Tanzania's Cashew Sector:
Constraints and Challenges in a Global Environment

Africa Region Working Paper Series No. 70
June 2004

Abstract

Cashews are an important export for Tanzania and an important source of income for small farmers in the southern coastal region. The sector has made a remarkable recovery since the near collapse of the 1980s. The recovery is credited to the economic reforms begun in 1986, especially trade liberalization and exchange rate adjustments, and to the sector reforms begun in the mid-1990s, that eliminated the monopoly of the Cashew Nut Marketing Board. The recovery was also aided by decision to export raw nuts rather than process them locally which meant that farmers were paid more quickly and they could afford to apply sulfur dust to control powdery mildew which increased yields.

However, the industry is not likely to expand further, or even maintain current production levels, unless problems are addressed.The problems include defining a more constructive role for the Cashew Board, reversing the decline in export crop quality, assisting farmers with financing input costs, and reducing high taxes on exports. Beyond correcting these immediate problems, there is an opportunity for the industry to expand in several directions. Replanting with improved varieties would reduce costs and make Tanzania a more competitive exporter. Developing a competitive private sector processing industry would create jobs and reduce dependence on India as the market for raw nuts. These growth opportunities are unlikely to happen without public sector support, but the challenge is to define the public-private partnership that will provide the needed changes to allow the private sector to grow.

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Tanzania's Cashew Sector:

Constraints And Challenges In A Global Environment

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June 2004

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his paper is part of a larger effort by the Africa Region in collaboration with the Economic Policy and Prospects Group to assess the performance and identify policy impediments of Tanzania's major export crops. The findings reflect fieldwork carried out during March 5-16 and November 5-16, 2001. The views expressed here are those of the author and should not be attributed to the World Bank.

*****Lead economist in the World Bank's Development Prospects Group. This report is based on a mission to Tanzania from March 4-22, 2001, a field visit to the main cashew producing areas of Mtwara and Lindi from March 12-14, numerous reports on Tanzania and the global cashew industry, and original research and analysis. Thanks are extended to Ataman Aksoy, John Baffes, Robert Keyfitz and Karen McConnell-Brooks for helpful comments on the earlier draft of the report. Any remaining errors or omissions are solely the responsibility of the author.

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Cashews provide an important source of income for some 250,000 smallholder farmers in Tanzania. They are especially important in the southern coastal region, where the districts of Mtwara, Lindi, and Ruvuma account for 80-90 percent of Tanzania's marketed cashew crop (table 1). These are three of the poorest districts in Tanzania, and cashews are often the main source of cash income for poor farmers. One survey (Jaffee 1995) found that cashews accounted for more than three-quarters of total cash incomes of farmers in these districts. Cashew nuts are also important to the national economy, providing 18 percent of Tanzania's merchandise export earnings in 1999.

Cashews are well suited to Tanzania and to production by poor farmers. The cashew tree's tolerance of drought conditions provides a hedge against crop failure. Its ability to grow on poor soils and to be intercropped with food crops makes it an ideal product for small farmers. Production responds to fertilization, but the cashew tree produces some nuts even without the application of purchased inputs. Cashew nuts are consumed as food as well as marketed for export.

Table 1: Cashew nut Marketing(Tons)

District	1990/91	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01
Mtwara	14,800	49,107	29,627	65,955	67,211	79,935	48,665
Lindi	3,254	11,585	9,160	16,480	14,737	17,652	18,411
Ruvuma	1,338	7,997	5,093	9,237	9,414	13,187	15,022
Pwani	5,723	6,858	4,991	655	4,380	5,910	11,976
D'Salaam	2,830	1,590	7,133	7,341	9,026	3,952	2,289
Tanga	1,622	978	24	116	957	571	907
Mbeya							58
Iringa							100
Mingineyo	221	3,613	7,005	133	716		
Total	**29,868**	**81,729**	**63,033**	**99,915**	**106,442**	**121,207**	**97,428**

Source: Cashew Marketing Board.

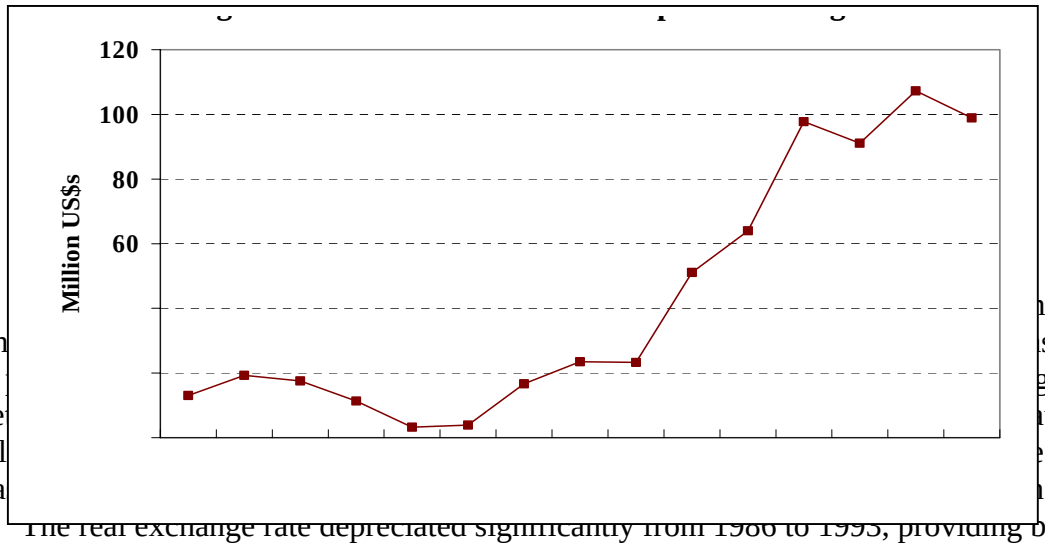
I. Brief History of the Cashew Industry in Tanzania

Cashew production in Tanzania has made a remarkable recovery since the near collapse of the 1980s. Marketed production rose to 121,207 tons in 1999/00, from a low of 29,868 tons in 1990/91. Export earnings from raw cashew nuts rose from less than $4 million in 1990 to $107 million in 1998 (figure 1). This recovery has been credited to the economic reforms begun in 1986, especially trade liberalization and exchange rate adjustments, and to the sector reforms begun in the mid-1990s, which eliminated the monopoly of the Cashew Nut Marketing Board (World Bank OED 1998). The recovery was also aided by the decision to export raw nuts rather than process them locally which meant that farmers were paid more quickly and they could afford to apply sulfur dust to control powdery mildew which increased yields.

Jaffee (1995) reports that a combination of problems led to the near collapse of the industry in the late 1980s. A key problem was the increasing financial difficulties of the cooperative unions and the Tanzania Cashew Marketing Board, which resulted in large quantities of unsold nuts at the farm or village level at the end of the buying season. The producer's share of the export price fell to 25 percent in the 1986/87 season. Cashew factories were operating at a loss, and 9 of 12 factories closed between 1985 and 1990. Local authorities contributed to the

problems of the factories by preventing cashew shipments between factories which would have facilitated processing.

Figure 1: Tanzanian Cashew Export Earnings

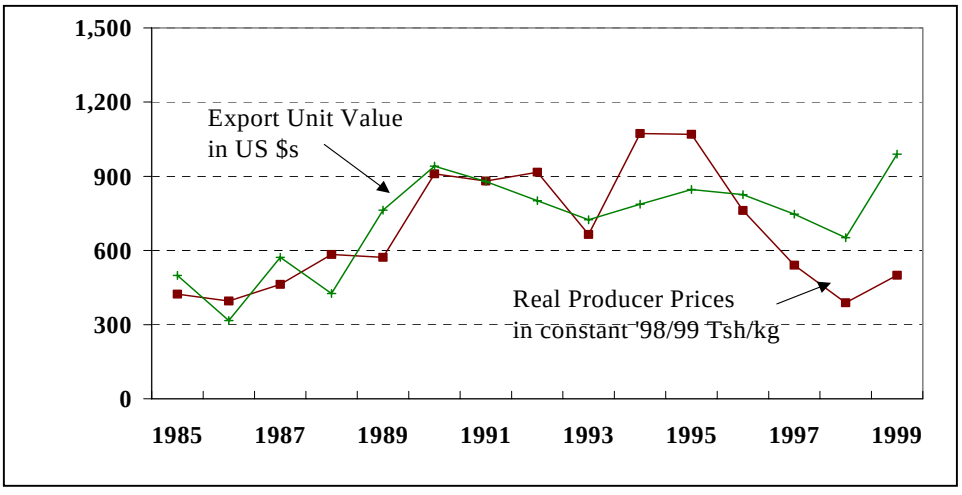


switch ...plete ...shew nuts to the ...gricultural marke... ...te for a liberal... ...e emerged, such a... ...g inputs.

The real exchange rate depreciated significantly from 1986 to 1993, providing better incentives to exporters and higher prices to producers (Government of Tanzania/World Bank/IFPRI 2000). Reforms in 1994/95 allowed private sector participation in marketing, which raised the share of f.o.b. prices received by farmers to 60-65 percent from the 40 percent paid by the Cashew Marketing Board prior to liberalization. Farmers were also paid on time and in cash after liberalization, whereas several month delays were common under the regulated marketing system (Government of Tanzania 2000).

Real producer prices for raw cashew nuts nearly tripled from the mid-1980s to the mid-1990s (figure 2) due to the devaluation of the exchange rate, the increase in the average export price relative to the international price, and the increased share of the export price received by producers. However, this favorable trend was reversed after 1995, due mostly to the appreciation of the real exchange rate after October 1993 at an average of 1.1 percent a month (Government of Tanzania/World Bank/IFPRI 2000). World market prices remained firm through 1999, but then declined sharply (Append A).

Figure 2: Tanzanian Cashew Prices



Source: Real producer prices, Government of Tanzania/World Bank/IFPRI 2000; export unit values, calculated from FAOSTAT data.

II. Recent Developments

The future of the cashew sector in Tanzania is threatened by recent developments that reflect longer-term issues of cashew nut marketing and the role of the Cashew Board. Problems emerged in the 2000/01 cashew marketing season in Tanzania even before the marketing season began in October. Large crops in key producing countries in early 2000 were depressing world prices of cashew kernels. The decline was not reflected in the September 2000 announcement of indicative prices by the Cashew Board that were the same as those in the previous year. This misled producers into expecting the same price they had received in the 1999/00 marketing season. In addition, the Cashew Board issued a regulation requiring cashew nut exports to be packed in sisal bags, causing exporting delays. The national elections further added to market uncertainty.

Cashew Board Issues Surprise Sisal Regulation

The Cashew Board unexpectedly announced a regulation, in early September 2000, that exporters of raw cashew nuts must ship in sisal bags instead of traditional jute bags. Sisal is produced locally and the announcement was apparently part of an effort to promote the local industry over imported bags made of jute. Exporters protested the decision because they had already purchased jute bags, sisal bags were more expensive, and sisal bags were not available in sufficient quantities to handle all exports.

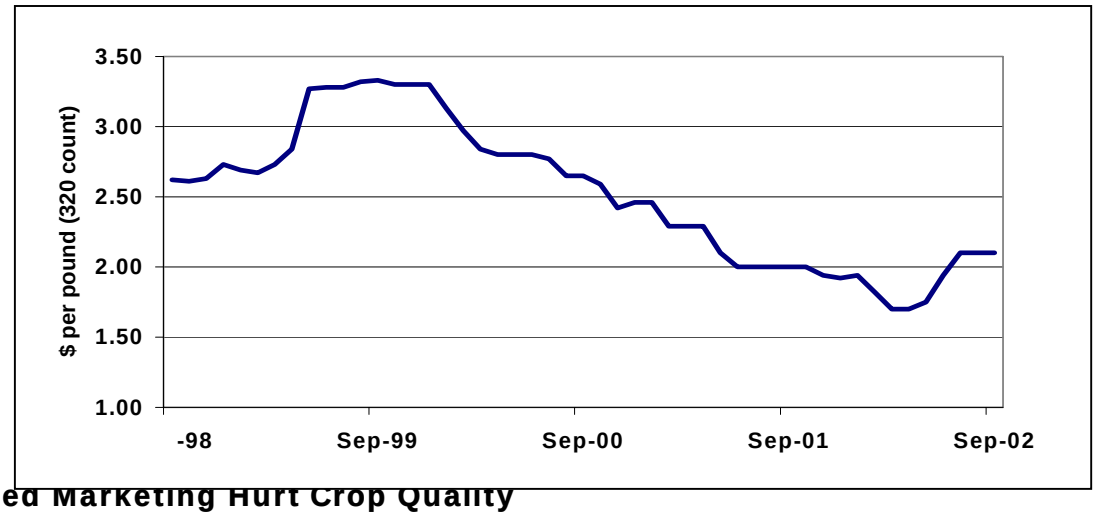
Exporters refused to accept the regulation during October and November, prompting the Cashew Board to take the case to the High Court of Mtwara to enforce the regulation. The court ruled on November 28 in support of the Cashew Board, but the decision was quickly overturned by the newly appointed minister of agriculture, who rescinded the regulation on December 2 and cleared the way for exporters to use either jute or sisal bags. The Cashew Board regulation and court case created uncertainty and delayed exporters' purchase of cashew nuts by about two months.

Indicative Price Unchanged from Previous Year Despite Declining International Prices

The Cashew Board announced an indicative price of 540 Tanzanian shillings (Tsh) a kilogram for standard grade cashew nuts in September 2000. This bolstered farmers' expectations of high prices. The indicative price, unchanged from the price announced in September 1999, did not reflect the decline in the world market price of processed cashew kernels from $3.33 a pound in September 1999 to $2.65 a pound in September 2000 (figure 3).[1] Exporters protested that the indicative price was too high and offered farmers 300-360 Tsh instead. The Cashew Board advised farmers and the primary societies not to sell at less than the indicative price. Meanwhile, the world market price for cashew kernels continued to fall, and in December the Cashew Board revised its indicative price to 435 Tsh a kilogram for standard grade cashews. This was still well above the 300-360 Tsh a kilogram offered by exporters. Farmers were slow to sell their cashew nuts, and many exporters withdrew from the market. The uncertainty was increased by the election on October 29.

[1] UK spot price for 320 count processed cashew kernels (Datastream).

Figure 3: Cashew Kernel Prices, Spot UK



Delayed Marketing Hurt Crop Quality

Marketing in the 2000/01 season was thus delayed by the combination of the Cashew Board's sisal regulation, an above-market indicative price, the Cashew Board's urging farmers to withhold their crop, and the fall elections. The delay led to a deterioration in the cashew nuts, because farmers did not store them properly. Following harvest, farmers typically sun dry and bag cashew nuts and store them in their houses in polypropylene bags. The bags do not allow adequate air circulation, which is not generally a problem if marketing occurs promptly. But the delay allowed the cashew nuts to become damp and moldy.

The extent of the quality deterioration was realized only after some shipments exported to India were rejected as below contract standards. Exporters in Tanzania then dropped their offer prices for cashews to as low as 175 Tsh a kilogram. Exporters were no longer purchasing cashew nuts at the farmers' villages. Farmers, fearing that the crop would not be purchased, began to bring their crop to the exporters' warehouses in Mtwara in December. By mid-March about 90 percent of the crop had been marketed, but the low quality and the decline in world market prices meant that the cashew nuts fetched prices that were only a third of what farmer's had expected at the start of the season.

III. Constraints and Challenges

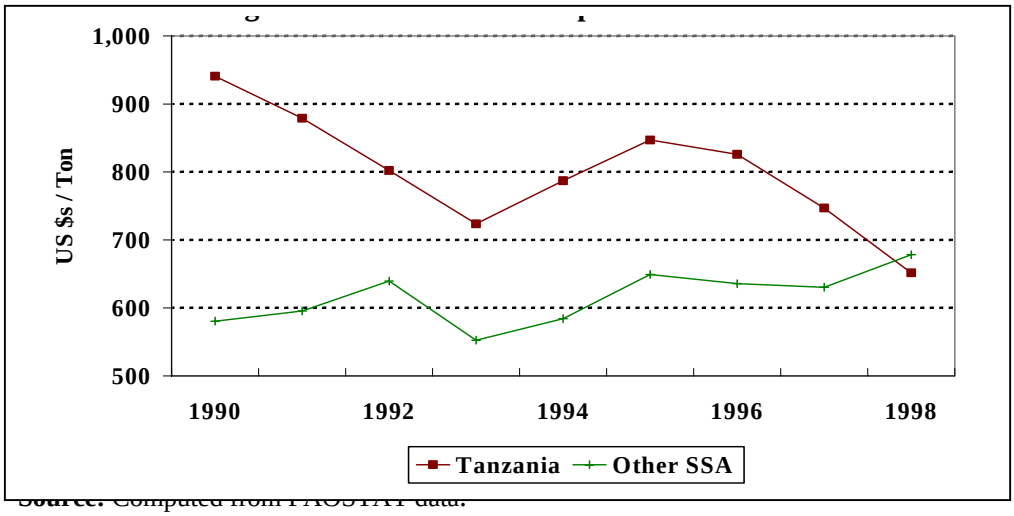
Several major issues in the cashew sector were highlighted by events during the 2000/01 marketing season. The most important were the deterioration in export crop quality and the corresponding decline in export unit values compared with other exports, farmers' need to finance production costs, the high overall taxes on producers and the sharp increases in local taxes, and the need to reconsider the operation and role of the Cashew Board.

Export Quality Has Deteriorated

The quality of Tanzania's raw cashew nut exports has deteriorated since the marketing liberalization of 1994/95. This is apparent from the events of this past year, when early shipments were rejected by Indian importers and also from comparisons of export unit values calculated from Food and Agriculture Organization data before and after liberalization. The

average export unit value for Tanzanian raw cashew nuts declined 14.8 percent from the pre- to post-liberalization period compared with other Sub-Saharan African countries (figure 4).

Figure 4: Cashew Nut Export Unit Value



Source: Computed from FAOSTAT data.

The decline in quality can be traced to changes in the grading system. Before liberalization extension agents in the villages supervised the sorting of cashews into three grades: standard, under, and rejects. Now cashew nuts are purchased and exported without grading and often include nuts that would have been rejected before 1994/95. This has reduced the average export price received for raw cashews.

The failure to grade cashew nuts in the villages has several undesirable consequences. It reduces the incentives for farmers to produce high-quality nuts because they receive an average price regardless of quality. It deprives local workers (mostly women) of hourly wages for sorting and grading. It reduces the price that traders in Tanzania and importers in India will pay for nuts because they do not know the quality. It increases transport costs throughout the marketing chain. And the unsorted nuts do not store well because wet or rotten nuts contaminate good nuts.

There are two possible solutions to the problem of grading. Either return to the old system in which extension agents were responsible for grading or change the marketing system so that it provides proper price incentives for graded nuts. The second approach is preferable. Nuts could be graded through an auction sale, with each sale lot (truck load) sampled before the auction. This would provide an incentive for producers to grade nuts and to let buyers know the quality of each lot before purchase. Sampling and grading could be done by auction officials, with the costs of grading deducted from the sale price.

Farmers Are Unable to Finance Production Costs

The cash costs of inputs and labor required to produce cashews were estimated to be about 79 Tsh a kilogram of raw nuts produced (Appendix B table B1). This was 25 percent of the 315 Tsh received by farmers for raw cashew nuts during the November-December selling period in the 2000/01 season. However, as world prices declined later in the season and the quality of the cashew nuts deteriorated the cash cost's share of the sale price rose to as much as 40 percent. Few farmers can tap formal sources of credit to finance such costs, and most must either finance the cash costs through savings or through village lenders, traders, or input suppliers. Past repayment performance has often been poor, which severely limits the number of farmers who can obtain credit.

The problem of financing production costs is not unique to cashew producers in Tanzania. It is a problem throughout the region, and a good solution has yet to be found. The problem is made worse when output prices fall, as they did in the 2000/01 season.

More Aggressive Replanting with Faster Maturing Varieties

Tanzania has a good climate for cashew nut production, especially in the southern coastal region bordering Mozambique. However, most of the trees in Tanzania are old, and yields are relatively low. The Research Station in Mtwara developed new clones in the early 1990s that are faster maturing than traditional varieties and yield twice as much, but they have not been widely adopted. A more aggressive replanting program should be undertaken to make Tanzania a low cost producer of cashews.

Lack of Domestic Processing

Tanzania invested heavily in mechanized processing facilities in the 1960s and 1970s with support from the World Bank and other donors. However, these facilities are no longer being operated, and nearly all cashew nuts are exported raw to India for processing. Cashew nuts have a hard outer shell and a leathery inner coating, and both must be removed to obtain the kernel. The outer shell contains a caustic liquid (cashew nut shell liquid) that blisters human skin and spoils the kernel on contact. Removing the shell and skin without breaking or contaminating the kernel is difficult and has been most successfully done manually by skilled workers. Efforts to mechanize the process have generally been unprofitable compared with low-wage manual labor.

The processing factory in Lindi was operated by a foreign investor in the 1999/00 season but was closed after the season because it was unprofitable. The lack of a competitive domestic processing industry puts the entire cashew sector in Tanzania at risk of being displaced by other raw cashew nut producers or by a change in policy in India. In years when India has a large crop, demand for imported nuts declines because the surplus processing capacity declines. When other African exporters have large crops, the competition to sell to India increases and prices also weaken. If India were to change its domestic policy for cashews, production could increase and displace Tanzanian exports. Processors in Vietnam purchased 3,000 tons of raw nuts from Tanzania in 2000/01, but this was a small share of the total crop and there was effectively only one foreign buyer for Tanzania's raw cashew nuts—factories in India that process the cashews for domestic and export markets. This may change in the future if Vietnam becomes a large processor of cashew nuts.

Prospects for reviving the mechanized cashew processing factories in Tanzania are not good while manual processing appears promising. The value added from manual processing appears to be high, and there are large employment opportunities. For example, the price of processed cashew kernels exported from India during 1996-98 averaged $5,106 a ton compared with $1,063 a ton for raw nut imports. According to Behrens (1996), an average worker can shell 21 kilograms of raw nuts a day yielding 5 kilograms of kernels. Using the Indian raw and processed nut prices as an example of the potential for processing, the value added from manual processing would be $3.21 a day (5 x $5.106 minus 21 x $1.063), excluding other costs such as transport, packaging, and handling. An experienced worker in India can shell twice as much with 90 percent whole kernels according to Behrens.

If an average worker in Tanzania shelled 21 kilograms of raw nuts a day and worked 250 days a year, 20,381 workers would be needed to shell the 107,000 tons Tanzania produced in the 2000/01 season. Thus the employment opportunities from manual processing are significant. The value added per day of manual processing is about three times the average wage in Tanzania. If

the output per worker could be raised to that of experienced workers as defined by Behrens, then the value of domestic processing would be even higher but employment would be lower.

An encouraging sign was the emergence of a local cashew processing industry in Dar es Saalam in 1999 using the manual technology developed in India. The success of the operation was being closely watched by companies anxious to enter the business. After two years of operation, a company that began with 40 employees was employing 1,400 workers (mostly women) and processing 5 percent of Tanzania's raw cashew nut production. Costs were comparable to processors in India, and cashew kernels were being exported to buyers in Europe, Japan, and the United States. This gave cashew farmers another market for their production, and the factory provides year-around employment for workers. It is encouraging to note that the operation started, and expanded, even though cashew prices fell sharply at the end of 1999 and only began to recover in 2002. A larger factory was being built, and new entrants were expected.

High Overall Taxes and Rapidly Increasing Local Taxes

Total taxes on cashew producers in the 1997/98 and 1998/99 season amounted to about 18 percent of producer prices (table 2). Taxes nearly doubled from 1997/98 to 1998/99 (in shillings per kilogram), and local taxes continued to rise rapidly after 1998/99. Taxes have reached levels that will discourage production and are a serious burden on poor farmers.

Table 2: Composition of Taxes on Cashews, 1997/98 and 1998/99

	Tsh per kilogram		Share of producer price (%)	
Tax	**1997/98**	**1998/99**	**1997/98**	**1998/99**
District produce cess	9.92	41.10	3.31	8.22
Education fund	2.48	2.86	0.83	0.57
District development levy	—	4.29	—	0.86
Village levies	5.00	3.86	1.67	0.77
Sum of local taxes	*17.40*	*52.10*	*5.80*	*10.52*
Buying and export license	4.50	0.18	1.50	0.04
Cashew Board fee (3% f.o.b.)	4.98	18.50	1.66	3.70
Stamp duty (1.2% f.o.b.)	5.98	7.39	1.99	1.48
Withholding tax (2% f.o.b.)	9.96	12.31	3.32	2.46
Export duty (2% f.o.b.)	9.96	—	3.32	—
Sum of central taxes	*35.38*	*38.38*	*11.79*	*7.68*
Total tax	**52.78**	**90.48**	**17.59**	**18.10**

—means that the tax does not apply.

Note: The tax calculations do not include levies for primary societies and input funds. The calculations were based on f.o.b. prices of 498 Tsh a kilogram in the 1997/98 season and 617 Tsh a kilogram in the 1998/99 season. The corresponding producer prices were 300 Tsh a kilogram in the 1997/98 season and 500 Tsh a kilogram in the 1998/99 season.

Source: Government of Tanzania (1998, 1999) and author's calculations.

Since 1998/99 producer prices have declined, while total taxes as a share of producer prices have increased substantially since some taxes are specific and are not based on cashew prices. In the Mtwara district local taxes ranged from 25 percent to 36 percent of the farm price in 2000/01.[2] This exceeds both the 10 percent ceiling recommended by the Prime Minister's Office and the net cash income recently received by farmers. The local tax was 100 Tsh a

[2] Traders are required to pay the district taxes before they purchase cashew nuts. Thus, the farm gate price is net of district taxes. The more typical way to calculate the tax share is to compare the tax with the farm gate price before the tax is paid (and that was done here).

kilogram of raw nuts, while farmers' net cash income ranged from 58 Tsh to 172 Tsh a kilogram in 2000/01.[3]

Taxes are collected on gross sales rather than gross margins or profits. This unfairly penalizes producers during low-price years when returns are already low. In the 2000/01 season total taxes could have exceeded the value of the cashews. For example, in Mtwara some farmers received 175 Tsh a kilogram for cashews, paid 79 Tsh a kilogram for cash inputs, and then were taxed 100 Tsh a kilogram in local taxes and 38 Tsh a kilogram in central taxes. The farmers would have owed 42 Tsh a kilogram more in taxes than they received for the crop after paying cash expenses. Taxes also vary by district, which creates uneven incentives and encourages producers to transport their products to neighboring districts to avoid high local taxes.

The Cashew Board's Role Remains Ambiguous

The Cashew Board of Tanzania was created to regulate and promote quality in the marketing and export of raw and processed cashew nuts.[4] It is also responsible for advising the government on matters relating to the cashew nut industry and for carrying out other functions deemed necessary by the Ministry of Agriculture.

The Cashew Board collects a 3 percent levy on the fob value of exports and 1 percent plus license fees for traders is used to fund Board operations. Two percent is used by the Cashew Industry Economic Development Fund. The fund has the status of an NGO and is managed by a board of trustees. Its aim is to promote and sustain the cashew industry. Half of the amount raised goes for research and development, and the remainder is used to fund cashew processing and an integrated cashew management package, which offers grafted seedlings, polyclonal seeds, top-worked trees, and fungicides, including sulfur dust, to participating farmers (Government of Tanzania 2000).

A World Bank mission in 1995 concluded that the commodity boards in Tanzania had potentially conflicting responsibilities of both regulating and marketing certain commodities, including cashews (Akiyama and Larson 1995). This conflict had largely been resolved in the cashew industry by the privatization of marketing. However, events in the 2000/01 marketing season point to new conflicts. According to reports in the international press, the Cashew Board has been directed to release 900 million Tsh ($1.1 million) to cooperative societies to buy the remaining cashew crop from farmers, according to the *Public Ledger* (March 26, 2001). This raises concerns that the Cashew Board may be returning to its role of competing with the private sector in cashew marketing.

Other recent actions of the Cashew Board also raise question about its role and its contributions to the sector. Government officials and Cashew Board members traveled to cashew importing countries on a marketing promotion mission, again impinging on a private sector responsibility (*Public Ledger*, March 26, 2001). While such delegations may serve a useful purpose, their financing raises questions about whether such trips represent a good use of funds. If the funds came from the export levy on cashews, farmers might rightly ask whether they got their money's worth.

[3] Prices during the early season (October to November) ranged from 300 to 360 Tsh a kilogram, while prices fell to 175-200 Tsh a kilogram after January.

[4] Based on discussion with Dr. Alli F. Mandali, General Manager of the Cashew Board of Tanzania.

And there is a conflict of interest in the way the export levies that fund the board's operations are calculated. The board calculates export prices rather than using exporter records.[5] This encourages overstating export prices in order to inflate export levies. Exporters, for their part, have an incentive to underinvoice in order to reduce their levies and taxes. Thus both the Cashew Board and exporters have incentives to incorrectly report export prices.

The combined levies of the Cashew Board and the Cashew Industry Economic Development Fund could have exceeded $3 million in 1998, based on reported export revenues—even more if the Cashew Board overstated export revenues. These funds should be used to provide services to producers, but it is difficult to evaluate what benefits the board provides to producers because there is insufficient information on the board's activities. It would be prudent to request a review of Cashew Board finances and operations in light of the large levies it collects from producers.

IV. Conclusion and Recommendations

Cashews are an important export for Tanzania and an important source of income for small farmers in the southern coastal region. However, the industry is not likely to expand further, or even to maintain current production levels, unless problems are addressed. These include defining a more constructive role for the Cashew Board, reversing the decline in export crop quality, assisting farmers with the financing of input costs, and reducing high taxes on exports. Beyond correcting these immediate problems, there is an opportunity for the industry to expand in several directions. Replanting with improved varieties would reduce costs and make Tanzania a more competitive exporter. Developing a competitive private sector processing industry would create jobs and reduce dependence on India as the market for raw nuts. These growth opportunities are unlikely to happen without public sector support, but the challenge is to define the public-private partnership that will provide the needed changes to allow the private sector to grow.

Defining a More Constructive Role for the Cashew Board

A key concern is the role of the Cashew Board. The producer's prices in the 2000/01 season would have been substantially higher and the marketing more orderly had the Cashew Board not issued the regulation requiring sisal bags for cashew exports, (a private sector matter), announced indicative prices that were too high, or urged farmers to withhold their cashews from

[5] The Cashew Board announced an indicative price of 540 Tsh a kilogram for raw cashew nuts in September 2000, and at the same time set the f.o.b. price at $1,055 for standard grade raw nuts. Exporters, farmers, and district government officials in Mtwara report that prices varied from 300 Tsh to 360 Tsh a kilogram during this period. The board issued statements urging farmers and primary societies not to sell at less than the indicative price, which suggests that prices being offered were below the indicative price. Yet the f.o.b. price used by the board to compute levy payments remained at $1,055 until December 7, according to board directives. The Cashew Board subsequently lowered the f.o.b. prices on December 7 and again on January 1, 2001. The board's procedures likely overstate export prices, boosting their revenues from levies, and overstate exporters' taxable incomes, increasing taxes owed to the Revenue Authority.

the market. World prices would still have been low, but farmers would have received 300-360 Tsh a kilogram rather than the 175-200 Tsh a kilogram that many received.

A problem for the future is the behavior of the Cashew Board and its potential to disrupt marketing. The Cashew Board should not announce indicative prices or regulations that relate to private sector activities. It should not make statements about the fairness of private sector prices, and it should not lead farmers to believe it will buy their unsold crops. It also has a clear conflict of interest between estimating export prices and collecting export levies on those estimated prices.

The combined levies of the Cashew Board and the Cashew Industry Economic Development Fund might have been as high as $3 million or more in 1998, based on reported export revenues—even more if the Cashew Board overstated export revenues. These funds should be used to provide services to producers that are of a public goods nature or to provide inputs to producers at lower costs through bulk purchasing. Funds could also be used to expand research into improved plant materials and production techniques Regulations that benefit producers directly, covering grading, for example, may also be justified. The Cashew Board should be directly accountable to producers, who pay for its operation through their levies.

Reversing the Decline in Export Crop Quality

Better post-harvest handling and storage would have preserved the quality of the crop and prevented some of the sharp price declines. The reasons for poor post-harvesting handling and storage need to be understood. If farmers are unaware of proper storage procedures, extension services could help. If farmers lack proper storage areas, then primary societies might be able help by leasing storage facilities. And if the pricing and grading system do not discourage poor handling and storage practices, that needs to be corrected.

The deterioration in cashew nut quality and the decline in average export prices relative to those commanded by other countries is largely a problem of the marketing system. Buyers collect nuts from many small producers and then mix them during the collection process. Thus producers with premium grade nuts do not receive higher prices than producers with lower quality nuts. This could possibly be solved through an auction. Cashews could be sold in standard lots (for example, by the truck load), sampled and graded prior to auction, and then kept separate after purchase. The auction would also provide better price information to producers than the current buying system and would probably result in higher prices for all producers as well as premiums for quality. The auction need not be mandatory in order to provide producers who sort and grade nuts with a market that rewards premium grade nuts.

Exploiting Opportunities for Expansion of the Industry

Tanzania has a comparative advantage in cashew nut production. However, most of the trees are old and yields are relatively low. Improved clonal varieties are available from the Research Station but have not been widely adopted. The feasibility of a replanting program should be investigated as part of an overall program to strengthen the industry.

A major concern is the lack of an internationally competitive domestic processing industry in Tanzania. This makes raw nut exporters dependent on India’s processing capacity, domestic production, and policies. If conditions change in India, or production increases in other African countries, Tanzania could be displaced despite good world market growth opportunities for the final product and a comparative advantage in production. The emergence of Vietnam as a

processor eases concerns somewhat, but does not change the vulnerability of the Tanzanian raw nut industry to a limited number of processors.

Resumption of mechanized cashew processing in Tanzania is unlikely but there appears to be significant potential for manual processing of cashews. The value added per worker is roughly $3.20 a day using the manual process and assuming similar levels of worker productivity as in India. This is well above the average wage in Tanzania, and as many as 20,000 workers could be employed to process a harvest the size of the 2000/01 crop. Domestic processing could have the added advantage of obtaining a better price than is currently obtained from exporting raw nuts to India. An encouraging sign was the emergence of a local processor during the 1999/00 - 2001/02 seasons, which processed nearly 5 percent of raw nut production.

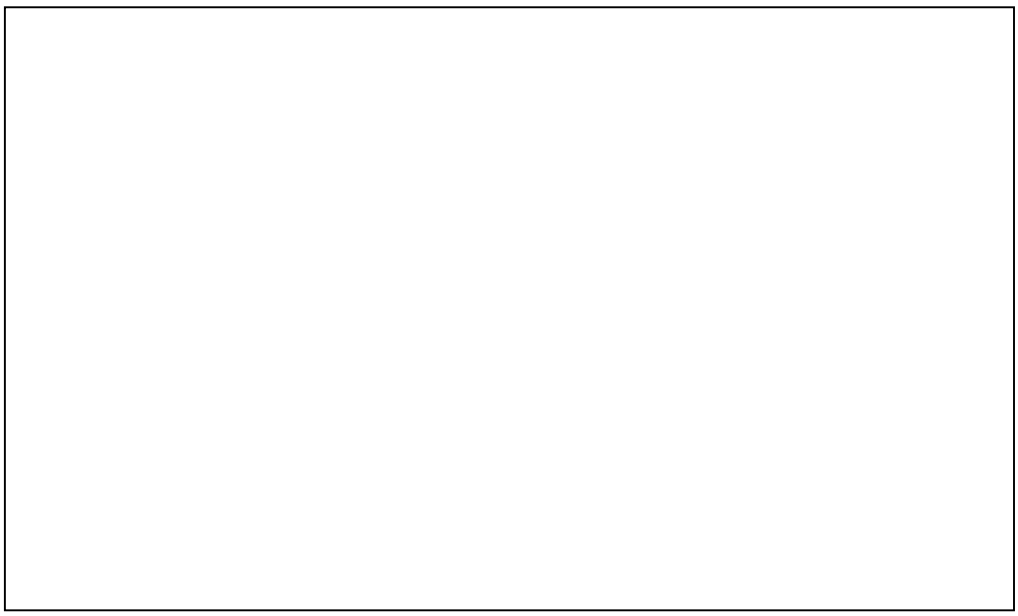
The near-term outlook for world cashew prices is not favorable, but the longer term prospects appear good because of the rapid growth of import demand in the United States and Europe (Appendix A). The weighted average income elasticity of demand in the United States, Europe, and Japan is estimated to be 1.88 and the weighted average price elasticity of demand is estimated to be –0.58 for per capita imports. Thus, cashew imports are sensitive to economic conditions, but growth prospects over the medium- and long-term are very good.

There is also considerable scope for increasing the growth of world demand through advertising and price competition. Per capita consumption in France and Japan is less than a quarter that in the United States and half that in Germany and the United Kingdom. Advertising may be a viable option to increase demand in selected importing countries and a new way to improve export prospects for Tanzania and other cashew producing countries. International donors may be willing to fund such an activity, and a pilot project should be undertaken to test the response to advertising and the willingness of donors to support such an activity. The high estimated price elasticities of demand in European countries provide an incentive for exporters to reduce production costs and increase exports and suggest a high return to research to improve the varieties and production techniques for cashews in Tanzania.

Appendix A: The World Cashew Market

Cashews have a favorable position among the world's agricultural commodities, with more rapid growth in world import demand, higher relative prices during the past decade, and lower price volatility than most other commodities. Cashews are grown almost exclusively in developing countries for domestic consumption and export, and 95 percent of processed cashew nuts are exported to developed countries. The growth of world cashew production has averaged nearly 6 percent a year during the 1990s compared with 2.2 percent for all food crops (FAO).

The price of cashew nut kernels increased 1.2 percent a year in nominal U.S. dollar terms from 1990 to 2000, compared with a decrease of 1.0 percent a year for the World Bank's index of all agricultural commodities. The coefficient of variation for cashew prices during 1990–2000 was 7.9, compared with 14.7 for all agricultural commodities. Cashew nuts compete most closely with almonds. The annual world export unit values for cashews and almond are shown in figure A1.



Global Demand

Cashews are a premium nut in high-income countries. They contain 10-20 percent less fat than other nuts, most of it unsaturated, which is preferred by health conscious consumers (Behrens 1996). Imports of cashew kernels by developed countries have grown 7.1 percent a year during the last decade. The largest consumer market is the United States, with a 45 percent share of world imports during the 1990s (table A1). The six importers shown in table A1 account for 75 percent of world imports. During the 1990s imports of cashew kernels grew by 12.0 percent in the European Union, 5.6 percent in the United States, and 2.6 percent in Japans. The large differential in per capita consumption of Japan and most European countries compared with the United States suggests considerable opportunity for increasing demand in Japan and Europe.

In the United States cashews had a 23 percent share of tree nut consumption during 1995–99 (compared with 16 percent in the 1980s) and the highest average price among major nuts. Cashews compete most directly in the United States with almonds, which have a slightly larger market share and lower prices. Other major nuts and their share of the U.S. market during the 1995–99 include pecans (20 percent) and walnuts (19 percent).

Table A1

Cashew Imports and Per Capita Consumption

	Imports				Per capita consumption	
	Tons		Percentage of world total		Grams per capita	
	1980-99	1990-99	1980-99	1990-99	1980-99	1990-99
United States	38,353	58,358	64	45	161	227
France	4,119	14,051	7	11	14	51
Netherlands[a]	2,209	7,428	4	6	152	479
Germany	2,392	7,339	4	6	30	90
United Kingdom	3,116	5,767	5	4	55	98
Japan	2,847	5,591	5	4	23	45
World	**59,901**	**130,480**				

a. Per capita consumption may be overstated because of re-export to other European countries.

Source: Calculated by the author from FAOSTAT and International Monetary Fund *International Financial Statistics* data.

Import demand equations were econometrically estimated for major importing countries using annual data for 1978–98 (table A2). The functional form used to estimate demand provides constant elasticities. The weighted average income elasticity of demand for the six countries was 1.88, the weighted average own-price elasticity was 0–.58, and the weighted average cross-price elasticity with almonds was 0.19. The income elasticity of import demand for all countries was positive and statistically significant at the 1 percent level. The price elasticity of import demand was negative in all equations. It was significant at the 1 percent level for the United States, Netherlands, Germany, and the United Kingdom; at the 5 percent level for France; and statistically insignificant at the 10 percent level for Japan. The overall level of explanatory power of the estimated equations was good, with the adjusted R^2 ranging from 0.84 to 0.93 for all countries except Japan (which was .49). Serial correlation was present in some of the estimated equations, but not severe according to the Dickey-Fuller tests.

The individual country equations were used to project world cashew demand to 2010 (table A3). The projections are for slower demand growth than during the last decade because of slower projected real per capita income growth. However, if world income growth during the 1998-2010 period were equal to growth during the 1990-98 period, demand growth would continue at the same rate. World imports are projected to grow 4.6 percent over the 1998–2010 period compared with 7.1 percent during the 1990s. Real cashew prices were assumed to remain constant over the forecast period (the base case), and thus the slower growth is due mostly to projected slower income growth. Slightly slower population growth rates also contribute to the reduced demand growth.

Table A2
Import Demand Equations for Cashews in Major Importing Countries

Country	Constant	Income	P-Cashews	P-Almonds	Adjusted R^2	Durbin-Watson test	Augmented Dickey-Fuller test
United States	-9.43***	1.06***	-0.36***	-0.08	0.84	1.64	-3.60
	(-2.88)	(3.62)	(-2.95)	(-0.78)			
France	-81.69***	6.51***	-0.59**	1.36***	0.89	1.02	-3.10
	(-14.20)	(6.01)	(-2.34)	(3.78)			
Netherlands	-40.69***	2.94***	-1.44***	0.87***	0.90	1.37	-3.17
	(-6.22)	(7.09)	(-5.36)	(3.45)			
Germany	-34.71**	3.23***	-1.32***	0.74**	0.87	1.59	-4.38
	(-3.72)	(4.00)	(-5.04)	(2.31)			

United Kingdom	-19.43***	1.97***	-0.39***	-0.16*	0.93	1.71	-4.05
	(-9.05)	(9.01)	(-3.27)	(-1.75)			
Japan	-32.00**	1.95***	-0.19	0.23	0.49	1.11	-3.73
	(-2.81)	(2.88)	(-0.82)	(0.69)			

** significant at the 10 percent level. ** significant at the 5 percent level. *** significant at the 1 percent level.*

Note: The model used to estimate cashew kernel demand for each country was: $\text{Log}(Q_t)=\beta_0 + \beta_1\text{Log}(Y_t)+\beta_2\text{Log}(P_t)+\beta_3\text{Log}(PA_t)+\varepsilon_t$. Where Q_t is net per capita cashew kernel imports in year t and is assumed to equal consumption, Y_t is real per capita GDP, P_t is real cashew import prices PA_t is real almond import prices, and ε_t denotes the error term. The equations were estimated using ordinary least squares on annual data from 1978 to 1998. The numbers in parentheses denote *t*-ratios.

Source: Estimated by the author.

The relatively high price elasticity of demand for cashews in Europe suggests considerable opportunity for increasing demand through price competition. Therefore, as an alternative to the base case demand projection, the 2010 projection was also made under the assumption that real cashew kernel prices declined by 25 percent over the 1998–2010 period. Under this alternative world cashew kernel demand would grow by 5.9 percent a year over the forecast period, and cashew demand would increase to 279,338 tons by 2010 compared with 4.6 percent growth under the base case.

Table A3
Projected Cashew Kernel Import Demand to 2010

Country or region	Demand in 1998 (tons)	Real per capita GDP growth rate 1998-2010 (percent)	Populationgrowth 1998-2010 (percent)	Elasticity	Demand in 2010 (tons)	Growthrate 1998-2010 (percent)
				Price income (percent)		
France	6,250	2.58	0.24	-0.59 6.51	21,404	10.80
Germany	12,454	3.01	-0.22	-1.32 3.23	23,690	5.51
Japan	5,532	2.29	-0.03	- .19 1.95	8,868	4.01
Netherlands	10,667	2.94	0.25	-1.44 2.94	24,429	7.15
United Kingdom	6,604	2.58	0.02	-0.39 1.97	11,283	4.56
United States	70,368	2.41	0.69	-0.36 1.06	103,216	3.24
Subtotal	111,875				192,890	4.64
Rest of world	28,000				48,223	4.64
World	139,844				241,113	4.64

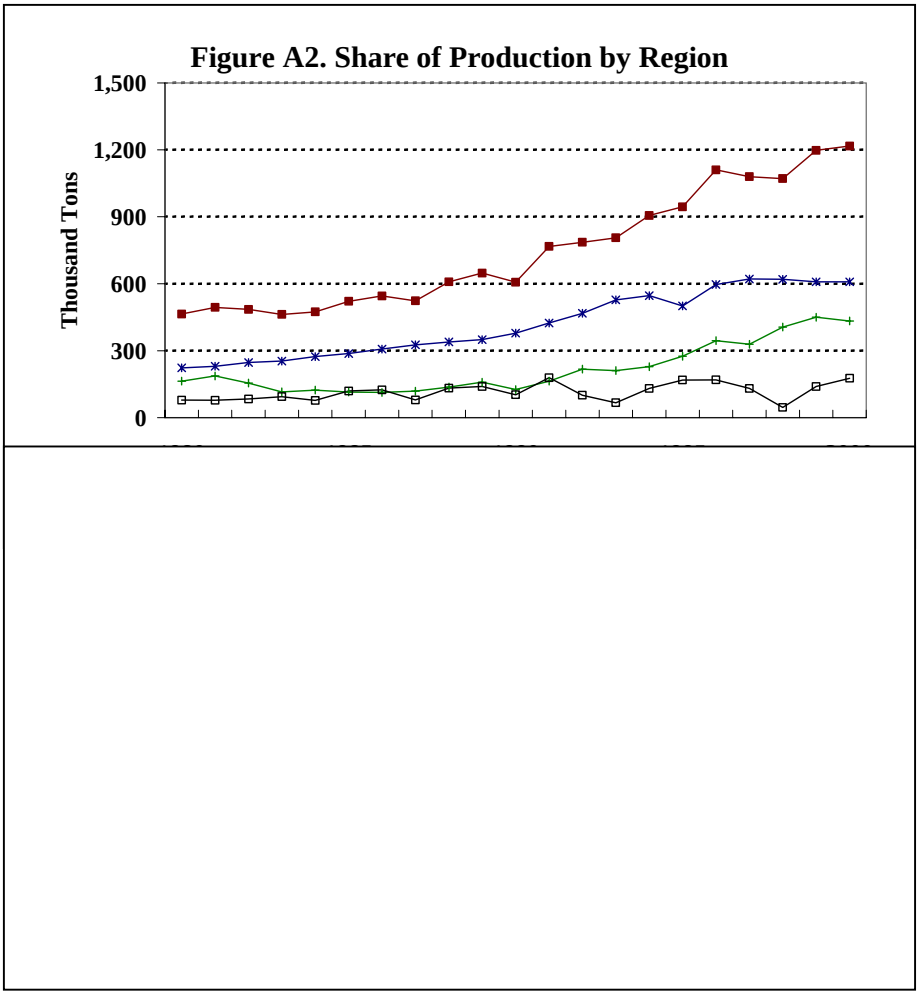
Note: *The average annual growth rate for the subtotal of six countries from 1998 to 2010 is applied to the rest of the world to obtain world demand. Real prices of cashews are assumed constant over the forecast period.*

Source: Real per capita GDP and population growth rates are from the World Bank (2001). Elasticities are from table A2.

Global Supply

Cashews are a highly profitable crop. They can be intercropped with food crops such as cassava. Cashew trees are drought-tolerant and thus provide a hedge against annual crop failure. They have been called the poor man's crop and the rich man's food. These attributes have contributed to the rapid growth of global cashew supplies, including a recovery of production in Africa and expansion in Asia (figure A2). India and Brazil are the largest producers and exporters of cashew

kernels, but Vietnam has emerged in the last decade to become a major producer and exporter. Production in Sub-Saharan Africa has increased rapidly during the 1990s (figure A3). Most African producers export raw cashews to India for processing, with only Mozambique processing significant quantities of cashews domestically.



Market Structure

Tanzania is a large producer and exporter of raw cashew nuts, accounting for an average of 44 percent of exports from Sub-Saharan Africa and 28 percent of global raw nut exports during 1990–98. Despite this, Tanzania has little power to set prices because of the increasing production of neighboring countries and the limited processing capacity in India. Tanzania will probably provide a smaller share of total exports from Sub-Saharan Africa in the future because of the expansion of other producers. It is unlikely that Tanzania will have significant market power in the future, and any attempt to exert market power would probably encourage competitors to increase production and increase their market share.

The relatively large share of Tanzanian exports in world raw cashew exports naturally leads to the question of whether there is a case for an optimal export tax. The justification for an optimal export tax is based on the argument that the exporting country can increase its total welfare (the sum of producer surplus and government revenue) by imposing a tax on exports when it faces a downward sloping demand curve for its commodity. The determinants of the optimal export tax are the price elasticity of demand for the commodity, the elasticity of supply in the exporting country and its competitors, and temporal issues such as the social discount rate.

If a country sets the export tax too high, it discourages production in that country and encourages production in competitors, which will reduce the country's market share over time. It is critical to have accurate estimates of the relevant elasticites. Because long-run elasticities are larger than short-run elasticities, using long-run elasticites would result in a lower optimal export tax. The social discount rate must also be considered and the rate of adjustment between short- and long-run elasticities (Repetto 1972).

Imran and Duncan (1988) calculated the optimal export tax for major exporters of four perennial crops (cocoa, coffee, natural rubber, and tea) and Akiyama (1992) extended the analysis to the dynamics of supply in the context of an export tax on Ghana's cocoa exports. Imran and Duncan found that the average optimal export tax for four perennial crops exported by 18 different countries was 22 percent using short-run elasticities and 6 percent using long-run elasticities. The results were very sensitive to assumptions. Akiyama found that the export tax had a large distributional impact between producer welfare and government revenues but did not have a large impact on national welfare. He concluded that under some conditions, the optimal tax was negative (implying subsidies) to encourage producers to invest in new plantings so that farmers and the government could obtain larger benefits in later years. It seems unlikely that Tanzania could justify an export tax on cashews based on the optimal export argument.

The Tanzanian cashew market has a large number of small producers and a moderate number of small to medium-size buyers (there were reported to be 27 buyers operating in the 2000/01 season). The buyers are predominately ethnic Indians who have close financial and cultural ties with each other and with processing factories in India. The potential exists for cooperation between buyers in purchasing and market sharing arrangements. If cashew buyers (exporters) operate as a single buyer (monopsony), producers could receive a price that is well below the competitive market price. Chengula (1997), in a study of the world cashew market, concluded that India had exerted market power in the cashew market. However, without an alternative to selling raw cashew nuts for processing in India, Tanzanian producers have little choice but to accept the price offered by buyers.

The current marketing system in Tanzania favors the buyers because of the limited information of farmers and the relatively small number of buyers. Farmers usually sell their crop to buyers who visit their villages. They have little market information beyond what the buyers provide and cannot easily evaluate the fairness of offers. This system allows buyers to concentrate in certain areas and possibly to agree among themselves to refrain from purchasing in other buyers' areas. A better system would be one in which prices are determined in a public setting such as a voluntary auction. This would encourage buyers to compete and would allow price information to be more widely available.

Global Price Prospects

The near-term outlook for cashew prices is not good because of the large supply increases in both Asia and Africa. Tanzania is but one of many countries that increased production during the 1990s. The emergence of Vietnam as a major producer and exporter has contributed to the recent oversupply. In addition, demand growth is very sensitive to economic growth in the United States and Western Europe, and growth in these countries has slowed since mid-2001. Nevertheless, cashew demand is expected to grow about 5.0 percent a year over the next decade, and prices are expected to recover.

Over the longer term international prices are not expected to return to the lofty levels of 1999, except in years when one or more major producers suffer a large production shortfall. But prices will likely remain near the average of the 1990s. Compared with most other agricultural

commodities, cashews are an attractive commodity for smallholders in Tanzania. They are one of the best opportunities Tanzania has to export agricultural commodities in the global economy. Few crops offer better demand growth prospects, and Tanzania has a revealed comparative advantage in production of cashews for export.

Appendix B Table B1: Cashew Price, Mtwara to London, 2000/01 Season

Appendix B Table B1. Cashew Price, Mtwara to London, 2000/01 Season

Tsh per Kilogram

	November-Decemb	January-March
Farmer Price /1	315	200
Cash Costs /2	79	79
Net Cash Income /3	236	121
District Cess /4	100	100
Trader Export Price /5	600	320
Freight to India /6	45	45
CBT f.o.b. Price, STD Grade /7	800	736
Export Levy (3% of f.o.b. price)	24	22
CIF Indian Price (Est) /8	790	510
London Processed Kernel Price /9		
320 Ct	4232	4039

Notes

1/ Price received for raw ungraded nuts as reported by CBT and confirmed by interviews.
2/ Based on the improved technology management alternative from page 267 of Tanzania, Agriculture: Performance and Strategies for Sustainable Growth prepared by Ministry of Agriculture and Cooperatives, February 2000. Assumes yields of 750 kg/hectare.
3/ By subtraction.
4/ Reported by Traders.
5/ Reported by traders.
6/ Reported by traders.
7/ From CBT Announcement.
8/ Estimated from ratio of Import Unit Value for 1999 ($1277) to ratio of kernel prices in Nov-Dec 2000 to avg. kernel prices in 1999. (For November calculation is 2.4/3.105*1277/100*800.) Exchange rate assumed 800 Tsh per $.
9/ Datastream

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