

**COSTS, MARGINS AND RETURNS
IN AGRICULTURAL MARKETING**

Marketing and Agribusiness Development Paper No. 1

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for the

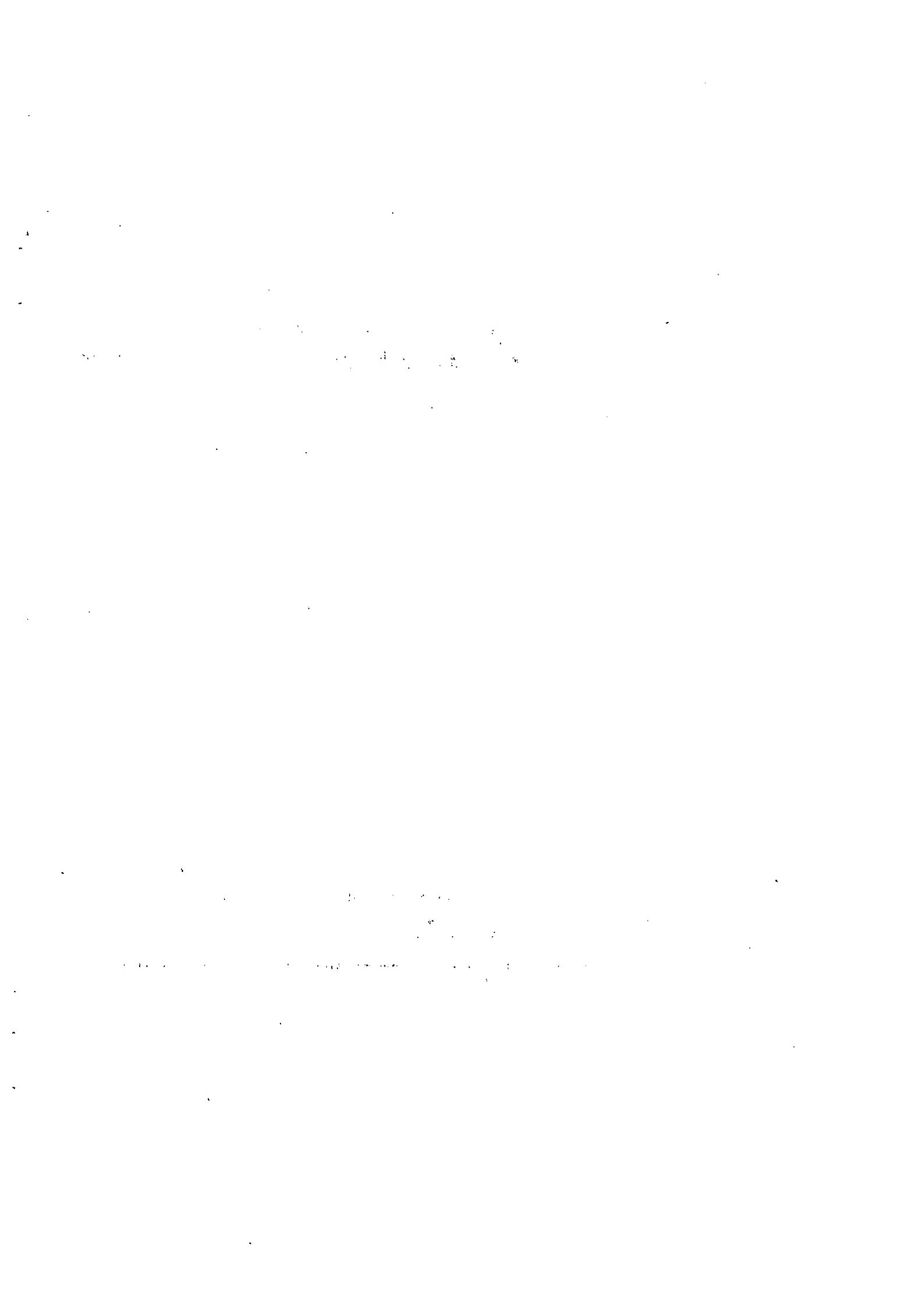
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1. Purpose of the guide

What are marketing costs and why do they have to be recovered?

The production of crops and livestock on the farm is just a first step in the often long process of providing consumers with the agricultural and food products that they require. As populations and incomes grow, as people increasingly move into cities, and as transport networks develop, the role of **marketing** becomes increasingly important. The roles of the **marketing system** include storing products until they are required, transforming raw materials into the end products demanded by consumers, and moving products from the point of production to the point of consumption. In addition, marketing systems also have to provide the farmer with the inputs required for agricultural production and the consumer goods needed in rural areas.

Not only should an effective marketing system provide these physical services in a cost-effective manner, thereby helping to raise farm incomes and lower consumer prices, but it should also act as a channel of communication between producers and consumers, ensuring that the right products are produced in appropriate quantities and marketed at the correct time.

One of the normal features of economic development and rising standards of living is that increasing amounts of marketing services are added to agricultural commodities to meet the consumers' demand for quality, variety, hygiene and convenience. Almost invariably this reduces the farmers' share of the final retail price of food and leads to complaints from farmers' organisations about the excessive costs of marketing.

Marketing agents, in common with any farmer or type of business, can only continue to operate if they receive a reasonable return for their efforts. However, marketing can be a surprisingly costly and risky business. Unfortunately, ignorance of this fact is widespread, and is one of the reasons leading officials and politicians, often mistakenly, to accuse private traders of "exploiting" farmers and/or consumers.

One of the best ways of coping with this problem is to be able to measure all of the various costs involved in the marketing activities which are required in an effective marketing system. Allegations of "exploitation" and "inefficiency" can then be assessed on the basis of hard evidence.

A **marketing margin** is the difference between the value of a product or a group of products at one stage in the marketing process and the value of an equivalent product or group of products at another stage. Measuring this margin indicates how much has been paid for the processing and marketing services applied to the product(s) at that particular stage in the marketing process. Margin analysis is thus the first step in providing the factual information

necessary to dispel the misconceptions which frequently arise when assessing the performance of the food marketing system. Equally, it can provide clues to significant weaknesses and inefficiencies in the system. For example, something may be wrong if the margin for one product varies distinctively from that for similar products marketed through different channels. However, estimating margins is only one part of the story. To get more information it is necessary to *disaggregate* the margin and calculate the marketing costs associated with the various services.

The main purposes of this guide are thus to increase knowledge of costs involved in agricultural marketing and to provide government officials, researchers and those involved in physical marketing with advice on how to calculate or estimate marketing costs and margins. Access to this information should help to identify weaknesses in food and agricultural marketing systems, and to suggest improvements which increase the returns for farmers; reduce the costs of food and improve the quality of food and other agricultural products.

2. The Marketing Chain

Only in the very simplest of marketing systems will a farmer sell produce directly to a consumer. Typically a **marketing chain** or **marketing channel** will involve several *intermediaries*. For example, a farmer may sell her produce initially to a local assembler, who then sells it in turn to a lorry trader. The lorry trader is responsible for transporting the produce to town, where it may be sold directly to a large number of retailers or perhaps to a wholesaler who then sells it to retailers.

The first task in measuring marketing margins and costs is therefore to describe the structure of the marketing chain, starting at the farm gate and tracing the product through the various intermediaries until it reaches the final consumer. Drawing a flow chart, and attempting to estimate the quantities going through each channel, helps in this exercise.

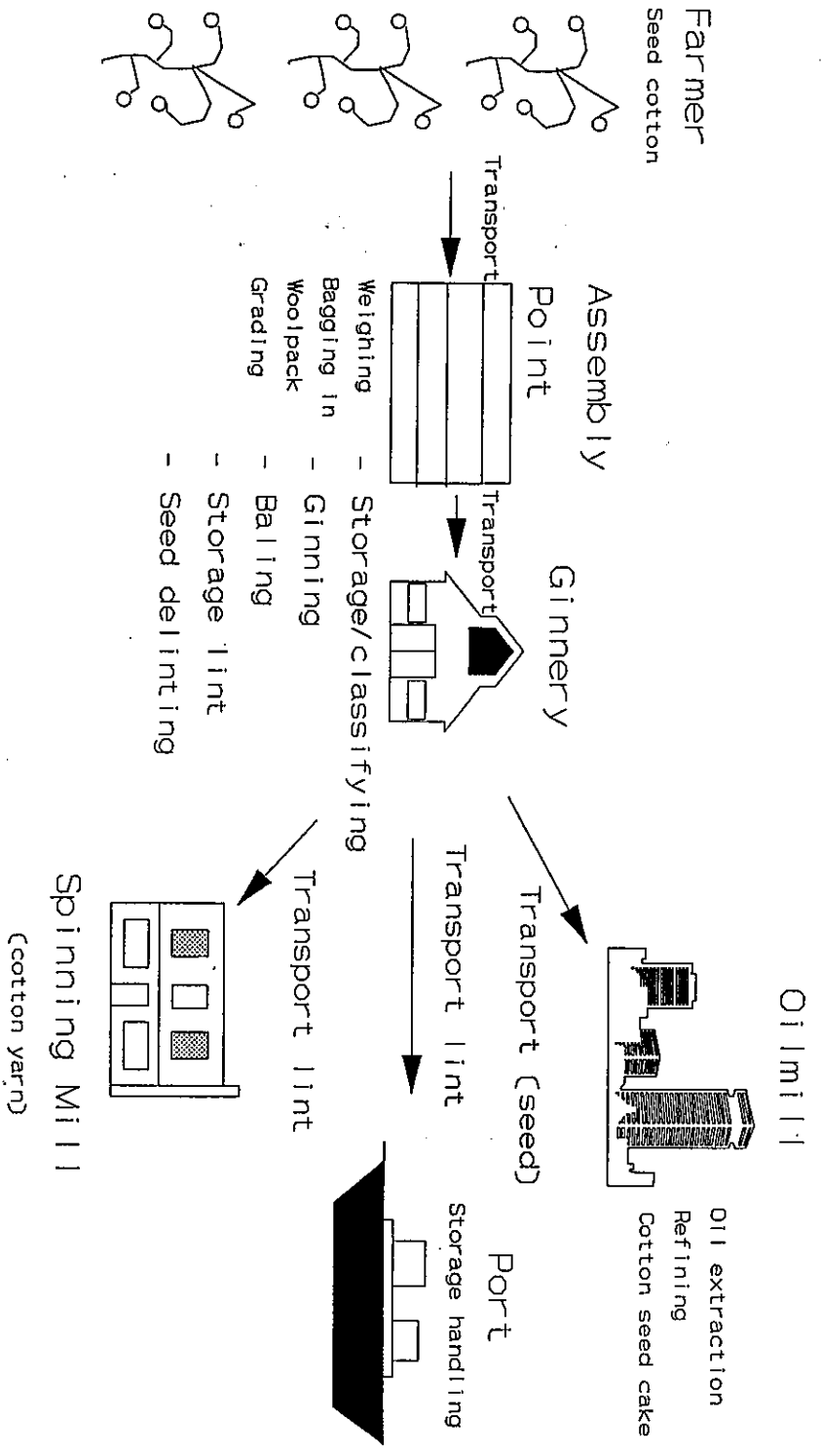
This may sound easy, but there are several points that have to be considered. First, it is not unusual for there to be several different marketing channels for the same product. For example, large farmers may use different outlets than small farmers; marketing channels for farmers near to urban centres may differ from those for distant farmers; some produce may be sold fresh and some processed or stored, and the marketing chains for each may vary; produce sold at harvest time may be sold to different intermediaries from that stored on the farm for several months; and so on. A first task is thus to establish which are the most important channels to be studied, and concentrate attention initially on one or two of these.

Various sources of published and unpublished information can help to quantify both the total amounts being produced, marketed, processed and consumed for different uses, and the amounts moving through different channels and agents.

Second, during the marketing process, the product that left the farm may be processed or transformed into two or more products. For example, seed cotton is ginned to produce cotton seed (which may be crushed to produce cotton seed oil and cotton seed cake) and cotton lint for textile manufacture. Which of these various products is going to be traced through to the ultimate consumer?

Having established the broad shapes of the marketing channels, a useful second task is to identify and list the various functions that are performed at each stage in the marketing process. This will form a useful checklist to ensure that all costs of these various activities have been measured.

A MARKETING CHAIN EXAMPLE - COTTON -



3. Margins and mark-ups

Once the basic structure of a marketing channel has been established, it is, *in principle*, relatively easy to collect information on the price at which the product is bought and sold at each stage in the marketing process. This information provides the basic material required for margin estimation, but a series of cautionary lessons need to be learnt before a meaningful analysis can be made.

With a product that remains essentially unchanged during the marketing process, the difference between the price per unit of that product at the farm gate and the price per unit when sold to the final consumer (the retail price) is termed the total gross margin or, alternatively, the total price spread.

Various ways of presenting the same information are possible, depending on the reasons for the analysis. For example, the farm-gate price can be shown as a percentage of the retail price, showing the farmer's share of the of the retail value, i.e:

$$\frac{\text{Farm gate-price}}{\text{Retail price}} \times 100 = \text{Farmer's share (\%)}$$

If we are more interested in the total costs of marketing, the percentage total gross margin can be calculated, i.e.:

$$\frac{\text{Retail price} - \text{farm-gate price}}{\text{Retail price}} \times 100 = \text{Total gross margin (\%)}$$

Alternatively, the difference between the retail price and the farm gate price may be calculated as a percentage of the farm gate price to give the percentage total mark-up, i.e:

$$\frac{\text{Retail price} - \text{farm-gate price}}{\text{Farm gate price}} \times 100 = \text{Total mark-up (\%)}$$

It should be noted that because the farm-gate price is (in the absence of subsidies) always lower than the retail price. A percentage mark-up will always be a larger number than a percentage gross margin if they refer to the same situation. For example, with a farm-gate price of 70 and a retail price of 100 the total gross margin will be 30 percent while the mark-up will be 42.9 percent ($(100-70)/70$). As a result, people who wish to sensationalise the costs of marketing often use the mark-up calculation rather than the gross margin.

Note that variations in these absolute price spreads or percentage margins or mark-ups do not necessarily indicate differences in efficiency. For example, comparing the prices which farmers receive 20 km. from an urban centre with those received for the same product by

farmers located 100 km. away, we would expect to find a lower farmers' share and a higher total mark-up in the latter case because of the greater costs to transport the product from the farmers to the consumer. Similar cautions apply to a comparison of price spreads for produce that moves quickly through the marketing channels with produce that is stored for several months.

Margins can be calculated for each stage in the marketing chain. For instance, farmer - wholesaler or wholesaler - retailer price spreads can be calculated.

Where the product remains basically unchanged during marketing, the main problems are ensuring the collection of reliable and comparable price data. Data can often be obtained from a variety of sources, but it must be remembered that different sources of data will probably have been collected for very different purposes. The definitions used, the collection methods (e.g. sampling techniques, frequency of collection, single grade or all grades) and methods of analysis (e.g. weighted or simple averages, pooling of all grades or separation) all need careful scrutiny before meaningful analysis of the data is possible.

Reliability can also be a problem when prices are not openly displayed but have to be obtained through interview. Traders can usually tell the difference between a genuine customer and a data collector and the prices quoted to the latter may be very different from those at which sales are actually negotiated! Comparability can be a serious issue either when produce is not clearly graded, as it is difficult to ensure that produce of similar quality is being compared, or when prices are extremely variable on a day-to-day basis. In both cases, accurate measures of price spreads become difficult and one has to rely on "average" or "representative" values.

More complicated problems arise *when the product is transformed* during marketing, and by-products are created or wastage occurs. In these cases one kilogram of product as sold by the farmer does not result in one kilogram of the same product being sold to consumers.

For example, suppose a miller purchases rice paddy from a farmer for 25 cents per kg. of paddy and sells rice to the wholesaler for 50 cents per kg. of rice. It would be clearly wrong to calculate the miller's mark-up as

$$\frac{50 - 25}{25} \times 100 = 100\%$$

because like is not being compared with like. Rice paddy and milled rice are two separate products. In this case we need to discover the conversion factor for paddy to milled rice, and the value of any by-products. Suppose the conversion factor, or extraction rate, is 70 percent, i.e. one kilogram of paddy produces 0.7 kg. of edible rice. At the same time suppose 0.2 kg. of saleable by-products are produced that can be sold at 10 cents per kilogram, the

remaining 0.1 kg. being waste. In this case the wholesale value of the kilogram of paddy sold by the farmer is the value (quantity multiplied by price) of the milled rice obtained from one kilogram of paddy plus the value of by-products from one kilogram of paddy, i.e.

$$(0.7 \times 50) + (0.2 \times 10) = 37 \text{ cents}$$

A more accurate representation of the miller's mark-up on the *price of paddy* would thus be

$$\frac{37 - 25}{25} \times 100 = 48\%$$

This is a very good example of the ways in which mark-ups can be exaggerated. Notice how an incorrect estimation of a 100 percent mark-up has been more than halved by ensuring the comparison of like with like.

Once a conversion factor applies at one stage in the marketing process, its effects have to be carried through the entire marketing system up to the final stage being considered by the analysis. Moreover, transformations, by-product creation and wastage can occur at various points in the marketing chain, and conversion factors may have to be compounded. Complications of this type will be introduced in Chapter 10 "Putting it all together".

4. Marketing Costs

A marketing margin represents the charge which organisations make for providing marketing services. The next stage in the analysis is to determine whether these charges are reasonable in relation to the services being offered, and this requires us to calculate the "costs" of these services.

One way of defining "costs" is that they are "all of the expenses incurred in organising and carrying out the marketing process". Another definition is "the charge which should be made for any marketing activity". Assembling, transport, storage, grading, processing, wholesaling and retailing, which can all be stages in the marketing chain, involve expenses. The actual *structure of costs* for any commodity will depend very much on particular circumstances. Some of the more obvious factors are the distance between production and consumption and the state of the roads, the bulkiness or value-to-weight ratio of the crop, perishability, the length of any storage period, and the amount of processing and packaging that is required.

People are often ignorant of the true costs of marketing because many of these costs are "hidden", and only come to light with patient investigation and reconstruction of the whole marketing process. One reason for this failure to identify costs is that many costs do not directly involve money. If we buy food which is carefully packaged in a plastic container, we recognise that this container has cost money and expect a charge to be made for this service. But many costs do not directly involve money, or are **implicit**. These could include unpaid family labour or the value of capital tied up in the owner's business.

To calculate the true costs of marketing, estimates have to be made of all these implicit cost items. We use the economists' concept of **opportunity cost** for this purpose. This is defined as "the benefit foregone by not using a resource in its best alternative use". For example, if a farmer spends 6 hours walking to and from market and waiting there to sell 10 kg. of beans, when she could have been employed as a casual worker at 50 cents per hour, then the opportunity cost of the labour involved in selling the beans is 300 cents or 30 cents per kg.

Similarly, an opportunity cost has to be determined for the capital tied up in the marketing operation. A rate of interest will normally be charged on money borrowed from a bank and this is an explicit cost. The bank's rate of interest on deposit accounts is usually an appropriate indicator for the minimum opportunity cost of the owner's personal capital, or equity capital, which is tied up in the business, because if the capital had not been invested in the business it could have been earning interest deposited in a bank. Of course, the owner might have a more attractive use for the money than depositing it in a bank and the return in this alternative activity might be a more appropriate opportunity cost to use. With experience it is usually possible to find a monetary approximation for opportunity cost in virtually all situations.

It is relatively easy to assign a cost to items such as non-returnable containers which are used up immediately in marketing. But what do we do about assessing a charge for the building in which the produce is stored? Here we face the problem that the resource is not used up immediately, but is expected to provide services over a number of years. In this case, even if we know how much it cost to construct the building, we would not charge all of this

amount to the first year's use. Instead we would allocate this capital, or depreciation charge, over the expected life of the building. Secondly, the replacement cost of items such as buildings is likely to rise with inflation, and the depreciation charge needs to be increased over time to reflect this. Some techniques available to cope with these problems are discussed in Chapter 5.

We also have to distinguish between variable and overhead costs. Variable costs are those that vary with the level of throughput or turnover, so that the total costs of these items tend to increase in line with throughput, and average cost per unit of throughput is relatively constant. Packaging costs are one example of this.

In contrast, overhead or fixed costs have to be met regardless of the level of throughput. Buildings used for storage are a good example of an overhead cost. In a year when very little produce is stored the average cost per tonne stored might be very high and it may thus be more appropriate to use a more representative year when calculating average costs.

Another problem area relates to the allocation of joint costs. Very often we are interested in the costs of marketing a particular commodity. But many traders and organisations handle a wide range of products. Some possible approaches to cope with this problem will be discussed in Chapter 9.

Although it is desirable to attach costs to all resources used in marketing, it is, in practice, useful to differentiate between those resources which are purchased from outside, and those that are actually owned by the marketing organisation. Most of the implicit cost items, which are harder to cost accurately, will fall into this latter category.

The costs of resources purchased from outside deducted from the total marketing margin, leaves us with the return to the organisation. This has to cover the costs of all the resources provided by the organisation. For example, if the organisation is a private trader, this return may have to cover the cost of the trader's labour and that of his or her family, the trader's management contribution, a return on capital invested in the business, and pure profit. The issue of returns to traders is discussed in Chapter 10.

5. Capital and Financing Costs

We noted above that there are special problems involved in measuring the costs of items such as buildings. This was used as an example of what are termed "capital" goods, a term used to describe any item that provides a flow of services over time, rather than being used up immediately and irrevocably in a production process. This description applies to a large number of items used in marketing, ranging from the transport used to carry goods (donkeys and horses, bicycles, carts, trucks and lorries are all covered by this definition), through packaging that can be used more than once, the plant and equipment used for processing, to storage facilities used by both wholesalers and retailers.

These capital goods can either be purchased or rented. If they are rented, then the rental charge can be used directly as the cost to the marketing agent, and included in cost calculations. If the rental is on, say, an annual basis and does not vary with how much the item is used, then it will be classified as an overhead or fixed cost, and the unit cost will then vary with its utilisation. However, the rental may be based on the volume of throughput or use (a variable cost), for example per tonne handled. Frequently the rental charge for hiring vehicles and storage facilities is a combination of fixed and variable charges. There may be an annual charge combined with an additional fee related to volume handled during the year.

The problems of cost estimation are slightly more complicated if the capital good is purchased by a marketing agent, whether using her own funds, or using borrowed money. There are now two types of cost which are incurred and which have to be calculated or estimated. First, even though the capital good is expected to provide a flow of services over time, we must expect it to eventually wear out and to be replaced. To provide for this, it is customary to spread the cost of the capital good over its productive life. This is called **depreciation**, and is a way of making allowance for the fact that the asset will eventually have to be replaced as a result of use, age or obsolescence.

There are two frequently used methods of calculating the annual depreciation of an investment good: **straight line depreciation** and **declining balance**.

Straight line depreciation allocates the value of the asset equally over its expected life, as follows:

$$D_i = (OC - SV)/L$$

where:

- D_i is the depreciation in Year i
- OC is the original cost of the asset
- SV is its salvage or resale value at L where
- L is its expected life in years.

Thus a truck worth \$10,000 originally, with scrap value of \$200 and an expected economic life of 15 years would depreciate at \$653.33 per year, i.e:

$$D_i = \frac{10,000 - 200}{15} = 653.33$$

Declining balance depreciation is calculated by applying a constant depreciation rate to the value of the asset at the beginning of each year. The formula is:

$$D_i = RV \times R$$

where:

D_i is the depreciation in Year i

RV is the value at the beginning of the Year i

R is the depreciation rate expressed as a decimal (e.g. 10% = 0.1)

If we take the same example as above, and set the depreciation rate equal to 10 percent (0.1) then the depreciation is as follows:

Year 1	$\$10,000 \times 0.1 = \$1,000$
Year 2	$(\$10,000 - \$1,000) \times 0.1 = \$900$
Year 3	$(\$9,000 - \$900) \times 0.1 = \$810$

This method reflects the changes in market value of an asset more closely than does the straight line method, as most assets decline in absolute money value most rapidly in their early years. It is a little more complicated to calculate, however, and requires the choice of a rate of depreciation. Nonetheless, it is probably the more appropriate of the two methods.

Once a depreciation rate (or asset life) is chosen, depreciation is a fixed cost, which does not vary with the volume of the commodity flowing through the system. However, the rate of depreciation is likely to be influenced by the use made of an asset. For example, a truck driven 100,000 km. per year will wear out more rapidly than one driven only 10,000 km. per year, and it would be sensible to reflect this in the depreciation rates chosen. However, in many countries the accountancy profession (or the tax authorities) choose standard depreciation rates for different types of assets which everyone uses regardless of whether they are realistic or not.

Depreciation is not the only cost of using capital. As indicated in Chapter 4, the *opportunity cost* of tying funds up in the investment good has also to be calculated. For example, in the case above, if the marketing organisation had not purchased the lorry, it could have at least put \$10,000 in the bank and earned interest on it. Alternatively it would not have needed to borrow money from the bank to make the purchase. In this case the annual interest cost is usually calculated by applying the interest rate to the asset value at the beginning of each year.

A similar example relates to storage. When commodities are kept in store they tie up capital or finance which could have been used for other purposes, i.e. capital has an opportunity cost which must be included in marketing costs, as part of the costs of storage. This cost, the cost of **working capital**, is calculated by applying an appropriate interest rate to the average amount involved for the relevant time period.

6. Transport Costs

Transport is nearly always one of the major marketing costs, particularly in situations where long distances are involved, roads are poorly maintained, and/or when only small quantities of produce can be transported at one time. Moreover, estimating transport costs illustrates many of the issues and problems outlined in the earlier sections and this makes it a useful place to start our study of the practical issues involved in measuring the various components of marketing costs.

The total costs of transport include:

1. the depreciation of vehicles (see Chapter 5);
2. other fixed or overhead costs such as vehicle taxes, insurance, and supervision;
3. repairs, spare parts including tyres, and maintenance;
4. fuel and oil;
5. the time of the driver and others travelling with the vehicle;
6. return on capital; etc.

These costs are usually calculated on an annual basis, and then divided by the expected travel distance and tonnage transported to give a basic charge per tonne/kilometre. An example of the fixed and variable cost items that need to be calculated or estimated is given in Table 1.

Table 1: Road Operating Costs for a Truck covering 100,000 Km. per year.	
('000 currency units per year)	
Fixed costs	
Vehicle depreciation	80
Licence and registration fee	10
Comprehensive insurance cover	150
Other overheads	10
Interest on capital	75
Gross employment costs (wages, etc.)	95
<i>Total fixed costs</i>	<u>420</u>
Variable costs	
Routine maintenance	
every 25,000 km. @9,000	36
every 2,000 km. @4,000	200
spare parts	85
labour charges	19
Fuel	185
Oil and lubricants	35
<i>Total variable costs</i>	<u>560</u>
Total cost	<u>980</u>
Average cost per km. = 9.8	

The calculation in the table omits an important factor, namely, the volume of produce transported. Assume the costs are for a 10-tonne truck which achieves a 40 percent load factor, i.e. total transport in a year is 400,000 tonne-kilometres. The average cost per tonne/km. is then:

$$\frac{980,000}{400,000} = 2.45 \text{ per tonne/km.}$$

It can be seen that this calculation of cost per tonne/km. is very sensitive to both the distance travelled and the tonnage carried during a year. Because of the high fixed costs associated with vehicle ownership, transport costs per tonne-kilometre can be very high if vehicles are underutilised, for example if they are only used for a few weeks of the year for crop purchases. If two or more people share a vehicle for transporting produce then the total cost can be apportioned by the share of the total tonnage carried for each person.

For human transport there is the opportunity cost of time, together with any extra incidental expenditures which would not have been incurred if the person was not engaged in transport activities.

Estimating the cost of transport is much easier when a vehicle is hired, or the services of a transporter are used, as the hirer will normally have included all of the costs in the charge made. Costs per tonne-kilometre will be higher for short journeys, where the time spent loading, unloading and waiting is likely to be a high percentage of total hire time, and also for small loads where vehicles are not being used to capacity.

7. Costs of product losses

Product losses can occur at all points in the marketing chain. In general, most losses occur during transport, storage or processing. Common reasons for losses are spoilage of the commodity through infestation and disease, losses to birds and vermin, pilfering and theft, poor packaging and handling, and defects in the use of processing machinery. Limited demand at prices which cover ex-store marketing costs may also mean produce being thrown away.

The level of losses that occurs can vary widely depending on the type of commodity and the handling and storage technology. It is often difficult to get good estimates of product losses but justifiable assessments are essential for realistic calculations of marketing costs.

Some "losses" are, in fact, advantageous. For example, properly stored grain will suffer a moisture loss which improves its longevity. On other occasions the losses are deliberate. For example, a customary practice when transporting produce such as cabbages is to use the outside leaves as a cheap and effective form of packaging. Before they are sold to the final consumer, these outside leaves are trimmed off, leaving a presentable, and edible, commodity.

Sometimes the amount of wastage at each stage of the marketing process may seem trivial, or difficult to measure, but if it is ignored it may seriously distort the assessment of the efficiency of the marketing process. The distortion occurs because, as with many processing operations, more than one kilogram of produce at the farm-gate is required to provide the ultimate consumer with one kilogram of the final product.

Some simple examples of different ways of dealing with wastage in analysing marketing margins and costs may illustrate some of the possible confusions and ambiguities. Let us take an example of cabbages which are bought by a trader from a farmer for \$4 per kg. and later sold by a retailer for \$6 per kg. Between the farm-gate and the retailer, there is a 20 percent wastage. To make life simple, assume that the only "outside" costs are wages and transport amounting to \$1 per kg. of cabbages purchased from the farmer.

Examples A and B below both show **incorrect**, but frequently used, methods of calculating marketing costs.

Example A

Marketing agents frequently consider the wastage as an item of costs, and would present their costs and margins as

	<u>\$ per kg.</u>
Purchase price from farmer	4.00
Wages and transport	1.00
Wastage (20% of \$4)	0.80
<i>Total marketing cost</i>	1.80
Sale price	6.00
Return to trader	0.20

Some people not only represent physical loss as a cost, as in Example A, but also argue that it should be valued at its potential sale price rather than its purchase price, on the grounds that had the product not been lost then it could have been sold at the retail price, i.e. the retail price represents the true opportunity cost. In this case, the costs and margins would have been represented as

	\$ per kg.
Purchase price from farmer	4.00
Wages and transport	1.00
Wastage (20% of \$6)	1.20
<i>Total marketing cost</i>	2.20
Sale price	6.00
Return to trader	(0.20)

In this case the trader appears to be making a loss of \$0.20 (the brackets indicate a loss to the trader).

The preferred and recommended method of dealing with losses is to treat them in the same way that weight changes during processing are handled. The weight loss is applied as a conversion factor to either the original product or the final product, depending on the focus of the analysis. Thus with 20 percent of the initial product being wasted, it takes

$$\frac{1.0}{1.0 - 0.2} = 1.25 \text{ kg. of cabbage}$$

as purchased from the farmer to provide the consumer with 1 kg. of "edible" cabbage. Alternatively, 1 kg. of "farm" cabbages provides only 0.8 kg. of "edible" cabbages. Margins and costs associated with 1 kg. of "farm" cabbages can thus be represented as:

Example C

	\$ per kg. of "farm" cabbage
Purchase price from farmer	4.00
Wages and transport	1.00
<i>Total marketing cost</i>	1.00
Wastage conversion factor (0.8)	(0.8)
Sale price (6.0 X 0.8)	4.80
Return to trader	(0.20)

Looked at from the viewpoint of "edible" cabbage we would have

		\$ per kg. of "edible" cabbage
Wastage conversion factor	(1.25)	
Purchase price from farmer	(4.0 X 1.25)	5.00
Wages and transport	(1.0 X 1.25)	1.25
<i>Total marketing cost</i>		1.25
Sale price		6.00
Return to trader		(0.25)

It is apparent that Examples A and B give very different views of the profitability of cabbage trading! Although Example B gives the same 'return to trader' as Example C, the presentation of total marketing costs differs, and if another stage were added to the marketing chain the final results could be vastly different.

In Examples A and B, the analyst is trying to compare two different products, but "farm" cabbages are clearly not "edible" cabbages. Example C provides us with the same information in two different forms, but the message is the same - total marketing costs exceed the total marketing margin, and traders make a loss of \$0.20 per kg. of "farm" cabbages, or \$0.25 per kg. of "edible" cabbages.

Example C also manages to avoid another of the common pitfalls of measuring marketing costs. Fortunately, in this case we were specifically told that the costs related to "cabbages purchased from the farmer." It is of crucial importance to note whether costs and wastage are measured in relation to the purchased product or in terms of the product as sold. For example, if wages and transport costs had been simply recorded as \$1.0 per kg. the analyst might mistakenly have interpreted this as referring to "edible" cabbages and thus seriously underestimated the true costs involved.

8. Other Marketing Costs

Agricultural product traders face numerous other major and minor costs including packaging, various types of plant and machinery (ranging, for instance, from small weighing scales to large sorting and grading machinery), licences, taxes and other fees including bribes, advertising and other promotional and presentational costs.

It should be possible to apply the major principles governing the measurement of different types of marketing costs, discussed in the earlier sections, to all of the various cost items that might be encountered in a marketing system.

In all cases, the first requirement is to establish whether the item is a capital cost, or which components of the item need to be treated as capital costs. In this case, an appropriate depreciation rate needs to be established together with estimates of the salvage value of the item in question. The second requirement is to determine whether the cost is fixed or variable. The third requirement is to ascertain precisely which product stage the cost refers to. The fourth is to obtain realistic estimates of the conversion and wastage costs associated with different marketing operations and costs. Providing these procedures are followed it should be possible to deal with all marketing costs and margins in a systematic manner.

9. Apportionment of joint costs.

The assumption throughout this report is that we are primarily interested in the marketing costs and margins associated with particular commodities. However, we often find that organisations do not specialise in one commodity, but handle a range of commodities. This usually means that the use of many resources is shared, leading to the problem of how to apportion these joint costs between the various commodities. For example, referring to an earlier example, a cabbage trader with a lorry may use it for transporting a wide range of fruits and vegetables, and probably grain, and a whole range of farm inputs. What proportion of the total annual costs of owning and running the lorry should be allocated to cabbage marketing? Unfortunately, just as there is no precise rule for dealing with depreciation charges so there is no single satisfactory method for allocating joint costs.

The most usual procedure is to allocate the total cost in proportion to the throughput of the different commodities using it. Whether this is best done in terms of volume, weight or value is a matter of judgment. For example, transport of produce is frequently charged on a per container basis (encouraging overpacking and hence damage). Depending on the product the weight per container may vary considerably. However, in general with transport costs an allocation in terms of tonne-kilometre will be most appropriate, but in allocating the overheads associated with a retail store, the value of turnover of different commodities might be preferable. The important point is to ensure a consistent use of these, necessarily arbitrary, allocation rules once they have been made.

10. Returns to traders

In Chapter 4 it was noted that if the costs of resources purchased from outside the organisation are deducted from the total marketing margin, we are left with the "return to the organisation". It is sometimes tempting to leave the analysis at this stage, because many of the costs associated with resources owned by the organisation will be *implicit* costs which we have to estimate using the opportunity cost principle. But leaving the analysis at this stage could produce deceptive results. Suppose there were two marketing channels; in one the traders rely mainly on hired labour, but the traders in the other channel use only family labour. Other things being equal, the measured marketing costs will be higher, and the returns to the organisation lower, in the first case compared to the second. But it would be misleading to claim that traders using family labour are more "efficient" than those using hired labour. To establish this, we would have to estimate what the family labour could have earned in its next best occupation.

Following on from this, it should be apparent that the return to the organisation is not necessarily the same thing as "profit". To the economist, *profit* is the residual after all resources, land, labour (manual and management) and capital have been rewarded with their opportunity cost. Using this concept we can often find that a positive gross return to a trader disguises a negative economic profit, or even a loss, signifying that the trader would have been better off using his resources in an alternative occupation.

For instance, suppose we had a trader who, using family labour, annually purchases \$10,000 of produce, incurs \$5,000 of purchased costs in terms of transport, containers, and market fees, suffers no wastage, and has sales of \$20,000. As we can see from the table below, the returns to the trader are \$5,000.

However, assume the trader has invested \$25,000 of his own money, in a warehouse and as working capital in the business, which could have been invested in a bank at a 10 percent per annum rate of interest. Furthermore, the family labour he employs could have obtained employment elsewhere for \$1,000 whilst he could have obtained employment as a manager of a trading firm at a salary of \$3,000. Subtracting these implicit costs from the gross return to the trader, we find a negative net return, or loss, of \$1,500.

	\$
Value of Sales	20,000
<u>less Purchase price of produce</u>	<u>10,000</u>
<u>less Purchased costs(transport, etc)</u>	<u>5,000</u>
Gross return to trader	5,000
Gross return to trader	5,000
Implicit cost of capital investment	
\$25,000 @ 10% p.a.	2,500
Opportunity cost of family labour	1,000
Opportunity cost as manager	<u>3,000</u>
Net return to trader	(1,500)

An alternative way of analysing returns to the organisation is to assign implicit costs to all resources except the one we are particularly interested in. For example, if we were interested in the return available to the trader's capital, we could have assigned costs to the family and managerial labour. The remaining return of \$1,000 represents a return to capital of

$$\frac{1,000}{25,000} \times 100 = 4\% \text{ p.a.}$$

We can readily compare this unfavourably with the implicit return to capital of 10 percent p.a. available in the bank. We could perform exactly the same exercise with family labour or the return to managerial labour by assigning implicit costs to all other items embraced in the gross return to the organisation.

11. Putting it all together

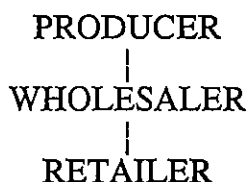
We are now at the stage where we can examine two actual examples of measuring marketing costs and margins. The first relates to the marketing of eggs in Turkey, the second to the marketing of rice in Colombia.

11.1. Marketing costs and margins for eggs in Turkey

In this example, the marketing of eggs in Ankara, the capital city of Turkey, is examined. In 1980, at the time of the study, commercial egg production was in its infancy and there were about 50 commercial poultry farms located, on average, around 50 km. from Ankara.

The producers usually sold eggs to wholesalers in the rural areas who transported them to their stores in Ankara. Wholesalers were typically two or three-man businesses with one or two vehicles. The wholesalers sold their eggs to general retail shops located in every part of the city. A few producers sold their eggs directly to retailers or consumers and wholesalers sold some eggs direct to consumers.

Thus the main marketing channel, and the one reported here, is a simple one of:



There were national standards for eggs, but as they were not mandatory they were not commonly used. In daily business the four classes of egg were:

- First class : heavier than 55 g. each
- Second class : between 45 to 55 g.
- Third class : up to 45 g.
- Fourth class : cracked eggs

These were very rough classifications. The present analysis is based on data for second class eggs. There is a marked seasonal variation in the price of eggs due to changes in both demand and supply. Because of this, the data in this study refer specifically to September, a month when prices are rising from their summer low.

Eggs were purchased from the producer at an average price of 195 kuru each. The average wholesaler received three deliveries per week, each of around 12,500 eggs. Delivery was by rented truck at a charge of 875 TL (1TL = 100 kuru) or 7 kuru per egg. In addition, the driver's wages for the pick-up truck were equivalent to 6 kuru per egg. The other major cost was the monthly rental for the store. This was around 2,000 TL, and as an average wholesaler handled approximately 150 thousand eggs per month (12,500 x 3 x 4), this rental charge was equivalent to 1.3 kuru per egg.

A relatively minor cost was heating, water and electricity for the store amounting to 250 TL per month, or 0.2 kuras per egg handled. The other minor cost was the replacement of egg trays. On average each wholesaler had five thousand egg trays in circulation, but the costs of these were shared equally by the wholesaler and the producers. It was estimated that approximately 70 needed replacement each month at 300 kuras each, which is equivalent to 0.1 kuras per egg. Physical losses at this stage were approximately 3 percent of eggs purchased, i.e. 103 eggs had to be purchased from the producer for every 100 eggs sold to the retailer.

Retailers were buying eggs for 250 kuras each from the wholesaler and selling to the consumer for 270 kuras each. The only identifiable costs encountered at the retail stage were the cost of paper bags for packing, estimated at 4 kuras per egg based on the knowledge that a bag holding 10 eggs cost 40 kuras, and a share of the overhead costs of the shop (a joint cost) estimated at 3 kuras per egg. It was estimated that there was a 1 percent loss of purchased eggs at the retail stage.

With this information, a picture of the cost and margin structure for egg marketing from the farmer to the consumer can be built up (Table 2). In this example we express all costs in terms of kuras per egg purchased from the producer. This means we have to reduce the wholesaler's selling price by the wastage factor of 3 percent because the wholesaler only sells 97 eggs for every 100 purchased. At the retail level, all costs have to be changed by this

		kuras per egg purchased from producer
Wholesaler's price to producer		195
Rented transport		7
Driver		6
Store rental, heating, trays		1.6
<i>Total identified costs</i>		14.6
<i>Total costs</i>		209.6
Conversion factor for wastage	(0.97)	
Wholesaler's selling price	250×0.97	242.5
Wholesaler's gross return (percentage of total wholesale costs)		32.9(15.7%)
Retailer's price to wholesaler	250×0.97	242.5
Packing		4
Overheads		3
<i>Total identified costs</i>	7×0.97	6.8
<i>Total costs</i>		249.3
Conversion factor for wastage	$(0.99 \times 0.97 = 0.96)$	
Retailer's selling price	270×0.96	259.2
Retailer's gross margin		9.9 (3.8%)

same conversion factor (because all the retailer's costs, if expressed in terms of eggs purchased from the wholesaler refer to only 0.97 eggs purchased from the farmer). Similarly, because there is a 1 percent wastage at the retail level, only 96 (0.99 x 0.97) eggs are sold for 100 originally purchased from the farmer, and thus the conversion factor for the retail price is 0.96.

Notice that the total price spread (the gap between retail and producer price) is not 75 kuras which would have been obtained using unconverted data, but rather 64.2 kuras (259.2 - 195). Similarly, the producer receives 75.2 percent of the adjusted retail price $[(195/259.2) \times 100\%]$, not 72.2 percent as suggested by the unadjusted data.

In this case, no attempt has been made to estimate the implicit costs contributing to the wholesaler's and retailer's gross margins. For the wholesaler, besides the management and labour cost of the owners, there would also be the implicit cost of finance. For example, with a turnover of 150,000 eggs per month, the wholesaler could easily have 30,000 eggs in stock, or unsold but paid for, at any time. This would require a continuous working capital of almost 60,000 TL which could have been earning interest if invested in a bank.

11.2. Marketing costs and margins for rice in Colombia

The major problem in studying the marketing costs and margins associated with rice is that there is a considerable weight loss and production of by-products in milling paddy. The data presented here relate to November 1980 and refer to the marketing of Type I rice of the variety IR 22, the most important cultivar grown in the country, produced in the area around Saldana in the Department of Tolima, in the main supply region for rice to the capital city, Bogota, 170 km. away. Almost 90 percent of rice was marketed through private marketing channels, and the marketing channel studied is:



Farmers were receiving \$Colombian 14.40 per kilogram from millers who were purchasing the 'green' paddy in local markets. However, farmers incurred imputed handling and transport costs of \$C 0.45 per kg. so the effective farm-gate price was \$C 13.55 per kg. of paddy.

The average out-turn of whole rice at the milling stage was claimed to be only 47.4 percent of the original paddy weight, i.e. 2.11 kg. of green paddy were required to produce one kilogram of whole rice as sold by the miller. This exceptionally low figure is in part because the paddy required drying before milling, reducing the original green paddy weight by 13

percent i.e. one kilogram of green paddy produced 0.87 kg. of dried paddy. The other reason for the low out-turn was because of a high proportion of by-products produced in the milling process. One kilogram of dried paddy produced 604 g. of whole grain, 74 g. of crystal rice or split grains, 95 g. of rice flour and 227 g. of stubble husks and granules. Thus 1 kilogram of green paddy produced 0.525 kg. (0.87×0.604) of whole rice and 0.345 kg. of by-products. The weighted value of these by-products was \$C 5.3 per kg.

Costs incurred at the milling stage were estimated as:

Drying before milling	\$C 0.60 (per kg. paddy)
Milling	\$C 0.60
Packaging	\$C 0.80
Storage (90 days)	\$C 0.20
Insurance, administration and capital cost	\$C 1.39
<i>Total milling costs</i>	<i>\$C 3.59</i>

Whole rice was then purchased from the miller by the wholesaler at \$C 29.33 per kg. of whole rice. Identified costs at this stage were:

Storage (15 days)	\$C 0.10 (per kg. whole rice)
Transport (160 km.)	\$C 0.70
Interest on fixed and working capital	\$C 0.47
<i>Total wholesaling costs</i>	<i>\$C 1.27</i>

No wastage was recorded at this stage.

Retailers purchased rice from wholesalers at \$C 31.30 and sold it to consumers at \$C 35.10 per kg. There was, however, a two percent loss of the quantity purchased during repacking. Identified costs were:

Transport (15 km.)	\$C 0.21 (per kg. rice purchased)
Packaging	\$C 0.13
Rent, services	\$C 0.08
Interest on working capital	\$C 0.50
<i>Total retailing costs</i>	<i>\$C 0.92</i>

The next step is to put all this information together in terms of costs and margins per one kilogram of green paddy as purchased from the farmer, remembering to use the appropriate conversion factors at each stage (Table 3).

In this example the data collector has not clearly distinguished between explicit and implicit costs, and thus it is difficult to distinguish gross and net margins. To simplify the presentation, only the total costs at each stage will be converted.

If these conversion and wastage factors are correct, the implication is that the total price spread is \$C 4.53 (18.08 - 13.55) per kilogram of undried paddy, and the farmer receives 75 percent of the final retail price.

Table 3:
Preliminary marketing costs and margins for rice in Colombia

		\$C per kg. paddy at the farm gate
Effective farm-gate price		13.55
<i>Total identified costs</i>		0.85
Miller's price to producer		14.40
<i>Total miller's identified costs</i>		3.59
<i>Less value of by-products</i>	(0.345 kg x 5.30)	1.83
<i>Costs net of by-products</i>		1.76
Conversion factor for wastage & milling	(0.525)	
Miller's selling price	(29.33 x 0.525)	15.40
Miller's margin	(15.40 - 14.40 - 1.76)	(0.76)
Wholesaler's purchase price from miller		15.40
<i>Total identified costs</i>	(1.27 x 0.525)	0.67
Wholesaler's selling price	(31.30 x 0.525)	16.43
Wholesaler's margin	(16.43 - 0.67 - 15.40)	0.36
Retailer's price paid to wholesaler		16.43
<i>Total identified costs</i>	(0.92 x 0.525)	0.48
Conversion factor for wastage	(0.98 x 0.525 = 0.515)	
Retailer's selling price	(35.10 x 0.515)	18.08
Retailer's margin	(18.08 - 0.48 - 16.43)	1.17

The data collector was, however, concerned with his findings because millers were shown to be making a substantial loss (\$C 0.76 per kg. of undried paddy) which was not consistent with his observation that millers were investing heavily in new mills, suggesting that rice milling was highly profitable.

The most likely source of error was the conversion factors that he had collected from millers, or his interpretation of them. For instance, he assumed that all paddy had to be dried, resulting in a 13 percent weight loss. However, if we assume that only half the paddy was wet when purchased, one kilogram of paddy would have produced 0.935 kg. (1 - 0.065) of dried paddy, 0.565 kg. (0.935 x 0.604) of whole rice, and 0.37 kg. of by-products.

Introducing just this one change in the conversion factor alters the picture of marketing costs and margins markedly (Table 4). The miller's loss is now turned into a positive margin of \$C 0.54 per kilogram of green paddy, and this leads to minor adjustments in other costs and

margins in subsequent phases of the marketing chain. This emphasises the need to ensure that both data and conversion factors are collected, and interpreted, as accurately as possible.

		\$C per kg. paddy at the farm gate
Effective farm-gate price		13.55
<i>Total identified costs</i>		0.85
Miller's price to producer		14.40
<i>Total miller's identified costs</i>		3.59
<i>Less value of by-products</i>	(0.37 kg x 5.30)	1.96
<i>Costs net of by-products</i>		1.63
Conversion factor for wastage & milling	(0.565)	
Miller's selling price	(29.33 x 0.565)	16.57
Miller's margin	(16.57 - 14.40 - 1.63)	0.54
Wholesaler's purchase price from miller		16.57
<i>Total identified costs</i>	(1.27 x 0.565)	0.72
Wholesaler's selling price	(31.30 x 0.565)	17.68
Wholesaler's margin	(17.68 - 16.57 - 0.72)	0.39
Retailer's price to wholesaler		17.68
<i>Total identified costs</i>	(0.92 x 0.565)	0.52
Conversion factor for wastage	(0.98 x 0.565 = 0.554)	
Retailer's selling price	(35.10 x 0.554)	19.45
Retailer's margin	(19.45 - 17.68 - 0.52)	1.25

12. Conclusions

The object of this guide is to show how marketing costs and margins can be measured in a way that removes many of the ambiguities and mistakes associated with this subject. The importance of comparing like-with-like, of selecting a reference product and presenting all costs and margins in terms of that product is the key to success. Ensuring that data, wastage rates and conversion factors are truly representative of the marketing channels being studied is also of considerable importance. Once such information has been assembled it is much easier to begin to identify the areas of inefficiencies or high costs, or the effects of government intervention or other factors on marketing returns. In this way, methods of improving the marketing system in the future can be identified.

