

Economic Viability of Brazil Nut Trading in Peru

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Report 2520

Spring 2000

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Final Draft



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Glossary

ATO	Alternative Trade Organisation
CI	Conservation International. A US based conservation organisation.
CIF	Cost Insurance and Freight. The point at which a commodity has arrived in the port of destination.
DFID	UK Government Department for International Development
FOB	Free on Board. The point at which a commodity has been loaded on to a ship at the port of origin.
IFAT	International Federation of Alternative Traders

Introduction

DFID's Forestry Research Programme is funding a three-year project to research the role that ethical trade can play in improving the lives of forest dependent people in developing countries. The project asks fundamental questions about whether such trade can deliver appropriate benefits, how effectively current ethical initiatives operate, and what practical steps can be taken to improve performance.

The research summarised in this report forms one of three comparative studies that will address the questions of how current ethical trade practitioners operate in the forest products context and whether the trade brings incremental benefits to forest dependent people. It examines ethical trade of brazil nuts in the context of Candela, an alternative trade organisation operating in Peru. Evidence was gathered on the type of financial improvements that Candela brings to brazil nut collectors, the size of these benefits, and how the organisation manages to deliver them. The research also analyses the international part of the ethical brazil nut trading chain and draws conclusions on the appropriateness of the commodity for ethical trade. The basis for the study is a comparison with the conventional brazil nut trade.

A separate study conducted by a social development expert examines the impact that ethical trading has had on the brazil nut collectors in Peru.

Part 1. Ethical and Conventional International Trade in Brazil Nuts

1.1 Overview of the Edible Nut Trade

The edible nut trade comprises a group of primarily tree crops, grown in both tropical and temperate climatic regions. Hazelnuts, groundnuts (peanuts), almonds, and cashew nuts dominate the trade, with other varieties, such as coconut (desiccated), walnuts, macadamia nuts and pecan nuts, also of significance.

All these products are to a large extent substitutable in their end uses, and can be consumed directly as “cocktail” nuts or in mixed ingredient snacks, or as food ingredients in the confectionery and bakery trade.

Most edible nuts of inferior quality can be crushed to produce oil and oil cake/oilmeal or used directly for non-human consumption as birdfeed.

The major products entering world trade are as follows:

Table 1. Edible nuts – major castaneros/volume (shelled)

Edible Nuts	Major Castaneros	Volume (metric tonnes)	Percentage Share
Hazelnuts	Turkey and Italy	136,000	11 %
Peanuts	USA, India, Argentina	731,000	9%
Almonds	USA and Spain	123,000	10 %
Cashews	India and Brazil	59,000	5 %
Walnuts	USA and China	61,000	5 %
Coconut	Philippines and Sri Lanka	106,000	9 %
Brazil nuts	Brazil, Bolivia and Peru	20,000	2 %

Source: Dominguez, 1994 and Man Producten, Rotterdam 1999.

These figures illustrate that brazil nuts, at around 1.62 % of total volume, are a relatively minor constituent of the world edible nut trade.

International edible nut prices are primarily influenced by supply and demand factors and there is an absence of commodity exchanges, auctions and futures markets to act as price determinant points. The trade is purely in the physical commodities without futures exchanges. The potential for high prices tends to be limited due to the substitutability of alternative edible nuts in their end products.

1.2 Brazil Nut Production and Export

The latest estimated production of the major *castaneros*, unshelled in metric tonnes, is as follows:

Brazil	—	7,800 mt
Bolivia	—	10,000 mt
Peru	—	2,200 mt
Total	—	20,000 mt

The bulk of production is exported, with less than approximately 3 % used for domestic consumption.

Accurate production figures are notoriously difficult to obtain and the trade relies on import statistics for both in-shell and kernels to give an indication of production trends. Trade calculations are usually based on 35% maximum yield of kernels to in-shell nuts.

1.3 Uses of Brazil Nuts

Brazil nuts are mainly traded as kernels (i.e. shelled) and used primarily as a food ingredient in the confectionery business (particularly in chocolate bars) in the bakery trade (cakes and biscuits), and in health foods. They are also used in snacks such as packs of dried fruit and nuts, and mixed nuts. The “midget” grade shelled kernel is found especially useful as a confectionery ingredient. There is also a traditional seasonal market for in-shell Brazil nuts during the Christmas and Thanksgiving periods in the UK and the USA.

Brazil nut oil is used locally as a cooking oil, for lubrication and for lighting lamps. Efforts are also being made to promote the oil in the export market as an exotic ingredient in food and cosmetic products.

1.4 Consumption

The main areas of consumption are Europe and North America.

Table 2. Brazil nut imports, whether shelled or not, fresh or dried.

1997	Brazil	Bolivia	Peru	Chile & Others	Total
UK	2045 mt	3110 mt	181 mt	399 mt	5,695 mt
Netherlands	356 mt	280 mt	134 mt	1,584 mt	2,354 mt
USA	6466 mt	1965 mt	593 mt	581 mt	9,605 mt
Canada	493 mt	307 mt	Nil	473 mt	1,273 mt

Source: USDA

1.5 Prices

As with edible nuts in general, the international price of Brazil nuts is determined by basic supply and demand and does not come under the influence of commodity auctions, exchanges or futures markets. There is no hedging mechanism available to suppliers and importers. The trade is therefore exclusively in the physical commodity at flat prices (and not in differential prices that reflect the value attached to nuts from different origins). Consequently, any imbalance in supply and demand tends to have an immediate impact on prices. However, there is no excessive speculative element that causes large and unjustified price swings.

As with many commodities, yearly price trends tend to be cyclical. Low international prices eventually result in collectors abandoning the harvest and precipitating a shortage in supply, thereby creating higher prices and an incentive to re-enter the trade.

While the production of Brazil nuts is normally adequate to meet demand, supply is inelastic due to the length of time (up to 30 years) that it takes for the trees to mature. Most other types of comparable tree nuts mature in 5 to 10 years.

Shipping usually occurs during the rainy season, because much internal transport is by navigable river only. However, supply is often affected by climatic conditions, particularly heavy rains, which slow the rate of the harvest and increase the percentage of post harvest losses and poor quality nuts due to mould. Heavy rains during the harvest season also put pressure on infrastructure, particularly, the condition of roads leading from the harvesting locations in the forest to the processing plants, secondary stores and shipment ports. A longer-term influence on the supply situation is the destruction of the rain forest through logging and clearing for agricultural development.

Demand and price movements tend to be seasonal, with unshelled demand particularly high during the Christmas season. However, demand is elastic because Brazil nuts can easily be substituted, particularly in snacks, by comparable nuts such as almonds and hazelnuts. Brazil nuts are often considered the poor relations within the edible nut trade.

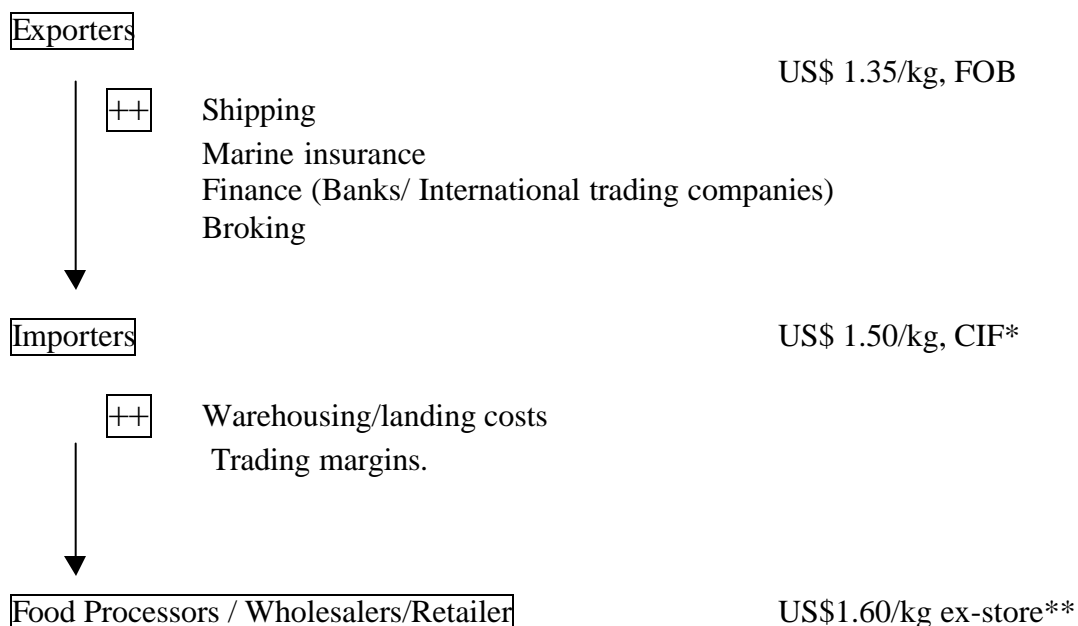
There is also a discount in the market of approximately 0.4 US cents/lb for Peruvian Brazil nuts compared with nuts of Brazilian and Bolivian origin, which are perceived as being of superior quality with a more consistent availability and shipment performance record. The trade currently views Peru as an origin of last resort.

The outlook for Brazil nut prices in general is favourable because output in the leading *castanero* country, Brazil, is declining due to high costs of extraction and the destruction of the rain forest. While Bolivia is increasingly filling the role of leading *castanero*, rapid expansion is constrained by lack of credit and difficulties meeting the strict quality requirements of the major importing countries, particularly those within the EU.

Another positive factor for future prices is Brazil nut's image, together with other edible nuts, as a natural, healthy, protein rich food increasingly favoured by consumers.

1.6 Stakeholders in the International Marketing Chain

The international brazil nut marketing chain is represented by the following diagram (++ indicates where value is added). The capital letters, e.g. FOB (Free on Board: The point at which the commodity has been loaded onto the ship at the port of origin), indicate key pricing points, with recent indicative market prices, as value is added along the marketing chain:



* CIF: Cost Insurance and Freight refers to the point at which the commodity has arrived in the destination port

** Ex-store refers to the point at which the commodity arrives in the buyer's or trader's warehouse.

According to trade sources, about 15 % of the price (US\$ 0.25/kg in the above example) is added to value between FOB and ex dock (when the commodity has been unloaded at the destination port). This figure represents freight, insurance, interest, weight losses, terminal handling charges, customs, import duties (if any), and warehouse costs, brokers' commission and trading profits. It is considered that traders would not operate for less than a net profit margin of 3 % of the ex dock price. It should also be noted that most large traders tend to be resellers in the market operating from "long" positions (they hold inventory) and not necessarily trading on a "back to back" basis (where all trading operations are concluded simultaneously).

1.7 The Brazil Nut Ethical Trade Experience

The following case study of TWIN trading's involvement in marketing Peruvian Brazil nuts highlights the constraints of trading edible nuts at the international level using the principles of fairtrade.

TWIN Trading identified the potential for fairtrade initiatives in Peruvian Brazil nuts in the late 1980's and started working with the Peruvian NGO, Candela, in 1988/89. Candela operates processing plants in Puerto Maldonado and buys Brazil nuts from collectors in the Madre de Dios region. TWIN's usual practice is to provide rural credit, practical support and advice (particularly on handling and quality control) to growers/collectors at the start of the marketing chain. However, in this instance the support function was performed by Candela. TWIN's role was limited to buying the processed and packed nuts FOB Puerto Callao, arranging shipment to Europe and selling into the market. They had about 10 clients covering "Fair Trade" buyers such as OXFAM and Traidcraft, health food shops, and mainstream food ingredient users.

TWIN Trading decided to withdraw from this enterprise at the beginning of 1999 for the following reasons:

- The operation did not satisfy TWIN's primary strategic aim of working with poor and marginalised peoples at the start of the marketing chain.
- Candela, in TWIN's opinion, was unable to provide the collectors with the support that they needed and consequently quality was poor and volumes disappointing.
- The lack of volume and poor quality put TWIN at a disadvantage compared with European traders selling into the mainstream food ingredient market, where higher volumes are required. Additionally, TWIN's inability to source from alternative origins and the substitutability of Brazil nuts put TWIN at a disadvantage to the large trading companies in the market place.
- The "Fair Trade" and health food shop markets were too small to justify the operation.

To solve these problems would have involved a major fund raising effort and TWIN decided that this project was not a priority within their current overall strategic objectives.

TWIN's trading experience indicated that very few innovations can be made to differentiate ethical from conventional trading methods at the international level. The scope for shortening the marketing chain from FOB onwards is limited to the possible elimination of some brokers and dealers operating on a CIF/ex-store basis. When considering the margins taken by brokers and traders it should be noted that their presence in the market is often welcomed by end users as they usually offer a range of competing origins and substitutable edible nuts and provide the market with a degree of liquidity (credit). Another factor in the cost equation is the cheaper freight rates that larger dealers buying FOB can realise through economies of scale, thereby enhancing their competitive position and profit margins.

Part 2. The Peruvian Ethical and Conventional Export Trading Chain

2.1 The Peruvian Economy

By Latin American standards, Peru is a middle income country. Evidence of this is provided in Table 3, which gives 1998 GNP per capita for Peru and its immediate neighbours.

Table 3. GNP Ratios

	1998 GNP per Capita in US\$	National debt as % of GNP
Peru	2,460	53%
Bolivia	1,000	68%
Brazil	4,570	28%
Chile	4,810	45%
Ecuador	1,530	87%

Source: World Bank

However, Peru's wealth is so poorly distributed that approximately 50% of the population live in poverty (DFID Country Strategy Paper). The situation is even worse in the rural sierra region, where two thirds of the households are deemed poor.

Peru's level of indebtedness is not particularly large by regional standards. The third column of Table 3 gives national debt as a percentage of GNP for Peru and its neighbours. The ratio gives an indication of ability to service loans. Clearly Bolivia's and Ecuador's debt burdens are much greater than Peru's.

Peru's rate of inflation in 1998 was 7% while the nominal rate of interest was 15%. The real rate of interest (nominal interest rate minus the rate of inflation - a reflection of the actual cost of borrowing) at 8% is not unusually high in the region, and, given that exchange rates have been stable over recent years, the export business environment is reasonably favourable.

2.2 The Brazil Nut Industry in Madre de Dios

The province of Madre de Dios lies in the south-east corner of Peru. It is dominated by tropical rainforest and broad silt laden rivers, both of which provide key exploitable resources for the local people. Road communications with the rest of the country are difficult and often non-existent during the rainy season. The only reliable means of inter-province transport is by air.

A recent study¹ calculated that approximately 27,000 people (38% of the population) in Madre de Dios depend directly or indirectly on the brazil nut trade. This figure includes:

¹ ÁGREDA, Víctor. Investigación Socioeconómica de la Actividad Castañera en Madre de Dios. Candela Perú y Proyecto Conservando Castaños, June 1999.

- Some 1,000 *castaneros* and their families. A *castanero* is a person who holds a concession from the Peruvian government to extract brazil nuts from a fixed area of forest.
- *Barrigueros*: men contracted by the *castanero* to collect and split the brazil nut “coconuts”, and to transport the 80kg sacks of nuts from the forest to the shipping point (on the river or main road).
- Hauliers, who transport the brazil nuts, by river or road, from the zones where the nuts are produced to the main towns of Madre de Dios. For concessions with river access, this is principally to the provincial capital, Puerto Maldonado, and for those with road access, to Planchón, Alegría, Mavila or Alerta.
- Workers and administrative staff within the companies.
- “Shellers”: women contracted by the *castaneros* or trading companies to shell the brazil nuts.
- Traders of all types, from the *habilitadores* (individuals who lend money to the *castaneros* to enable them to finance their work in the forest, in exchange for the promise of their future brazil nut supply) to *acopiadores* (collectors, individuals who work independently or under contract to the companies to buy up brazil nuts from the forest region); *rescatistas* (“debt collectors”, individuals who collect brazil nuts which have already been promised through earlier loans); and even shop keepers (in grocery stores, who provide goods on credit, again in return for brazil nuts).

The brazil nut trade drives a large part of the economic life of the region. This is not only because it injects cash into the local economy, but also because, unlike the other predominantly commercial activities (such as timber and gold), brazil nuts are one of the few resources that remain under the control of poor people (who are, in general, farmers and small scale poultry keepers).

Analysis of *castaneros*' incomes suggests that trading brazil nuts (which constitute a seasonal activity, completed in just three months) generate on average 67% of their gross annual income. In absolute terms, this is equivalent to US\$ 6,410 annually per *castanero*, or an average of US\$ 534 per month. Considering that the average family size is 6 people, this signifies a monthly per capita income of US\$ 89. This is less than the minimum living income², which, for the country as a whole, is on average US\$ 200 a month.

Brazil nuts have become the principal factor that prevents the poorer members of the population of this isolated province from becoming even more impoverished. The trade is also the principal factor that restricts the advance of deforestation into the virgin forests of the Amazon. Once forest land has been logged, poor soils prevent large scale agriculture and livestock ranching, leaving subsistence agriculture as the only viable activity.

There are 14 companies who buy brazil nuts in Madre de Dios (company names appear in Appendix 1). The rate at which companies enter and exit the industry is high. For example, this year E & F Traders (a subsidiary of Backus & Johnston, the first *castanero* of bottled beer in Peru) is restricted to recovering outstanding debts,

² Or the basic food basket, which refers to minimum protein and calorie requirements valued at market prices.

while Premium Trading has left the market altogether. In their place, two new companies have appeared: Cereales and El Muelle (created by two ex-employees of the company La Selva³).

This high turnover is the result of two factors:

- lack of knowledge among new companies of the dynamics of the brazil nut industry
- lack of fixed assets on the part of some companies.

These factors are discussed below.

Lack of Knowledge of the Brazil Nut Trade

Many of the new companies, and even some of the more established companies who contract new personnel in the zone, are unaware of one of the fundamental elements of the trade: *Castaneros* generally suffer high levels of indebtedness.

This point requires a brief explanation of the problems associated with brazil nut collection in Madre de Dios. As in all forest zones of Peru the land and brazil nut trees belong to the Peruvian State⁴. The State authorises concessions for periods of between 2-10 years to private individuals in order that they work the brazil nut resource. In return, the State receives an annual levy that is proportional to the declared volume of brazil nuts obtained from the concession. This, in turn, is proportional to the size of the concession, which can vary from 500 to 2000 hectares⁵.

In general, the majority of *castaneros* are already burdened with a history of debt of which they cannot easily rid themselves. This is the consequence of the lack of alternative income generating activities. Many new companies do not understand this important feature of the industry. In order to acquire nuts in the quantities needed for export, such companies have to enter into the system of providing loans in exchange for the promise of future supply. The *castaneros*, under pressure from their immediate financial needs, take advantage of the appearance of these newcomers, and often make them suffer for their lack of experience. In all other aspects of the trade, companies are in a much stronger bargaining position than the *castaneros*.

The longer established companies already know who is good at repaying, and who are the debt defaulters. The new companies do not possess this important knowledge and enter into the trade with a significant handicap. There is virtually no company in Madre de Dios that does not have delinquent debtor portfolios dating, in some cases, from up to 5 years earlier. Continued business viability depends on managing these

³ This is a situation which has occurred previously on many occasions, and has given rise to the creation of companies such as Jaramillo and Bonilla, among others.

⁴ This differs from the situation in Bolivia, for example, where land is owned by individuals.

⁵ Recent studies have shown that the official size of the concessions does not always coincide with their actual size. For example, one concession of 500ha contained only 237ha of land which was actually exploited. To address this discrepancy, the Ministry of Agriculture commissioned a survey to calculate the actual areas of the brazil nut territories which were being exploited. Concession holders were charged a substantial amount of money for this activity, despite the fact that they are not the owners of the land which, as explained previously, remains the property of the State. This situation generated some controversy. Furthermore, the work was of insufficiently high quality to provide reliable results.

debts adequately. The companies need to balance the risk of increasing the capital tied up in outstanding loans, against their need to establish and increase their participation in the market.

Non-existence of Fixed Assets

The high proportion of companies leaving the market reflects the fact that the majority of companies have few fixed assets, often possessing only small rented premises with limited equipment, and conditions that are less than optimal for storing the nuts. The decision to withdraw from the trade in times of financial hardship, and dismiss their buyers (who, in reality, may be only one person), is therefore easy.

2.3 Candela Perú

Candela Perú is an alternative trade organisation (ATO) and active member of the International Federation of Alternative Traders (IFAT), whose activities are run on the concepts and values of fair trade. Our analysis focuses on this organisation and a comparison of its performance with other commercial and strictly private institutions involved in the brazil nut trade.

Candela Perú has established the following product lines:

- Brazil nuts
- Brazil nut oil
- Handmade candles
- Pecan nuts

Its activities are centred on the export of brazil nuts. However a significant proportion of the brazil nuts collected in Madre de Dios do not meet the requirements of external markets. To address this problem, Candela is producing brazil nut oil, manufactured from 3rd grade (split) brazil nuts. While these nuts do have an external market, their unit value is very low and therefore profits are small⁶. Further processing into brazil nut oil yields a much greater profit margin, though so far, the market has been small.

Whole nuts, which for reasons of poor appearance were not of export quality, used to be sold to wholesalers in Lima who introduced them into the national market for domestic consumption. The price paid by these traders was very low and Candela made an evaluation of the profitability of initiating direct marketing to the confectionery and cake industries in Lima. The evaluation was positive, but pointed to the need to incorporate other, complementary products such as grated coconut, raisins, cherries, apricots, candied fruits, sesame, aniseed, and fruits in syrup, which were also consumed by this segment of the market. In this market, Candela competes with most of the other export companies including La Selva (which mainly operates in the city of Arequipa, on the southern coast of the country), El Bosque, and Rovalex.

⁶ This is explained by the fact that the importers take advantage of the [poor] quality of the residual produce by paying a lower price.

Candela has also developed the manufacture and marketing of candles made from the natural casks ("coconuts") that contain the brazil nuts and which otherwise would be left to rot on the forest floor. While many local crafts people in Puerto Maldonado were manufacturing ashtrays, sugar bowls and other ornaments with these coconuts, production had never been large scale. Currently, Candela Perú purchases approximately 50,000 of these coconuts annually, thus generating an additional income for some *castaneros* (though the supply could still increase considerably). The candles are manufactured in Lima.

In the past, the organisation had a much wider range of handicrafts, and worked with groups of *castaneros* from cities in the interior of the country. However, three years ago the company directors decided to concentrate on brazil nuts and products derived from them.⁷

2.4 Candela's Performance Compared with its Local Competitors

This section examines the incremental financial and capacity-building benefits that Candela delivers to *castaneros*.

2.4.1 General Perception of Candela.

Very few *castaneros* in the region have heard of the concept of ethical trade, and even fewer feel that an organisation that shares and practices such principles exists in their locality. Despite the fact that many *castaneros* recognise Candela as a friendly organisation (something which was not easy to achieve on Candela's part), they do not associate the company's commitment and actions with ethical trade.

At present, opinions about Candela Perú are varied. The company has not managed to project an image of a true "partner organisation" to the majority of other players with which it interacts. It is, however, well established as a serious entity within the group of institutional players (principally other NGOs, state and government organisations and leaders of grass roots organisations).

It has yet to consolidate this image among the nucleus of private companies, or among the region's large group of *castaneros*.

2.4.2 Purchase Price

Despite the fact that Candela Perú has sold most of its output (at least until 1998) to ATOs of the North such as Global Organics, Sunshine Nuts and Oxfam Trading, their purchase price in the market has not differed significantly from that of the other private companies.

In 1999, Candela Perú increased the size of its operations, thereby entering the mainstream international market using the contacts obtained through the Amberwood Trading Co. Candela's export earnings were henceforth determined by the

⁷ Transferring the entire network of organised craft workers to another Peruvian alternative trade organisation: CIAP.

international price. At a local level, this has had the consequence that the price paid by Candela is significantly less than that paid by other companies operating in the region. This is demonstrated in Table 4.

Table 4. Prices per Kilo of Brazil Nuts in US\$ in 1998 and 1999

	September 1998		July 1999	
	Local Price	FOB Price	Local Price	FOB Price
Candela Perú	1.74	3.45	1.50	3.12
Other companies	1.70	3.15	1.65	3.12

Source: PROMPEX and Field Work

Author's interpretation.

As can be seen, when the price on the external market was significantly higher for Candela (9.52% higher), as occurred in 1998, this premium was not reflected in local prices (only 2.35% higher). When the price on the external market was similar for both Candela and its private companies competitors, the internal price paid by Candela was significantly below that of its competitors (9.09 % lower). This may reveal internal inefficiencies (excessive costs not incurred by its competitors), or perhaps higher profit margins. This issue is considered in more detail later in the report.

When the fieldwork for this research was conducted, Candela's new lower-than-market-value price regime had only been recently introduced. Consequently the effect that it has had on the organisation's ability to procure brazil nuts in the competitive local buying environment was not apparent.

2.4.3 Conditions of Credit

Credit is a crucial element within the trading system because almost all *castaneros* have to resort to some form of external credit in order to be able to initiate their harvest.

The principal sources of credit are:

1. CREDISMAD

This institution, which specialises in credit for small scale *castaneros* and is a local initiative with external funding, has the aim of creating an alternative source of credit for the *castaneros* (alternative to the conventional companies).

The characteristics of the credit are as follows:

- A monthly interest rate of 2.5 %
- Maximum period of repayment of 6 months
- Repayment of the principal is made in cash and not in kind (brazil nuts)
- Various types of loan guarantees (depending on the degree of trust established) including physical assets and concession contracts
- Daily arrears, proportional and cumulative according to the delay in repayment

2. Candela Perú

Credit terms are as follows:

- No interest is charged
- There is no fixed repayment period
- No cumulative daily arrears are charged
- Credit is in US dollars
- There is an agreement to pay in kind (brazil nuts) for the service of shelling
- The selling price is not fixed in advance, but is according to the market price at the moment of sale
- The contract for the concession is required as a guarantee

3. Processing Companies and Traders

The characteristics of their credit are as follows:

- They do not charge interest or arrears; neither do they have a fixed time limit for repayment (in kind)
- Credit is not tied to US dollars
- Repayment must be in unshelled brazil nuts
- In some cases the price to be paid for the nuts is fixed in advance, while in others it is not
- In some (but not all) cases, assets must be pledged as a guarantee

4. Export Companies (These companies vary from case 3 companies because they do not engage in shelling brazil nuts)

The characteristics of the credit offered are as follows:

- They do not charge credit or arrears; neither do they have a fixed time limit for repayment (in kind)
- Credit is not tied to the US dollar
- Repayment must be in shelled brazil nuts
- The price to be paid for the nuts is almost always fixed in advance
- In some (but not all) cases, assets must be pledged as a guarantee

Candela Perú offers credit with the most acceptable terms and conditions. This is tending to put pressure on the other companies to improve the conditions they offer, in order to compete.

The advantages offered by Candela stem from three critical points:

- Compared to CREDISMAD, the main advantage is that the debt does not increase daily if, for some unforeseen circumstance, the *castaneros* cannot cover the entire loan with income from the current season⁸.
- Compared to processing companies and traders, the principal advantage is that they do not require the loan to be repaid in unshelled brazil nuts. *Castaneros* can greatly increase their profits if they can sell shelled nuts (refer to appendix 2 for details)
- Finally, in comparison with the export companies, the principal advantage is that the price is not fixed in advance, but is based on the market price⁹ at the time of sale. In general, the other companies, in “agreeing” (“forcing” would be more exact) a fixed price with the *castaneros* at the time when money is lent, set this well below the prevailing market price in Madre de Dios (around 20% lower on average).

On the negative side, Candela is known for its inflexibility in recovering overdue debts. This has been the cause of frustration and anger on the part of some *castaneros* who found themselves in this situation.

2.4.4 Transparency of Transactions

Lack of transparency occurs in both directions: transparency on the part of the companies towards the *castaneros*, and transparency of the *castaneros* towards the companies. These problems are a reflection of the fragile web of relationships that exists within the brazil nut trade.

⁸ It is important to remember that, in general, the brazil nut *castaneros* have no other source of income for the rest of the year, at least, of comparable magnitude. Some 67% of their annual income is from brazil nuts. For this reason, if they do not repay the debt with brazil nuts from a given harvest, it is very difficult for them to repay until the following year.

⁹ Candela’s market price incorporates its own “company inefficiencies”, as described previously.

The most serious aspects of the transparency issue stem from the following points:

Transparency on the part of the companies and/or traders

- The costs charged to the *castanero* who enters into a working arrangement under the shelling service.
- Dishonesty (robbery) in the weight of the nuts
- The differences in yields obtained in the processing plants compared to those obtained in the family (domestic) shelling units

Transparency on the part of the castaneros

- The quality of the product
- The repayment of the loan

Enough has already been said concerning this last point. Transparency in quality refers to the fact that the *castaneros* are accustomed to negotiating the sale of shelled nuts (if a prior agreement has not been established) with the sack closed, without allowing the company to check whether or not the product is genuinely of first grade quality as stated. In many instances, it is not.

The most frequent problems of transparency are the fault of companies at the expense of the *castaneros*.

A major problem relates to the charges made to the *castaneros* and the charges taken on by the companies. The problem is much more frequent among companies that offer a shelling service, a group which includes Candela Perú. (For an account of why exporters originally began to offer shelling services, refer to appendix 2)

Under the shelling service, unshelled nuts entering the processing plant continue to be the property of the *castaneros*, and remain so during all the different phases of processing (transport, airing, storage, drying, wetting, shelling, and a second drying) until the point when the companies purchase the shelled nuts from the *castaneros*. For this reason, it is logical that all the costs incurred during the preparation and processing of the brazil nuts, up to the point of sale, should be charged to the *castaneros* (as the nuts are still his property).

INSERT PROCESS DIAGRAM

Problems arise when *castaneros* are charged for services that he does not consider legitimate. For instance, if a *castaneros* owns a boat and he pilots it himself, he rarely considers the costs of depreciation, let alone the fact that he should incorporate a payment for himself for his work as haulier. For him, it is a “saving” and he does not see why he should pay the company for transport services.

A second problem is that of determining which costs should be charged to the *castaneros* and which should not. Candela and La Selva who, up until 1998 were the only two companies offering this shelling service, had somewhat different methods of processing and therefore had different cost structures. For example, on receiving the product, La Selva immediately puts the nuts into the drying stage, thus eliminating

almost entirely the airing phase. In contrast, Candela dedicates more time to airing the product, and this in turn reduces the time required in the drying ovens. Its costs are thus higher in the first phase, but reduced in the second.

The companies Rovalex and Internacional de Comercio also now offer the shelling service, and have increased the diversity of methods used. Neither have drying ovens, but carry out the drying process in the sun using large platforms. Drying takes some 7 days (without rain) for a process which lasts only 20 hours using ovens, but their consumption of electricity is zero.

Every method carries distinct labour and capital costs in terms, and results in a variation in the charges made to the *castaneros*. The costs borne by the companies also vary.

The question is, with what logic are some costs charged to the *castaneros*, and others not? There is no clear answer to this. Competition between shelling service providers appears not to have reached the level where practices and charges are common across companies. Unfortunately, this lack of clarity does nothing to improve the fragile relations between the parties involved.

Castaneros will always wish costs to be reduced, but they are also capable of recognising that some costs have to be paid, as long as there is just cause, and as long as the company tries to keep them to a minimum through efficient practices.

There is a third problem relating to company transparency. Companies often fail to give accurate and complete information to the *castaneros* concerning how much it will cost him to use the company shelling service. There have been many complaints, principally against the company La Selva, because while initially stating that they would not charge, for example, for transport from the port to the processing plant, they later added this charge.

A worse criticism is that *castaneros* are not provided with a detailed breakdown of costs at the time of receiving the final payment of the total sum owed (after discounting any outstanding advances, and these unexplained costs).

In the case of Candela, when the company makes the final payment, it provides a detailed written breakdown of costs charged to the *castaneros*. In this aspect, it appears that there has been a significant attempt at improving transparency.

The principal and perhaps only objection that the *castaneros* had to Candela with respect to this point concerned the fact that they considered some costs to be excessive, and there were additional, new costs. For example, the cost of food for the hauliers was excessive, and the cost of loading and unloading did not previously exist because labourers were responsible for this task. In this respect, there is no evidence that Candela Perú¹⁰ is making the significant efforts to be cost efficient in order to provide greater benefits to the *castaneros*.

¹⁰ Candela Perú has as a priority objective the achievement of the greatest benefit possible for the *castanero* and, for this reason, should increase efficiency.

Castaneros often complain about “robbery of weight”. For a long time the companies, particularly the traders, have used weighing scales that have been tampered with, so that the brazil nuts purchased from the *castaneros* are underweighed. This was the most basic and crude form of the “lack of transparency” in their dealings.

In the case of Candela Perú, this problem does not occur because the company has electronic weighing equipment. This is a fact which is not sufficiently widely known, and is an important element within Candela’s efforts to improve the transparency of its relations with the *castaneros*.

Castaneros are almost unanimous in their belief that one sack of unshelled brazil nuts yields 20kg of first grade shelled nuts. However, using Candela’s processing method, supposedly with better equipment and employees experienced in shelling¹¹, in 1998 they obtained an average of only 16.50 kg of first grade nuts per sack. This represents 17.5% less than the *castaneros* would supposedly have obtained if they had shelled the nuts themselves. In financial terms, this is equivalent to 14 Peruvian Soles less net income per sack (28% less in percentage terms of the total net income expected). This has been the reason for much ill feeling among *castaneros*.

Since 1999 the average yield has been considerably higher (almost 20kg per sack). However, at the same time, Candela have added a wastage factor to allow for drying (against the fresh weight of the nuts) which is equivalent to 22%. So, for every 100 sacks of nuts that a *castanero* hands over to the company, Candela treats this as 78 sacks, which is equivalent to the weight after drying. This wastage factor did not previously exist, or at least was not of this magnitude.

The problem of yield continues to be a point of conflict between *castaneros* and companies. This is not perceived by the *castaneros* as a problem of transparency (though, when seen in perspective, it is) but as a problem of efficiency. In consequence, many *castaneros* are following the proposals of the Candela administration to the letter, and are personally supervising the shelling of their own produce.

In summary, there are problems of transparency between the companies and *castaneros*, and Candela Perú is not excluded from this. This is a reflection of the fragile relationships that exist between players.

2.4.5 Capacity building

While the concept of ethical trade contains an important quantitative component (prices, conditions of credit, funds for investment, etc.), it also contains the equally important qualitative element of developing the target population’s skills and knowledge, thus allowing people to improve their own welfare. Such empowerment centres on capacity building in such skills as negotiation and business management.

This is an area that marks out Candela from the private companies. To support this aspect of its activities, until March 1999 the company had external funding from the

¹¹ And also keen to obtain first grade produce, as this provides them with increased income.

IAF (Inter-American Foundation) and had previously received funds from the MacArthur Foundation.

Candela has used these funds to provide training either directly or through alliances with other development organisations working in the region. For Candela, this signified a difficult process in which it had to rebuild its relations with the *castaneros'* association ASECAM (*Asociación de Extractores de Castaña de Madre de Dios* - Association of Brazil Nut Extractors of Madre de Dios). Candela's commercial competitors accused Candela of benefitting from unfair competition because, by being a civil organisation without a profit motive, it was excused from local and national taxes which affected the remaining export companies.

In relation to Candela Perú's commitment to empowerment, it signed an Institutional Strengthening Agreement with ASECAM, through which it is committed to participate in all training conducted by the association, either directly or through other institutions.

In association with the NGO Conservation International, Candela has provided training in the following:

- Organisation and Leadership
- Evaluation of the Statutes of the Association

In terms of technical training, Candela has participated in the following:

- Forestry Surveys (Inventories) and the Optimum Design of Roads (Pathways) conducted through a strategic alliance with Conservation International.
- Management of a Processing Plant

Candela has provided marketing training in the following topics:

- The Function of Credit in the Industry
- Accounting and the Calculation of Basic Costs
- Export Procedures

In addition, marketing and financial evaluation (using a system created by Candela) has been given to CREDISMAD. A credit manual has also been edited for *castaneros*.

Candela has co-operated with the NGO "TREES" in conducting these training courses, and analysing and evaluating the results.

2.4.6 Investment Funds for Local Communities

Candela has developed a series of projects designed to generate income in local communities:

- Processing of Native Fruits into Jams and Preserves in the communities of La Joya, Alto Loero and Alta Pastora

- A Rotary Fund for the Raising of Pigs with Grupos Solidarios in the community of La Joya
- Demonstration plots of yucca and maize to introduce agro-ecological practices in the community of La Joya
- Shed for the storage and shelling of brazil nuts with the community of Lago Valencia
- Working capital and the loan of facilities and equipment to women in the community of La Joya for the purchase - processing - sale of brazil nuts

However, many of these projects did not achieve the expected results. In some cases this was due to the inexperience of the project team, while in others it was the result of human resource constraints among the target beneficiaries.

2.4.7 Candela's Role as Industry Lookout

Through its knowledge of the international market, derived in part from contact with ATOs and NGOs in the North, Candela has been able to foresee international threats to the Peruvian brazil nut industry. For instance, Candela and Conservation International (CI) alerted the industry to the threat posed by poor hygiene and drying during the handling and processing of the nuts before export. From the 1st January 1999, the European Community unified hygiene standards required for imported food products. This led to an overall tightening of standards. The most exacting standard for brazil nuts became the level of mycotoxin contamination, a problem that arises through poor drying practices. Reactions within the Peruvian brazil nut industry were generally unconstructive. Some industry participants failed to react, others reacted defensively, while several exporters began to turn their attentions to the US markets.

The effects of these changes have yet to be fully felt. However, the situation has already proved that the Candela's warning voice was fully justified.

Candela and CI are working independently of each other to mobilise all the relevant industry and government players to agree a common course of action on the mycotoxin problem. The process is slow and difficult because relationships are very fragile; there is considerable mutual distrust as well as internal jealousies that need to be overcome. Nevertheless, there are indications that the process is underway. Candela Perú obtained financial support from the MSP agreement between ADEX (*Asociación de Exportadores del Perú* -the Peruvian Exporters Association) and USAID (US Agency for International development) to hold a forum to discuss this matter in the second half of August 1999. CI is working with Prompex (Peru's state-run export promotion organisation) towards implementing export standards and providing the necessary infrastructure to ensure that standards are met.

2.5 Profitability within the Industry

This section examines the profits that different actors in the Brazil nut trading chain generate. A more detailed summary of costs and profits appears in Appendix 4.

2.5.1 *Castaneros*

There are four possible ways in which a *castanero* can operate:

- Case 1: When the *castanero* sells unshelled nuts that are not “committed” (as repayment of loans)
- Case 2: When the *castanero* “sells” unshelled nuts that are “committed”.
- Case 3: When the *castanero* sells shelled nuts that are not “committed”
- Case 4: When the *castanero* “sells” shelled nuts that are “committed”

Table 5 indicates the relative profitability for the *castaneros* according to each of these situations. Note that the final row expresses profit as a percentage of total costs. The figures could equally have been expressed as percentages of the selling price, in which case they would have been lower. The absolute level of these percentages is less important than their ability to clarify comparisons between cases and between different types of market chain participants.

Table 5. Analysis of profitability for the castaneros

	1 st Case ¹	2 nd Case ¹	3 rd Case ²	4 th Case ²
Total Costs (TC) (in Soles)	46.6	46.6	3.3	3.3
Selling Price (in Soles)	52.5	46.2	5.4	4.8
Profit Margin (PM) (in Soles)	5.9	- 0.4	2.1	1.4
PM (in % of TC)	12.7 %	- 0.8 %	62.2 %	42.6 %

1 These figures are calculated for one unit of unshelled produce = 70kg sack

2 These figures are calculated for one unit of shelled produce = Kilo of 1st grade nuts

Source: Field work

Clearly, profit margins are significantly higher when the product is transformed from unshelled to shelled nuts. In reality the most frequent situations are cases 2 and 4. There are few *castaneros* who have sufficient savings to provide them with adequate working capital to start the season without having to borrow.

Two factors tend to alleviate this situation:

- 1 *Castaneros* almost never commit their entire production, particularly if conditions are particularly disadvantageous. They generally only request what is necessary to enable them to enter the concession and to begin collecting nuts. Money for the remaining operating expenses is obtained from the sale of the early production as it is extracted.
- 2 As mentioned previously, many of the expenses shown are “shadow” costs; in other words, the expenditure is not actually made because the tasks are conducted by the *castaneros* or members of their direct families (i.e. *unpaid*)

family labour). In reality therefore, total expenditure is less than that estimated in the Table 5.

2.5.2 *Habilitadores*

From a functional standpoint, there is little substantial difference between *habilitadores* and traders. The only real difference lies in the credit and purchase terms that the two groups offer to the *castaneros*. For the purpose of the analysis, we define the *habilitador* as an individual who provides a cash advance to *castaneros* in exchange for the promise of their future production. The brazil nut price is fixed at the moment of handing over the working capital. By contrast, traders purchase brazil nuts (shelled and unshelled) without a commitment against an advance. For this reason, the sale price is the same as the market price at the time of making the transaction.

Traditionally, the price pre-fixed by the *habilitador* has been lower than the price set by the trader. A recent study¹² estimated that the difference was 12% less for product committed to the *habilitador*.

Table 6 gives a summary of the costs, selling prices and profit margins for the *habilitador* for three cases.

- 1st Case: The *habilitador* buys unshelled and sells unshelled
- 2nd case: The *habilitador* buys unshelled and sells shelled
- 3rd Case: The *habilitador* buys shelled and sells shelled

Table 6. Analysis of profitability for the *habilitador* in each possible contextual relationship

	1 st Case ¹	2 nd Case ²	3 rd Case ²
Total Cost (TC) in Soles	46.2 S/.	3.4 S/.	4.8 S/.
Selling Price in Soles	52.5 S/.	5.4 S/.	5.4 S/.
Profit Margin in Soles	6.3 S/.	2.0 S/.	0.7 S/.
Profit Margin (in % of TC)	13.6 %	58.8 %	13.7 %

1 The figures are calculated per unit of unshelled product = sack of 70 kg.

2 The figures are calculated per unit of shelled product = Kilo of 1st grade nuts

Source: Field Work

In this case it can be seen that levels of profit are positive in all cases, although slightly lower than those obtained, in specific cases, by the *castaneros*.

2.5.3 Traders

In the case of the trader, as noted earlier, the prices at which he buys and sells are market prices. For this reason, we analyse only one case: that in which the trader conducts processing of the nuts in his “low technology” unit. In the other cases previously considered, there would in theory be no profit margin¹³.

¹² ÁGREGA, Víctor. Investigación Socioeconómica de la Actividad Castañera en Madre de Dios. Candela Perú y Proyecto Conservando Castañas, June 1999

¹³ When he buys the product shelled and sells it shelled and when he buys unshelled and sells unshelled. In each case, the purchase and selling prices would be the same.

Table 7. Analysis of profitability for the trader

	Case*
Total Cost (TC) in Soles	3.7 S/.
Selling price in Soles	5.4 S/.
Profit Margin in Soles	1.7 S/.
Profit Margin (in % of TC)	45.4 %

* This refers to the trader who buys unshelled nuts at the market price, processes them, and then sells them shelled, again at the market price. The figures are calculated per unit of unshelled product = sack of 70 kg.

Source: Field Work

As Table 7 illustrates, the profit margin of the trader is less than that of the *habilitador* for a similar situation. However, the trader has the advantage that his profit is relatively secure (providing market prices don't decline during processing), while the *habilitador* runs the risk that the indebted *castaneros* do not repay their debts. Furthermore the *habilitador* has his capital tied up by a third party, without being able to move it, without charging any rate of interest, and for a period of time which is never less than two months.

2.5.4 Processing and Export Companies

It is important here to make the qualitative distinction between a processing company and an export company.

A processing company is one that has the buildings and equipment required to process (dry and shell) brazil nuts in a centralised and efficient manner.

A company that merely exports does not have these facilities, and generally has access to relatively small buildings which are sufficient only to store shelled nuts temporarily between purchase and transport to the place of export. These companies also employ considerably fewer labourers.

The analysis below was conducted for the following situations:

- Case 1: When a processing company buys unshelled produce
- Case 2: When a processing company buys shelled produce
- Case 3: When an export company buys shelled produce

In three cases, we have assumed that the company pays the market price. Almost all companies function simultaneously as lenders (*habilitadores*) and buyers.

Table 8. Analysis of the profitability of export companies

	Case 1	Case 2	Case 3
Total costs (TC)	8.55 S/.	10.17 S/.	8.71 S/.
Selling price	10.18 S/.	10.18 S/.	10.18 S/.
Profit margin	1.63 S/.	0.01 S/.	1.47 S/.
Profit margin (as % of TC)	19.13 %	0.10 %	16.88 %

Table 9 presents information on the profitability of companies that function as *habilitadores*.

Table 9. Analysis of profitability of companies acting as lenders

	Case 1	Case 2	Case 3
Total costs (TC)	8.23 S/.	9.52 S/.	8.06 S/.
Selling price	10.18 S/.	10.18 S/.	10.18 S/.
Profit margin	1.95 S/.	0.66 S/.	2.12 S/.
Profit margin (as % of TC)	23.69 %	6.93 %	26.30 %

In reality, a company normally uses both forms of operating. Part of their capital is invested in obtaining future produce, and this provides them with a relatively greater profit margin. Their remaining capital is retained in order to diversify their portfolio of clients, and reduce their level of risk.

2.5.5 Conclusions on profitability within the industry

Conclusions from two types of comparison are worth drawing:

1. Comparisons within trading chain groups. Profits depend greatly on the circumstances of the individual or company. The greatest determinant is access to capital, either to invest as working capital (a major profitability constraint for *castaneros*), or as fixed investment in shelling facilities (a major profitability constraint for *habilitadores*).
2. Comparisons across groups, summarised in Table 10.

Table 10. Comparing profitability

Type of market participant	Range of profit (as % of total costs)
<i>Castaneros</i>	-0.8 – 42.6*
<i>Habilitadores</i>	13.6 – 58.8
Traders	45.3
Exporters	0.1 – 19.1
Processors/exporters	0.1 – 26.3

* The most likely range of profitability

Traders and *habilitadores* potentially make the largest per unit profits. However, of all the groups, these two face the greatest exposure to risk. Traders experience the risk that prices will move against them in between buying and selling brazil nuts. *Habilitadores* not only face this risk but also are liable to suffer from default on loans made to *castaneros*. So, while profits can be high, variability of profit is also high, giving rise to a greater likelihood of bankruptcy.

Exporters and processor/exporters are potentially open to similar risks, but the vertically integrated and diversified nature of their businesses means that the chance of business failure is much lower. In effect, these companies have spread their risk over a range of (sometimes unrelated) activities.

2.5.6 Candela's profitability

Table 11 indicates the structure of costs and incomes from Candela's different lines of business.

Table 11. Structure Of Costs And Profits Forecast For 1999 According To Line Of Business

	Brazil Nuts (S/ per unit)*	Oil* (S/ per unit)	Candles* (S/ per unit)	Local Market (S/ annual sales)	Pecans (S/ annual sales)
Selling price	11.92	11.29	4316.00	94393.38	207.38
Costs	9.86	6.34	3432.88	88802.90	189.68
Profit	2.06	4.95	0.88	5590.51	17.70
In %	35.4 %	78.3 %	20.5 %	6.3 %	9.3 %

* In these cases, information is given in selling prices, unit costs and margins of utility; while in the case of the local market and pecans, the analysis considers the annual operational results of the respective lines (in Peruvian Soles).

Sources:

ÁGREDA, Víctor. Investigación Socioeconómica de la Actividad Castañera en Madre de Dios. Candela Perú y Proyecto Conservando Castañaes, June 1999

Internal Documents from Candela Perú

ITDG. Manual de Procesamiento de Aceite (*Manual for Oil Processing*). ITDG, 1999.

Candela appears to make a considerable profit from its brazil nut activities. In fact, on the basis of these figures, the organisation makes considerably more money per brazil nut than all the comparable business models contained in tables 8 and 9. However, two factors may have caused bias in the figures. Firstly, in the absence of cost data from Candela's competitors, the cost figures in tables 8 and 9 were adapted from data supplied by Candela. Consequently any cost efficiencies that Candela's competitors have realised above those achieved by Candela were not reflected in the figures. If such efficiencies exist, then the competition's profit margins would be higher than those shown.

The second potential cause of bias concerns Candela itself. Because the organisation exists to promote the welfare of the local brazil nut community and is therefore not merely a commercial concern, it employs more staff than its competitors. For instance, Candela employs a greater number of managerial, research and technical staff. The figures in table 11 do not reflect these additional costs and consequently Candela's profit may be overstated. However, the extent to which donor grants offset staff overheads is not known.

Part 3. Key Findings and Conclusions

The following key findings emerged from the research

- The Brazil nut trade is a small element of the international edible nut trade with approximately 1.6 % of total market share by volume.
- Brazil nut supply is inelastic in the short term. In contrast, demand is elastic because the edible nut products are easily substitutable with one another.
- International Brazil nut prices are determined by basic supply and demand patterns, without the influence of commodity exchanges and futures markets. Prices are also cyclical because low international prices cause collectors to abandon their Brazil nut activities, thereby precipitating a supply shortage.
- The international edible nut trade considers Peru as a Brazil nut origin of last resort due to inconsistency of supply and poor quality.
- From FOB to consumption the trade pattern does not currently have an ethical dimension. Furthermore the high degrees of efficiency and competitiveness within the international trade mean that there is very limited scope for introducing ethical innovations.
- Conditions within Peru's internal Brazil nut export marketing chain are highly competitive. Unfortunately, there is too much competition, with too many traders of all types chasing too little product. This has led to fragmentation of the industry, absence of trust between participants, lack of investment funds for modernisation, a short term view of the future, and a high turnover of companies. Overall, there is an inability to exploit economies of scale thereby improving cost competitiveness, and quality of product and service.
- These factors should be acknowledged when appraising the performance of Candela Peru.
- Despite having benefited from ethical trade price premiums, Candela does not, on face value, offer competitive prices to *castaneros*. Three factors might account for this. Firstly, the nature of its development work causes the organisation to be top-heavy with management, technical and research staff, giving rise to high overhead costs. Secondly, in the absence of the requirement to pay local and federal taxes, the organisation is under less financial pressure than its competitors to be cost efficient. Thirdly, Candela's use of electronic weighing scales means that *castaneros* are not cheated through under-declaration of weight, and therefore in reality may receive competitive (or perhaps more than competitive) prices. There is currently no proof to validate any of these explanations.
- Of all sources of credit in the region, Candela offers the most favourable terms, a practice that brings significant improvements to the lives of *castaneros*. The organisation has been a true innovator in this context and its competitors are having to adopt similar practices.

- Candela and Conservation International were the only organisations that foresaw the problems that would arise from the tightening of importing country regulations on mycotoxin contamination of edible nuts. The rest of the industry failed to notice. Subsequently, Candela has been participating in efforts to improve standards within the local industry.
- Candela has made considerable efforts to improve transparency of its shelling service through adopting itemised cost sheets, using electronic scales, and allowing *castaneros* to supervise the shelling process. However, high levels of distrust between *castaneros* and traders in general, mean that discontent lingers.
- Candela has attempted to build the capacities of individual *castaneros* and their representative organisations. Success has been mixed.

Conclusions

International ethical trading initiatives should avoid commodities that have a multiplicity of substitutes, and no-end product that is easily identifiable by consumers as "ethical". Fair-traded coffee, tea and, to a lesser extent, cocoa/chocolate provide successful illustrations in this context.

However, there is still scope for trading organisations in developing countries to act ethically towards their suppliers, regardless of what commodity is traded. In Candela's case, the trading environment in which it operates is difficult. Its experience highlights the problems of delivering financial improvements to a target population while operating in a competitive (or in this case, an over-competitive) marketing chain. However, Candela's presence has encouraged its competitors to improve their business practices to the advantage of *castaneros*.

Candela's ethical performance has been mixed. There is some evidence that it could offer better prices, yet in other aspects, such as credit and transparency, it has introduced innovations that bring substantial benefit to *castaneros*. Despite this, it has yet to gain a perception among *castaneros* that it is significantly different from conventional trading and processing companies.

Candela's ability to see threats and long term developments puts it in a unique position among local organisations in Madre de Dios. However, the experience with changes to import regulations on mycotoxins shows that its voice goes largely unheard in an atmosphere of short term perspectives and mistrust. The role of protecting the interests of the industry would be better performed by an industry association that contains representatives from all groups involved in the trade.

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Appendices

Appendix 1. Companies that buy brazil nuts in Madre de Dios (June 1999)

- Exportaciones de la Selva
- Compañía Inmobiliaria Perú e Inversiones (IMPERUSA)
- Internacional de Comercio
- Bonilla Export
- Rovalex
- El Bosque E.I.R.L.
- Fast Trade
- Deshidratados
- Comercializadora Manu S.A. (COMASA)
- Premium Trading
- Candela Perú
- E & F Traders S.A.
- Others

Appendix 2. The advent of shelling service

Traditionally, the export companies operating in Madre de Dios bought brazil nuts either shelled or unshelled. The buying decision was entirely influenced by whether or not the company had the facilities and machinery required to carry out the processing and shelling of the nuts.

The profit of a company was much higher from selling shelled nuts. For this reason, in order to establish themselves in the market place, all the companies had as a priority the acquisition of the infrastructure required to carry out processing. The *castaneros* also became progressively more aware of the advantages of shelling the nuts before sale, as this allowed them to retain a greater margin of the benefits.

In earlier years, the companies in Madre de Dios (the largest of which being Exportadora El Sol) were few in number, and only purchased unshelled nuts. Trading in shelled nuts only became commonplace once this huge company disappeared, an event which prompted a boom in the appearance of small companies and generated a higher level of competition¹⁴. With time, the practice of selling shelled nuts has been progressively adopted by the *castaneros*, and has been to their own benefit.

The following table demonstrates the substantial difference that exists between these two forms of selling (shelled vs. unshelled).

COMPARISON BETWEEN BOTH
FORMS OF SELLING

	Shelled Nuts	Unshelled nuts
Total production costs	30 soles	30 soles
Costs of shelling	20 soles	0 soles
Total costs	50 soles	30 soles
Selling price (per Kilo)	5 soles	0.71 soles*
Number of Kilos	20 kilos	70 kilos
Total income	100 soles	50 soles
Profit	50 soles	20 soles
Percentage profit	100 %	67 %

* Unshelled brazil nuts are not sold by kilo, but by sack. Each sack weighs approximately 70kg and yields some 20kg of shelled product.

Source and interpretation: the author

The table indicates that, in a market that is functioning normally, a *castanero* can expect 150% greater net income from selling shelled nuts rather than unshelled nuts. It is clear that selling the brazil nuts shelled benefits the *castanero* considerably more than selling nuts unshelled.

In the battle to win market share, the company La Selva became the largest (since the disappearance of El Sol) and acquired its own facilities and equipment for processing.

¹⁴ It is certain that this lack of control on the part of some new traders, who see brazil nuts as “manna from heaven” is upsetting the market to such an extent that many experienced traders, who traditionally only purchased unshelled nuts to process themselves, are now opting to buy the nuts shelled. They indicate that “you earn less, but the profit is secure”.

Originally, to have your own equipment was a qualitative advantage, but as a result of increasing competition (and tendency for *castaneros* to sell shelled nuts), it became a disadvantage. It did not make sense for the company to buy nuts already shelled (as it did for the other companies, who had only small premises and no machinery for processing) because this signified under-utilisation of their fixed costs. On account of this, the company began to lose its presence in the marketplace.

It subsequently developed a simple but highly intelligent commercial response: it developed and offered the system known as the **Shelling Service**. This service consisted of receiving the product as unshelled nuts, processing them using the company facilities and then, once shelled, buying them from the *castanero* as shelled nuts.

This innovation offered the *castaneros* the advantages of being able to sell the product shelled, and therefore to gain higher profits, while at the same time it offered the possibility, not seen previously, of being able to complete the transaction in record time. When *castaneros* began to shell the nuts in their own homes, they used family labour (their wife and younger children), but few possessed shelling machines (some were forced to shell using sticks and stones). In some cases, *castaneros* contracted women (generally not more than 3-4 in number) for the task, particularly those who had shelling machines.

Under this system, to shell 100 sacks (an acceptable yield from a concession) took on average between 4-5 months. Because *castaneros* tended to sell the nuts little by little, they also received and spent their income little by little and, consequently, by the end of the season, they were not able to see and appreciate the fruits of their work.

With the new shelling service, the 100 sacks could be shelled in a week and in this way the *castanero* received all the money at once. This had its advantages; the *castanero* could effectively complete the transaction promptly, and receive a large sum of money which he could invest in some other activity.

While many *castaneros* took advantage of this, it was not the case for everyone, and many others spent their money unproductively. However, this was not the responsibility of the company, but the result of the idiosyncracies of individuals.

The motivation behind this innovation was the simple search for private gain. Nevertheless, the positive effect of competition as a generator of innovative ideas needs to be highlighted, as well as the ability of these to raise the well-being of society.

The following year (1998), Candela Perú saw the enormous possibilities offered by this method of working with the *castaneros*, although it approached the innovation from a rather different perspective.

Candela's interest in increasing their level of participation in the Peruvian brazil nut market was evidently one of their motivations. Helping the *castaneros* to capture more value-added was seen as an effective means to benefit the target population.

One of the principal causes of poor quality is related to lack of hygiene during processing when this is conducted at the level of decentralised, domestic units (i.e. in the forest or in the individual houses of the *castaneros*).

It is for this reason that the shelling service is in reality the best option in terms of balancing the importance of obtaining a fair income (more so than a fair price per unit) for the individual *castanero*, with the importance of protecting the quality of the product and, therefore, the market itself (and this activity which generates employment and income for *castaneros* in general).

The importance of the shelling service is such that other companies (including Rovalex and Internacional de Comercio) which have facilities for processing nuts, have also begun to offer the service since the beginning of this year.

Appendix 3. Historical Trends in Prices

1) Evolution of the Internal Price 1990 – 1998

Within the period under consideration, price has tended to increase steadily. The only exception was a fall (in the order of 52.5%) which occurred in 1993¹⁵.

On average, during these seven years, a Kilo of first grade shelled nuts in Puerto Maldonado increased from S/.0.50 to S/.4.81, representing a percentage increase of 862% and an annual rate of increase of 123.14%.

Much of this increase is associated with the devaluation of the national currency. Changes in (the international) price in foreign currencies have been somewhat different: the variation between 1994 and the present was considerably less (34 % increase, with an annual rate of increase of 8.5 %).

Preliminary estimates of the average 1998 price for first grade brazil nuts is S/. 5.41 per Kilo, which is consistent with the upward trend in price (representing an increase of 12.39 %).

We should not expect this trend to continue indefinitely. In contrast, it can be assumed that it has reached a ceiling at approximately 5 soles, as indicated by a halt in the annual rate of increase with respect to the average.

CHANGES IN THE PRICE OF
BRAZIL NUTS IN MADRE DE DIOS
(in soles per kilo for 1st grade shelled nuts)

	1990	1991	1992	1993	1994	1995	1996	1997	1998*
S/. per Kg 1 st	0.50	0.70	0.80	0.38	3.00	3.20	3.89	4.81	5.41
% var. in S/.		+ 40	+ 14	- 53	+ 689	+ 7	+ 22	+ 24	+ 12
US\$ per Kg. 1 st	2.42	0.90	0.64	0.19	1.38	1.42	1.63	1.82	1.85
% var. in US\$		- 63	- 29	- 70	+ 619	+ 3	+ 14	+ 12	+ 1

Source: INEI – MDD

* Preliminary data based on internal information from Candela Perú

2) Volume of Brazil Nuts Commercialised in Madre de Dios

With reference to the total volume of brazil nuts sold (in net kilos), though the nuts are a natural product whose production depends exclusively on natural factors, its exploitation and, therefore, the volume commercialised, is more affected by market considerations.

Statistical data verifies a certain correlation between the volume commercialised and the unit price (in soles or dollars). This is true both in data derived from internal production statistics from the Ministry of Agriculture as well as in data from

¹⁵ The statistical data on international prices did not register any “trough” in the international price during this same period.

ADUANAS on the volumes exported. The only exception was 1993, when the volume of production increased despite a dramatic fall in the market price.

The following table shows changes in the volume of shelled brazil nut commercialised in Madre de Dios, according to statistics provided by INEI, who use a source the *Oficina de Forestal y Fauna de la Dirección Regional Agraria de Madre de Dios* (The Forestry and Wildlife Office of the Regional Agricultural Office of Madre de Dios).

**CHANGES IN THE VOLUME OF BRAZIL NUTS
MARKETED IN MADRE DE DIOS**
(in tonnes)

Year	Tonnes	% Variation
1980	1.446,4	
1981	363,4	-74,87%
1982	1.051,8	189,41%
1983	1.432,9	36,24%
1984	1.437,8	0,35%
1985	861,7	-40,07%
1986	1.135,8	31,81%
1987	959,4	-15,53%
1988	906,5	-5,51%
1989	1.445,1	59,41%
1990	1.371,7	-5,08%
1991	454,0	-66,90%
1992	239,2	-47,31%
1993	995,4	316,15%
1994	1.013,2	1,78%
1995	1.128,6	11,39%
1996	1.203,5	6,63%
1997	2.069,5	71,96%

Source: INEI – MDD

This table demonstrates that the production (exploitation) of brazil nuts has not increased significantly in terms of volume, even in 1997 (a year much remembered in the region because of the exceptionally good harvest). From this it can be deduced that production has not depended exclusively on natural factors, but on the increases in price up to its present level.

In some years pre-1993, statistical records suggest that brazil nut production fell to very low levels. Such low production figures are implausible, and most likely reflect the fact that many *castaneros*, when faced with very low prices, simply did not enter their concessions to collect the nuts as it was not profitable to do so¹⁶.

3) Changes by Month in 1998

¹⁶ Such events are well known in Puerto Maldonado, and are remembered with much sadness by the *castaneros* as those years when they had to “leave the brazil nuts to rot in the forest while they kicked tins around” because the price did not justify the investment.

Information given below refers to the prices paid for brazil nuts by Candela Peru in its La Joya plant in 1998 for produce not “promised” in its various forms [in repayment of loans or advances].

In this sense, we cannot extrapolate from this, except to give a “useful reference”, to calculate the average price in the department during 1998.¹⁷

a) Price of Shelled Brazil Nuts

Shelled nuts were marketed from February. They reached their highest point during this month, but then there followed a decline which was only reversed in July, when prices began to increase once more (though without again returning to the high average values for February).

Between February and June the price of shelled nuts in the market of Puerto Maldonado fell by 16.4 %

CHANGES IN THE PRICE OF SHELLED NUTS
(in soles per kilo of first grade nuts)

	Feb.	Mar.	Apr.	May	Jun.	Jul.	Sept.	Av.
S/. per Kg 1 st	5.86	5.80	5.58	5.18	4.90	5.03	5.63	5.35
% Var.		-1.02	-3.79	-7.17	-5.41	+2.65	+11.93	
US\$ / Kg 1 st	2.10	2.07	1.98	1.82	1.69	1.72	1.85	1.89
% Var.		-1.41	-4.13	-7.95	-7.52	+2.23	+7.33	

Source: Candela Perú

The cause of the rise can be explained by the relative scarcity of the product which obliged companies to pay a relatively higher price in order to meet their commitments to fill container ships.

This scarcity is evident, for example, in the month of August, when the company did not make a single purchase of shelled nuts, but was confined to processing produce which had already entered for the service.

b) Price of Unshelled Brazil Nuts

The characteristics of production last year suggest that few purchases were made of unshelled nuts, and these were confined exclusively to the end of February and beginning of March.

¹⁷ However, we have already seen that Candela Perú offers a price which is very similar to the average price offered by the other companies.

CHANGES IN THE PRICE OF UNSHELLED NUTS
(in soles per sack)

	4^a Week February	1^a Week March	2^a Week March	3^a Week March	4^a Week March	Ave.
S/.per Bca	73.20	73.36	76.46	74.10	77.00	74.05
% Var.		+ 0.22 %	+ 4.23 %	- 3.09 %	+ 3.91 %	

Source: Candela Perú

The table confirms that 1998 was a good year, in terms of price, with an average close to 75 soles.

In comparison, information taken from direct sources for 1999 show the purchase price per a sack of unshelled nuts to be approximately 50-55 soles, 40% less than the average price in the previous year.

c) **Price of Brazil Nuts under the Shelling Service**

In general, we should expect a purchase price similar to that of nuts shelled (independently) in the family production units.

In the case of Candela Perú, the price of nuts purchased through the shelling service is slightly higher than the price paid for nuts shelled independently. This is illustrated by the following table.

CHANGES IN THE PRICE OF SHELLED NUTS
UNDER THE SHELLING SERVICE
(in soles per kilo for first grade nuts)

	Mar.	Apr.	May	Jun.	July	Aug.	Aver.
S/. per Kg 1 st	5.67	5.11	5.24	4.99	5.57	5.53	5.43
% Variation		-9.88	+2.54	-4.77	+11.62	-0.72	
US\$/Kg 1 st	2.02	1.81	1.84	1.72	1.91	1.87	1.86
% Variation		-10.2	+1.68	-6.90	+11.16	-2.03	

Source: Candela Perú

Unfortunately, this information does not specify a processing date. Because of this, we have supposed (reasonably) that this is conducted continuously.

This deficiency in the information is probably the main reason why a clear and marked trend in the behaviour of the price cannot be seen. Nevertheless, there is a clear “trough” between the months of April and June.

In other words, the price begins high and ends high, but tends to decline over most of the duration of commercial activity.

4) Determinants of the Internal Price

In general, it has been held that higher volumes provided a better negotiating position for the *castanero* with respect to the price paid for the final sale of shelled nuts.

During the current year, information was compiled which supported this assertion, as illustrated in the following table.

SCALE OF PRICES ACCORDING TO VOLUME
TRANSACTIONED; JULY 1999 (in soles)

	Less than 500 kg	More than 500 kg
Puerto Capitanía	5.30	5.40
Puerto Tambopata	5.30	5.40
La Selva	5.40	5.50
Internacional de Comercio	5.50	5.60
Carretera	5.30	5.40
Candela Perú	5.00	5.40*
Jaramillo	5.50	5.50

* In one special case, which involved approximately 18,000 kg, a price of up to 6.06 soles per Kilo was offered, which they called the “export price”

Source: Field work

Own interpretation

This demonstrates that in almost all cases (with the exception of Jaramillo), extra is being paid for produce supplied in higher volumes. This practice is commonplace.

When the nuts are not already “promised” (under a loan arrangement, for example), it is the *castaneros* who have the better negotiating position. This is because there are many offers for the produce at varying prices (which are not necessarily co-ordinated in any way), even within the same physical area such as the ports of Tambopata and Capitanía.

5) Comparative Analysis between Internal Production and Exports

It is important to consider the differences that exist between internal production, as “declared” to the Ministry of Agriculture, and the official export figures registered by ADUANAS.

The second of these sources is the more reliable. The first provides information that cannot be verified, and furthermore is liable to underestimate on the part of the *castanero*; a fact which is predictable considering that a levy, proportional to the volume of brazil nuts extracted, has to be paid for rights to the concession.

**COMPARISON BETWEEN FIGURES FOR INTERNAL
PRODUCTION AND EXPORTS**
(in net kilos)

	1993	1994	1995	1996	1997	1998
Exports	1.220.031, 23	1.372.043, 93	1.586.259, 64	1.876.692, 27	2.666.888, 67	1.056.260, 81
Internal Production	995.438,70	1.013.200, 00	1.128.627, 00	1.203.495, 00	2.069.504, 00	778.075,40 *
Difference	224.592,53	358.843,93	457.632,64	673.197,27	597.384,67	278.185,41
Difference (in % of exports)	18,41%	26,15%	28,85%	35,87%	22,40%	26,34%

* Author's estimate of production

Source: INEI – MDD / ADUANAS

The table demonstrates that “underestimates” in the information declared to the Ministry are on average in the order of 26.34 %. This is equivalent to a quarter of the official production, and the figure has tended to increase in recent years.

The figure should in reality be higher if internal consumption is taken into account, also the proportion of waste or low quality nuts that make up each batch, and which are not suitable for export.

In the case of Candela, internal consumption constitutes some 10.5% of total brazil nut production and a similar proportion is destined for processing to produce oil.

If these figures are taken into account, “underestimates” in the information declared must be in the order of 42% - almost half of actual production.

Similarly, it is important to make a comparison of the internal and external unit price of brazil nuts in order to be able to put together a value-added chain for the industry in each phase of the chain.

6) Peruvian FOB Price – Whole, Shelled Brazil Nuts – 1993/98

The following information is provided in the table:

**COMPARISON BETWEEN INTERNAL AND EXTERNAL PRICES
FOR PERUVIAN BRAZIL NUTS 1993 – 1998**

	1993	1994	1995	1996	1997	1998
Local Price	0.19	1.38	1.42	1.63	1.82	1.85
FOB Price	2.12	2.82	2.80	3.15	3.35	3.17
Local Pr./FOB Pr.	9.0 %	48.9 %	50.6 %	51.7 %	54.4 %	58.3 %
Local Pr. - FOB Pr.	1.93	1.44	1.38	1.52	1.53	1.32

Source: PROMPEX, INEI-MDD

Author's interpretation

During the period 93-98, the price of brazil nuts in the city of Puerto Maldonado has increased from 0.19 US\$ to 1.85 US\$. This is equivalent to a rise of 873.68%, while the FOB price per kilo of exported nuts has increased by only 49.53%.

This explains the increase in the ratio between the local price/FOB price. It is also illustrative of how this fact (the decreasing difference between both prices) was possible - the export of brazil nuts was evidently a highly profitable enterprise.

In absolute terms¹⁸, this difference has actually decreased, as indicated in the above table. In 1993 the companies had a gross margin of utility (without discounting export costs) of 1.93 US\$, while in 1998, this margin had decreased to only 1.32 US\$. In other words, it fell by 316 % which, in absolute terms, is equivalent to 0.61 cents (US\$) clear profit per kilo of nuts exported.

Considering that each company moves on average 115 tonnes of brazil nuts annually, it can be expected that during this period they have made¹⁹ more than 70 thousand US Dollars in annual net profit at the expense of the *castanero*.

7) International Price of Shelled Nuts – 1990/99

As is widely known, brazil nut trees are found in significant concentrations (clusters) only in the Amazon triangle in the Selva Baja of Perú (Madre de Dios), Brazil (Acre, Pará) and Bolivia (Riberalta). Any statistic which mentions another country as an exporter of brazil nuts is referring to re-exportation or redistribution.

“Significant numbers” or concentrations of trees refer to areas of the Amazon forest which are characterised by land which is not prone to flooding, and where there is an average density greater than one brazil nut tree per hectare.

Many years ago, the world thought of brazil nuts as originating from Brazil, hence the name. It is now known that the north-western region of Bolivia contains as much or more brazil nuts than Brazil. However, for various reasons, Bolivia previously chose to sell the nuts to Brazil who would then export them.

At the present time Bolivia, as well as Peru, is fighting to change the image and the name of the nut, which originates from this area, to the amazon nut. Bolivia has a brazil nut industry which is better consolidated and with a more business-like

¹⁸ It could be argued that the reason for the increase [Local Price / FOB Price] is because the whole increase in the FOB price has been transferred to the *castanero*. However, the table demonstrates that this is not the case. The increase in absolute (and not relative) terms in the local price has been greater than the increase in FOB price. As we understand it, the reason for any improvement in the position of the *castaneros* is exclusively the result of increased competition, prompted by the high profitability of the trade, which has created better conditions for them (against the wishes of some companies). The fact that this occurred proved that it had always been possible.

¹⁹ Or “would have made” would be more appropriate, as it is profit that they have progressively stopped receiving.

It must not be forgotten that this excludes the profits that are still being made under the current market conditions, and which we analyse in a later section.

approach²⁰, and is now putting considerable effort into changing the international image of the quality of this product.

The following statistics confirm this asertion:

IMPORTS OF BRAZIL NUTS INTO GREAT BRITAIN – 1998

(in tonnes)

	Brazil	Bolivia	Perú	Others	Total
Tonnes	332.296	2.495.329	200.906	103.583	3.134.112
In %	10.61 %	79.67 %	6.41 %	3.31 %	100.00 %

Source: AMBERWOOD TRADING LTD

According to a recent report from the Bolivian National Brazil Nut Council (*Consejo Nacional de la Castaña*), these statistics are very similar to total world exports.

The same source indicates that the total quantity of brazil nuts offered for export world-wide is made up as follows:

WORLD EXPORTS OF BRAZIL NUTS

(according to value)

	Brazil	Bolivia	Perú	Total
Million US\$	6,0 million	22,5 million	1,5 million	30,0
In %	20,0 %	75,0 %	5,0 %	100,0 %

Source: Consejo Nacional de la Castaña (Bolivia)

There are three ways of marketing the nuts in their natural form²¹: whole, broken or chipped.

Without doubt, the best known of these is the former (whole nuts) because of important differences in their relative price, as we will discuss later. Within this category, the produce is selected according to size and four different sizes are recognised commercially: Large, Small, Medium and Midgets.

At present, the last two of these sizes are the most valued, while the first two (particularly the Large category) only have a small market and generally only as a complement to the other categories.

²⁰ This was demonstrated in the stand taken by the union of Bolivian businesses which sent a delegation to meet the European food hygiene authorities to request a postponement in the measures imposed from the 1st January, to deal with the issue of aflotoxins.

²¹ Some Brazilian, Bolivian and Peruvian companies are marketing brazil nuts with a basic salting process (with salt and in small cubes or spheres, smaller than a dice). Though this market is so far still marginal, it has interesting possibilities. The company Renmero in Brazil and El Bosque in Peru are involved (the latter sells bleached and salted nuts to the British company H & T Walker, with whom it has a contract which is mutually exclusive). Exploring further this possibility is of considerable interest, as it would allow a higher price to be paid for the nuts locally. This is certainly true in the case of El Bosque which is well known as one of the companies offering highest prices. It recently offered 6.20 S/. for a large consignment from ASECAM.

a) Whole Brazil Nuts

As previously stated, the whole nuts marketed are principally in the Midget and Medium size categories.

In the following case, we have taken as a reference the price of Midget nuts, but it should be noted that there is little substantial difference between the categories.

The source used is the internal source of the well known English company Amberwood. Considering that the product is a commodity, the information is highly useful.

**BEHAVIOUR OF THE INTERNATIONAL PRICE
FOR WHOLE BRAZIL NUTS 1992 - 1999**

	Price			% Variation in US\$
	US\$ / Pound	US\$ / kg.	S/. / kg.	
1992	0,68	1,49	1,85	
1993	0,94	2,07	4,10	39,18%
1994	1,19	2,63	5,72	26,64%
1995	1,28	2,81	6,32	6,97%
1996	1,49	3,27	7,81	16,39%
1997	1,55	3,41	9,03	4,21%
1998-I	1,46	3,20	8,90	-6,02%
1998-II	1,28	2,82	8,04	-11,89%
1998-III	1,23	2,71	8,06	-3,80%
1998-IV	1,09	2,41	7,38	-11,35%
Jan-99	1,28	2,82	9,07	17,07%
Feb-99	1,34	2,95	9,99	4,69%
Mar-99	1,38	3,04	10,26	2,99%
Apr-99	1,39	3,05	10,21	0,36%

Sources: Perú en Números 1999 / BCRP / AMBERWOOD TRADING LTD
Author's interpretation

During the period 1992-97, an upward tendency can be observed in the international price of the nuts until a peak is reached in 1997 of 1.55 US\$ per Pound. This is equivalent to approximately 3.5 US\$ per kilo of nuts for export. During these five years, the price in US\$ has increased by 128%, giving an annual rate of increase of approximately 25.6%.

The following year (1998) the price fell substantially by 30% of its value, but rose again during the current year (based on information registered up to the month of April) by some 27.5%. This tendency to rise has continued during recent months, with the current price calculated at 1.48 US\$ per Pound for last month (July).

The national exchange rates have also experienced a continuous increase during the period 1992 - 1999. When this has occurred, an increase in the price in soles has been given at higher rates and, vice versa, cushioned the fall in the international price during 1998.

Compared with the internal price of the brazil nut in 1998, there was no “trough” in the international price equivalent to that observed locally.

This phenomenon can be explained by the protectionist attitude of the companies when faced with a fall in the international price. By the end of the year, the recovery in the local price was prompted by their need to fill container ships already contracted, and the problems of scarcity (low production) which characterised 1998.

(b) Broken Brazil Nuts

The behaviour of split (or broken) nuts has followed almost exactly the same tendencies as those of whole nuts, though the considerable increase in price recorded in 1994 was much more marked here than in the case of whole nuts.

Another factor that needs to be highlighted is that the future of broken nuts is less clear than in the case of whole nuts. While the latter have increased in price in 1999 from the low levels reached in the previous year, the price of the broken product on the last registered date (April 1999) was exactly the same as that recorded during the first quarter of 1998.

BEHAVIOUR OF THE INTERNATIONAL PRICE
FOR BROKEN BRAZIL NUTS 1992 - 1999

	Price			% Variation in US\$
	US\$ / Pound	US\$ / kg.	S/. / kg.	
1993	0,27	0,58	1,15	
1994	0,66	1,46	3,17	149,64%
1995	0,79	1,74	3,91	19,42%
1996	0,84	1,84	4,39	5,70%
1997	0,98	2,15	5,68	16,77%
1998-I	0,77	1,69	4,71	-21,03%
1998-II	0,65	1,42	4,04	-16,23%
1998-III	0,73	1,61	4,77	13,18%
1998-IV	0,58	1,27	3,90	-20,89%
Jan-99	0,80	1,76	5,67	38,53%
Feb-99	0,92	2,02	6,86	15,00%
Mar-99	0,77	1,69	5,73	-16,30%
Apr-99	0,77	1,69	5,67	0,00%

Sources: Perú en Números 1999 / BCRP / AMBERWOOD TRADING LTD.
Author's interpretation.

The low relative price of broken nuts (only 55.57% of the price of whole nuts) explains why this form of marketing is less widespread. Importers take advantage of the status of the broken nuts as a by-product by offering a substantially lower price.

Because of this, Candela's strategy of transforming the broken (and chipped) nuts into new products (such as brazil nut oil, which will be discussed in a later section) is

attractive in terms of its internal financial sustainability, particularly considering the profit margins of this activity.

c) Chipped Brazil Nuts

In the case of chipped brazil nuts, the data indicate that the price is substantially higher than in the case of broken nuts, and in some cases even approaches the price of whole nuts.

On average, the price of chipped nuts is 90.18% of the price of whole nuts, though in some cases has reached an almost equal value.

However, it is important to note that chipped nuts require additional processing, which adds slightly to the costs.

In Peru, these forms of commercialisation (broken and chipped) are not well known or used (only one case being registered during the 10 years under consideration).

Chipped nuts are the least frequently commercialised, probably on account of the increased cost component, and there are times when Amberwood has not marketed any nuts in this form (first quarter of 1998; January and March 1999).

This entire analysis has so far only taken into account production arising from the same year, and not production from the previous or future years.

However, these two patterns of selling are also utilised. Many companies sell (principally during the early months of the year) produce that is left over from last year's harvest. Similarly, they may commit production from the coming year (particularly if they have problems of financial liquidity).

These two forms of selling are heavily penalised by the import companies and the disparity in negotiating conditions are well recognised by both parties²².

It is for this reason that they have not been taken into account in the current analysis.

²² On the one hand, it is assumed that the quality (of last years produce) is less than optimum, while in the case of future production, the importers take advantage of the need for cash on the part of the sellers by paying a substantially lower price.

The following table shows the changes in the international price of chipped brazil nuts.

**BEHAVIOUR OF THE INTERNATIONAL PRICE
FOR BROKEN BRAZIL NUTS 1990 - 1999**

	Price			% Variation in US\$
	US\$ / Pound	US\$ / kg.	S/. / kg.	
1990	0,81	1,78	0,37	
1991	0,85	1,87	1,44	4,94%
1992	0,45	0,99	1,23	-47,06%
1993	0,86	1,90	4,14	91,75%
1994	1,13	2,48	5,41	30,77%
1995	1,17	2,58	5,80	3,91%
1996	1,31	2,89	6,90	11,94%
1997	1,45	3,18	8,43	10,22%
1998-I	1,37*	3,00	8,35	-5,65%
1998-II	1,28	2,81	8,00	-6,47%
1998-III	1,12	2,46	7,32	-12,27%
1998-IV	1,01	2,22	6,82	-9,82%
Jan-99	1,11*	2,44	7,86	9,90%
Feb-99	1,21	2,66	9,02	9,01%
Mar-99	1,25*	2,74	9,26	2,89%
Apr-99	1,28	2,82	9,43	2,81%

* No information is available. The calculated value has been extrapolated using its limits.

Sources: Perú en Números 1999 / BCRP / AMBERWOOD TRADING LTD
Author's interpretation

8) Determinants of Price

Brazil nuts play a marginal role in the world nut markets, in which they compete with 14 other nuts. Their contribution represents only a small percentage of the total market, with a tendency to decrease.

It can be stated that brazil nuts themselves have little demand, but are largely consumed in nut-mixes that are used in the chocolate and confectionery industries.

For this reason, their price depends principally on two factors:

- The price of other nuts, principally cashew from Central America, the Amazon, India and the Indo-China region (particularly Vietnam). In other words, regions of tropical humid forest.
- The quantity available for sale, which depends on natural (wild) production²³

²³ Many Bolivian companies, for example, take on high levels of debt which requires them to sell their future production at very low prices. Indirectly, this affects the market price (on account of the high proportion of production from Bolivia).

It is certain that there is a climate in developed countries within which consumption of brazil nuts could be stimulated, not only because of the ecological factors already mentioned, but also because it is an organic product. Nevertheless, fears concerning the possible carcinogenic affects of the aflotoxins which develop on the fruit are a serious constraint to the commercial promotion of this product²⁴.

²⁴ It is known, for example, that peanuts are carcinogenic.

Appendix 4. Profit Margins Obtained By The Different Agents

1) Collector [*Castanero*]

The *castanero* incurs a series of costs which are related either directly or indirectly to the extraction of brazil nuts.

These costs can be classified according to the following groups:

- Legal Costs
- Preparation Costs (or Path Clearing) and Costs of Extraction
 - Basic Living Expenses
 - Expenditure on Transport
 - Expenditure on Labour
- Cost of Shelling
 - Expenditure on Labour

Legal Costs

As mentioned previously, all forest areas are the property of the Peruvian State, which allocates concessions to individuals in order that they can exploit them in a rational manner.

Title holders of a concession are obliged to pay a series of expenses related to the acquisition of the rights to work the brazil nut resource.

In theory, it is possible that “informal concessions” exist, although in this region virtually no cases of this are known.

It can be claimed that 99% of the brazil nut areas exploited are legally registered with the Peruvian Ministry of Agriculture. However, a problem which does occur with some frequency is “robbery”.

This refers to the actions of strangers who, in the absence of the rightful owner, enter a concession which is not their own to collect the brazil nuts. These “robbers” are in some cases individuals who are not normally even involved in brazil nut extraction, while in others they are title holders to neighbouring concessions.

The problem occurs generally during the month of December, when the concessions are uninhabited. In order to reduce the time spent living in the forest, the concession holders often wait for the entire production of “coconuts” to fall (generally by mid-January). However, despite incurring increased costs, many are now deciding to enter the forest earlier, suggesting that losses due to robbery may be substantial. This problem is generalised.

The principal legal costs include the following:

- Request to Renew the Contract
- Contract of Concession Holder

- Guarantee of 20 %
- Levy
- Visual Inspection
- Territorial Mapping

It is not the intention of the current study to enter into this level of detail; for this reason, we provide only a brief description of each cost component.

Firstly, the request to renew the contract as well as the contract itself carries a fixed costs of 34 soles. This is paid every two or five years²⁵, except in the case of new contracts, which (on the first occasion) are given for only one year.

In addition to this there is an annual levy. This levy is proportional to the volume of produce declared when forms are filled at the time of acquiring the concession contract, and is equivalent to 2% of the value of production (although, as indicated previously, there is considerable “underestimation”, in the order of some 42%, in the volumes declared). Twenty percent of the levy must be paid at the start of harvest, while the remaining 80% is paid with the income received from the sale of the nuts.

Finally, territorial mapping and visual inspection of concessions were extraordinary costs incurred in 1998, for activities which aimed to provide more realistic information. These costs were proportional the official size of the concessions and were equivalent to 0.7 soles per hectare.

For an average concession of 1000 ha (180 sacks, 3600 Kilos) the following costs are estimated:

AVERAGE COMPOSITION OF LEGAL COSTS

	Total Cost	Annual Cost
Contract and renovation of contract ¹	34 soles	17 soles
Concession levy	72 soles	72 soles
Mapping and visual inspection ²	700 soles	70 soles
Total legal costs		159 soles

1 As the majority of contracts are given for a two year period, this value is used as the reference.

2 It is assumed here (reasonably) that territorial mapping is conducted every 10 years (or, in its absence, that the Ministry introduces some new “extraordinary cost” for the *castanero*).

Costs of Preparation (or Path Clearing) and Extraction Costs

Rumbeo (path clearing) is the term used to describe the activity of locating brazil nut trees in a new area of forest which was previously unexplored and in which it is presumed there are clusters of suitable trees.

²⁵ In theory, the contracts can be extended for up to a 10 year period. In practice this does not occur as the Ministry of Agriculture tends to put forward too many objections and, furthermore, does not provide information on the possibility.

Individuals specialised in locating brazil nut trees (generally indigenous people) are contracted for this task. These individuals are known as “*rumberos*” or “*materos*”.

After locating the trees it is necessary to open roads (paths, tracks or roads) through the undergrowth to link the different trees. It is also necessary to construct a camp which acts as the centre of operations for the harvest. This camp is generally constructed on the banks of the river or alongside the main road.

Some *castaneros* decide to construct *payoles*, or small, temporary deposits for the short-term storage of the sacks of brazil nuts. This generally occurs on the very large concessions (where there may even be 2 camps, one at each extreme).

In the case of old, long established concessions, all that is required annually is repair of the camps (there is always some deterioration of the installations due to natural effects or human action²⁶) and clearing of undergrowth that has grown onto the paths.

Some *castaneros* carry out this work as a separate activity (in October or earlier, during the dry season, which facilitates the task). Other (and, increasingly, more) *castaneros* conduct repairs and path-clearing simultaneously or immediately before initiating the harvest, in order to save (at least) on transport costs.

As preparation and extraction are fundamentally similar in that both imply “entering the forest”, we can assume that the cost structure of both is also similar.

Both entail:

- Transport Costs (to enter and leave the concession; in the one case to leave while transporting the produce). There are many means of transport which can be used:
 - Own transport (canoe with a 16HP or 55HP motor; tractor; motorbike)
 - Rented transport
 - Transport service (public or company. Some companies, such as Candela Perú for example, provide this service free in the boats which enter to buy or collect committed produce²⁷).
- Expenditure on Labour. In the case of preparation of the concession, payment is generally on a daily rate; in the case of the harvest, payment is on a piece-work rate (i.e. by sack collected). In addition, some *castaneros* contract a woman to take charge of the cooking.
- Living expenses²⁸, which include:
 - Food²⁹, essentially made up of oil, garlic, rice³⁰, sugar, coffee, onions, cigarettes, spices, preserved fish, flour (fermented cassava flour), beans and

²⁶ It is common to encounter cases where timber extractors have destroyed whole camps, using the wood as firewood.

²⁷ This is an interesting proposal designed to establish more harmonious relationships between the different players. Advantage is taken of a cost that would otherwise be lost (as the journey would be made anyway, regardless of whether or not the boat was full or empty).

²⁸ In contrast to Bolivia, in Peru the tradition universally practised is for the concession holder to bear all the costs of food and other living expenses for the workers.

²⁹ Apart from local produce, all the remaining subsistence items have to be purchased. This entails financial expenditure before the start of the brazil nut harvest.

³⁰ *Castaneros* are increasingly cultivating rice themselves. This can allow relatively significant savings to be made on the money that has to be spent on the harvest.

other dried vegetables, flour, eggs, milk, potatoes, Quaker oats, powdered drinks (flavourings), salt, tea, vegetables, as well as local produce such as cassava, bananas and maize.

- Work tools such as machetes, axes, plastic (to protect the brazil nuts from the frequent rain), sacks, and hard hats, among others.
- Other accessories such as rifles and cartridges (for hunting animals, necessary to complement the diet³¹), torch batteries, kerosene (used as fuel for cooking), among others.
- Medicines, principally anti-venom (to counteract venom from a variety of snakes), treatment of diarrhoea, fever, etc..
- In general, personal items for washing etc. are the responsibility of each individual.

Based on information collected in the field, it was possible to calculate the average cost of each of these components.

Using the same example used previously as a model, we have assumed that 180 sacks are extracted in 16 man-months (i.e. 4 men working for some 4 months). This generates the following information:

COST STRUCTURE OF EXTRACTION (AND PREPARATION)

	Total Cost	Cost per Sack
Expenditure on Transport ¹	900 soles	5 soles
Living Expenses ²	2520 soles	14 soles
Expenditure on Labour	2700 soles	15 soles
Total Expenditure on Extraction	6120 soles	34 soles
Total Expenditure on Preparation ³	2106 soles	11.7 soles

1. Transport costs vary according to 3 fundamental factors: (a) distance between the concession and Puerto Maldonado; (b) type of access to the concession - road or river; and (c) availability or not of own means of transport. For this point we have used an average value which is equivalent to the fee charged by public transport from the middle region of the Rio Pairumano, the main brazil nut zone.³²

2 Cost of living expenses have been calculated using a cost per work-day of approximately 5 soles and the same length of stay assumed above (i.e. 4 people working for 4 months). Both figures were derived from information collected in the field.

3 Using the same method, it is estimated that expenditure on preparation is approximately one third of the cost of harvest.

³¹ Normally, preserved fish is only taken for the journey or as a back-up in case hunting should be poor. Otherwise hunting for food is universal, and is of fundamental importance in order to reduce (substantially) the expenditure required on food.

³² For more detail, the following information is given on transport fees charged by Candela Perú (in unit cost per sack) from the different brazil nut producing areas in Madre de Dios: Lago Valencia: 4.50 S/.; Río Las Piedras: 7.70 S/.; Río Parimarca: 6.60 S/.; Río Pariamanu: 4.80 S/.; Boca Pariamanu: 4.00 S/.; Pastora Grande: 1.80 S/.; Palma Real: 3.50 S/.; Carretera a Iberia: 5.45 S/.. In reality, these fees should have fallen by some 20% as the cost of fuel (the principal component of transport costs) has fallen by 25% with the coming into force of the new law of promotion of the Amazon.

These expenditures have been calculated using real (though not ideal) data. Ideally, expenditure on extraction should amount to some 25 soles, according to calculations made in a model concession, and not the 46 soles calculated here.

This information on the economic efficiency of the use of resources (only 54% efficient, approximately) is close to estimates given by other studies³³, which obtained an average index of efficiency of 56%.

This suggests that the conditions of poverty and indebtedness in which the majority of *castaneros* find themselves is largely the result of an inadequate use of financial resources, and concession-management which is not economically optimum, and which does not allow them to retain a significant net margin. In some cases, where the *castanero* has not been able to negotiate effectively and has been obliged to commit his produce unshelled, it is very probable that his “operational result” has been negative. In other words, working the concession can generate losses.

This situation is certainly alleviated by the fact that some of these costs, in effect, do not occur (such as the depreciation of equipment, which is taken into account by Candela Perú). Also by the fact that some of these payments are “made” to the *castanero* himself, or to members of his family (for example, the functions of haulier or labourer - *barriquero*).

This does not deny the fact that there are undoubtedly other components associated with the unequal negotiating positions between agents which, as we have seen, “help” to maintain this vicious circle in which the *castaneros* find themselves.

There is a real concern on the part of *castaneros* to control the level of efficiency of the workers which they contract.

One concrete form in which this can be seen is demonstrated by the following account. The price that had normally always been paid to the *barriqueros* (workers) for gathering, splitting and carrying the brazil nuts from the forest was 15 soles per sack, and no-one challenged this.

Then one *castanero* decided to pay extra for increased efficiency. He began to pay 18 soles per sack (20% more) to *barriqueros* who extracted two sacks per day, and up to 20 soles per sack (33% more than the market average) to those who extracted three.

Historically, it was believed that each worker extracted one sack per day, for which he was paid 15 soles. This novel proposal was received with much scepticism, and even rejection, by other *castaneros*, who considered the idea of paying more to the workers as totally hair-brained, particularly when the activity already generated such small profit margins.

Others were very concerned that this practice would “spoil” the market and push the price for *barriqueros* even higher, at a time when many were actually trying to push the price down to 13 soles.

³³ ÁGREDA, Víctor. Investigación Socioeconómica de la Actividad Castañera en Madre de Dios. Candela Perú y Proyecto Conservando Castañaes, June 1999.

Though the results of this strategy were never monitored systematically, there is no better proof of its success than the increasingly large band of followers that have adopted the idea. Today, during the final harvest of 1999, it is not unusual to find *castaneros* who require that their *barriqueros* extract at least two sacks per day in exchange for an extra payment (which the *barriqueros* have already learnt to demand).

This agreement benefits both parties. The *castaneros* reduce the time spent in the concession, and thus save on the cost that this extra time implies. The *barriqueros* obtain more income in less time and are able, in some cases, to enter and work in other concessions³⁴.

Expenditure on Shelling

The option exists for the *castanero* to carry out shelling himself, either using family labour (the most frequent choice) or contracted labour.

In some cases, the task of shelling is carried out in the forest, while in others it is conducted in the family units in the city of Puerto Maldonado. The third option is to use the shelling service of one of the companies, as described.

In this section we will discuss only the first two of these options, as the third has already been covered at some length.

When shelling is carried out in the forest, as well as paying in cash a previously agreed price for the work, the *castanero* carries the cost of food and lodgings for those contracted to undertake it. The rate paid is according to each Kilo of first grade nuts shelled, and this fluctuates from 0.80 S/. to 1.00 S/.

The need for this is obvious, as there is no possibility once in the forest of obtaining food in any other way. The *castanero* tries (though does not always succeed) to compensate for the cost by paying a lower piece-work rate.

When shelling is conducted in the capital, the *castanero* does not generally carry the cost of living expenses of those contracted, but pays 1.00 S/. for each Kilo of first grade nuts obtained.

³⁴ This is not a utopia. The harvest is a seasonal activity of only 3 months duration and it is generally believed that it is physically impossible to work in more than one concession at the same time. However, there are individuals (principally from the highlands in the South of the country) who emigrate temporarily to Madre de Dios to work in the brazil nut trade and accumulate a significant quantity of money, to which end they may work in 2-3 concessions. These individuals are among those most keen to increase their efficiency to a maximum

Summary of Extraction Costs

A summary of all average costs involved in extraction is given in the following table.

PRINCIPAL COSTS INCURRED BY THE *CASTANERO*
(in S/. per sack)

	Total Cost	Cost per Sack
Legal Costs	159 soles	0.88 soles
Expenditure on Preparation	2106 soles	11.7 soles
Expenditure on Transport	900 soles	5 soles
Expenditure on Labour	2700 soles	15 soles
Living Expenses	2520 soles	14 soles
Expenditure on Extraction	8385 soles	46.58 soles
Expenditure on Shelling	3600 soles	20 soles
Expenditure on Extraction and Shelling	11985 soles	66.58 soles

Source: Field work

Here we advance to the next point to consider the average transaction price this season³⁵. This allows us to appreciate the extremely small profit margins obtained by the *castaneros*, particularly if they sell their nuts unshelled, and explains why *castaneros* are so keen to process the nuts themselves, as it allows them to retain a slightly increased margin.

As detailed later, the average prices this season are as follows:

PRICE OF BRAZIL NUTS IN PUERTO MALDONADO – 1999

	Free price ¹	Price for “Committed” Produce ²
Unshelled (by sack)	52.50 S/.	46.20 S/.
Shelled (by Kilo of 1 st grade nuts)	5.40 S/.	4.75 S/.

- 1 This is the price obtained by the *castanero* in the marketplace when the product is sold free onto the market, and not given as partial payment against an advance (loan).
- 2 This is the price of produce which is committed (for repayment of an advance/loan) and has suffered a penalty of 12% against the market price.

Source: Field work.

This can be used to estimate the profit (or loss) margins obtained by the *castanero* in each case.

³⁵ The estimated figures are based on information collected in the field and compiled for the current season (1999). The entire analysis will use this as the reference period, unless otherwise stated.

There are four possible scenarios:

- Case 1: When the *castanero* sells unshelled nuts which are not “committed” (as repayment)
- Case 2: When the *castanero* “sells” unshelled nuts which are “committed”.
- Case 3: When the *castanero* sells shelled nuts which are not “committed”
- Case 4: When the *castanero* “sells” shelled nuts which are “committed”

The following table indicates the relative profitability of the activity for the *castanero* according to each of these situations.

ANALYSIS OF PROFITABILITY FOR THE *CASTANERO*
ACCORDING TO EACH POSSIBLE SCENARIO

	1 st Case ¹	2 nd Case ¹	3 rd Case ²	4 th Case ²
Extraction Costs	46.58 S/.	46.58 S/.	2.33 S/.	2.33 S/.
Shelling Costs	0.00 S/.	0.00 S/.	1.00 S/.	1.00 S/.
Total Costs (TC)	46.58 S/.	46.58 S/.	3.33 S/.	3.33 S/.
Selling Price	52.50 S/.	46.20 S/.	5.40 S/.	4.75 S/.
Profit Margin (PM)	5.92 S/.	- 0.38 S/.	2.07 S/.	1.42 S/.
PM (in % of TC)	12.71 %	- 0.82 %	62.16 %	42.64 %

1 These figures are calculated for one unit of unshelled produce = 70kg sack

2 These figures are calculated for one unit of shelled produce = Kilo of 1st grade nuts

Source: Field work

The table clearly demonstrates that profit margins are significantly higher when the product is transformed from unshelled to shelled nuts. The very low profit margins obtained when the product is sold unshelled are also evident.

There is negative net profit where *castaneros* commit the nuts unshelled [as part of an advance/loan repayment].

Unfortunately, in reality the most frequent situations are cases 2 and 4. There are few *castaneros* who have sufficient savings to provide them with adequate working capital (at least initial capital). It is because of this that many *castaneros* agree to commit their produce unshelled, but end by repaying in shelled nuts. They give as justification their desire to clear their debts and thus maintain a relationship of trust with their sources of finance, something which is only possible if they can at least recuperate their investment.

Some factors tend to alleviate the findings:

- 3 Firstly, *castaneros* almost never commit their entire production, particularly if conditions are particularly disadvantageous. They generally only request (and receive) what is really necessary to enable them to enter the concession and begin harvest. The remaining money needed is obtained from the sale of the early production as it extracted.
- 4 Secondly, as mentioned previously, many of the expenses shown are “shadow” costs; in other words, the expenditure is not actually made as the tasks are

conducted by the *castanero* himself or members of his direct family (i.e. *unpaid family labour*). In reality, therefore, total expenditure is less than that estimated in the above table.

2) **Habilitador**

From a technical standpoint, there is little substantial difference between the *habilitadores* and the traders. The only real difference lies in the commercial aspect. For the purpose of the analysis, we define the *habilitador* as an individual who provides a cash advance to *castaneros* in exchange for the promise of their future production; the price of the future production is fixed at the moment of handing over the working capital.

The “loan” agreement may cover either shelled or unshelled nuts. We have included both situations in the analysis, to estimate net profit margins for either form of the product.

Traders also buy nuts from the *castaneros* either shelled or unshelled, but in this case the product is traded freely (i.e. it is not committed against an advance). For this reason, the sale price is the same as the market price at the time of making the transaction.

Traditionally, the price pre-fixed by the *habilitador* has been lower than the price set by the trader. A recent study³⁶ estimated that the difference between them fluctuated around a value of 12% less for the product committed to the *habilitador*.

This value has been used as a basis for the analysis, in conjunction with the average [market] price of shelled and unshelled brazil nuts in Puerto Maldonado. The figures were taken from information collected in the field this year.

Using the information provided above, we made the following calculations:

PRICE OF BRAZIL NUTS IN PUERTO MALDONADO – 1999

	Market Price ¹	Price of <i>Habilitador</i> ²
Unshelled (per sack)	52.50 S/.	46.20 S/.
Shelled (per Kilo of 1 st Grade)	5.40 S/.	4.75 S/.

1 This is the price used to calculate the costs of the trader.

2 This price is calculated by subtracting 12% from the market price.

Source: Field work

Throughout the analysis, it is assumed that a yield of 20kg of first grade shelled nuts is obtained from each unit (sack) of unshelled produce.

The intermediary (*habilitador* or trader) may shell the nuts, or may market the product unshelled.

³⁶ ÁGREDA, Víctor. Investigación Socioeconómica de la Actividad Castañera en Madre de Dios. Candela Perú y Proyecto Conservando Castaños, June 1999

If the nuts are purchased unshelled, and sold unshelled, the profit is derived from the fact that the nuts are being purchased at a lower price (46.20 S/. or 4.75 S/., depending on whether the nuts are shelled or unshelled) and sold at the normal, market price (52.50 S/. or 5.40 S/.).

If the nuts have been purchased unshelled, the *habilitador* or trader may decide to process the product and then sell them shelled and, in this way, obtain a greater net profit margin.

In this case, new costs need to be incorporated into the analysis - specifically the costs of drying and shelling the product.

COST OF “LOW TECHNOLOGY” PROCESSING
OF THE BRAZIL NUTS

Activity	Unit Cost per Kilo of 1 st Grade
Drying and Handling	0.09 S/.
Shelling	1.00 S/.
TOTAL	1.09 S/.

Source: Field Work

This case refers to “low technology” processing of the brazil nuts, as distinct from the “high technology” processing carried out, ideally, by the processing companies.

Under “low technology” processing, drying is carried out in the sun on enormous platforms which fit up to 60 sacks of nuts. One worker is needed to transport the nuts to and from the platforms, stir and turn them to promote airing, and protect them from possible theft, for a period of approximately 7 days until the nuts are dry. The daily rate of a worker is approximately 15 soles and, if it is assumed that the 60 sacks yield 1200 Kilos, the unit cost is calculated at 0.09 soles per Kilo of first grade nuts

This is in contrast to processing by the *castanero*, where we have not added any expenditure for drying. This is because in the case of the *habilitador* (or trader) the process is on a considerably larger scale. The platforms are much larger, and the process requires special attention. This necessitates either contracting a worker, or that the intermediary (or family member) carries out the task himself³⁷.

In the case of the *castanero*, drying is carried out on a succession of small plots while, at the same time, a series of other (related or unrelated) activities are performed. In other words, the task does not imply additional costs or the dedication of any individual exclusively to complete the operation.

The *habilitadores* normally have shelling machines similar to those used by the companies. However, in some cases they do not, and instead use sticks and stones to break the shells.

³⁷ As already indicated, all costs will be entered: remunerated and family members (not remunerated).

There is no differentiation in terms of payment of those carrying out the shelling (usually women), and the rate is 1.00 S/. per Kilo of 1st grade nuts shelled.

The following table gives a summary of the costs, selling prices and profit margins for the *habilitador*.

**ANALYSIS OF PROFITABILITY FOR THE *HABILITADOR*
IN EACH POSSIBLE CONTEXTUAL RELATIONSHIP**

	1 st Case ¹	2 nd Case ²	3 rd Case ²
Cost of Raw Materials	46.20 S/.	2.31 S/.	4.75 S/.
Processing Cost	0.00 S/.	1.09 S/.	0.00 S/.
Total Cost (TC)	46.20 S/.	3.40 S/.	4.75 S/.
Selling Price	52.50 S/.	5.40 S/.	5.40 S/.
Profit Margin	6.30 S/.	2.00 S/.	0.65 S/.
Profit Margin (in % of TC)	13.64 %	58.82 %	13.68 %

1st Case: The *habilitador* buys unshelled and sells unshelled

2nd case: The *habilitador* buys unshelled and sells shelled

3rd Case: The *habilitador* buys shelled and sells shelled

1 The figures are calculated per unit of unshelled product = sack of 70 kg.

2 The figures are calculated per unit of shelled product = Kilo of 1st grade nuts

Source: Field Work

In this case it can be seen that the levels of profit are, normally, positive in all cases, although slightly lower than those obtained, in some very specific cases, by the *castanero*.

3) Trader

In the case of the trader, as noted earlier, the price at which he purchases is the market price, and the same is also true for the selling price. For this reason, we analyse only one case: that in which the trader conducts processing of the nuts in his “low technology” units. In the other cases previously considered, there would [in theory] be no profit margin³⁸.

In reality, however, the latter situations are observed; i.e. the purchase and sale of the product in the same form (shelled or unshelled).

This generally occurs when the trader buys the nuts in the concessions and sells them in the city of Puerto Maldonado. Factors that need to be taken into account in these cases include the following:

- His transport costs must be reduced to levels below those charged by the companies or public transport units.
- He must take advantage of the lack of (or wrong) information held by *castaneros* (while they are in the forest) about the current price situation.

³⁸ When he buys the product shelled and sells it shelled and when he buys unshelled and sells unshelled. In each case, the purchase and selling prices would be the same.

- He buys sensing that the price will soon increase, thus providing him with his profit margin.

Except for the last case, in which there is a certain element of risk, the first two cases provide a secure (though perhaps small) profit.

As these cases are unusual, they are not considered here and the analysis focuses on the case of the trader who buys nuts unshelled at the market price, and then sells them shelled, again at the market price.

**ANALYSIS OF PROFITABILITY FOR THE TRADER
IN EACH POSSIBLE CONTEXTUAL RELATIONSHIP**

	Sole Case*
Cost of Raw Materials	2.63 S/.
Processing Cost	1.09 S/.
Total Cost (TC)	3.72 S/.
Selling price	5.40 S/.
Profit Margin	1.68 S/.
Profit Margin (in % of TC)	45.36 %

* This refers to the trader who buys unshelled nuts at the market price, processes them, and then sells them shelled, again at the market price. The figures are calculated per unit of unshelled product = sack of 70 kg.

Source: Field Work

As can be seen, the profit margin of the trader is less than that of the *habilitador* for a similar situation. However, the trader has the advantage that his profit is secure, while the *habilitador* runs the risk that the indebted *castanero* does not repay his debt.

This is without mentioning the financial cost to the *habilitador* of having his capital tied up by a third party, without being able to move it, without charging any rate of interest, and for a period of time which is uncertain, but not less than two months.

4) Processing and Export Companies

It is important here to make the qualitative distinction between a processing company and an export company.

A processing company is one which has the buildings and equipment required to process (dry and shell) brazil nuts in a manner which is centralised and “modernised”.

A company which merely exports does not have these facilities, and generally has access to relatively small buildings which are sufficient only to store shelled nuts temporarily between purchase and transport to the place of export. These companies also employ considerably fewer labourers.

Although both fall within the category of “exporters”, their fixed and variable costs are very different, also their possibilities of working and of generating aggregated value.

A processing company can purchase either shelled or unshelled produce. An export company can buy only shelled nuts. The impact of both on the price and the market, also their margin of manoeuvrability under different economic situations, are also variable - in prejudice of the latter [the export company].

The following table shows in detail the principal expenditures which are incurred during the final phases of the chain: handling of the product, processing, transport to the final destination before export, selection, and packing; as well as administrative and marketing costs³⁹.

PRINCIPAL COSTS INCURRED BY THE COMPANY
(in S/. per Kilo of shelled brazil nuts for export⁴⁰)

	Processing Company	Export Company
Drying (using modern equipment)	0.15 S/.	0.00 S/.
Shelling (using modern equipment)	1.00 S/.	0.00 S/.
Handling	0.17 S/.	0.03 S/.
Packing and transport to Lima	1.76 S/.	1.76 S/.
Selection according to size and [exportable] quality	0.17 S/.	0.17 S/.
Packing and wrapping for export	0.12 S/.	0.12 S/.
Administrative costs	1.95 S/.	0.83 S/.
Marketing costs	0.60 S/.	0.42 S/.
TOTAL	4.77 S/.	3.31 S/.

Source: Candela Perú

A calculation was made using internal data from Candela Perú, by deducting expenditures not relevant in companies without their own processing plant.

The following section details the fundamental differences between these two types of company.

These differences can be classed into 3 groups:

- Handling
- Expenditure on administration
- Expenditure on marketing

We indicated previously the difference between the more modern “high technology” drying conducted by the processing companies, and the “low technology” drying which was described under the analysis of the *habilitador*.

In the case of the companies, there are two types of drying:

³⁹ These costs (as well as cost relating to the *castanero*) are given in detail in the relevant annexes.

⁴⁰ For practical purposes, we use synonymously the categories of “first grade brazil nuts” and “export quality brazil nuts”. However, in reality, only some 80% of nuts marketed in Puerto Maldonado as first grade are actually of export quality.

- Drying of the nuts in-shell in an oven which is either oil fired, or uses as fuel firewood such as brazil nut “coconuts” or even discarded shells (for example)
- Drying of the shelled nuts in an oven which runs on electricity.

The unit cost calculated by Candela Perú for each type of dryer is approximately US\$0.05, which takes into account the cost of electricity and fuel (the firewood is obviously free).

We will now consider the differences that exist within the three components mentioned above.

Expenditure on Handling

As mentioned earlier, an export company requires far fewer labouring staff. The only work involved includes the airing of the shelled nuts, and packing and transport for carriage to Lima or Arequipa (the only two departure points for final export of the product). In general, this requires only one labourer, in contrast to the case of Candela Perú which, in 1998, contracted 5 labourers.

If this figure is taken as average for the number of labourers employed by the processing companies, an estimate can be made of the unit costs for handling in the [purely] export companies by dividing the unit costs of handling in the former by 5.

Expenditure on Administration

For the purposes of the analysis, the following employees have not been included [in the case of export companies]: head of the plant, administrative assistant, plant assistant, assistant accountant and watchman. The only costs retained were for the administrative director, collection co-ordinator, and head of selection.

Similarly, expenditure on other components has also been reduced including reparation and maintenance of the plant, water and electricity, vehicle and fuel, office equipment, cleaning equipment, other consumables, sacks, depreciation and rent. These have been reduced to levels which are appropriate for a construction which is much smaller and functions purely as a store. These aspects are covered in detail in the relevant annex.

Expenditure on Marketing

Finally, in considering expenditure on commercialisation, we have reduced by 25% the high salary paid to the director of the plant in Lima, and we have eliminated costs of travel and subsistence.

Summary

With these modifications, we can conduct an analysis of the profitability of these two types of company. The analysis assumes the FOB export price to be US\$1.39 per Pound, which is equivalent in local currency to 10.18 new soles per Kilo of shelled nuts of export quality.

The analysis was conducted for the following situations:

- Case 1: When a processing company buys unshelled produce
- Case 2: When a processing company buys shelled produce
- Case 3: When an export company buys shelled produce

In these three cases, we have assumed that the company pays the market price. Almost all companies function simultaneously as lenders (*habilitadores*) and buyers, as explained earlier.

In the first instance, we consider the case of companies that buy on the open market, at market prices.

ANALYSIS OF THE PROFITABILITY OF TRADING COMPANIES IN EACH POSSIBLE CONTEXTUAL RELATIONSHIP

	Case 1	Case 2	Case 3
Purchase price	2.63 S/.	5.40 S/.	5.40 S/.
Cost of shelling	1.15 S/.	0.00 S/.	0.00 S/.
Business costs*	4.77 S/.	4.77 S/.	3.31 S/.
Total costs (TC)	8.55 S/.	10.17 S/.	8.71 S/.
Selling price	10.18 S/.	10.18 S/.	10.18 S/.
Profit margin	1.63 S/.	0.01 S/.	1.47 S/.
Profit margin (as % of TC)	19.13 %	0.10 %	16.88 %

* Business costs include all expenses detailed in the earlier table on costs attributed to the companies.

Source: Field work

The low profit margin obtained when a processing company buys shelled nuts (or offers a shelling service, which is virtually the same) is surprising.

It is important to note that the cost structure of Candela Perú contains some expenses which are unusual and not characteristic of all companies. This can be seen in the details given. We do not pretend to comment on which of these costs actually correspond to its activities as an exporter (i.e. which expenditures are made efficiently, and which not).

The following table presents information on the profitability of companies that function as *habilitadores*. All the information and tools necessary for the analysis were already available (it was necessary only to modify the value assigned to the purchase price).

ANALYSIS OF PROFITABILITY OF COMPANIES ACTING AS LENDERS
(*HABILITADORES*) IN EACH POSSIBLE CONTEXTUAL RELATIONSHIP

	Case 1	Case 2	Case 3
Purchase price	2.31 S/.	4.75 S/.	4.75 S/.
Cost of shelling	1.15 S/.	0.00 S/.	0.00 S/.
Business costs*	4.77 S/.	4.77 S/.	3.31 S/.
Total costs (TC)	8.23 S/.	9.52 S/.	8.06 S/.
Selling price	10.18 S/.	10.18 S/.	10.18 S/.
Profit margin	1.95 S/.	0.66 S/.	2.12 S/.
Profit margin (as % of TC)	23.69 %	6.93 %	26.30 %

* Business costs include all expenses detailed in the earlier table on costs attributed to the companies.

Source: Field work

In reality, a company normally uses both forms of operating. Part of their capital is invested in obtaining future produce, and this provides them with a relatively greater profit margin. Their remaining capital is retained in order to diversify their portfolio of (types of) clients, and reduce their level of risk.

Appendix 5. Brazil Nut Grades

Brazil nuts are graded according to size (nuts to the lb).

In shell they are classified as:

Extra large (40 to 45 nuts/lb) — large (45 to 50 nuts/lb) — medium (55 to 60 nuts/lb).

Shelled nuts, referred to as kernels, are classified as:

Large (90 to 110 nuts/lb) — medium (110 to 130 nuts/lb) — small (140 to 160 nuts/lb) — midget (160 to 180nuts/lb) — tiny (180 to 220 nut/lb).

There is also a classification for broken and chipped kernels.

Quality standards relate particularly to moisture content which if too high can result in moulds which result in aflotoxins. Europe, a major market, has strict aflotoxin quality standards.

With regard to quality in general, in addition to mould, rodent damage, moth infestation are also considerable problems at the origin processing plants prior to vacuum packing.