price level of cashews against selected other crops varying between 12% and 48% from 1973/74 to 1978/79 (Ellis, pp. 9-13).

These figures would suggest that the volume of cashew harvest is quite sensitive to changes in the real and relative level of the producer price. Ideally this sensitivity should be measured in a supply function which would yield estimates of the responsiveness of output to price in the form of elasticities. However, the level of output in recent years has been

influenced by several other important factors which do not readily lend themselves to such formal treatment. These include the impact and subsequent effects of villagisation, and long run agronomic factors related to the age distribution of the stock of trees. Ultimately, with or without the utilisation of a formal econometric approach, the upward responsiveness of output to different projected price levels must remain to some degree an interpretative exercise in which the identification of qualitative aspects of the decision-making process at the peasant level must be given due consideration alongside the more quantitative evidence.

Visits to villages in the cashew zones suggest that the output response to small incremental increases in price is likely to be very disappointing. This is both because such small increases would make negligible inroads on the total magnitude of the real and relative price decline of the last decade, and because of the displacement of the cashew from the peasant economy following villagisation. For these reasons, as well as other factors dealt with more fully in the earlier paper, the degree of responsiveness over different projected price ranges is likely to be discontinuous. More concretely, it is considered here that any level of producer price up to about T.Shs. 2.40 per kilo is unlikely to make any great impact on peasant motivation to return to cashew cultivation, implying that the price elasticity of supply in this range would be quite low.

Above the level of T.Shs. 2.40, the responsiveness of output to price should increase sharply, constrained only in the short-term by the quality of the existing stock of trees. The recommendation of a price level of T.Shs. 2.50 is thus regarded as a closest estimate of the price required to motivate peasants to fully realise the potential of the existing tree stock, i.e., clean and harvest the vast number of trees which have been abandoned since villagisation.

Further subsequent price increases will undoubtedly be required latter a) to compensate for continued inflation on a year to year basis, and b) to provide an additional incentive to uproot old and unproductive trees and replace them by new ones. One alternative here is to assign a proportion of the village levy per ton to providing a separate incentive to replant

unproductive cashew areas, perhaps associated with the cessation of the grading function to which the levy is at present directed (Ellis, pp. 25-26). Yet another component of the cashew revival strategy could be the reduction of official prices for some of the minor competing crops for which production in recent years has exceeded the absorptive capacity of markets except at prices which involve substantial losses for the marketing authorities concerned.<sup>16</sup>

The recommended price level of T.Shs. 2.50 per kilo is 47% above the current official price of T.Shs. 1.70 and 39% above the level for 1980/81 decided in the 1979 producer price review. These percentage increases are not startlingly high. Assuming an arc elasticity of supply of unity over the range from T.Shs. 1.70 to T.Shs. 2.50, output would increase from the present level of around 60,000 tons to about 90,000 tons. This is probably a conservative estimate for the longer run but not an unreasonable one for the immediate impact.

## 2. Overhead Costs and the Effect of Increases in Production

The revised cost estimates of Table 7 contain overhead costs equivalent to 54% of total marketing costs excluding processing. These are branch administration (12%), Head Office expenses (12%), overdraft cost (4%), and financial charges (26%). This means that for every 10% increase in the volume of raw nuts handled the unit overhead costs should reduce by nearly 10%. In concrete terms, an increase in production from the 70,000 tons assumed in the projections to the 90,000 tons suggested above (plus 29%) would result in a fall of unit overhead costs from T.Shs. 659.25 to T.Shs. 512.75 per ton (minus 22%). This would release nearly 15 cents per kilo to offset the increase of the grower price by 70 cents.

The significance of the overheads argument is even more striking with respect to the fixed costs of processing.

The previous analysis of processing cost assumed that factories would be operating no more than 10% or 15% below their rated raw nut capacity. This assumption clearly does not hold if production were to stay at its present level or decline still further. The overhead costs of processing are some 60% of total processing cost on the basis that the permanent labour

force is a fixed cost at least in the short term. Again in concrete terms, this means that a decline in capacity utilisation from say 90% to 60% (well within the bounds of possibility under current conditions) would result in unit processing cost rising from T.Shs. 2,200 per ton to T.Shs. 2,850 per ton. This would render impossible the provision of a higher price to growers, would make the repayment of external loans extremely difficult if not impossible, and would in effect destroy the entire rationale of the processing strategy.

Finally in this context it is appropriate to show the extent of CATA's burden in terms of long-term loan repayments. These are scheduled to rise as follows:

1980/81—T.Shs. 4.6 million

1981/82—T.Shs. 28.6 million

1982/83—T.Shs. 38.4 million

1983/84—T.Shs. 47.5 million

1984/85—T.Shs. 45.1 million

At the level of production of 70,000 tons, assumed in projections, the unit cost of such payments would rise from T.Shs. 66 per ton in 1980/81 to T.Shs. 680 per ton in 1983/84. Such a burden is clearly insupportable with or without any foreseeable increase in raw nut output, and it is for this reason that the author's cost estimates for 1978/79 and 1980/81 included capital deductions which would spread the later loan repayments over a wider span of years.

Under one possible future scenario of no shift of policy on the producer price, production remaining at 60,000 tons, and processing factories operating at 60% of capacity, CATA would begin to incur catastrophic losses from 1980/81 onwards. A very rough estimate of such losses would be from T.Shs. 700 per ton in 1981/82 rising to over T.Shs. 1,000 per ton in 1983/84. Moreover this effect would be cumulative since elevated overdrafts would further increase the overhead component of total costs, with interest payments in all areas of operation mounting uncontrollably. Such hypothetical conditions are not so far off current tendencies to be regarded as figments of an overheated imagination; they suggest potential future losses in the order of T.Shs. 100 million per annum by the mid-1980s in the absence of an adequate turn around of production.

### 3. The Control of Costs

The majority of the inconsistencies and contradictions found in the analysis of cost structures could be avoided if the different cost components were routinely subjected to prior annual limits on expenditure, determined from one year to the next according to up-to-date information on relevant prices and operating coefficients. A particular department or section then returning to Head Office for more money during the financial year would have to substantiate rigorously why it was required. This is quite standard financial control practice for enterprises in both capitalist and socialist economic systems, and there is no reason whatsoever why the crop parastatals of Tanzania should be an exception to the general rule.

The evidence collected and examined for the purposes of this paper suggests that CATA procedures have in the past been fairly contrary to sound financial planning. In particular it seems probable that costs in many departments have simply followed whatever natural progression arises out of day-to-day decisions and exigencies, with the accounting of them being undertaken on a post-hoc basis from monthly bank statements. This of course reflects in part the great difficulty in attracting and keeping qualified accounting personnel at the headquarters in Mtwara, and it is not suggested here that the present CATA management is responsible for the past growth of costs along such lines.

The area in which financial control becomes absolutely indispensable in the future is that of processing factories.<sup>17</sup> This basically requires a standard format into which are placed the maximum quantity of inputs, including labour, required for reasonably efficient factory operation, and which is budgeted annually according to changes in prices and wages. This is the only method by which processing cost will be kept in line with the technical capabilities of the factories which have been constructed. Under such a system, a factory manager requesting for example, an increase in his budget to cover additional payroll costs would have to show why it had become necessary to employ more persons than had been established. This would act as a powerful check on the well-documented problem of overmanning and the high-unit labour costs with which it is associated.

#### 4. A Point in Conclusion

It has been shown in the analysis of cashewnut marketing and processing costs that there does exist room in the cost structure to permit the payment of a significantly higher price to growers. This result depends on the notion, stressed at various points of the paper, that projections based on the acceptance of sub-optimal performance as a norm have no validity as an argument in the determination of the level of the producer price. To suggest that they should have validity is also to argue implicitly a) that there should be no public or national accountability of the crop parastatals, b) that sub-optimal performance is an acceptable behavioural characteristic both now and in the future, and c) that peasants should subsidise economic wastefulness in the downstream marketing system for their crop. It is suggested in conclusion that such arguments neither form a reasonable basis for economic policy in the particular case of the future of the cashew economy, nor should be adopted as a more general philosophical approach to the future of Tanzanian development strategy.

FOOTNOTES

1. Cashewnut shell liquid (CNSL) is contained in the raw nut between the outer skin and the inner shell which surrounds the kernel. It is a by-product of the kernel extraction process and has various industrial uses, among which the most important is as a heat-reduction material in friction applications (chiefly brake-linings).
2. The World Bank project appraisals assumed a kernel recovery rate of 23% (World Bank, 1974 and 1978). Since actual recovery rates in Tanzania have sometimes been lower than this (with variation between years and between operational plants), an average of 22.5% is assumed in the conversion of time-series export data.
3. The precise growth of the real gross marketing margin depends on the choice of deflator used. The range of such increase obtained using the two alternative deflators of the author's first paper (Ellis, p. 12) is 88% to 165%.
4. This is simply obtained by holding the proportion of raw nut output processed constant at the 1971 level, and calculating the average export value for 1979 which would have resulted from intervening price changes alone.
5. India's share of the world kernel market has varied between 90% and 0% over the decades of the sixties and seventies. The decline of raw nut availability from Tanzania and Mozambique, formerly the major sources of raw nuts for India, has implied a severe fall in capacity utilisation of the manual processing activity in India. The magnitude of the raw nut price increase relative to kernels rests on Indian domestic policy of subsidising the importation of raw nuts in order to safeguard the very large employment and family-income generating role of manual cashew processing in the southern Indian state of Kerala. See also Wilson R.J., (pp. 20-30) and Deepak Nayyar, (pp. 111-120).
6. The authority responsible for cashew marketing up to 1972/73 was the National Agricultural Products Board (NAPB). CATA took over the functions of the latter in the 1973/74 crop season, and subsequently also took over the procurement functions of cooperative unions and primary cooperative societies between 1974 and 1976. The average sales value of CATA does not contain processed cashew products until the 1978/79 crop season (see also footnote 17 below).
7. The Head Office cost in 1978/79 is an estimate since CATA costings subsume various other costs in this sub-category. The reader is referred to Appendix B for the fuller explanation of the 1978/79 cost components.
8. In the early years of undertaking the procurement function, CATA was also involved in the purchase of other crops in Mtwara and Lindi regions on behalf of the National Milling Corporation (NMC). This may explain the apparently high procurement/cooperative related costs between 1973 and 1976,

but the latter may also be attributed quite simply to losses which occurred in the transition between cooperative payments and CATA direct procurement.

9. The kernel recovery rate in processing is typically calculated with respect to the weight of raw nuts at the entrance to the roasters, which is after raw nuts have re-humidified (World Bank, 1977, p. 26).
10. The topic of cashew processing really deserves a separate treatise, involving as it does major issues in development strategy associated with increasing the value added of primary commodity exports and the appropriateness of the advanced technology which has been adopted.
11. This can readily be verified by reference to the unit import and export values of raw nuts and kernels respectively in Indian trade statistics. See for example Wilson R.J. (pp. 74-78).
12. The Phase I internal rate of return figures are calculated from the factory cash flow figures contained in World Bank (1974, Annex 14, Tables 1-4). Phase II internal rates of return are given in World Bank (1978, Table 32).
13. It is reported that a major proportion of installed mechanical processing capacity in the Third World has been financed by the World Bank (World Bank 1977, preface).
14. A further irrelevance for medium-term policy discussion is to make special allowances for the additional inefficiencies of factories in their first year of operation.
15. Econometric model-building as a tool of analysis can sometimes have a negative impact on the ability of social scientists to effectively interpret the real world. This is because the effort required to mount and execute the model detracts from the exploration of the wider context in which the exercise is undertaken. (An analogy is with the chess-playing computer which is still unable to beat a competent human player in spite of its vastly superior ability to examine all possible combinations of the future course of play.)
16. These include cassava and cowpeas, the production of which has far outstripped the absorptive capacity of the domestic market, and the exportation of which involves heavy losses. I am indebted to Mike Sackett of the MDB for discussion of the overpricing of minor food crops.
17. The current accounting practice is for processing factories to be treated as semi-autonomous entities, purchasing raw nuts from CATA at a fixed price and obtaining from CATA income from sales less 2 $\frac{1}{2}$ % sales commission. This practice is quite ludicrous from the viewpoint of cost control, implying as it does the proliferation of separate bank accounts and wide powers of discretion for individual factory managers.



# APPENDICES

Appendix A. Tanzania: Data on the volume and value of raw cashewnut and cashew products exports, 1971 - 1979

Appendix B. Notes on the derivation of the cashew marketing cost structure

Appendix C. A revised projection of cashew processing costs in Tanzania, 1980/81.

APPENDIX A.

TABLE I. VOLUME AND VALUE OF RAW CASHEWNUT AND CASHEW PRODUCTS EXPORTS, 1971-1979

Year	Raw Cashew Nuts		Cashew Kernels		CNSL <sup>a</sup>		Volume R.N.E. <sup>b</sup> (Metric Tons)		
	Metric Tons	T.Shs. '000	Metric Tons	T.Shs. '000	Metric Tons	T.Shs. '000	Total R.N.E.	Kernels <sup>c</sup> R.N.E.	Kernels %
1971	95,973	119,553	3,976.8	28,498	652.9	697.7	113,648	17,675	15.6
1972	112,925	150,343	2,901.2	22,435	413.8	408.9	125,819	12,894	10.2
1973	109,915	141,211	3,708.8	32,709	848.1	654.7	126,399	16,484	13.0
1974	113,891	196,242	4,041.5	46,588	658.4	2,184.0	131,853	17,962	13.6
1975	97,328	176,859	3,999.7	44,115	502.3	861.6	115,104	17,776	15.4
1976	66,380	131,135	6,082.8	76,226	1,614.0	2,721.3	93,415	27,035	28.9
1977	74,759	187,694	3,890.0	85,302	873.0	3,323.0	92,048	17,289	18.8
1978	44,200	160,887	3,635.0	67,903	1,025.0	3,868.0	60,356	16,156	26.8
1979 <sup>d</sup> (E)	30,000	121,980	6,750.0	140,062	2,1200.0	17,850.0	60,000	30,000	50.0

SOURCES: East African Community, Annual Trade Reports; MDB (1979, pp. 9 - 10); CATA.

NOTES: <sup>a</sup> Code 422 90 9 "fixed vegetable oils n.e.s." in Annual Trade Reports.

<sup>b</sup> R.N.E. = Raw Nut Equivalent volume.

<sup>c</sup> Calculated from kernel exports assuming a recovery rate of 22.5% by weight.

<sup>d</sup> Estimated on the basis of actual sales, Jan-May 1979.

APPENDIX B

NOTES ON THE DERIVATION OF THE CASHEW MARKETING COST STRUCTURE  
(SEE TABLES 4 and 5 IN TEXT)

1. Sources and General Observations

a) The 1968/69 total cost and income from sales (Table 4) was obtained from the analysis of cashew nut marketing costs in Tanzania undertaken by Westergaard (1968 and 1969).

b) The 1973/74 cost structure was obtained from CATA accounting costs for that year as reported in MDB (1977, pp. 26, 29), and MDB (1978, p. 24). The primary source is the first of these, adjusted only in relation to primary procurement for which the second gives slightly more detail on individual sub-categories. The total cost for 1974/75 is contained in the same sources.

c) The 1975/76 cost structure corresponds in virtually all sub-categories to the costs given in the CATA final accounts for that financial year (source CATA). An unexplained addition to the growers price, stated in the accounts at T.Shs. 1,172.51 instead of T.Shs. 1,030 per ton, has been distributed between unspecified crop procurement costs ("other" at T.Shs. 101.31) and shrinkage at 4% of the growers price (T.Shs. 41.20). The total cost excludes two items appearing in the final accounts which are not relevant to the comparative historical picture, even though they contributed to the substantial losses incurred by CATA in that year. These were a loss on the difference between beginning and end season raw nut stocks (T.Shs. 127.31), and a loss on the now redundant semi-mechanical processing plant at Magala (T.Shs. 94.19 per ton).

d) The 1978/79 cost structure is directly based on detailed crop costings (estimates) obtained from CATA in June 1979. These have been adjusted to reflect the drop in raw nut throughput from an original estimate of 80,000 tons down to 60,000 tons (which increases the unit level of all overhead cost sub-categories). The total cost given in Table 4 includes a rough provision for unit processing cost at T.Shs. 1,100 per ton of total raw nut throughput (i.e. 2,200 per ton for the assumed 50% of total raw nuts which are processed). This does

not appear in the CATA costings, and the average sales value has been adjusted accordingly (see below).

e) The volume of raw nut throughput underlying the unit costs in each year do not necessarily correspond to annual crop purchase figures, due to stock changes. The figures used are as in the original sources (1973/74 and 1975/76), and an assumed throughput of 60,000 tons in 1978/79 (actual crop purchase was slightly below this at approximately 58,000 tons, so some drawing down of previous stocks is supposed).

f) The unit sales value figures of Table 4 for 1973/74 to 1975/76 are as given in the original accounts. For 1968/69 it is a weighted average of the figures shown in Westergaard (1969, Table 3.1, p. 3). For 1978/79, the average sales value has been estimated on the basis of actual performance from October 1978 to May 1979. The average sales value of raw nuts, exports of which had been completed by the end of May (30,000 tons), was T.Shs. 4,066 per ton. The average raw nut equivalent value of kernels, CNSL, and cashew waste up to the end of May was T.Shs. 5,117 per ton (MDB 1979, p. 10). On an assumed 50:50 distribution of the total 60,000 tons throughput between exports and processing, this gives an average sales realisation of T.Shs. 4,591.50 for 1978/79.

g) The growers price figures of Table 4 are calculated on the assumption of purchase proportions of 80% Standard Grade and 20% Undergrade for all years, except 1968/69. The latter is a weighted average of the grower's prices shown in Westergaard (1969, Table 3.1, p. 3).

## 2. Notes by Sub-category of Cost

Notes are only given for items where additional explanation is required. There are no further specific comments on 1973/74 and 1975/76 costs, with respect to which the few deviations from the published accounts are fully explained under 1 (b) and (c) above. Comments set out below on the 1978/79 sub-categories are restricted to those instances where there is a departure from CATA costings.

a. Primary procurement

The CATA costings for 1978/79 contain a transportation cost of T.Shs. 2.9 million equivalent to T.Shs. 477.94 per ton at 60,000 tons throughput. This cannot possibly refer only to transportation, being quite out of line with both past costs and CATA future projections. It is revised down to T.Shs. 200 per ton. The shrinkage allowance is calculated separately at 4% of the grower's price, probably having been included under transportation in the costings. Branch costs are re-calculated at the reduced raw nut volume.

b. Secondary crop costs

Some of the sub-categories here are not specified separately in the 1978/79 costings and are subsumed: either in the transport figure referred to above or under Head Office costs. Crop finance is calculated, following recent CATA practice, at 9.5% for 6 months on the grower price ( $0.095 \times 2 \times 1,640 = \text{T.Shs. } 77.90$  per ton). Crop insurance is calculated at the going rate of T.Shs. 15 for every T.Shs. 20,000 insured ( $0.00075 \times 1,640 = \text{T.Shs. } 1.23$  per ton), Cash insurance is calculated at the going rate of T.Shs. 3 for every T.Shs. 2,000 insured ( $0.0015 \times 1,640 = \text{T.Shs. } 2.46$  per ton). Export tax is calculated at 10% of average raw nut sales price of T.Shs. 4,066 per ton, which applies to half of the total raw nut output, giving T.Shs. 203.30 per ton instead of the T.Shs. 207.50 of CATA costings.

c. Administrative costs

The 1978/79 costing of Head Office expenses seems to contain other sub-categories since it gives a unit cost at 60,000 tons of T.Shs. 250.96 per ton. The estimate used in the present analysis assumes a total Head Office cost of T.Shs. 9.6 million, divided between T.Shs. 3.7 million for salaries and T.Shs. 5.9 million operating expenses. This is in line with alternative CATA figures on past and future projected H.O. costs, and gives a unit level of T.Shs. 160 per ton. The CATA costings for overdraft and bank charges and long-term loan servicing are re-calculated at reduced raw nut volume.

The 1978/79 CATA costings contain no provision for capital deduction, preferring this to appear in the form of the surplus between total costs and expected revenue. In the revised 1978/79 estimate, this deduction has been re-introduced at T.Shs. 180 per ton, in order to defray in advance the very substantial overheads which the authority will incur from 1980 onwards. The basic position here is that CATA will incur approximately T.Shs. 190 million in capital charges over the period 1980 to 1985. T.Shs. 25 million of this pertains to capital projects which the authority proposes to finance itself, and T.Shs. 165 million is long-term loan repayments originating from the Phase I and Phase II cashew processing projects. Under the assumption (now rather doubtful) that production were to increase to 100,000 tons by 1981/82, these capital commitments could be met by unit deductions per ton rising from T.Shs. 180 in 1978/79 (60,000 tons), to T.Shs. 250 per ton in 1979/80 (65,000 tons), T.Shs. 320 per ton in 1980/81 (70,000 tons), and T.Shs. 350 per ton from 1981/82 to 1984/85 (100,000 tons).

APPENDIX C

A REVISED PROJECTION OF CASHEW PROCESSING COSTS IN TANZANIA 1980/81

Table II on the following page gives a revised estimate of the 1980/81 processing costs of an Oltremare plant operating at an assumed level of 10,000 tons. Since it is based in part on the actual costs of Tanita I in 1977/78, it can be thought of as applying to a factory operating below the manufacturer's rated capacity. The derivation of the different cost elements, including comment on technical matters which underlie them, is given in the following notes. The reader is also referred to the Marketing Development Bureau Report (1979, pp. 30-34) for the complete specification of the Tanita I 1977/78 cost accounts.

a. Labour input and labour cost

The estimate assumes a total labour force including administrative staff of 1,260 persons. This implies a labour productivity level of 34 man days per ton of raw nuts processed which is the same as existed in Tanita in early 1977 (World Bank 1977, pp. 29, 49). This is a substantially lower labour productivity than has been observed in an operational Oltremare plant (28 man days per ton in the Kilifi plant in Kenya in 1977). Since early 1977, the labour requirements of Tanita I have risen to 40 man days per ton (1977/78) and 44 man days per ton (first 6 months of 1978/79). The Tanita I Oltremare plant, with a current direct labour force in the region of 1,580 persons, is clearly grossly overmanned.

The average monthly wages assumed in the estimate is T.Shs. 600 for wage labour and supervisors and T.Shs. 1,250 for administrative and office staff. These represent an increase of 15% over average payments to labour as suggested in Tanita 1977/78 accounts, and they are substantially higher than the current average payment to ordinary labour which was stated in interview at Tanita in July 1979 as being T.Shs. 410 per month. The labour cost per ton thus obtained is slightly lower than that experienced by Tanita I in 1977/78 as shown under various categories in the cost accounts.

TABLE II. REVISED ESTIMATE OF PROCESSING COSTS IN 1980/81,  
INCLUDING COMPARISON WITH TANITA I COSTS 1977/78

Cost Category	Tanita I Accounts <sup>a</sup> 1977/78	Revised Estimate 1980/81 <sup>b</sup>	
		T.Shs./Ton	Notes
Director Labour	918	864	600/- p.m.
Indirect Labour	102	90	1,250/- p.m.
1. <u>Total Labour</u>	<u>1,020</u>	<u>954</u>	
Tins	103	238	at 12/-
Cartons	75	79	at 8/-
2. <u>Direct Costs</u>	<u>178</u>	<u>317</u>	
3. Other Identified Costs	122 <sup>c</sup>	140	Estimate
4. Spares & Maintenance	291 <sup>d</sup>	252	Estimate
5. Fuel & Oils	77	112	+ 50%
6. Water & Power	56	81	+ 50%
Depreciation	201 <sup>e</sup>	350 <sup>f</sup>	Estimate
8. Miscellaneous	253	-	Zero
<u>Total</u>	<u>2,201</u>	<u>2,206</u>	-

SOURCES: CATA, MDB, World Bank; Appendix C provides full explanation of this table.

NOTES: <sup>a</sup> 9,562 tons raw nuts

<sup>b</sup> based on Oltremare-type plant (at 10,000 tons) except depreciation;

<sup>c</sup> contains uniforms, vehicles, housing levy, stationery, insurance, etc.;

<sup>d</sup> of which T.Shs. 199 is spares and T.Shs. 92 is maintenance;

<sup>e</sup> contains category described as "Other (depreciation, audit, etc.);

<sup>f</sup> average all plants.



b. Direct costs: tins and cartons

This is an unambiguous category of cost which is simply a function of the price of the items multiplied by the volume required to service the output. A 10,000 tons factory should produce 2,250 tons of kernels requiring roughly 198,500 tins and 99,250 certons. The prices of these were T.Shs. 10 and T.Shs. 7 respectively in 1979. They have been assumed to rise to T.Shs. 12 (plus 20%) and T.Shs. 8.00 (plus 15%) up to 1980/81. This gives a total cost for the two items of T.Shs. 317 per ton which is substantially above the level recorded in the Tanita I accounts of 1977/78 (hardly an ungenerous estimate).

c. Other direct costs and miscellaneous categories

Other materials required in connection with kernel production are solder, carton tape, carbon dioxide, and gas. In addition there are a number of minor materials such as sawdust for absorbing ONSL, staff uniforms, various minor chemicals, and paint. The costs per ton for these were estimated by the World Bank in 1974 to be only T.Shs. 2.20. This was subsequently revised in later appraisals based on actual costs in 1977 to a level of T.Shs. 83 per ton. Finally there are vague suggestions for this category ranging from T.Shs. 100 to T.Shs. 250 in recent accounts and costings. In the Tanita I accounts the "miscellaneous" category alone comes to T.Shs. 253 per ton (T.Shs. 2.4 million).

The level suggested here for 1980/81 is T.Shs. 140 per ton to cover all such eventualities, including office supplies, telephone charges etc. Implying a total expenditure in a factory operating at 10,000 tons of T.Shs. 1.4 million, it is felt that it is inconceivable that eventual and minor costs should exceed this amount (any attempt to add up the more important components according to their current or future prices comes to nowhere near this amount).

d. Spares and maintenance

This is another category the costs of which have grown out of all proportion in the last few years. In the original World Bank appraisal, the cost of spares and maintenance was set at 5% of the total capital investment, giving a level of

The outcome of the foregoing considerations is an estimated total processing cost in 1980/81 of T.Shs. 2,206 per ton of raw nuts. This estimate is considered quite generous in the light of the mass of evidence reviewed on the operation of processing factories, and of a tendency to give uncertain cost categories the benefit of the doubt as to the validity of their content. Apart from the depreciation allowance the estimates refer to an Oltremare type of factory. All published data on costs is in agreement that the Cashco technology has lower operating costs, largely on account of a significantly smaller labour requirement. Figures on the comparison vary from 30% lower (actual comparison of Tanita and Mtwara in 1976/77), 11% lower (World Bank projections of late 1977) and 40% lower (JATA estimates made in 1979). This would have the implication of reducing the future processing cost estimate, since quite apart from the new Cashco factories scheduled to commence operation in 1981, the lower actual costs of the Mtwara Cashco plant should be taken into account in the general average. In the event, the estimate cited above is merely rounded down to T.Shs. 2,200 per ton for the purposes of discussion in the text.

T.Shs. 93.75 per ton. This was reduced in later projections based on the observation of actual conditions in 1977 to between T.Shs. 50 and T.Shs. 60 per ton (approximately 2 $\frac{1}{2}$ % of revised investment costs). However, the Tanita I 1977/78 accounts suggest a level of T.Shs. 291 per ton of which spares alone are T.Shs. 199 per ton. This makes the spares and maintenance category almost equivalent to 10% of the 1979 total investment cost of a new factory. In the estimates here, this category is set at T.Shs. 252 per ton, which is still considered extraordinarily high by any objective standards of the relationship of maintenance cost to the capital cost of replacing the factory in its entirety.

e. Depreciation

The depreciation allowance evidently varies with the original cost of the different factories, which it turn has been changing rapidly during the period of coming into operation of Phase I factories. The Tanita I accounts specify depreciation of building and machinery at T.Shs. 63 per ton, but since depreciation is also mentioned in one of the miscellaneous categories this may not be a realistic figure. The World Bank Phase I and Phase II project appraisals gave depreciation costs as T.Shs. 126 and T.Shs. 480 respectively. Allowing for increases in the final commissioned cost of Phase I and Phase II factories, an average depreciation allowance for Tanzania (including Cashco plants under construction) is estimated at T.Shs. 350 per ton.

f. Fuel and Oils, Water and Power

Since it is extremely difficult, short of highly specific empirical investigation, to trace the correct levels of these costs the procedure followed here is simply to adopt the MDB estimates for this category in 1980/81. This consists of increasing the 1977/78 Tanita I accounting costs by 50% (to reflect the likelihood of substantial price increases for these inputs over the next few years). The figures obtained are T.Shs. 112 per ton for fuel and oil and T.Shs. 81 per ton for electricity and water, totalling T.Shs. 193 per ton. This may be compared with the 1974 World Bank estimate of T.Shs. 17.40 and a revised World Bank estimate of 1977 of T.Shs. 74 per ton.

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