Makerere Institute of Social Research

(831)

EDRP. NO. 95
Miss D.M.S. Mason
18. 3. 66.

BACKGROUND INFORMATION TO A STUDY OF THE VEGETABLE OIL-CRUSHING INDUSTRY IN UGANDA

INTRODUCTION.-

This paper sets out the structure of the oil crushing industry from 1940 to 1965, an industry which has an output of around 54,000 tons of oil per annum about 40% of which supplies the home market.[1] Rises in the price of edible oil affect the cost of living and also possibly the export potential of oil and thus the performance of the industry is important to the economy of the country.

The work is to be supplemented with information from interviews with both past and present millers, on the basis of which I also plan to assess the performance of the industry. I have made no attempt to criticize the structure or performance of the industry, or to make suggestions as to future policy with regard to the industry, as at this stage my evidence is incomplete. These factors will be set out in a later paper.

I am grateful to those who have made information available to me - Sir Amar Maini, Mr. Cownie from the Ministry of Commerce and Industry, Officials of the Lint Marketing Board, and Officials at the Registry of Companies.

DEVELOPMENT.

Before 1940, nearly all the cotton seed produced in the country of Uganda was burnt. The first firm to consider the processing of cotton seed was Vithaldas Haridas & Co. Ltd. parent Company of Muljibhai Madvani & Co. Ltd., who in 1938 processed cotton seed to obtain manure in the form of cake. With the second world war came a critical shortage of fats both in Europe and in East Africa - in the latter to feed the military forces stationed in Africa. This gave impetus to the development of the industry in East Africa.

In May 1944 the Industrial Investigation Committee found 24 firms engaged in flour and oil milling, employing some 56 Asians, many of which firms they reported, were very small uneconomic units. The existing oil milling firms of that time (5 licensed and 5 unlicensed) included 3 of the "big 4" of today - Muljibhai Madvani & Co. Ltd. (then Uganda (Kakira) Sugar Works Ltd. and Vithaldas Haridas & Co. Ltd.), Hoima Cotton Co. Ltd., and Damadar Jinabhai & Co. Ltd.

The 1943 Defence (controlled Produce) Regulations had given the government effective control over processing by requiring that millers should hold a licence to crush oilseeds. Applications from firms had to be made to the Vegetable Oilseeds Controller for an allocation of oil-seeds for crushing, and to the Control of Industries Committee for permission to erect oil mills. Further, the sale of the oil and cake itself was also controlled.

Almost from the begining the necessity and efficacy of the Oilseeds Control was questioned. In 1945 it was suggested that oilseeds should be freed from control, and sold through licensed produce buyers, but that a price (f.o.r. Uganda) should be fixed for seeds to be exported, and also for edible oil and cake. But no changes were made. These cries because the more vehement in 1946 and 1947, when the oil crushing industry was removed from the Control of Inustries order (1946) and firms were now in position to erect new factories freely, but were not necessarily entitled an allocation of oilseeds for crushing once the plant was installed.

This anomalous situation arose as a result of the Government wishing [illegible]ndorse the application from Lever Bros in 1945, to erect a cotton seed mill [illegible]p factory in Uganda.

[1] Survey of Industial Production 1963 - Uganda Government.

The decision was therefore made to free the industry from the Control of Industries Order. The position was reviewed again in late 1947, when the Vegetable Oilseeds Controller/confronted with a large number (approximately 12) of applications for allocations of seed from firms who had erected new mills, and the Controller of Vegetable Oils for crushing licences for these same firms.

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The continued need for control of seed and oil was based a 3 factors. Firstly, the need to supply seed for export to the Ministary of food in the U.K. Secondly, the need to limit the amount of seed crushed in East Africa to the minimum requirements of oil in East Africa and thirdly, the need to control seed and oil prices.

Given, that the quantity of seed to be crushed locally should remain unchanged, the decision had to be made as to whether the allocations to the existing 13 millers should be decreased, so as to provide allocations for the 12 new mills, thus arousing opposition from established millers, or whether no new allocations should be made.

An order was sent out to existing millers receiving allocations to the effect that only mills that obtained an output of 20 gals of refined cotton seed oil from each ton of cotton seed,would continue to receive an allocation of seed. Firms who proved unsatisfactory were to have their crushing licence removed. New mills were informed that they could not crush seed or receive an allocation of seed. The reason given for the refusal of licences to new mills, was that the crushing of smaller amounts by a larges number of mills would lead to uneconomic working, and increased prices.

This urge to crush oil by the Asian Community was a result of the profits being made at that time in the industry. The price formula establishing the price of oil in 1947 had been worked out with a far too low extraction rate of oil from the seed, (16 gallons of refined oil per ton of cotton seed, as apposed to the more realistic figure of 24 gallons per ton adopted in 1950) giving a high profit to the miller, for a product with a guaranteed market.

In 1948, a new legal notice was enforced which allowed only the replacement of existing machinery by millers. Viz. "No person shall engage in the production of any processed produce or erect any machinery except under permit issued by or an behalf of the controller, who may grant refuse or cancel a permit at his discretion." This notice was in force until 1955.

By 1950, the control of the industry had became such an administrative burden, that efforts were made to free the industry from all controls. At last in 1953 it was decided to free the industry from all controls, and the responsibility for the sale of cotton seed was placed in the hands of the Lint Marketing Board.

INFLOW AND OUTFLOW OF FIRMS INTO THE INDUSTRY.

No. of mills in existence:

1940	6
1945	18
1950	26
1955	44
1960	45
1965	37

Entry into the industry has been spasmodic. The first large inflow of firms was in 1946 and 1947, and was the result firstly of a favourable price formula for oil and cake, giving a high margin of profit to the existing millers, and secondly the result of the removal of the industry from the control of Industries Order, thus enabling new mills to be constructed. The result was the incorporation of 10 new firms concerned with oil crushing in the 2 years period. There was a second large inflow in the years 1951-54 following the Korean War, when 16 new firms were incorporated.

The outflow of firms from the industry is more difficult to ascertain, the more especially so as a firm may be inactive for a number of years before it is finally liquidated.Further, some firms may continue to exist, but mav no longer be concerned in any way with oil crushing.

By 1966, 14 firms, out of a total of 51 which had at sometime existed in the period 1929-1965, had been liquidated, 10 of these liquidations having taken place in the period 1960-1965.

Of the 37 firms in existence in 1966, only 4 were very active, 10 were semi-active, and 23 were thought to be inactive as for as oil crushing was concerned.

These figures should only be treated as approximations to the true situation. They are based on data concerning 51 firms which have been concerned with the oil-crushing industry, which has been extracted from the files of the Registrar of Companies. While I am certain, by cross-checkings with principle buyers of cotton seed given by the Lint Marketing Board, that no firm of significant size has been left out, it is possible that a number of smaller firms, incorporated in the earlier years and which have since been liquidated, are missing from the list.

Another measure of the number of active mills over the period 1954-1965, is proveded by the figures for purchasers of cotton seed given by the Lint Marketing Board, which are as follows:

1954/55	35 millers
1959/60	20 "
1964/65	19 "

This indicates that in 1955 79.5% of the millers were active, in 1960 44.4%, and in 1965 51.4%. The rise in the percentage between 1960 and 1965, is purely a result of a number of formerly inactive mills finally going into liquidation. The large fall in percentage between 1955 and 1960 represents a large increase in the number of inactive firms.

SIZE OF MILLS.

The only information which I have about the relative sizes of the mills, is from the classification given by the Oil Millers Association in 1961 of their member firms divided into small, medium, and large. Of the 30 mills listed as operative, 15 are classified as small, 5 as medium, and 10 as large. 6 of the large firms also had refirming equipment.

A better measure of size would be to consider the number of expellers, and their crushing capacity per day, which information I expect to obtain for firms still in existence when I visit the firms individually.

CAPACITY.

The question of capacity, is interesting in relation to the amount of cotton seed available for crushing. It is believed that the total crushing capacity of the industry is about 4 times the amount of cotton seed available. Seed sold through the Lint Marketing Board represents about 90% of the seed crushed, and in the period 1958-1965 amounted to :

1958	72,590 tons
1959	88,800 "
1960	107,000 "
1961	108,500 "
1962	30,000 "
1963	100,000 "
1964	107,500 "
1965	100,000 "

Other vegetable seeds are not crushed in significant amounts, and therefore do not account for the excess crushing capacity. In general about 9,000-16,000 tons of groundnuts are sold on the market each year, but high export prices for shelled nuts makes crushing of them uneconomic.

All firms in the industry are known to have considerable surplus capacity, including the big four. When I have obtained figures for the crushing capacity of individual firms, this will be compared with the amount of cotton seed bought over a number of years by the firms to give an estimate of excess capacity.

The industry is dominated now by the big four who in the 1958-1965 period bought approximately 75% of the cotton seed sold through the Lint Marketing Board. Further, 95% of the seed was bought by the 14 biggest firms over the same period, and only approximately 7% went to the remaining 27firms who had made some purchases over period. It seems probable that the big four have less surplus capacity than the other firms in the industry.

LOCATION OF THE INDUSTRY.

The industy is almost completely confined to Buganda and the Eastern Region. In 1947, a mill was established at Masindi Port, but this was liquidated in 1950. A mill had existed in 1944 at Gulu, but had to be closed as a result of the infavourable position in which it was placed relative to other mills when it came to purchasing cotton seed, which in the 1950's was bidded for at auctions in Kampala or Jinja.

The industry is distributed as follows:

	very active	semi-active	inactive	non-existant	total
Jinja	4	3	7	4	18
Kampala	-	3	13	9	25
Other	-	4	3	1	8
Total	4	10	23	14	51

The industry appears to be market orientated. The chief outlets for the products are for local consumption, and for export to Kenya. If the percentage of the population in the 4 different regions is compared with the percentage of millers still active in these regions, this indicates that the industry is not spread according to population, but has a strong orientation to the Eastern Region. The figures are as follows:

	% of total population 1959	% of all millers	% still in existence 1966	% still active 1966
Buganda	28.8	49.0	43.2	21.4
Eastern	29.1	49.0	56.8	78.6
Northern	19.1	-	-	-
Western	23.0	2.0	-	-

Source: Statistical Abstract 1963.

This orientation fowards the Eastern Region is probably explained by the fact that some of the oil (approximately 50%) and all of the cake is exported. The concentration of all mills in Buganda and Eastern Region may also be explained by the higher level of incomes, and hence of demand for oil, in these two regions. The system of sale of seed through the Lint Marketing Board auctions, with transport provided by the Lint Marketing Board from the ginneries to the mills, means that we may not necessarily expect mill locations and sources of seed to be related, as closeness to source will yield no advantage to the miller. (The cost of transport is net by the Lint Marketing Board and has cost the Board around £200,000 per annum).. The following figures compare the percentage of total sales of seed cotton by region with the percentage of millers in the 4 regions.

	% of total sales of seed cotton 1957/58 - 1961/62	% of all millers	% still in existence 1966	% still active 1966
Buganda	25.1	49.0	43.2	21.4
Eastern	48.1	49.0	56.8	78.6
Northern	21.9	-	-	-
Western	4.9	2.0	-	-

Source: Annual Report of Agricultural Department 1963.

Throughout the whole period 1929-1965 an equal number of mills have existed in Buganda and the Eastern Region, but the decline in the number of active mills has been much fast in the former.

/that Prior to 1959 cotton seed was sold as two distinct varieties, S.47, and B.P.52, the former being variety grower East of the Nile, the latter that grown West of the Nile. The law laid down that there should be no mixing of varieties, and hence oil millers in the Eastern Region could only bid for S.47 seed, and millers in Buganda for B.P.52. This meant that up until 1959 there were two distinct competitive groups of millers as far as buying of seed was concerned. When seed of any variety became available to all millers alike in 1959, the Jinja millers gradually bidded the Kampala millers out of business, a factor which may be indicative of the more advantageous position of Jinja as a centre for the oil milling industry.

The stronger position of Jinja millers though may well be a result of the strength of individual firms there, who as mentioned elsewhere were able to offset losses in oil crushing against their profits in other enterprises e.g. Muljibhai Madhvani, and Damodar Junabhi.

Another explanation for the fasterdecline of the industry in the Kampala region, is that, arising from the zoning arrangements, there was a much higher degree of competition with resultant higher prices for seed in the Kampala area, putting Kampala millers in an unprofitable position even before 1959.

CHARACTERISTICS OF THE FIRMS IN THE INDUSTRY.

The information which follows on the characteristics of the firms in the industry has been mainly derived from the returns of firms in the Registrar of Companies. I hope to augment this late. with information from the oil millers themselves. The firms are all Asian owned, and are generally run as family businesses. Out of a total of 51 firms considered, onl 3 became public companies, and 1 remained a patternship the rest bring private limited companies. 2 of the firms were incorporated in Kenya, the rest being incorporated in Uganda.

The nominal capital of 48 of the firms was considered and showed no disanible pattern. Means and standard deviation were found for the four quartiles - shown in Table 1. The range of nominal capital was 100,000/- to 10,000,000/-. The nominal capitals were split according to whether the firm was small, medium, or large these classifications being taken from the Oilmillers Association. The results are shown in Table 2. These indicate that for oilmilling firms, nominal capital is not related to the size of oil mill. However, it must be remembered that oil milling may not be the only business of the firm, and nominal capital may still be related to size of firm. 55.3% of the firms had issued capital the same as nominal capital while 44.7% had a nominal capital exceeding their issued capital.

The firms in the industry are connected with one another both by interlocking directorates between them, and in some cases by use of the same plant and machinery at different periods of time.

Out of 46 firms 20 had no connection through interlocking directorates with other firms in the industry, 13 were linked with one other firm, 9 with two other firms, 3 with three other firms, and 1 with four other firms. 1 mill was linked with an oil mill in Mwanza, Tanzania. Of the firms termed "the big four", i.e. the 4 active mills in 1966, none were related to other firms through interlocking directorates.

Of the 10 firms slightly active in 1966, 4 had no links with other firms, 3 were linked to inactive mills, 2 were linked with each other, and 1 was linked with a mill in Mwanza.
For the remaining mills, when the active and slightly active have been set apart, 12 had no connections, 10 had links with 1 firm, 7 with 2 firms, 3 with 3 firms and 1 with four. This seems to suggest a much greater degree of independence amongst the successful survivors in the industry.

It is apparent that some of the inactive mills have sold out machinery to new or existing mills, and in some cases the same premises have been used by a succession of firms.

Machinery has also been sold to the neighbouring territories of Tanzania, the Congo and Ruanda, by inactive millers.

Preliminary enquiries have indicated that in many cases oil milling is not the only enterprise of the firm. Grain milling and soap manufacture seem to be the most important alternative interests. Further, there is some evidence to show that the largest firms have, at different periods of their history, been offseting their losses in oil crushing, (losses mainly resulting from the high price of seed), against their profits for tax purposes, in some other enterprise with which the firm is linked.

SUPPLIES OF COTTON SEED FOR CRUSHING.

In the 1953/54 season cotton seed was first freed from the Vegetable Oilseeds Controller, and all seed which was surplus to planting requirements became the responsibility of the Lint Marketing Board which had been established under Ordinance No.33 of 1949.

For the 1953/54 season quotas were arranged through the Oilmiller's Association, and it was not until the 1954/55 season that cotton seed was first auctioned by the Board at weekly auctions held from November to February. By this time the Board had realized the advantageous position it held at auctions, with the supply of seed falling far short of demand.

At that time, due to zoning arrangements, the two varieties of seed S.47 and B.P.52 were sold separately and there was a further differentiation between 'AR' and 'BR' seed, 'BR' seed being stained seed which has a lower oil content. All millers had to hold a licence with the Board if they wished to buy.

Throughout, imports of cotton seed for crushing have been banned by the Ministry of Agriculture, on the grounds that imports might lead to a mixing of varieties. This seems to have been a disappointing decision, as there were readily available supplies of seed across the lake at Mwanza in Tanzania in the 1950's. Exports of cottonseed have ceased since 1959/60, sales to Tanzania have been negligible, and sales to Kenya only spasmodic. The sales to Kenya seem to have taken the form of purchases by one Kenyan Miller who has held a licence with the Lint Marketing Board of Uganda. Figures for exports and sales to Kenya are as follows:

	Exports in Tons.	Sales to Kenya in tons.
1954/55	37	-
1955/56	14,606	-
1956/57	1,396	-
1957/58	402	298
1958/59	-	-
1959/60	39	-
1960/61	-	-
1961/62	-	132
1962/63	-	229
1963/64	-	-

Source: East African Customs and Excise Annual Trade Report.

Since 1959/60 the price received for cottonseed in Uganda has been considerably above that offered by exporting firms.

The markebale surplus of 'AR' and 'BR' cotton seed is given below:

	'AR' seed in tons.	'BR' seed in tons.	Total.
1954/55	87,651		87,651
1955/56	110,500		110,500
1956/57	114,595		114,595
1957/58	107,381		107,381
1958/59	125,410		125,410
1959/60	105,190	13,322	118,512
1960/61	108,321	9,638	117,992
1961/62 *	35,709	8,592	44,301
1962/63	101,055	11,604	112,659
1963/64	104,982	13,283	118,265

Source: Lint Marketing Board Annual Reports.
Note: 'BR' was sold through the ginneries before 1959, and no record of sales are available. * the 1961/62 figure was a result of the very poor cotton crop due to flooding in that year.

The prices of cotton seed over the period 1953-1964 are given in table 3. A quick look at the figures suggests no ordered pattern, but rather indicates a sharp fluctuation in prices from year to year. These wide fluctuations in price may be explained by fluctuations in the export price of cake, and changes in local demand for oil. Further the prices are probably influenced by the degree of competition between millers. This is especially evident in the 1961/62 season in which the amount of available seed was only a third that of a normal year, but prices fell about 100/- per ton compared with the previous year as a result of a pooling system between millers which operated for the first two auctions of the season.

The millers have made two attempts to exercise some control over their disadvantageous position. They formed their first pool in the B.P.52 zone in 1953/54, but this ring broke down during the season. Likewise with the 1961/62 pooling agreement, the ring broke down after the second auction. The main cause of breakdown of these pools, seems to have been an inability of the millers to agree on the allocation of seed amongst themselves, and 'unfair play' by a member of the pool.

A new system of allocation has been used for the 1965/66 crop, the seed being allocated to firms in proportion to their purchases in 1964/65, and their purchases for the first 3 auctions of this season. A price of 513/- per ton was agreed upon between the Lint Marketing Board and Muljibhai Madhvani who was acting on behalf of the millers. This agreement was the result of political considerations to raise the price of seed cotton to the growers, financing this from the extra profits on cotton seed. It is probable that this will set the pattern for the years to come, with the Lint Marketing Board anxious to make as much profit as it can from the sales of cotton-seed. Some illegal trading in cotton-seed seems to have been taking place between ginneries and mills. The stern measures which the Lint Marketing Board have announced for dealing with offenders in 1965 indicate its existence.

SUPPLIES OF OTHER OILSEEDS FOR CRUSHING.

It has been claimed by the millers that in recent years the prices of groundnuts have been sufficiently high on the export market to make crushing unremunerative. If we consider 1 ton of groundnuts. Price received for 1 ton of nuts on the export market = £ 56.7 (£ 2.53 /cental from table 4). 2240 lbs.groundnuts with a 45% extraction rate for cake, and 40% extraction rate for oil yields 896 lbs. oil and 1008 lbs. cake.
896 lbs. oil at £5.39/cental = £48.29
1008 lbs. cake at £1.39/cental = £14.01
Total £62.3
(Price of oil taken from Table 6, price of cake from 1963 figures.)

Thus the difference between the price received for 1 ton of groundnuts (decorticated and graded) and the products of 1 ton of groundnuts when crushed is only £5.6 on an average. This difference must cover the costs of milling etc. and only amounts to an allowance of 5/- per 100 lbs. of groundnuts, an allowance which will barely cover the costs involved. Sales of groundnuts are given in Table 4.

All other seeds beside cotton seed are sold on the free market. Crushing of sesame seed appears to have been spasmodic. A total of 1285 centals of sesame oil has been exported in the 1954-1964 period - figures given in Table 5.

Castor oil is being produced by Muljibhai Madhvani and Co. Ltd. Only 14 centals of castor oil has been exported in the period 1954-1964, but 1,715 centals has been sold to Kenya in the 1954-1964 period at an average price of £8.29 per cental, and 308 centals to Tanzania at an average price of £9.71 (Table 5).

PRODUCTS OF INDUSTRY AND MARKETS.

Basically, there exist four different products of cotton seed:

(i) Linters
(ii) Hulls
(iii) Oil
(iv) Cake

Linters. A few of the bigger firms have delinting equipment, but the market for linters is not suffici ntly good to make delinting n economic operation on a regular basis.

Hulls. Nearly all mills decorticate their seed, and therefore there is a large quantity of hulls, but little demand. Large amounts of the hulls are burnt at the mills.

Oil. This is of two types semi-refined and double refined, the double refined oil being produced by only 6 firms who have refining equipment. Many small millers sell their semi-refined oil to a mill with refining equipment. Large amounts of the fully refined oil are sold to Kenya and Tanzania or exported, but the semi-refined oil is sold locally in Uganda. Some oil is hydrogenated and sold as solid fat. The figures for exports of oils are given in table 6, and for sales to Kenya and Tanzania in table 7 and 8. Large amounts of the oil are sold to Cyprus, Somalia, Mauritius and Mogadishu.

It is interesting to note that the prices received on the world market exceeded the prices received from the Kenyan and Tanzanin market for all kinds of oil.

In table 9, the total amount of edible cotton-seed oil sold outside Uganda is calculated, and in table 10, this is compared with the probable output of cotton-seed oil from the mills thus giving us a figure for the percentage of total output of oil in Uganda which is exported. The calculation is based on the assumption that there is a 5% wastage rate due to drying out of seed while in store and other factors such as use for soap manufacture, and that all millers have an extraction rate of 16%. The extraction rates will obviously vary as between millers, but it is thought that 16% is a reasonable average rate. The overall mean percentage exported is 52.1%, which leads us to the conclusion that around 50% of the oil produced in Uganda is sold outside Uganda. (Later calculations lead one to suspect that a more realistic figure would be 40%). Exports of cotton-seed oil on the world market (with a range of 81,885 centals of 100 lbs from 1954-1964) and sales to Kenya (range of 107,952 centals) show much wides fluctuations than sales to Tanzania (range of 24,465 centals). From table 9, it can be seen that a high percentage of sales of cotton-seed oil outside Uganda, are accounted for by sales to Kenya and Tanzania, these accounting for 81.4% on an average, and never less than 55% for the period 1954 to 1964.

Some of the crude cotton-seed oil is used in the manufacture of hydrogenated oil, and vegetable ghee. Exports of hydrogenated oils and fats are again found in tables 6,7 and 8. At present I have no figures for the likely output by Uganda millers of these products, nor of other oils, such as groundnut, sesame and castor oils.

Cake. Cotton-seed cake has an important market for stockfeed, but as yet there is little demand for cake in Uganda. This position may radically alter in the next few years with the introduction of exotic cattle. Exports of cake and sales to Kenya are shown in tables 11 and 12. Sales to Tanzania have been negligible. Most of the exports are arranged through brokers in Mombasa, and a large amount of the cake is sent to Europe.

For both cotton-seed cake and other cake, the prices are on an average lower for sales to Kenya than for sales on the world market. A very high percentage (approximately 97%) of the cotton-seed cake is sold on the world market.

Table 13 throws some interesting light on the figures given for cotton-seed crushed in Uganda. If the most optumistic estimate is taken of total amount of seed available for crushing as in column (1), at an extraction rate of 45%, it is found that the amount of cake falls considerable short of the amount exported in every year except 1957. The overall short fall is in the region of 20%, and this assumes that there is no wastage of cake, and all of it is exported.

Either the Lint Marketing Board's claim to deal in well over 90% of the cotton-seed is wrong, or the millers have a much higher extraction rate for cake. The latter is unlikely to account for more than a small percentage of the difference, and even allowing for a 5% margin of error in the Lint Marketing Board's calculations, this still leaves a gap of some 10-15% which may well be accounted for by illegal sales of cotton-seed from the ginneries to the millers.

These illegal sales are most likely to be made out of stocks of seed held at the ginneries for planting requirements. The amount put aside for this purpose is approximately 20,000 tons of seed per annum. With the new figures given by the F.A.O. census showing that acreage figures for cotton have been overestimated by 40%, it is reasonable to suppose that 8,000 tons of seed made available for planting may be in surplus.

In Table 14, this 8,000 tons has been added on to the total for 'AR' and 'BR' seed given in table 13, and the new percentages of seed required to give amount of exports given to actual seed available, calculated. These percentages are on an average 108%. thus showing an 8% gap between amount required and amount available.

These figures certainly do not give any conclusive results on the matter of illegal sales, but indicate that they may be of an order of 10% of seed sold.

<u>TABLE 1.</u>

<u>Nominal Capital in '000/-</u>	Frequency			
100	2)			
125	1)			
150	1)			
160	1)	1st Quartile	Mean =	207.1
200	3)		Variance =	7635.4
250	1)			
300	2)			
400	1)			
400	6)	2nd Quartile	Mean =	445.8
500	5)		Variance =	2304.0
450	1)			
600	4)			
750	1)	3rd Quartile	Mean =	812.5
800	2)		Variance =	30052.08
1,000	5)			
1,200	1)			
1,500	2)			
2,000	1)			
2,400	1)	4th Quartile	Mean =	3925.0
2,500	1)		Variance =	6923541.6
4,000	2)			
5,000	2)			
8,000	1)			
10,000	1)			

Overall mean = 1,347.6

Range = 9,900.0

Source : Files of the Registry of Companies.

TABLE 2.

Small Firm's Nominal Capitals in '000/-	Medium Firm's Nominal Capitals in '000/-	Large Firm's Nominal Capitals in '000/-
200	1,000	160
300	1,200	450
400	1,500	600
500		1,000
500	Mean = 1233.3	1,000
500	Variance = 42304.4	1,000
600	Range = 500	4,000
600		5,000
750		5,000
800		8,000
1,000		Mean = 2621.0
1,500		Variance = 6489169.[illegible]
2,000		Range = 7,840
2,400		
2,500		
10,000		
Mean = 1534.4		
Variance = 5284599.6		
Range = 9,800		

TABLE 3.

Prices of Cotton-seed.

Season	B.P. 52 in Shs./ton.	S. 47 in Shs./ton.	BP.52 & S.47 in Shs./ton.
'AR' Seed.			
1953/54	310	285	
1954/55	570	484	
1955/56	400	376	
1956/57	452	438	
1957/58	281	364	
1958/59	363	359	
1959/60	-	-	467
1960/61	-	-	468
1961/62	-	-	354
1962/63	-	-	455
1963/64	-	-	403
'BR' Seed.			
1959/60	-	-	424
1960/61	-	-	392
1961/62	-	-	376
1963/63	-	-	342
1963/64	-	-	244

Source: Lint Marketing Board Annual Reports.

Note (i) there is no differentiation as to variety after the 1958/59 season.

(ii) Prices are average for season.

TABLE 4.

Sales of Groundnust Outside Uganda.

	Exports in Centals	Sales to Kenya in Centals	Sales to Tanzania
1954	173,894	446	8,194
1955	202,878	4,230	10,404
1956	196,752	2,289	962
1957	253,798	155	713
1958	165,087	3,624	437
1959	70,742	4	1,029
1960	212,948	431	2,353
1961	205,613	474	18,213
1962	162,322	5,091	622
1963	78,403	1,528	2,754
1964	85,205	330	3,643

Source: E.A. Customs and Excise Annual Reports.

Average price of groundnuts exported is £2.53/ cental, of groundnuts sold to Kenya is £2.26/ cental, and of groundnuts sold to Tanzania £2.44/cental.

TABLE 5.

CASTOR OIL.

	Exports from Uganda in Centals	Sales to Kenya in Centals	Sales to Tanzania in Centals	Total
1954	-	570	150	720
1955	4	322	53	379
1956	-	81	40	121
1957	-	51	29	80
1958	-	23	12	35
1959	6	62	12	80
1960	-	132	4	136
1961	-	208	4	212
1962	1	172	2	175
1963	-	40	-	40
1964	3	54	2	59
		SESAME OIL		
1954	-	2	112	114
1955	-	-	-	-
1956	-	-	-	-
1957	-	-	-	-
1958		-	80	80
1959	208	482	40	730
1960	43	163	35	241
1961	706	640	4	1350
1962	-	-	-	-
1963	-	9	-	9
1964	328	-	-	328

Source: East African Customs and Excise Annual Reports.

TABLE 6.

EXPORTS OF OILS

	Cotton Seed Oil in Centals of 100 lbs	Groundnut Oil in Centals	Hydrogenated Oils and fats in Centals.
1952	36,900	-	-
1953	64,700	4,596	-
1954	57,672	2,736	1
1955	5,639	246	-
1956	54,808	1,710	21
1957	83,098	11,958	149
1958	46,979	759	75
1959	62,054	2,194	73
1960	2,082	-	42
1961	4,416	1,154	75
1962	1,213	872	-
1963	19,310	40	-
1964	34,939	-	-

Source: E.A. Customs and Excise Annual Reports.

Note: Exports of Castor Oil and Sesame Oil have only taken place on a small scale. Average export price of Cotton seed oil is £5.19 per cental, of groundnut oil £5.39 per cental, and of hydrogenated oils and fats £6.34 per cental.

TABLE 7.

SALES TO KENYA.

	Cotton Seed Oil in Centals 100 lbs	Groundnut Oil in Centals	Castor Oil in Centals	Hydrogeneted Oils & fats.
1954	81,316	524	570	6,881
1955	70,032	2,169	322	10,670
1956	49,400	1,559	81	12,077
1957	74,214	444	51	8,333
1958	120,144	276	23	16,189
1959	157,352	781	62	39,736
1960	149,772	1,274	132	37,024
1961	128,821	2,703	208	28,577
1962	87,727	8,140	172	19,734
1963	138,159	2,778	40	2
1964	152,427	2,411	54	-

Source: E.A. Customs and Excise Annual Trade Reports.

Note: Sales of Sesame Oil Spasmodic.

Average price of cotton seed oil is £4.91 per cental of groundnut oil £5.13, of castor oil £8.29, and of hydrogenated oils and fats £5.98.

TABLE 8.

SALES TO TANZANIA

	Cotton Seed Oil in Centals of 100 lbs.	Groundnut Oil in Centals	Castor Oil in Centals	Hydrogenated Oils & fats
1954	34,607	1,898	150	326
1955	25,382	1,221	53	133
1956	19,853	412	40	94
1957	39,118	383	29	239
1958	39,934	220	12	673
1959	36,951	585	12	2,217
1960	29,624	229	4	3,894
1961	30,006	1,705	4	1,415
– '62	15,469	2,468	2	1,156
1963	20,342	327	-	-
1964	18,630	616	2	-

Source: E.A. Customs and Excise Annual Trade Reports.

Note: Sales of Sesame Oil Spasmodic.

Average price of Cotton Seed Oil is £4.90 per cental, of groundnut oil £5.06, of Castor Oil £9.71, and of hydrogenated oils and fats £6.18.

TABLE 9.

	Cotton Seed Oil exported in Centals of 100 lbs.	Cotton Seed Oil Sold to Kenya in Centals.	Cotton Seed Oil Sold to Tanzania in Centals.	Total.
1954	57,672	81,316	34,607	173,595
1955	5,639	70,032	25,382	101,053
1956	54,808	49,400	19,853	124,061
1957	83,098	74,214	39,118	196,430
1958	46,979	120,144	39,934	207,057
1959	62,054	157,352	36,951	256,357
1960	2,082	149,772	29,624	181,478
1961	4,416	128,821	30,006	163,243
1962	1,213	87,727	15,469	104,409
1963	19,310	138,159	20,342	177,811
1964	34,939	152,427	18,630	205,996

% of total of cotton
Seed Oil Sold to Tanzania and Kenya.

1954	66.8
1955	94.4
1956	55.8
1957	57.7
1958	57.3
1959	75.8
1960	98.9
1961	97.3
1962	98.8
1963	89.1
1964	83.0

Mean = 81.4%

Variance = 234.

TABLE 10.

COTTON-SEED OIL.

	(1)	(2)	(3)	(4)	(5)
	Marketable surplus of 'AR' Seed in Centals of 100 lbs.	less 5% for wastage	16% extraction rate for oil	Exports etc. in Centals	% of produce as exports
1954/55	1,963,382.4	1,865,213.28	298,434.	101,053.	33.9
1955/56	2,475,200.0	2,351,440.10	376,230.	124,061.	33.0
1956/57	2,566,928.0	2,438,581.70	390,173.	196,430.	50.3
1957/58	2,405,334.4	2,285,067.68	365,611.	207,057.	56.6
1958/59	2,808,534.4	2,668,107.60	426,897.	256,357.	60.0
1959/60	2,356,256.0	2,338,443.20	358,151.	181,478.	50.7
1960/61	2,426,390.4	2,305,070.88	368,811.	163,243.	44.3
1961/62	799,881.6	759,887.20	121,582.	104,409.	*85.9
1962/63	2,263,632.0	2,150,450.40	362,181.	177,811.	49.1
1963/64	2,351,596.8	2,234,016.96	357,443.	205,996.	57.6

*This high % for 1961/62 is a result of the poor crop in that year, giving a low output of oil, but firms still having to fulfill their export contracts.

Note: (i) There is reason to behaive from later calculations on cake that the marketable surplus of seed is underestimated by about 20%. This would increase column (3) and lead to %'s in column (5) at lower levels.

(ii) The 16% extraction rate for oil from cotton seed is an average rate for cotton-seed given in the Tropical Products Quarterly of the Commonwealth Economic Committee. A lower rate of 13% has been given by some millers in Uganda.

TABLE 11.

SALES OF COTTON-SEED CAKE.

	For export in Centals.	To Kenya in Centals.	Total.	% of Total for export.
1954	1,339,120	18,553	1,357,673	98.6
1955	1,070,057	20,656	1,090,713	98.1
1956	1,313,414	22,175	1,335,589	98.3
1957	1,171,370	51,593	1,222,963	95.8
1958	1,459,456	19,090	1,478,546	98.7
1959	1,606,783	37,028	1,643,811	97.7
1960	1,604,806	55,859	1,660,665	96,6
1961	1,392,508	49,678	1,442,186	96.6
1962	641,130	25,344	666,474	96.2
1963	1,308,421	30,895	1,339,316	97.7
1964	1,385,074	20,213	1,405,287	98.6
			Mean =	97.5

Source: E.A. Customs and Excise Annual Trade Report.

Average price of Cotton-seed cake exported, is £1.06 per cental and of Cotton-seed cake sold to Kenya £0.75 per cental.

TABLE 12.

SALES OF OTHER CAKE.

	For export in Centals.	To Kenya in Centals.	Total.	% of Total for export.
1954	18,255	5,951	24,206	75.4
1955	38,760	2,718	41,478	93.4
1956	31,055	5,703	36,758	84.5
1957	5,572	26,370	31,942	17.4
1958	20,675	7,168	27,843	74.3
1959	12,600	22,671	35,271	35.7
1960	-	19,485	19,485	-
1961	87,277	20,677	107,954	80.8
1962	145,310	12,638	157,948	92.0
1963	41,254	16,629	57,883	71.3
1964	13,216	22,512	35,728	37.0

Source: E.A. Customs and Excise Annual Trade Report.

Average price of other cake for export is £1.32 per cental and of cake sold to Kenya is £1.16 per cental.

TABLE 13.

	(1) 'AR'÷ estimates of 'BR' Seed in Centals.	(2) Exports of Cake in Centals	(3) $^{100}/_{46}$(X2)	(4) (3) expressed as % of (1)
1954/55	2,189,174.4	1,090,713	2,371,115.2	108.3
1955/56	2,759,859.2	1,335,589	2,903,454.3	105.2
1956/57	2,862,115.2	1,222,963	2,658,615.2	92.9
1957/58	2,681,952.0	1,478,546	3,214,230.4	119.8
1958/59	3,132,236.8	1,643,811	3,573,502.1	114.1
1959/60	2,654,668.8	1,660,665	3,610,141.3	136.0
1960/61	2,643,020.	1,442,186	3,135,186.9	118.6
1961/62	992,342.4	666,474	1,448,856.5	146.0
1962/63	2,523,561.6	1,339,316	2,907,208.6	115.2
1963/64	2,649,136.0	1,405,287	3,054,971.7	115.3
				M= 117.1

Notes: (i) Estimates of 'BR' have been made for 1954/55 to 1958/59 based on the average % which 'BR' forms of total seed in period 1959/60 to 1963/64 excluding the exceptional year 1961/62. Estimate is probably biased in the upward direction.

(ii) Column (3) gives the total amount of Cotton-seed requred to give the amount of cake shown to be exported, the extraction rate being take as 46%. (Rate given in Trapical Products Quarterly of the Commonwealth Economic Committee).

(iii) Column (4) gives the total amount of seed required expressed as a percentage of that known to exist.

TABLE 14.

	(1) Column (1) of table 13 in Centals of 100 lbs.	(2) Column (1) of this table + 179,200 Centals.	(3) Column (3) of table 13.	(4) %.
1954/55	2,189,174.4	2,368,374	2,371,115.2	100.1
1955/56	2,759,859.2	2,939,059	2,903,454.3	98.8
1956/57	2,862,115.2	3,041,315	2,658,615.2	87.4
1957/58	2,681,952.0	2,861,152	3,214,230.4	112.3
1958/59	3,132,236.8	3,311,437	3,573,502.1	107.9
1959/60	2,654,668.8	2,833,869	3,610,141.3	127.4
1960/61	2,643,020.8	2,822,221	3,135,186.9	111.1
1961/62	992,342.4	1,171,542	1,448,856.5	123.7
1962/63	2,523,561.6	2,702,762	2,907,208.6	107.6
1963/64	2,649,136.0	2,828,336	3,054,971.7	108.0
				Mean = 108.4

Notes: Column (2) is Column (1) + the 8,000 tons of seed possibly surplus to planting requirements.