

Mozambique Cashew Reforms Revisited

M. Ataman Aksoy

Fahrettin Yagci

The World Bank
Poverty Reduction and Economic Management Network
International Trade Department
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Abstract

Cashew policy reforms in Mozambique have been controversial. They are often invoked by critics as an illustration of how agricultural policy reforms supported by international financial institutions may fail to have their intended effects. This paper revisits the reforms and their outcomes almost two decades later. While the reforms resulted in higher producer prices and an increase in output, lack of consensus on the specifics of the reforms and associated non-price support arrangements created a situation in which the sector was not able to withstand international price shocks that ultimately led to a collapse of both the processing industry and cashew production. Non-price support by donors improved

the efficiency of the processing industry but this was not complemented by an expansion in cashew nut supply as such support did not extend to smallholder cashew producers. For the reforms to have had their intended results, greater investment in—and support to—smallholder production was needed to increase yields and overall output. Such a more comprehensive approach to cashew policy reform would have required a greater focus on achieving consensus on the causes of the cashew sector's problems and agreement by all stakeholders on a common institutional framework for pricing and non-price support.

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Mozambique Cashew Reforms Revisited

M. Ataman Aksoy and Fahrettin Yagci¹

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Introduction

Cashew is a tropical nut grown in developing countries. It is produced primarily by smallholders. World cashew production and exports have grown rapidly over the last few decades, faster than world agricultural trade and output.² The value of world cashew exports, raw and processed, was US \$532 million in 1990/91, US \$1005 million in 2000/01 and US \$2,436 million in 2007/08.

During the 1960s and 1970s, East Africa (mainly Tanzania and Mozambique) was the major cashew producer and exporter. It also had a very capital intensive cashew processing industry, unlike India and Brazil, which used more labor intensive processing techniques. India and Brazil became the major exporters in the early 1990s, having 43 and 22 percent of world exports. By 2007/08, their export shares had declined to 27 and 8 percent, respectively, and these shares were replaced by Vietnam and West Africa, whose world export shares increased from 5.5 and 6 percent in 1990/91 to 26 percent 18 percent in 2007/08, respectively. By 2008 Vietnam had become the largest exporter in value terms. East African countries (Kenya, Mozambique and Tanzania) saw their shares decline further from 7.5 percent in 1990/91 to 5 percent in 2007/08. India and Vietnam have also become major cashew processing locations and import significant quantities of raw cashews from Africa, while Africa is primarily specialized in exporting raw cashew to these two countries. More recently East African countries have started again to process their cashews.

Mozambique's cashew production and exports collapsed during the 1980s due to the civil war, nationalization of the processing facilities, very low producer prices caused by bans on raw cashew exports, and little non price support to the producers. By 1990/01, Mozambique only exported cashews worth US\$15 million which was just 2.8 percent of world exports.

A very contentious reform process was initiated during the early 1990s to return this sector to its pre independence level of production and maintain the processing industry.³ The reforms, which became a cause célèbre of globalization and trade liberalization skeptics, basically involved the elimination of export controls on raw cashews in return for a reasonably high rate of export tax that gradually decreased and then eliminated. Processors, which had bought the privatized cashew processing plants and had made new investments insisted on maintaining the requirement that the producers first sell their raw cashews to the processors before raw cashews could be exported by traders. At the end, export controls were eliminated and replaced with high export taxes which are kept until today.

These reforms pitted a group of new business elites, closely connected to the political leadership, against another new stakeholder, the donors. The fact that the farmers, which were

² See Annex I for the details of the world cashew production, exports and prices.

³ The story of the developments and the policy debates have been told in detail by many authors and will not be repeated in detail here (see e.g., Macmillan et al 2002; Welch 2002, Hanlon 2000, and Abt associates 1999). Annex III provides information on the timeline and specifics of policy and other actions.

supposed to be the beneficiaries of the reforms, came from locations that voted for the opposition party did not help. The reform program was highly controversial and there was little consensus on how to move forward. Even towards the end of the initial reforms, little agreement was reached on the nature of the policy and institutional structure that could accelerate production growth and accommodate future developments. INCAJU, the agency that was the parastatal supporting the cashew industry, was privatized but acted effectively as a quasi parastatal and did not deliver effective non price support to the farmers. Aksoy and Onal (2011), which analyzes nine cases of reform in sub-Saharan Africa (SSA), classified this reform process as unsuccessful.

Real producer prices increased during the initial stages of the reforms creating an aura of success. These increases also transferred income from the processors to the farmers creating greater conflict among the stakeholders. Declines in international prices after 2000 led to the collapse of both the output and the capital intensive processing industry. More recent international price increases were not fully passed on to domestic prices because of the serious appreciation of the currency.

There was little non price support to the smallholders. A World Bank project for cashew production was terminated because of lack of quality management by the Ministry of Agriculture and there was no active program to improve the cashew orchards after decades of deterioration. Donors, such as the World Bank, have not focused on the cashew sector mostly because of the very acrimonious debates on the reform program. INCAJU, which was privatized in the early 1990s, has effectively been a quasi parastatal and have not been very effective in supporting the smallholders despite its programs of spraying and replanting.

The capital intensive processing technology adopted by the processors and supported by the government has not been able to be competitive with the manual systems despite high export taxes on raw cashews. This has led to the exit of one group of processors, and the entry of another of group. This new group of processors employs labor intensive production technologies, is more efficient, and is supported by the donors. This new group, like the earlier processors, has not been able to establish effective production and support relationships with the smallholder producers

Despite a series of actions, programs, and controversy; cashew exports only increased from an average of 24 thousand tons in 1993/94 to an average of 44 thousand tons of raw cashew equivalent in 2007/08. While this is an increase of 86 percent, it also corresponds to a decline from 2.1 to 1.6 percent of world exports. Therefore, it has been a sector that has performed badly relative to the rest of the world and even to the rest of SSA (Annex I). In the process, output, producer prices, and the share of the export price received by the producers all increased after the reforms and exports reached 50 thousand tons in 1998. However, a steep fall in international prices in 2000 of some 50 percent led to a collapse in output to below pre reform levels. A subsequent gradual increase in producer prices, slightly higher support to producers and new donor support programs for the processors led to a recovery in exports to reach almost 50 thousand tons in 2008.

In what follows we first summarize in Section 1 the main elements of the reform program and the resulting price and output developments. Sections 2 and 3 then analyze the two main stakeholder groups, the processing industry and the producers (farmers) in greater detail. Section 4 concludes. Annex I discusses global developments in the cashew sector since 1990. Annex II analyzes the data problems in Mozambique and shows how the numbers used in this paper are derived. Annex III summarizes the developments after 1990 and places them in a timeline. The following three annexes analyze some of the critical issues raised during the reform debates and controversies. Annex IV shows the relationship between the processed kernel export prices of India and the raw cashew export prices of Mozambique and argues that the idea of India exerting monopsonistic power over Mozambique is not likely. Annex V explains the differences in cashew processing technology and the state of Mozambique cashew processing plants during the reforms. Annex VI shows that using different deflators to estimate real producer prices do not yield different results.

1. Background, the Reform Program, Prices, and Output

Mozambique was a major cashew producer during the 1960s and 1970s. The Portuguese actively promoted cashew cultivation during the colonial period and during the 1960s Mozambique produced half of the world's cashew nuts. In 1968, there were 45 million cashew trees in Mozambique and the country at its maximum produced more than 200,000 tons of raw cashew nuts (Walsh, 2001; McMillan, Rodrik and Welch, 2002; Mole, 2000; Abt and associates, 1999; World Bank, 2001). This production continued to increase until independence.

With the expansion of cashew production during the colonial period, small, manual processing systems were replaced by large, mechanized factories. (See Annex V for the technology of cashew processing). By 1973, there were 12 processing factories with a total processing capacity of 150,000 tons of raw nuts. Mozambique was one of the few developing countries that had a very mechanized and effective processing industry. At the industry's peak up to 17,000 workers were employed in fourteen large mechanized factories. Taken together, the country's mega-plantations and thriving domestic processing industry led to a strong export market. But this successful colonial production was achieved at great social costs due to poor working conditions and forced cultivation.⁴

In 1975 Mozambique gained its independence and as the Liberation Front of Mozambique (FRELIMO) moved to nationalize plantations and processing plants, as many of the previous Portuguese owners and managers abandoned the industry and fled the country. Despite the FRELIMO government's policy of protecting the industry through an export ban and price

⁴ These outputs were obtained because world prices were higher and East Africa had an almost monopoly in cashew production; most of the trees were young and did not have diseases; there was a poll tax which required cash income to be paid and in these provinces cashew was among the few commodities that generated cash income; and finally the district authorities forced the farmers to take care of the trees.

supports, the cumulative impact of decolonization and a devastating civil war completely disrupted the production and processing (Paul, 2008). In 1978 export of raw cashews was banned to allow the domestic processing industry to obtain sufficient quantity of raw nuts which led to lower producer prices. FAO report on the cashew industry in Mozambique undertaken during the late 1980s summarizes the pre-reform state of the cashew sector succinctly:

“There has been little replanting carried out in the past 15 years or so, and it appears that the average tree age is fast approaching the point where marked decreases in production can be expected.”⁵

As a whole the processing sector is operating at less than 25 percent of its rated capacity. It is unlikely that the flow of nuts can be increased to anything near full capacity even in the next 10 years. Under such circumstances it would be uneconomic and impractical to continue operating all factories. All factories show severe deterioration of equipment due to lack of maintenance and non-replacement” (FAO, 1987).

By 1990/01, Mozambique exported mostly cashew kernels only worth US\$15 million which amounted to just 2.8 percent of world exports. However, this was still a significant part of its non mineral exports of Mozambique. To maintain the profitability of an inefficient processing industry, exports of raw cashews had been banned since 1978 and the farmers had to sell their raw cashews to the processors at very low prices. By 1993/94 the farmers’ share in export prices had declined to almost 15 percent. Along with these very low prices, supply of raw cashew nuts for processing and direct exports had also declined to about 22 thousand tons.

After the civil war ended, along with the general liberalization and privatization of the economy, a series of developments specific to cashew industry took place.⁶ In 1991, the National Cashew Institute (*Instituto Nacional do Caju*, or INCAJU) was privatized and privatization of the formerly nationalized processing factories was initiated. The nationalized factories were privatized by 1994 along with the entry of new factories also mostly using the capital intensive techniques.

Starting in 1991/92, limited quantities of raw nuts were allowed to be exported but the producers were to sell their raw cashews first to the processors. A tax was imposed on the difference between the export FOB price and the factory gate price to minimize the reselling of the raw cashew by the processors rather than processing it.⁷ At first this tax was 60 percent, but then it was lowered to 35 percent in 1992/93. These tentative steps were followed by a large shift in policy in 1994 where quantitative restrictions on exports were removed.⁸ At the same time, in

⁵ Apparently older cashew trees do not have the same yields even if they are well looked after (WB 2007).

⁶ See Annex III for the details.

⁷ There is little evidence that this tax was ever paid.

⁸ Many have argued that it was the World Bank that led to the elimination of export ban on raw cashew. Raw cashew exports were allowed much before the Bank got into the debate and there were significant exports of raw cashews

order to maintain some sort of protection for the domestic processing sector, the government introduced a graduated export tax equivalent to about 30 to 32 percent of the FOB export value.

This reform program was in line with what was being implemented by the government for the general economy. The World Bank, along with some other donors and groups in Mozambique, tried to accelerate the liberalization the marketing of cashew as a part of more general agricultural pricing and marketing reforms undertaken after 1989.⁹ This was also the time when the civil war had ended and many farmers were returning to their fields. Along with resettlement support, it was thought that increasing the prices of cashew, which was among the few cash crops that were available to smallholders, would also facilitate the return to normal agricultural practices.

In the 1995 Country Assistance Strategy (CAS) Report, the World Bank called on Mozambique to further liberalize cashew marketing and exporting in order to satisfy the “base case” conditions and qualify for approximately \$400 million of loan assistance (World Bank, 1995a). While accepting the need for liberalization, the government and industry leaders disagreed with the World Bank regarding the extent and time-frame for the liberalization. When the government proposed a 10-year time- horizon for eliminating the tax, World Bank advised that the tax should be eliminated in a shorter period of time. A 5-year time-horizon was agreed by the World Bank and the government.

The new tariff plan consisted of an export tax (on FOB value) of 20 percent on the export of raw cashews in the first year, 1995/96 (from 35 percent during 1994/95), and a phased elimination in five years, i.e. by 1999/2000. After the first year, the plan was never implemented in its entirety. The new policy was met with intense opposition from leaders of the processing industry who had withstood the war years in Mozambique and felt entitled to continued protection. Urban factory owners and workers had greater political power and influence than the producers. The latter, despite numbering over one million households, were relatively disorganized and dispersed throughout the rural areas of the country.¹⁰

starting in 1992 (see fig.4). But most of these raw cashew exports were undertaken by the “processors” that had the right to buy the raw cashews first.

⁹ During the late 1980’s and early 1990’s, Mozambique started to move away from a planned socialist economy to a more liberal one. Reforms were implemented in almost all areas of economic activity, where price and production controls were eliminated. After the civil war ended, the government also started a large program of privatization and within a few years, bulk of the economic activity has been privatized.

¹⁰ Despite the domestic opposition, the government was dependent on continued support from the international financial institutions. Mozambique was one of the poorest countries in the world in the mid-1990s and international aid accounted for 60% of its GDP. In addition, Mozambique was in the process of applying for debt relief under the HIPC initiative. According to Mozambican President Joaquim Chissano, Mozambique “had to liberalize the export of raw cashews in order to obtain other benefits from the Bretton Woods institutions.” Specifically, he asserts that Mozambique complied with the World Bank’s liberalization policy in order to qualify for HIPC debt relief (AIM, June 25, 2001).

In 1996/97 the export tax was reduced to 14 percent, instead of the 12 percent agreed upon, and then frozen at 14 percent until 1999 when it was raised to 18 percent. The cashew export tax of 18 percent has been maintained since then, effectively taxing the poor farmers and giving a subsidy of more than 25 percent to the processors compared to their competitors in India and Vietnam.¹¹

Fig. 1 shows the exports of raw cashews and raw cashew-equivalent of processed cashew kernels, and the real producer prices. Given the problems associated with production numbers, exports are treated as officially marketed output (Annex II). In what follows the export estimates will be used as equivalent to marketed production and for production itself.

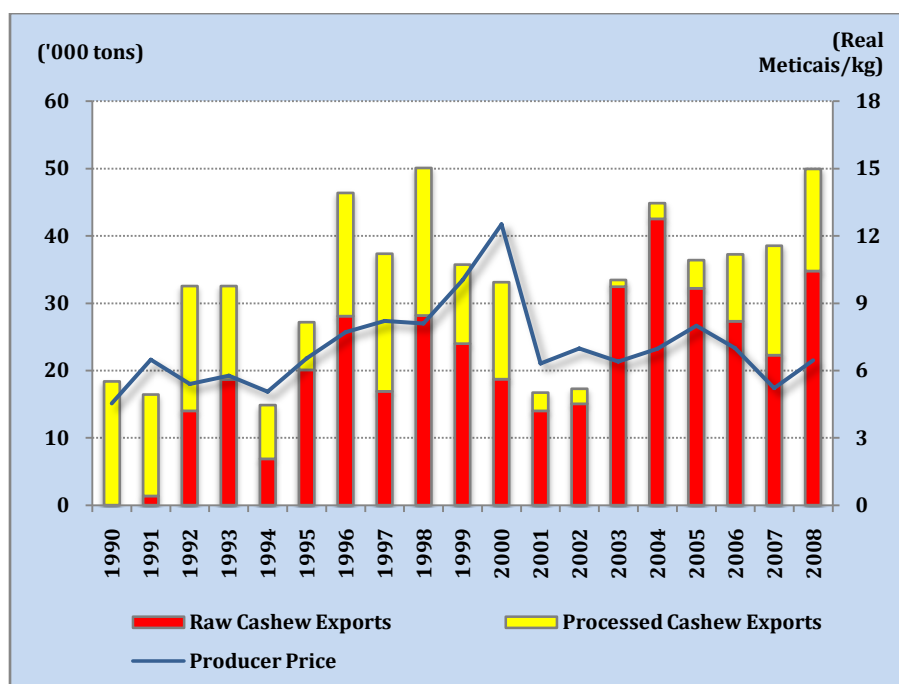


Figure 1: Cashew Exports from Mozambique

In 1990 and 1991 most exports comprised processed cashews as a result of the ban against exporting raw cashews. There is an increase in exports (production) after the civil war ends in 1992 to above 30 thousand tons, and then gradually increasing almost to 50 thousand tons in 1998. After 1999 there is a slowdown in exports caused by policy uncertainties but more importantly weather conditions. When the global cashew prices collapse in 2001, exports decline further both in value and volume terms. The capital intensive companies exit the processing

¹¹ In addition to the export tax, local producers have the advantage of not paying the shipping costs of raw cashew to India which is the main importer of raw cashews from Mozambique. These costs are estimated to be between 5-15 percent of the raw cashew price which increases the rate of subsidy to almost 25 percent.

industry and the ratio of processed cashew to raw cashew exports declines. The share of processed cashew begins to increase during the late 2000s with the entry of new labor intensive factories. Real cashew prices for the producers do not recover to their peak levels and stay quite low, but export volumes continue to increase. This could be due to a rise in support to the producers through subsidies for spraying and for seedlings.

Figure 2 shows the share of export prices received by the producers and real producer prices- producer prices deflated by the consumer price index. There is a significant increase in the prices received by the farmers as a result of the reforms. Especially after 1994 when the raw cashew export bans were effectively removed, the competition between the raw cashew exporters and processors led to increases in the share of export prices received by the farmers. This, and the increase in the US dollar prices of raw cashews reflected in local currency prices, was the main cause of the increase in real producer prices. At the end of the 2000s when real producer prices peak, real raw cashew producer prices were almost double of what they were during the early 1990s.

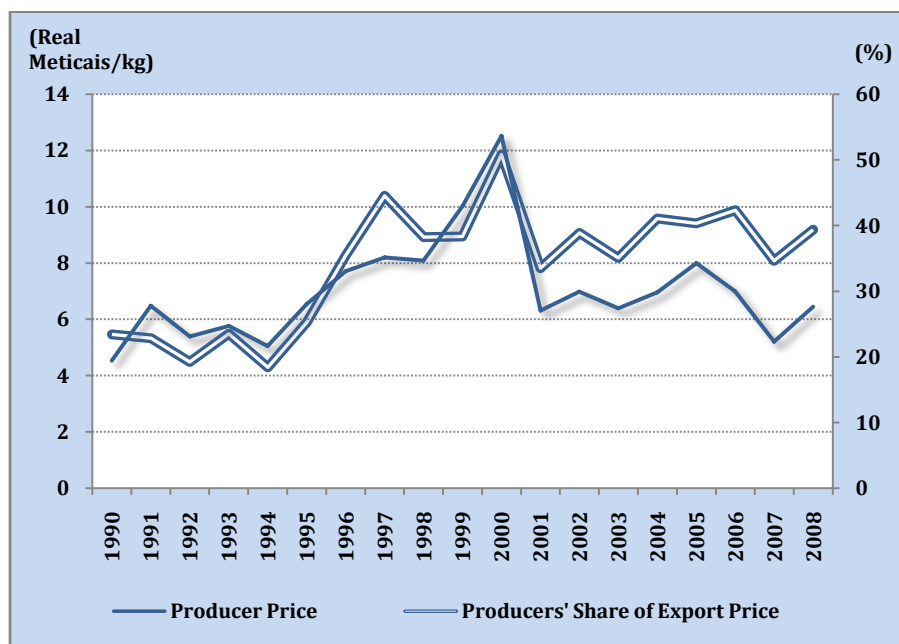


Figure 2: Cashew Producer Prices in Mozambique

Table 1 summarizes the development of real exchange rates,¹² raw cashew export prices in US dollars, producer prices in US dollars, real producer prices in local currency units, share of producer prices in export prices, and exports of cashew expressed in raw cashew equivalents. Four critical two year periods are selected to show the key changes. Two year averages are used because there can be large year to year changes in output due to weather and other conditions.

¹² A decrease shows appreciation of the currency.

First is the 1993/94 period before the main reforms. This we use as the baseline and give it the value of 100. The numbers in the other years are expressed as a percentage of the initial values of the variables. Second period is 1999/00 which is the last two years before international price collapse where both international and domestic cashew prices reach a peak. 2000/01 is the period where international prices collapse. 2007/08 are the last two years for which we have data—they are also a period where international prices were recovering.

Table 1: Main Price Developments

	1993/94	1999/00	2001/02	2007/08
Real Exchange Rate	100.0	82.3	105.1	62.7
Raw cashew Export Price (US\$/kg)	100.0	118.0	67.1	97.0
Producer Price (US\$/kg)	100.0	248.3	117.1	174.3
Real Producer Price (Meticais/kg)	100.0	208.4	122.9	107.8
Producers' Share of Export Price	100.0	211.9	173.8	176.2
Export Volume (Raw cashew equivalent)	100.0	144.8	71.6	186.1

Real producer prices more than doubled by 1999/00 following the elimination of export controls and reductions in export taxes. This increase is primarily due to the increase in share of producer prices in export prices. Furthermore, an appreciation of the currency in addition to the 18 percent export tax, limit the increases in real producer prices. If the exchange rates had not appreciated and the export tax had been abolished as planned, the real producer prices by 1999/00 could have increased by more than 300 percent. Even with limited price increases, changes in producer prices and exports increased the cash income for the cashew producers by 300 percent. Thus, for the initial period there is the expected outcome of higher incomes for the producers and higher exports though limited by export taxes and currency appreciation.

This expansion was stopped by the dramatic fall in export prices. By 2001 and 2002, export prices declined by more than 40 percent. Losses incurred by the producers are even greater. Price collapse coupled with declines in exported amounts reduced the cash income of cashew producers by more than half.¹³ But compared to the pre reform period, real producer

¹³ This is a point made by Macmillan et al (2002), that after all the debate about reforms; by 2001/2002 the price increases and income gains by the producers were limited. But the decline in international prices is the cause of limited income gains, not the reform program.

prices were still higher due to the depreciation of the currency and higher producer shares out of the export price.

World prices in US dollars increased during the last period by almost 40 percent but prices in local currency and real producer prices continued to decline. The most important determinant of this difference is the large appreciation of the currency (almost 50 percent) and the reduction in the share of producer prices in export prices from 54 percent to 43 percent. While the appreciation is determined by forces beyond the cashew sector, it is not clear why the share of producers should decline. Especially with the increase in the number of local processors, one would have expected a more competitive environment for the purchase of raw cashews between them and the exporters. In this context the arrangement that allows INCAJU to delay the export of raw cashews and allow local processors to purchase their raw materials cheaply seems to limit the share of export prices obtained by farmers. This might also show the power and ability of the new class of processors to limit the share of export price obtained by the farmers.

But the net result is that real producer prices at the end are very close to where they were before the reforms. While the lack of improvement is not related to the design and organization of the reform program itself, it shows the importance of price developments in determining the outcomes of reforms.

In the process, all of the capital intensive processing factories closed during the late 1990s and especially after the international cashew price collapse during 2000-2002. However, after this period, mostly aided by international aid agencies and Technoserve, new and labor intensive cashew processing factories were established.¹⁴ These new factories require mostly local inputs and capital, imitate Indian manual technologies, and are located close to major production in rural areas. This allows them to procure their inputs without high transport costs and hire cheaper rural labor. Currently there 25 such plants, some supported by Technoserve, and they process about 15-25 thousand tons of cashews which is almost one third of marketed raw cashew output. There is also an export credit guarantee system, supported by donors, that allows the new smaller processors to obtain credit for processing and exporting cashews.

INCAJU, which is now a semi-government organization; receives the proceeds from the 18 percent export tax and is supposed to use these funds for the benefit of the cashew producers. INCAJU undertakes research on the appropriate new varieties, supplies subsidized seedlings to the producers, and subsidizes the pesticides used in disease control. It also adjusts the exporting season to allow the local producers to purchase raw nuts before the exports start.

In the last few years, partially due to public support, slightly higher prices, and subsidies on both the spraying and replanting, cashew exports have increased to almost 50 thousand tons of raw cashew equivalent. This is the same as the peak value reached before the collapse of cashew

¹⁴ Technoserve is supported and funded by USAID.

prices in 2000. This increase is achieved despite the fact that real producer prices have not increased substantially from their pre reform levels.

Despite recent improvements, cashew industry never regained its former glory and cashew exports stabilized around 40-50 thousand tons of raw cashew equivalent, much lower than the 100 thousand tons that was the forecast for the early 2000s. While production, which also includes domestic consumption, might be higher, it is very difficult to estimate it precisely. Commercialization and productivity gains in cashew growing did not take place and the potential for Mozambique to become a major player in the global cashew industry did not happen.

In the following sections we trace out what has happened to the processors, and then discuss developments for the smallholder producers in greater detail.

2. Processors: Industrial Restructuring

One of the most important groups that was very active in the debate were the processors, both those that stayed private throughout the independence period and more importantly the groups that bought the capital intensive factories in the early 1990s. They have argued, and still continue to argue that they should have been given more time to restructure and that the export ban on raw cashews should have been kept in one form or another for a much longer period. On the other hand, the World Bank has consistently argued that the labor intensive methods are more appropriate and that the capital intensive factories actually lose value due to very inefficient processing (Annex V).

Since the reforms the capital intensive cashew processing industry has undergone a major downsizing. The large scale, capital intensive plants have become unviable. Despite a subsidy of almost 25 percent, all the capital intensive factories have closed over the last decade. Similar developments have taken place in Tanzania and currently all cashew processing plants use either manual or semi manual technologies. The exit of the traditional processors was completed when the cashew prices collapsed in 2000. With such prices it was not possible to maintain the profitability of such an inefficient industry. But this collapse also did not automatically translate into the development of alternative processing technologies and more efficient processing.

The interesting question is why the industry leaders did not recognize this fact and in addition to buying the privatized factories, they invested large sums in new factories.¹⁵ Pitcher (2002) argues persuasively that most of the new owners were pressured by the government and the FRELIMO party to purchase these factories so that the cashew processing industry will be owned and controlled by domestic investors and companies. In return they were promised

¹⁵ Most of the new owners only paid symbolic amounts for the privatized factories. They paid only \$850,000 as down payment for factories valued at around \$13 million which were sold at \$5 million (Macmillan et al, 2002). It is not clear whether any other sums were actually paid.

support and potential profitability. Of course, this support only became partial after the agreements with the World Bank.¹⁶

Pitcher (2002) also argues that many of the so called “industrialists” are also traders and depending on the world prices and raw cashew availability, either export raw cashews or process them locally. The older regime that allowed local processors to obtain the raw cashews before the exporters allowed many of them to make excess profits during the 1992- 95 period through exporting raw cashews. Our data shows also large share of raw cashew exports which were probably undertaken by the processors during the pre reform years.

From a very low base of processed nut production, the cashew processing industry began to rise again in the 2000s. New private sector entrants began to invest in processing facilities which were more economically scaled, required only manual inputs, and which were located near to sources of raw nuts.¹⁷ Since the industry’s renaissance began, private investors have gradually refined alternative business models, adapted them in ways appropriate to the Mozambican business environment and developed new systems for product quality control.

“New generation” factories employ manual processing technologies similar to those found in India and Brazil. They tend to be located within high cashew production areas (Nampula province in Mozambique) thus minimizing the high transport costs. Around 2004/05, 16 such units were operational, with a combined processing capacity of about 13,750 tons and employing nearly 3,000 workers, many on a seasonal basis. Five of these units processed cashew nuts for the first time 2004, and at least four new units came on stream in 2005. According to information from TechnoServe, they have supported about 16 labor intensive factories that employ 4,700 workers (Sumana Mitra 2009; World Bank, 2008). Today the industry includes 11 principal processors and a few smaller ones reaching 25 in 2009. One of the industry participants, the multinational corporation Olam, is active both in processing and in exporting raw nuts. The industry is highly concentrated in the Nacala Corridor, and less so in Inhambane and Gaza. This is the area which incubates new nut processors in Mozambique. The industry is concentrated here not because the cashew trees are more productive, on the contrary, but rather because essential competencies and complementary service support is readily available to industry participants in the corridor.

One of the processors based in the corridor—Miranda Caju—has emerged as the cluster leader. Miranda Caju and other well established processors have bought out two other companies who eventually exited the business. Debt financing is available to industry participants both for fixed assets and for working capital. Currently, however, it depends on backup guarantees

¹⁶ On the other hand, most of these processors has supported FRELIMO during the civil war and were probably promised new opportunities after the civil war. It is not possible to determine which exactly the right interpretation is.

¹⁷ Formerly state owned factories were large, mechanized and located in larger cities and towns.

provided by donors. A group of processors have formed a holding company, the Association of Agribusiness Industries or AIA, which is based in the Nacala Corridor. Through this holding company the founding members and most of the other industry participants in Nampula Province market all of their processed kernels. This group monitors quality and health standards, manages transportation, and exports collectively under multiyear contracts with international buyers. They have also created Zambique brand cashew again with donor support.

Fig. 3 shows the ratio of raw cashew export prices to processed cashew export prices. It shows a steady decline in the ratio of raw to processed cashew prices which means higher processing margins for the processors. It is not clear why this is taking place. One possibility is the increasing power of the new processors or their easier and cheaper access to raw cashews compared to the exporters of raw cashew. On the other hand, a background paper for the Country Economic Memorandum (World Bank 2009) argues the opposite; that despite cost reductions associated with new processing systems, lower quality of raw cashews and other cost increases have increased costs therefore the processing margins.

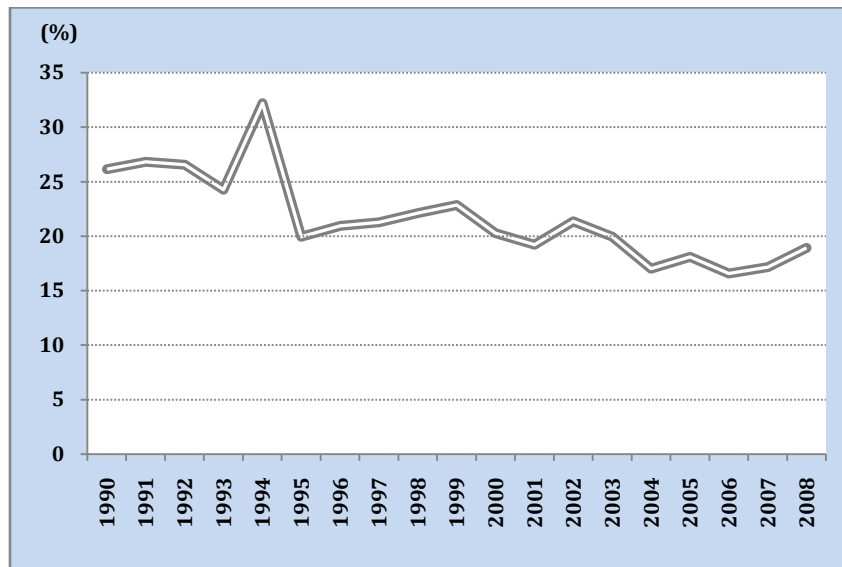


Figure 3: Mozambique Raw Cashew Export Prices (as Percentage of Mozambique Processed Cashew Export Prices)

Thus the restructuring, which has eliminated the capital intensive processors, have opened the way for labor intensive factories, but this has taken a long time, probably due to the uncertainties created by the acrimonious debate. It is now clear that the future lies with smaller, labor intensive production facilities that are located close to the cashew producing areas¹⁸ Thus,

¹⁸ . These factories also contribute to the rural economies by creating wage and business income in addition to the farming activities. Paul (2008) details the social and economic transformation as a result of the starting of such a factory in Mogincual in Nampula province.

the hypothesis that the capital intensive factories were not efficient has been borne by the developments.

Finally, the evidence so far suggests that the industry has adapted to the external shocks and restructured itself. This restructuring is also being aided by higher processing margins extracted by the industry. Through collective action and support from the donors through Technoserve and export credit guarantees, a more efficient processing system has emerged.

One can interpret these developments as the state again placing its support for the new class of industrialists and traders. Maintenance of export taxes and trading limitations, coupled with changes in the labor regime suggest such a bias. The support to the smallholders has been more limited both through the lack of non price support and the behavior of exchange rates which have limited the pass through of higher international prices. But a more definitive conclusion requires more research into the cost structures of the processors and the farmers.

3. The Cashew Producers

Despite positive developments and effective restructuring of the cashew processing industry, raw cashew output has not increased nearly as much as was expected when the reforms were enacted. While we have analyzed some of the reasons for this slow response, a detailed look is needed to understand the economics of the smallholder cashew producers. A series of surveys, supported by the World Bank, were undertaken during the late 1990s on the behavior of smallholders (World Bank 2001). Survey findings, at least until 2001, support our previous conclusion that real cashew producer prices as well as their share in cashew export prices increased after the reforms.

An important finding of the surveys is that investment in new trees and better treatment of the existing trees have not taken place to the extent expected when the reforms were implemented. The lack of interest in cashew cultivation has, over time, resulted in an aging stock of trees of low productivity. Roughly 13 percent of trees are deemed to be too old by households. Tree diseases, primarily the powdery mildew *oidium*, afflict around 25 percent of a household's tree stock. Analysis of the determinants of disease treatment show that producer prices have no bearing on the decision to treat tree diseases, not even in Nampula where raw nut commercialization displays relatively strong price responsiveness. Indeed, when asked for reasons for not treating diseases, a large percentage of survey respondents point to lack of knowledge and information on disease treatment and unavailability of chemicals. There is, therefore, a large role for agricultural extension services, and in some areas private sector provision of inputs – from processors.

The surveys also show that cashew is not only a cash crop but also a food crop meeting some of rural households' nutritional requirements. Only about 85 percent of farmers in Nampula sell any part of their harvest, a figure relatively unchanged between 1996 and 1998. Moreover, only about 64 percent of what they harvest is commercialized. In Gaza, only about 47 percent of cashew producers sell any part of their harvest and in Inhambane, less than one-third market their

harvest. An even higher percentage of harvested raw nuts – 86 percent in Inhambane and 71 percent in Gaza – are retained for home consumption. Then the question becomes why cashew producers in Mozambique do not sell all the raw nuts they harvest? Several factors contribute to this pattern, but at their core is the fact that even though they have increased in recent years, producer prices were still too low to make it worthwhile for farmers to sell all their raw nuts (see Annex VI).

The following nicely summarizes the main conclusion of the surveys:

“The pattern of cashew cultivation that appears to have evolved over a long period of unremunerative prices is one wherein households simply collect raw nuts instead of “producing” them. And even this collection of raw nuts is irregular and incomplete. Almost one quarter of all households do not harvest their cashew trees, and amongst those that do, raw nut harvests, and cashew incomes, exhibit tremendous variation from one year to the next. These patterns are difficult to explain in terms of production variability, suggesting that during the survey years farmers exhibited little interest in cashew cultivation.” (World Bank, 2001, p. v).

Paul (2008) analyzing the households in the cashew triangle after the labor intensive factories located in rural areas, also comes to the same conclusions. Most farmers do not treat cashew as a commercial crop. On the other hand, the new labor intensive factories have started to pay higher prices for better quality and by lowering transport costs they can afford to pay better prices. It is not clear whether the average prices reported here are the same where new processing factories are working. Some of these questions can only be answered if there are new comprehensive surveys that analyze similar households.

Recent analyses (Technoserve 2009) show a similar pattern. The vast majority of cashew production is undertaken by small farmers typically owning around 20 trees. Almost 42 percent of farmers in Mozambique own cashew trees which represents about one million producers. Average productivity is low about 2-4 kg per tree while 8-10 kg per tree is attainable. Just like earlier surveys between 10-35 percent of output is consumed at home. The investment in new trees, which most argue are essential to the production growth is undertaken by only 5 percent of farmers over the last 12 months of the survey.

These averages mask large differences among cashew producers. Better off farmers own between 100-300 trees, and constitute between 10-15 percent of all farmers. Middle income farmers own between 40-90 cashew trees and constitute 25-35 percent of all farmers. Poorer farmers on the other hand, own 5-25 trees and constitute 50-65 percent of all farmers. Better off farmers are able to spray the trees and sell later in the season and receive better prices. Spraying increases the yields and improves the quality of cashews. Net income per tree for poorer farmers is estimated to be about \$1.20, while the better off farmers earn as much as \$3.42 per tree (Technoserve, 2009).

In addition, three types of commercial cashew farms are beginning to emerge. In many of these farms, trees are intercropped with peanuts or other plant varieties. These types include: i) Commercial plantations of more than 100 hectares which processors manage themselves with their own employees¹⁹; ii) Medium-sized cashew farms or 2-3 hectares, with 200-250 trees each; and iii) Small farms of 20-25 trees. Both of these latter two categories are organized typically through farmers' organizations. However, cultivation schemes have proved difficult to carry out due, in part, to a lack of effective extension and, in part, due to a lack of support at the farm level. Subsistence farmers do not readily identify themselves with the cashew business. Moreover, they lack agronomic training and motivation which is a prerequisite for the planting and successful cultivation of trees.

Under a Cashew Sector Master Plan, INCAJU started supporting raw cashew production from early 2000s.²⁰ The Plan aims to improve yields and quality, and lower disease incidence. It includes programs for spraying, developing new variety of seeds tolerant to infection, replanting, and managing model farms, providing extension services, and assisting commercialization of larger farmers. Farmers Associations were formed to assist farmers and buying centers were set up to reduce the transportation costs to farmers. These are the necessary programs for the sector to recover making both raw cashew production and processing sectors viable.

The implementation so far shows that the capacity of INCAJU and the resources available to it fall far short of what is needed for an effective and full implementation of such a comprehensive program. INCAJU's efforts have so far concentrated primarily on spraying and replanting. It has developed 4 new varieties. These new varieties yield output in 3 years and have higher yields. It also supplies first 20-30 seedlings free and the rest at production cost. In particular, INCAJU now assists spraying of approximately 4.5 million trees (about 10% of total). INCAJU provides chemicals to the farmers at 50% of the cost and gives sprayers to local service providers. Farmers then engage service providers on commercial basis. Regarding replanting, it is estimated that nine million seedlings need to be planted a year. Only a fraction of this is bred and distributed at subsidized prices by INCAJU. These efforts, however, are limited given the large needs and questions about the effectiveness of the replanting program. Its funding source is the 18 percent export tax, which creates a conflict of interest in increasing the return to farmers.

In addition to the weaknesses in the support to farmers, another link in the industry's value chain which remains the weak is the one between processors and suppliers. Most cashew nuts are collected rather than farmed in Mozambique. Changing the way that the raw nut suppliers interface with processors is difficult because cashew collection and sale is part of the nation's rural welfare system and as more a part of a long standing social policy than it is part of

¹⁹ Miranda for example is integrating backwards and growing more of its own cashew. Developing tree plantations successfully requires significant agricultural expertise

²⁰ Earlier programs during the 1990s, designed to support the producers were canceled by the donors due to problems associated with the implementation of the program. Ministry of Agriculture never supported the cashew producers during the earlier periods of reforms.

any commercial or competitiveness consideration. Significant political support exists for the maintenance of existing policies.

4. Conclusions

The debate over cashew policy was one of the more acrimonious in the World Bank's history. It has been used by commentators as an illustration of the errors of judgment by international financial institutions and has been a cause célèbre of critics of globalization. The net results of the policy changes that were implemented – or those that were not pursued – are difficult to estimate. Nonetheless, a few conclusions can be drawn.

At the time, World Bank economists argued that the industry was very inefficient, and could not be made competitive even if local prices were kept very low. At these prices, little supply would be forthcoming, while the capital intensive nature of the processing technology used by the companies implied they needed large turnovers to be competitive. Many of the processors at the time were simply exporting raw cashews at world prices instead of processing them. This generated significant profits while the factories stayed idle.²¹

World Bank staff believed that higher prices would elicit a large supply response of raw cashews from the farmers, thus increasing the potential viability of the processing industry. Any factory which could not adjust within a longer time period (five years) was probably too inefficient and needed to close down anyway. They also believed that over time the industry would move towards the Indian system of highly labor intensive smaller scale manual systems. These smaller factories could be located in cashew producing areas thus minimizing the high transport costs in Mozambique.

The existing processors though that supply would be forthcoming even at very low prices just like the period before the nationalizations. They expected their factories would be viable because a large enough supply of raw nuts would be available at very low prices. Thus, while the Bank believed in high price elasticity of supply, the processors believed in low price elasticity.

Following more than a decade of effort, most of the objectives espoused by the parties were not realized. All the capital intensive factories have closed and there is a consensus now that they were not efficient. On the other hand, the anticipated supply response in cashew production has not taken place and the producer price increases were not sustained. The outcomes are summarized in the evaluation by Nathan Associates in 2004:

“The fundamental problem of the cashew sector in Mozambique has been the declining volume and quality of cashew nuts produced in the country. Mozambique has found itself in a vicious cycle wherein producers receive prices for their nuts that are too low to justify

²¹ About half the exports in 1993 to 1995 period were raw cashews. Thus the decision to allow exports of raw cashew was made before the World Bank got involved in the policy debates on cashew which was around 1995. But the export licenses were given primarily to so called “processors” which gave them a quasi-monopoly in exporting.

investments in better care of existing trees and/or planting of new trees. Yet at the same time, the prices paid by existing processors are too high for them to make adequate profits and returns on their investments.”(Nathan Associates, 2004 p. 2)

The only way to increase the yields, improve quality, and lower disease incidence is to replant the cashew orchards. Older trees require much more pesticides and do not yield similar quantities even with greater care. Replanting and grafting requires farmers to forgo income from cashews for 3-5 years. Thus, even with increasing prices and greater availability of new high yield varieties, it has been difficult to get the farmers to replant their cashew orchards despite the fact that these new plantings are intercropped with other crops.

Improving the quality of nut yields holds out the greatest promise for improving the sector's competitiveness. Younger and better tended trees greatly improve yield and quality. Both domestic processors and raw nut exporters would be willing to pay a higher price to farmers for higher quality nuts. However, given the organization of the industry which entails arm's length interactions between diffused farmer groups and equally diffused processors, any program for replanting trees requires government support in order to be effective.

Looking back, the only way out would have been large investments and support to the smallholders to increase their yields, output and lower their costs. By focusing on the profitability of an inefficient processing industry on one hand, and the capacity of price reforms to lead to increases in cashew nut output on the other, other important dimensions of the issue where interventions would have benefited both groups were neglected. A broader effort could have centered on building a greater consensus on the causes of the problems and an agreement by all the stakeholders on a common institutional framework for pricing and non-price support.

If the recent history is reanalyzed and put in context of the framework advanced by Aksoy and Onal (2011), the following points stand out. First, as expected, reforms lead to producer price increases and the exported output responds to this price increase. This continues until there is an external shock – in this case the international price collapse. The possibility of such an external shock is not built into the reform program and there is no mechanism to redistribute the losses among the stakeholders. Therefore the output decreases and the inefficient processing industry is completely eliminated. The collapse of prices and the exit of processors lead to a less competitive environment for the purchasers of raw cashews and lowers the share of the export price received by farmers, further reducing the marketed output. There is an effective non-price support for the processors provided by the donors and a more competitive processing technology and corporate structure emerges, aided by the existing export tax and the reduction in the share of the export price going to the farmers. Real producer prices do not rise despite the increase in international export prices due to lower share of export prices going to farmers and a seriously appreciating currency. On the other hand, during this period, there is increasing but still weak support to the farmers.

The tradeoff between the farmers and processors has stayed as a point of conflict throughout the post reform period. Recent efforts to establish producer groups are helping but the power of the processors to affect outcomes has been greater. The ideology in favor of domestic processing and the closer links between the processors and the political leadership have always dominated the political decisions. This has led to underinvestment in cashew farming and thus has harmed both sides. Lack of consensus also led to INCAJU staying as a quasi parastatal which created much weaker non price support and thus led the output to depend fully on the levels of real producer prices.

Non price support to the farmers, which could have been an important intervention, was never effectively supplied. The World Bank had a cashew project in the late 1990s that was closed due to mismanagement.²² Other donors did not focus on the farmers probably because of the controversy about cashew policies. The Ministry of Agriculture has not placed the needs of cashew farming on top of its agenda despite the fact that it is among the few cash crops that could help the rural economy to become more commercialized. INCAJU has been given greater responsibilities for cashew, and has started to support the farmers, but it has limited resources and skills to seriously upgrade the cashew tree stock.

Finally, the behavior of international prices and especially the exchange rates play a very important role in determining outcomes independent of the design of the reforms. The appreciation arguably played an important role. Given the political economy of cashew in Mozambique, the absence of such large appreciation in the recent years may have led to a more positive conclusion.

This story is slightly different than the one told earlier. Had there been less controversy, better understanding of the key issues, and a better mechanism to analyze the issues from all sides, the response to the external shock could have been managed better, and could have led to greater investment in cashew farming. Despite the intervening events and positive developments, producers did not end up gaining as much as expected, but nonetheless realized a threefold increase in their cash incomes during the initial phase of the reforms. The original processors that intervened to reverse the reform process ended up losing completely. While cashew exports did increase, it was not by as much as expected when the reform program was designed.

²² The ICR clearly states that “However, the planting program, the key to the development strategy behind the extension and nursery components, which were the main investments made under the project, was unsuccessful and did not contribute to increased production. Also, no commercial farms were established. The project therefore failed to achieve its production objectives.” (WB 1999, Page v).

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ANNEX I

Global Background

World exports were about US \$2 billion in 2008.²³ Over the last two decades cashew exports denominated in nominal US dollars have increased by about 376 percent. This is much higher than total world exports of agricultural products which have only increased by 250 percent. Cashew prices have followed the international price cycles but have shown much lower volatility than many of the tropical agricultural products such as coffee, and cotton (Onal and Aksoy, 2011). In Figure 1, we show processed cashew unit export prices for India and Brazil from FAO, the two largest exporters for this period in question, and the World Bank's world cashew price index.

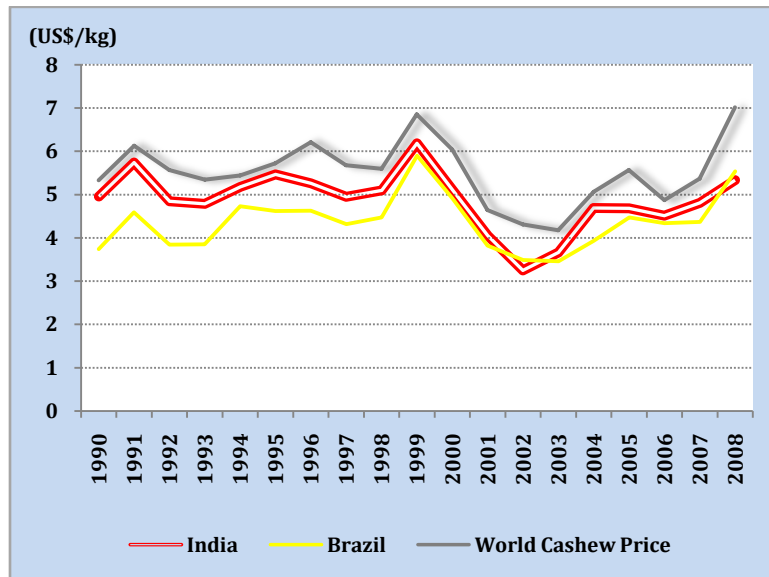


Figure A1.1: Processed Cashew Export Prices

These price movements are very similar to the export unit value indexes from COMTRADE. The World Bank world cashew index show higher prices than the unit export values for Brazil and India, but the turning points are the same for all three series. There are slightly increasing prices during the 1990s, with a peak in 1999, and a very rapid price decline until 2002 -2003. After that, cashew prices start increasing with the rest of commodity prices,

²³ Ideally we should separate the raw and processed cashew trade. The COMTRADE data does not differentiate between raw and processed cashew exports and is the most reliable data for the SSA exports. Other sources such as FAO and country data which separate raw and processed exports seriously underestimate SSA exports.

with a large increase in 2008. Thus, price series are consistent with each other and we can use any one of them for the international price of processed cashews.²⁴

World cashew exports have been dominated by a few countries. During the 1960s and 1970s, East Africa (Mozambique and Tanzania) supplied almost half of world cashew demand. By 1990/01, East Africa's share had dropped dramatically and Brazil and India became the large producers and exporters accounting for more than 61 percent of world exports. These two were followed by a group of Sub Saharan African Countries, Mozambique, and Tanzania in East Africa, and Guinea-Bissau in West Africa. Vietnam which only had 5.5 percent of world exports in 1990/01, expanded its production and exports over the last two decades and is now almost the largest exporter. Over the last decade a group of countries from West Africa, Cote d'Ivoire, Ghana, Benin, and Nigeria have entered the export markets and now dominate the exports from SSA. Especially Cote d'Ivoire has become the largest exporter from SSA in 2008.²⁵ Table A1.1 shows the structure of world exports supplied by partner data from the UN Comtrade database.

Table A1.1: Cashew Exports (US\$ mil.)

	India	Brazil	Vietnam	East Africa	West Africa	Indonesia	WORLD
1990/91	227	116	29	40	32	18	532
	42.60%	21.80%	5.50%	7.50%	6.00%	3.30%	86.00%
2000/01	475	139	126	85	103	23	1005
	47.30%	13.80%	12.50%	8.50%	10.20%	2.20%	94.50%
2007/08	646	212	642	122	448	109	2436
	26.50%	8.70%	26.30%	5.00%	18.40%	4.50%	89.50%

Source :COMTRADE

The values are in current US dollars and the percentages given below are the share of that country's exports as a percentage of world exports. In addition to individual countries, East Africa category consists of Kenya (a small producer), Mozambique and Tanzania. West Africa includes Ghana, Benin, Guinea-Bissau, Nigeria, and Cote d'Ivoire. Percentages given under the World column show the total share of countries exports that are covered in this table. For example in 1990/01, 14 percent of world exports were made by countries which are not included in our categories.

Table A1.1 shows large structural changes especially after 2000/01 and they can be summarized as follows. Brazil has consistently lost market share from 21.8 percent in 1990/01 to 8.7 percent in 2007/08. Vietnam and West African countries have consistently increased their

²⁴ Of course there are many kinds and qualities of cashew with different prices. These are basically an average price used as a benchmark.

²⁵ There are large differences on the export values by different sources. Here we report the partner supplied data from COMTRADE. See Annex II for the analysis of different sources of data.

market share from 5.5 and 6.0 percent in 1990/01 to 26.3 and 18.4 percent respectively in 2007/08. India and East Africa have increased their world market shares between 1990/01 and 2000/01 but have lost market shares during 2000/01 and 2007/08.

Brazil exports processed cashew that is produced locally. India and more recently Vietnam import raw cashew in addition to their local production and export these after processing them. In SSA, especially during the last decade, exports have been predominantly raw cashews. Raw cashew imports of India during these periods were 91.3, 179.5 and 506.7 million US dollars. These constitute 40.2; 37.8; and 78.4 percent of the value of their exports. Thus, India has become a marginal net importer of cashew and has become a processor of cashew. In terms of raw cashew, it is now almost a net importer. Vietnam is moving in the same direction where they started importing raw cashew during the late 1990s. In 2000/01 and 2007/08, their imports were 14 and 28 percent of their exports respectively.

To sum up, cashew exports are highly concentrated with 10 countries accounting for almost 90 percent of world exports. During the last two decades, Brazil, India and East African countries have lost market shares while Vietnam and West African countries have gained market shares.

Table A1.2 summarizes the development of cashew production across the same groups. The countries included in Table A1.2 account for more than 95 percent of world production. Cashew production has increased rapidly over the last two decades from 821 thousand metric tons in 1990/01 to 3.65 million metric tons in 2007/08. This is a cumulative increase of almost 345 percent corresponding to 7.5 percent growth per annum.

Table A1.2: Cashew Production ('000 mt)

	India	Brazil	Vietnam	East Africa	West Africa	Indonesia	WORLD
1990/91	291	147	150	60	89	44	821
	35%	18%	18%	7.30%	10.80%	5.40%	95%
2000/01	485	132	282	193	678	81	1924
	25.2%	6.8%	14.7%	10.0%	35.2%	4.2%	96.2%
2007/08	643	191	1200	186	1099	145	3650
	17.6%	5.3%	32.9%	5.1%	30.1%	4.0%	94.9%

Source: FAO

Last two decades have seen a larger adjustment in production than in exports. Partially this is due to African countries' exporting raw cashews which have lower prices than processed cashews. India and Brazil, which export processed cashews, have much higher shares in the export markets than in production. Their combined export market share has come down to about 35 percent while their share in world production has declined to almost 23 percent.

Decline in the market share of East Africa is not only caused by exporting mostly raw cashews but a more rapid decline in their share of world production. It is the only region where cashew production has absolutely decreased over the last decade. This decline in production, coupled with rapid increases in production in the rest of the world has reduced their share of world production from 10 percent in 2000/01 to 5 percent in 2007/08.

Vietnam and West Africa, on the other hand, have seen their production increase more than 10 fold over the last two decades and now collectively account for 63 percent of world production. The difference in their export market share in nominal dollars and in production is explained by the fact that West Africa is exporting raw cashews while Vietnam is exporting processed cashews and is also importing raw cashews. So its exports are being aided by their imports.²⁶ In 2008 Vietnam exported processed cashews worth about US 650 million dollars and imported raw cashew worth about US 225 million.

By 2007 India exported as much as it produced. It produced 620 thousand metric tons of raw cashews and imported 590 thousand tons of raw cashews. Thus, it is effectively not a net supplier to the rest of the world. In value terms, in 2007, India exported processed cashews worth US 535 million dollars and imported raw cashews worth US 415 million dollars. Its production of cashews has increased after 2000/01, but not as fast as the increase in world production.

World cashew market is being driven by the production growth in Vietnam and West Africa, with India becoming a smaller player. Its production is not growing as rapidly as the world market, and needs to proportionately import more and more raw cashews to satisfy its domestic and export market. Vietnam, is also trying to compete with India on becoming a major processor, but has the added advantage of having a much faster growing domestic output and smaller domestic market. East Africa along with Brazil has become a minor player in world cashew markets. West Africa, on the other hand, is the major producer and exporter of raw cashew, and is expanding its output at a much faster rate than the world demand and supply.

²⁶ FAO does not report cashew imports for Vietnam, thus there is no volume data for imports.

ANNEX II

Reconciling the Numbers

We have three sources of data for the cashew subsector. First is the FAO database which includes both volume and value series. It includes production, trade, and price series. It also separates the raw and processed nut trade volumes and values. Second is the Anderson et al database that includes a limited number of countries and commodities but also has nominal rates of assistance (NRA) for these commodities. In most cases, their numbers are very close to the FAO numbers. For the trade data, there is the COMTRADE data base which contains predominantly just values but in some cases also have unit values from which can be used to generate the quantities. In COMTRADE data, there are two export series. First is the values reported by the countries and the second is the values reported by the trading partners. In many cases for developing countries, partner reporting is used because countries do not report their trade fully or there is serious delays. This is more of an issue for some of the SSA countries. We do expect the partner import data to be higher than export data due to freight and insurance but the differences can't just be explained by the FOB and CIF differences.

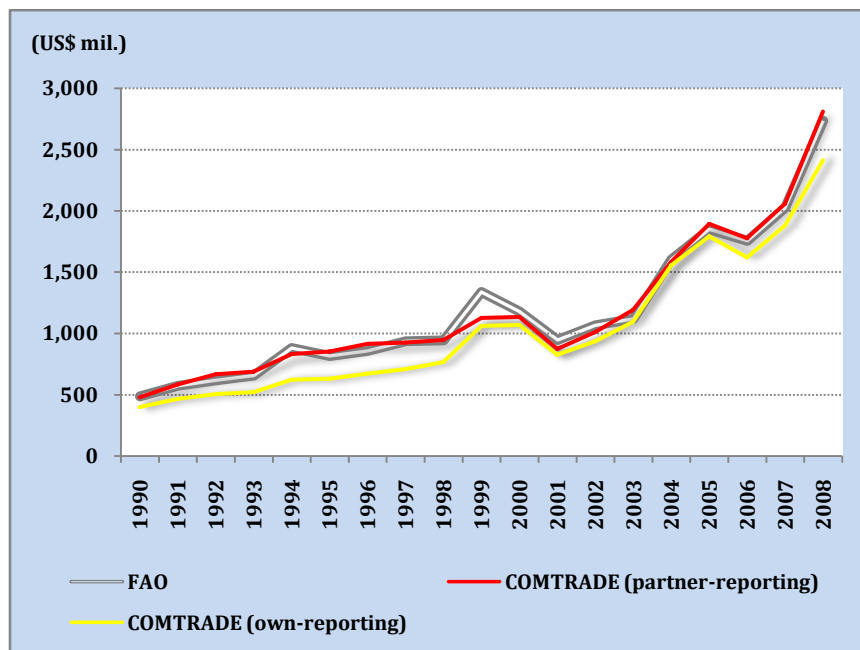


Figure A2.1: Total World Cashew Exports

In Figures A2.1 and A2.2, few points stand out. First self reporting, especially for SSA, underestimates the exports compared to both partner reporting and the FAO data. For total world

exports, FAO numbers and COMTRADE Partner Data are almost identical, except for the year 1999. This gives us some comfort that both might be more reasonable than the alternatives. Thus we will use the COMTRADE partner data when there are questions or missing information.

The numbers are quite different for SSA, especially self reporting and the partner COMTRADE data. In 1992 and 1993 FAO reports exports of \$65 and \$67 million, Partner data shows \$108 and \$110 million, and their own reporting is only \$4 and \$1 million. African countries have consistently underreported their cashew exports. FAO numbers are close to the own reporting COMTRADE series, and many times are between partner and own reporting series. It is very hard to reconcile these numbers.

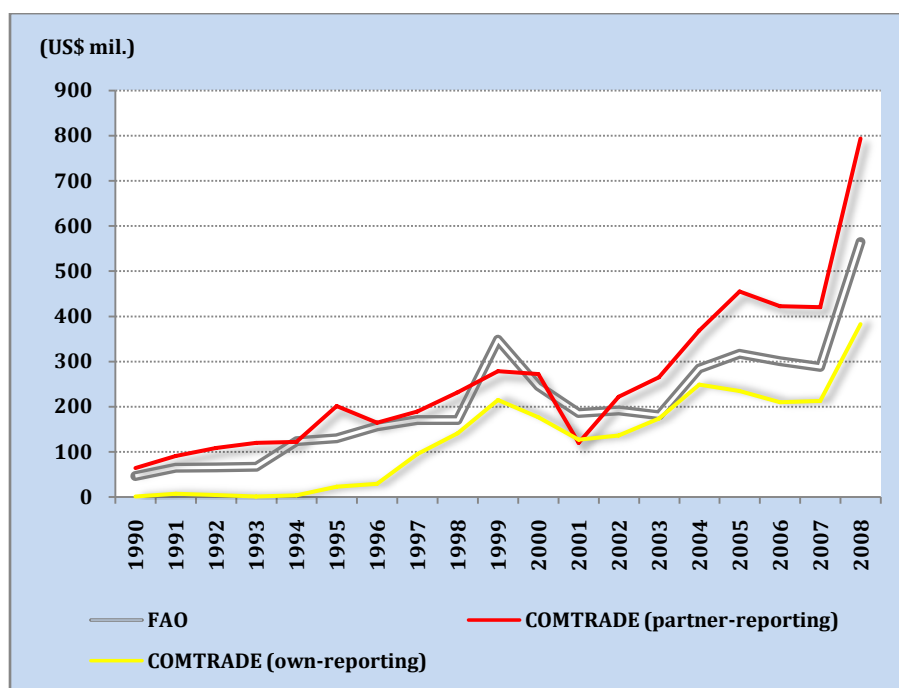


Figure A2.2: Total Sub-Saharan Africa Cashew Exports

Big differences in the value of exports exist for individual SSA countries as well. In almost all cases, partner reports show much higher level of exports. However, since the FAO and COMTRADE partner data are very similar at the global level, it makes sense to accept the COMTRADE numbers. Also, the turning points are similar in all three series, but the absolute export numbers vary by almost \$100 million. For the SSA, we separated the data for Mozambique and Tanzania, our case study countries, and the rest of SSA. Tanzanian data does not show the same magnitude of differences among different data sources. Also they have similar

turning points, suggesting that the FAO data and the country reporting might not be that way off as the case in Mozambique and other African countries.

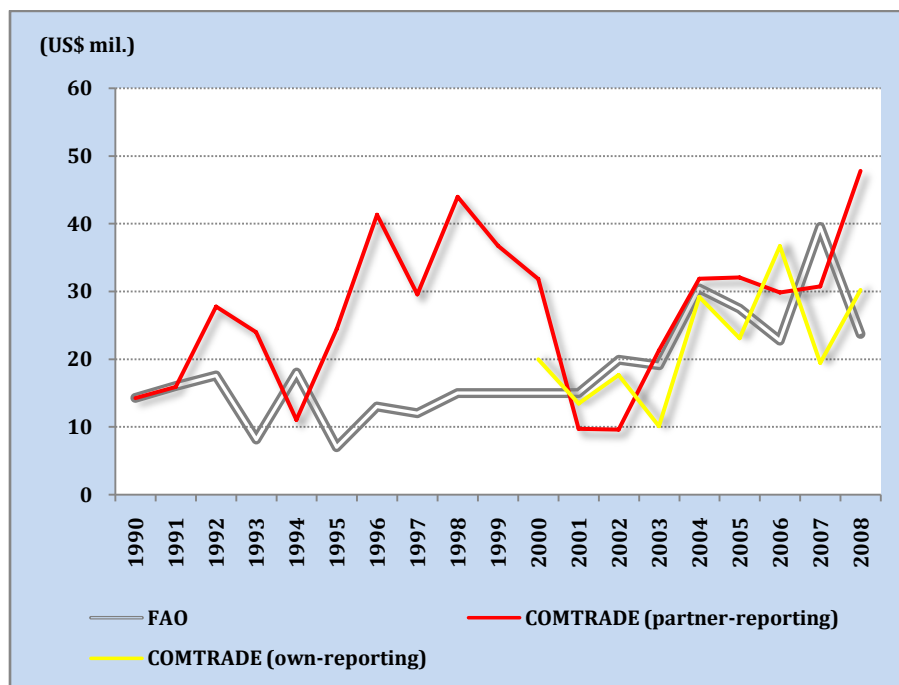


Figure A2.3: Mozambique Cashew Exports

FAO data shows almost no increase in the value of exports especially around the time of the reforms in early 1990s. The partner data on the other hand show almost doubling of the export values during this period. FAO data, which is used by almost all the researchers, have the same production volumes (58 thousand tons) for 7 years (1999 to 2005) when the raw cashew export prices fluctuated by more than 100 percent down and up. This is very unlikely. Actually data from other sources such as Agricultural Development Strategy report prepared by WB in 2005 show that the production during 2000 to 2002 were 46, 47 and 44 thousand tons respectively. 2000 is a year of floods as well but we do not know what their impact on the cashew production was.

Similarly, export prices for processed cashews reported by FAO do not change for 4 years (1999 to 2002) while processed export prices in India decline by almost 50 percent. Thus, the data supplied by Mozambique and then used by FAO should not be taken at its face value. INCAJU also supplies export and production data which is also different from all other numbers but have the same problems outlined above.

Table A2.1: Existing Mozambique Cashew Production and Export Series

	Exports (Raw and Processed Cashew, US\$ mil.)				Production (‘000 mt)	Export Volume (‘000 mt)	
	FAO	COMTRADE (partner-reporting)	COMTRADE (own-reporting)	INCAJU	FAO	FAO (Raw)	FAO (Processed)
1990	14.3	14.2			22.5		4.3
1991	16.0	15.9			31.1		3.8
1992	17.6	27.8			54.2		5.5
1993	8.2	24.0			23.9		2.3
1994	18.0	11.1			23.0		5.0
1995	7.0	24.4			33.4		2.0
1996	13.0	41.3			66.5		3.6
1997	12.0	29.6		29.8	43.3		4.1
1998	15.0	44.0		35.4	51.7		4.7
1999	15.0	36.7		33.8	58.7		4.7
2000	15.0	31.9	20.0	30.5	57.9		4.7
2001	15.0	9.7	13.5	24.1	58.0		4.7
2002	19.9	9.6	17.7	11.8	50.2	38.4	0.6
2003	19.1	21.3	10.1	15.2	63.8	32.7	0.2
2004	30.4	31.9	29.2	10.0	43.0	39.7	0.5
2005	27.4	32.1	23.1	44.8	104.3	33.5	0.9
2006	22.7	29.9	36.7	19.9	62.8	24.0	2.2
2007	39.5	30.7	19.5	24.2	74.4	32.7	3.2
2008	23.7	47.8	30.2	35.1	85.0	10.5	3.3

We find the partner data from COMTRADE to be the most reasonable for export values and prices. For domestic producer prices, we use the data from INCAJU which is identical to FAO and Anderson data for most of the earlier years.

COMTRADE partner data is used to generate the export volumes. Thus we estimate the raw cashew equivalent of total exports. For the exports of raw cashew we use the import figures from India, where all the raw cashew exports go. We also use unit import values from the COMTRADE database. By deflating the import values with unit values, we obtain the export volumes for raw cashews. For processed cashew exports, we use the import values from all countries except India. Then we use the unit value of these imports to arrive at the cashew kernel exports. Then we divide this number by 0.22 to obtain the raw cashew equivalent of the processed cashew exports. The following table A.2.2 shows all series used to estimate the exports. These are the numbers used for production in the text.

Table A2.2: Constructed Mozambique Cashew Export Series

Raw Cashew Exports			Processed Cashew Exports				Total Cashew Exports		
<i>Value (US\$ mil.)</i>	<i>Unit Value (US\$/kg)</i>	<i>Volume (‘000 mt)</i>	<i>Value (US\$ mil.)</i>	<i>Unit Value (US\$/kg)</i>	<i>Volume (‘000 mt)</i>	<i>Volume (raw cashew equivalent @5.2, ‘000 mt)</i>	<i>Total Value (US\$ mil.)</i>	<i>Total Volume (raw cashew equivalent @5.2, ‘000 mt)</i>	
1990	0	0.92	14.2	3.5	4.0	18.4	14.2	18.4	
1991	1.6	1.16	14.3	4.3	3.3	15.1	15.9	16.4	
1992	13.3	0.95	14.5	3.6	4.1	18.5	27.8	32.5	
1993	14.3	0.77	9.7	3.2	3.1	13.9	24.0	32.6	
1994	6.2	0.90	4.9	2.8	1.8	8.0	11.1	14.9	
1995	17.6	0.88	6.8	4.4	1.6	7.0	24.4	27.2	
1996	24.6	0.87	16.8	4.2	4.0	18.3	41.3	46.4	
1997	13.1	0.78	16.4	3.7	4.5	20.4	29.6	37.3	
1998	24.8	0.88	19.2	4.0	4.8	21.9	44.0	50.1	
1999	25.0	1.04	11.8	4.6	2.6	11.7	36.7	35.7	
2000	17.4	0.93	14.5	4.6	3.2	14.4	31.9	33.1	
2001	8.0	0.57	1.8	3.0	0.6	2.7	9.7	16.7	
2002	8.3	0.55	1.3	2.6	0.5	2.2	9.6	17.3	
2003	20.6	0.64	0.7	3.2	0.2	1.0	21.3	33.4	
2004	29.8	0.70	2.1	4.1	0.5	2.4	31.9	44.9	
2005	27.7	0.86	4.4	4.7	0.9	4.2	32.1	36.4	
2006	20.1	0.74	9.7	4.4	2.2	10.0	29.9	37.3	
2007	15.9	0.71	14.9	4.2	3.6	16.3	30.7	38.5	
2008	31.7	0.91	16.1	4.8	3.3	15.2	47.8	49.9	

The price series used in this study are shown in the following figure. In figure A2.4 the US dollar international prices, these prices converted to local currency, and the real producer prices are shown. They are indexed to be equal in 2002. Raw cashew prices in US dollars gradually increase during the late 1990s with a peak around 1999. Then there is a big decline during 2001 and 2003(fig A2.4). After that decline raw cashew export prices in US dollars start to increase and surpass their pre collapse levels in 2008.

The difference between cashew prices in US dollars and in real local currency is the behavior of the real exchange rate. In the early 1990s, there is some increase in LCU cashew prices due to the depreciation of the currency. The appreciation after 2003 does not allow the large increase in international prices to be passed on to the local producers. Despite the appreciation we do see some increase in producer prices but nowhere close to the international price increases.

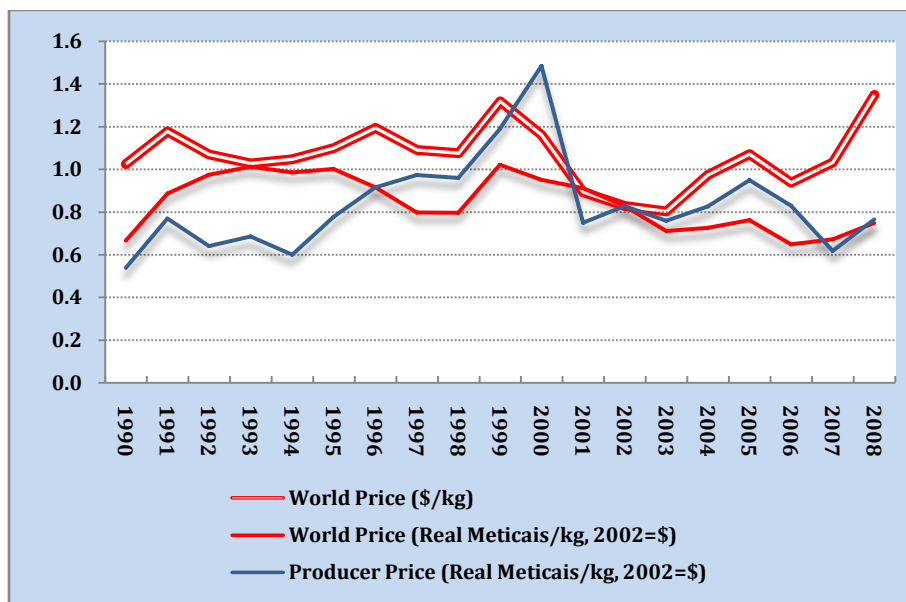


Figure A2.4: Cashew Producer Prices in Mozambique and World Prices for Raw Cashew

The data for the prices used in the main section and this Annex is presented in the next table.

Table 2: Mozambique Cashew Production and Prices²⁷

Period	Production (<i>'000 tons</i>)	Producer Price (<i>US\$/kg</i>)	Export Price		World Price (<i>US\$/kg</i>)	CPI (<i>2005=100</i>)	Exchange Rate (<i>Meticais/US\$</i>)
			Raw (<i>US\$/kg</i>)	Processed (<i>US\$/kg</i>)			
1990	18.40	0.22	0.92	3.52	1.02	4.41	0.93
1991	16.43	0.27	1.16	4.33	1.18	5.86	1.43
1992	32.53	0.18	0.95	3.57	1.07	8.53	2.52
1993	32.56	0.18	0.77	3.16	1.03	12.13	3.87
1994	14.86	0.17	0.90	2.79	1.05	19.79	6.04
1995	27.16	0.22	0.88	4.40	1.10	30.56	9.02
1996	46.36	0.31	0.87	4.17	1.19	45.39	11.29
1997	37.32	0.35	0.78	3.66	1.09	48.73	11.54
1998	50.07	0.34	0.88	3.98	1.08	49.45	11.87
1999	35.75	0.40	1.04	4.55	1.32	50.87	12.78
2000	33.12	0.47	0.93	4.57	1.16	57.34	15.23
2001	16.70	0.19	0.57	2.96	0.89	62.53	20.70
2002	17.30	0.22	0.55	2.59	0.83	73.02	23.68
2003	33.44	0.22	0.64	3.19	0.80	82.82	23.78
2004	44.86	0.29	0.70	4.12	0.97	93.31	22.58
2005	36.39	0.35	0.86	4.75	1.07	100.00	23.06
2006	37.27	0.31	0.74	4.45	0.94	113.24	25.40
2007	38.54	0.25	0.71	4.16	1.03	122.48	25.84
2008	49.94	0.36	0.91	4.82	1.35	135.13	24.30

²⁷ World cashew prices are from GEM (2011). Nominal exchange rates and CPI are from WDI (2011). Producer prices are from Anderson and Valenzuela (2008) and updated from local sources. Export prices are unit export values calculated from UN Comtrade (2011) partner-reported data. Raw cashew export prices are calculated from Mozambique's cashew exports to India and processed cashew export prices are calculated from Mozambique's cashew exports to the rest of the world. Production reflects marketed output and calculated based on export volumes from UN Comtrade (2011).

ANNEX III

The Timeline

	Civil war and After 1977 - 1994	First phase of reforms 1995 - 2000	Price collapse 2001 - 02	More recent phase 2003 - 2008
Policy initiatives				
Policy actions	Export ban on raw cashew (1978) Nationalization of processing companies	Switch from export ban to export tax to Privatization of processing companies		TA by donors for restructuring the processing industry Support to producers by INCAJU, farmers associations Encouragement of vertical integration by processors
Exchange rate		Allowing moderate appreciation	Allowing depreciation	Allowing large appreciation
Exogenous factors				
Raw cashew export price (\$)		Stable with 20% increase in 1999/2000	40% decline, significantly below the 1993-2000 level	Gradual increase, reaching 1993-1998 level in 2007. Continued increase since then
Incentive indicators				
Real producer price (local currency)		Significant increase until 2000 (more than doubling) due to lifting of the export ban	Moderate fall, depreciation of currency moderating the sharp fall in \$ price	Stable - \$ price increase was not translated into producer price because of large appreciation
Impact on the sector				
Structure of the sector		Some old capital intensive processing companies closed because they could not compete in international markets	Exit of old processing companies continued	New smaller and more labor intensive processors emerge. Some processors start their own raw cashew production.
Exports (raw cashew equivalent -- as a proxy for production)	Average exports for 1990-94 period was 23,000 tons.	Average exports increased to 39,000 tons, 50,000 tons in 1999. .	Average exports: 17,000 tons.	Average exports: 40,000 tons (50,000 in 2008).

ANNEX IV

Monopoly Power of Indian Processors?

A key issue has been the fear over the quasi monopsonistic power of Indian processors if the cashew processing industry collapses in Mozambique. Vietnam has now entered this market as a major processor and importer eliminating the monopsony of India. Similarly, India has become more dependent on imported cashew to both meet its domestic market and maintain its export markets. Box 1 fig.1 shows that the raw cashew prices closely follow the India kernel export prices, which we can take as the international prices for processed cashews. This suggests that what the Indian importers pay for raw cashew is closely determined by the world prices of processed kernels. Thus, a competitive world market assumption is a reasonable one to make.

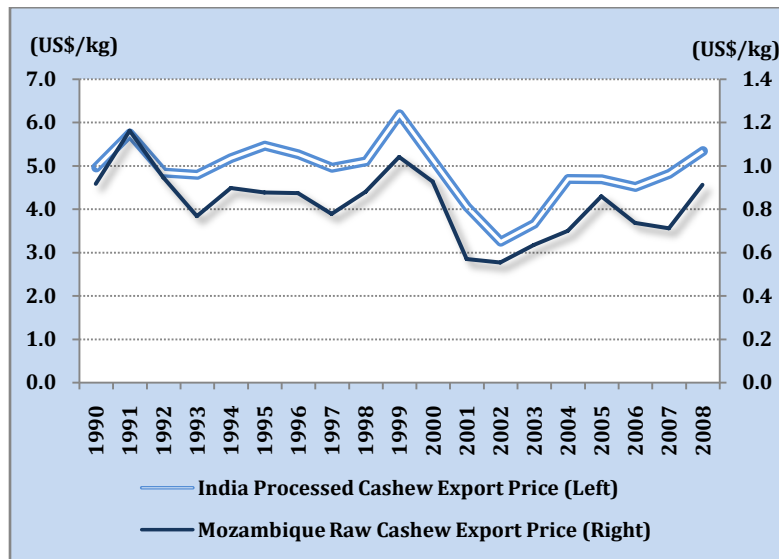


Figure A4.1: Mozambique Raw Cashew Export Prices

ANNEX V

Cashew Processing Technology

Cashew processing involves various steps to recover the edible kernel and the liquid in the nut called CNSL. The process begins with the separation of raw nuts by size and their moisture content. Then the nuts are heated through various methods to make the nuts brittle and thus easier to break open. Next is the shelling stage where the shells are broken either through impact or cutting it open; (decorticated). The kernel is covered with a thin skin which is removed either by hand or pneumatic peeling. Thus cashew processing varies from very primitive systems using basically hands, to very complicated ones using highly capital intensive techniques. Furthermore, there are more than 20 grades of cashew kernels and grading is also a labor and skill intensive process (Abt Associates, 1999).

With the expansion of cashew production during the colonial period, small, manual processing systems were replaced by large, mechanized factories. By 1993, 97 percent of Mozambique's installed processing capacity was either impact or Oltremare technology. Impact decortications system operated efficiently with smaller quantities of raw nuts but where they had to be of a consistent size in order to minimize kernel breakage. The automated cutter, known as the Oltremare system was a fully automated system and was well-suited for processing large, high quality cashews as the method to break open the raw cashews to obtain the edible kernel (Deloitte and Touche, 1997).

Value added by processing cashews depend on the ratio of non scorched (white) and broken kernels. Large, white, and full kernels are the most expensive ones. The price drops dramatically when the kernels are broken or scorched (reaching as high as 50 percent per unit). Original estimates by the World Bank argued that most of the capital intensive factories in the early 1990s had negative value added because of the high ratio of scorched and broken kernels (Hilmarsson 1995).

Table A5.1: Percentage of Raw Cashew Scorched and Broken

Cluster	Scorched	Broken
Steam/Semi Mechanical Cutting	13.6	38.5
Roasting/Mechanical shelling	35.0	51.7
Roasting/Impact Shelling	68.6	52.2

Source: Abt associates 1999, p.3.16

Abt Associates (1999) confirmed the differences in breaking and scorching among different types of technologies (Table A5.1). Steam heating and semi mechanical cutting seem to yield much higher full and white kernels. Full manual systems used yield even lower broken kernels. Abt Associates concluded that the 15 factories that existed in 1999 could be grouped into four categories or clusters.

- 4 former state owned plants that use impact shelling technology.
- 3 traditionally private companies that use cutting technology.
- 4 new private plants that use Semi- Mechanical technology.
- 4 factories with mixed ownership history and processing technology.

Except for the few plants using the manual processing, both the existing and the new plants used the inefficient capital intensive techniques.

ANNEX VI

Real Cashew Prices

When the real cashew price is estimated using the consumer price index, real prices do increase rapidly after the reforms, reaching a peak in 2000. Surveys undertaken by the World Bank during the late 1990s, argued that when evaluated at the prices of basic inputs and substitutes used by the farmers, these prices turn out to be very low, especially when compared to their competitors in countries where the production is increasing more rapidly. But even though they have increased in during the late 1990s, the producer prices were still too low to make it worthwhile for farmers to sell their raw nuts. Selling a kilogram of raw nuts in Nampula, Inhambane, or Gaza, would not permit a farmer to purchase a kilogram of white maize flour, rice, peanuts, sugar, or oil, all of which are part of the basic rural consumption basket. In Mozambique, selling 1 kg of cashew raw nuts allows farmers to purchase less than 1 kg of the staple food, white maize flour. In Vietnam, relative prices are such that 1 kg of raw nuts allows farmers to purchase more than 2 kgs of the staple food, rice. The Indian farmer has an even more favorable opportunity set, since he/she earns close to \$1.00 per kg of raw nuts, and this is equivalent to 3 or more kg of rice. The most striking difference is to be observed in the quantity of salt – a basic non-farm food – that can be purchased by selling one kg of raw nuts. In Vietnam, one kg of raw nuts is equivalent to almost 7.6 kilograms of salt, but in Mozambique, households in Nampula can purchase no more than 1760 grams, and those in Inhambane and Gaza would be able to purchase only about 1 kg of salt (WB 2001).

Thus, not only the prices of cashew vis-à-vis the general consumer price but the prices of the substitutes become very important. Most important substitute is the groundnuts. Groundnuts are a staple in the Mozambican diet, but are substituted with cashew kernels for reasons of taste preference and price differences. Peanut prices in Inhambane and Gaza were, on average, 2 to 3 times those in Nampula. Cashew raw nut prices are also higher in Inhambane and Gaza, but by only about 20 percent. Thus it makes economic sense for farmers to retain their raw nuts, instead of selling them to purchase peanuts. This point was made to us by most of the villagers around Xai-Xai during field visits in 1996. They said that historically, the peanut prices were very low because they were imported from outside the regions, and it made sense to buy peanuts and sell cashews. But since the end of the war, prices had increased for peanuts and it became more economical to just eat the cashews.

On the other hand, we have prices of maize, peanuts, and cashews obtained from FAO. The evolution of cashew, maize and peanut prices shows that peanut and maize prices move in the same direction as overall CPI and real cashew prices deflated by CPI and separately deflated by groundnuts and maize yield very similar results.

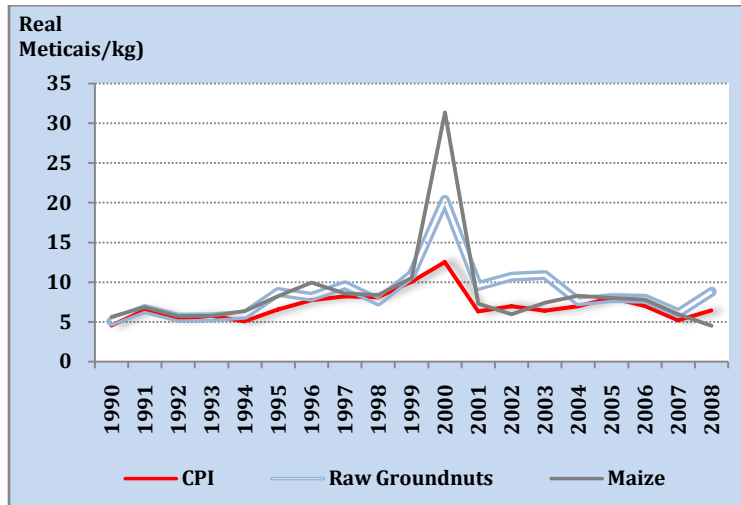


Figure A6.1: Real Cashew Producer Prices in Mozambique with Various Deflators