MARKETING COSTS

FOR NEW ZEALAND WOOL:

1970/71 to 1975/76

by

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THE AGRICULTURAL ECONOMICS RESEARCH UNIT

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PREFACE

Over the past few years New Zealand agricultural producers and policy makers have been increasingly alarmed at large increases in marketing costs of agricultural products, particularly of those products destined for export. In accord with this alarm, the Agricultural Economics Research Unit has seen fit to increase its involvement in this area.

The current report is the result of an Agricultural Economics Research Unit study commissioned by the Ministry of Agriculture and Fisheries. The study has been designed to investigate trends in marketing costs for major export products; the present report refers to wool marketing costs.

The Economics Division of the Ministry of Agriculture and Fisheries has provided financial assistance to enable this study to be undertaken.

Professor J. B. Dent
Director

SUMMARY

Marketing charges for each of the six years ending 30th June 1971 up to 30th June 1976 are identified and trends in unit and average charges presented. Aggregate charges for various wool marketing activities are estimated with the assistance of a mathematical model representing quantities of wool flowing between a number of activity centres.

The model's estimates of auction sales by selling centre are validated against actual auction sales for the six years concerned; another validation exercise comparing estimated shipments by port with actual shipments for the 1975/76 season is also carried out. It is concluded that from farm to auction centre, the model's estimates are satisfactory; however, for post-auction wool flows the model's performance is poor, reflecting the simplified assumptions made in the absence of adequate data.

Most unit wool marketing charges increased at rates faster than the consumer price index or the wage rate index over the period concerned. Scouring charges portrayed the lowest rate of increase, far lower than the consumer price index or the wage rate index.

Selling charges dominated the total farm gate to f.o.b. charges, making up 33-45 per cent of total charges for the years investigated. Marketing charges from farm gate to f.o.b. made up 10-18 per cent of a 'derived' f.o.b. price for wool over the six years, so leaving 82-90 per cent of the f.o.b. price for the woolgrower.

New Zealand total wool marketing charges farm gate to f.o.b. have been some 20-30 per cent lower than corresponding Australian charges; however, these differences are slightly lower if allowance is made for the relatively higher Australian wool values involved.

It is suggested that priority for further research should be given to selling activities; more specifically, that studies should be initiated on the economic implications of sale by sample and objective

measurement in brokers' stores, and the influence of the seasonal flow of wool on brokers' costs and charges. It is suggested that lack of competition in transport, woolbroking, wool dumping, and in port activities, should be examined as should methods of charge setting and an apparent lack of incentive for reducing charges in some sectors.

A sheep's back to overseas mill concept rather than a farm gate to f.o.b. concept is advocated for any further studies. Finally, an expanded statistical series based on that currently published by the New Zealand Wool Marketing Corporation is suggested.

CHAPTER 1

INTRODUCTION

1.1 Background to Marketing Cost Analyses

Marketing cost and marketing margin studies concerning agricultural products have been developed largely in the United States. Such studies were most popular in the years preceding as well as just after World War 2. In describing these studies, Thomson (1951), has stated:

> "Many studies of marketing costs and margins have been made. The published reports seem to follow a general pattern. First, the importance of reducing costs and margins is pointed out. Then, it is said, in order to reduce costs we must know what they are. There follows a description of the method used in obtaining the margin and cost data. Next comes presentation of the findings. The margins are so much and it is shown that they are accounted for by certain costs, including materials, labour, equipment, transportation, and miscellaneous items, plus a small profit. From the section labelled 'Conclusions' we learn that in marketing certain services are performed, that certain costs necessarily are incurred in rendering them, and that there is no magical way of reducing costs and margins. The only way of accomplishing this objective, it is wisely concluded, is to make marketing more efficient! "

This is perhaps a rather sombre account of the application and usefulness of these earlier studies. However, it does serve to illustrate that marketing cost studies may not be as rewarding as the enthusiasm given to them by producers (in periods of depressed prices) and by consumers (in periods of high prices) would indicate.

Bateman (1976) points out that many efforts to measure marketing margins in agriculture have been undertaken without any specific objective; as a consequence results of such studies have not been particularly rewarding.

It has been fairly well established that the farmers' share of the consumers' dollar (in terms of the price received by the farmer as a proportion of what the consumer pays) is not an adequate index of marketing efficiency. Such proportions vary with the commodity concerned and are obviously related to distances from markets, degree of processing after leaving the farm and the general marketing functions that need to be undertaken, e.g. grading, assembling, financing, etc. Even for a single commodity changing shares over time do not necessarily point to changes in marketing efficiency, since requirements in marketing particular commodities can change rapidly.

However, if the producer can determine that existing marketing functions can be effected at lower charges (either through lowered profits, or a reduction in total costs of the marketing sector), then he should have the right to protest and to attempt to effect change. This is one of the premises for attempting the current study which is aimed at providing background data for further wool marketing studies of a more normative type.

With respect to New Zealand's (NZ's) particular situation where the economy still largely rests on the agricultural export sector, the marketing cost arena takes on added significance. This is because in the past producers and exporters have been unable to influence greatly the overseas prices paid for their products; farm gate prices are therefore reduced directly as a result of higher farm gate to market charges. It would seem that knowledge of costs beyond the farm gate may be an indispensable input in attempts to improve marketing efficiency.

Taylor (1976) has commented on the NZ scene:

> "Of the research going into agriculture, the great bulk is directed to the 'on farm' production area, some small amount into processing, but little or none into transport or marketing - should we not be as concerned with the transport, processing, storage, and marketing of our agricultural products as we have traditionally been with production? "

1.2 Available Data Series on NZ Marketing Costs

The Farm Costs Price Index of the Department of Statistics does not include any costs past the farm gate. The wholesale price index of the same Department refers to commodity prices only, which means that the valuation boundary is set at a point where there is no need to price commodities and service charges separately (Dept. Stats., pers comm, 1976). Information on transport charge increases is available from the Ministry of Transport, and information from 'Industrial Production Statistics' is available for isolating broad cost components of various processing industries. However, there is no currently available data series on farm product marketing charges or costs at aggregate level.

Isolation of various farming sector accounts was effected for the 1960 to 1971 period in a study by the New Zealand Institute of Economic Research (NZIER) (O'Malley, 1973); such accounts showed the value of farm gate output in relation to transport and handling charges, fees and commissions, and processing costs, overseas freight etc. However, it was pointed out that construction of such accounts was hindered by the nature and extent of data available. The study was undertaken by NZIER as a piece of contract research and such accounts have not been updated for later years (O'Malley, pers comm, 1977).

It would appear that the relative neglect of statistics associated with processing and marketing of agricultural products is not peculiar to New Zealand. Upchurch (1974), in a plea for more appropriate and reliable agricultural and economic data in the US, has suggested that agricultural statistics must in the future have a broader focus:

> "The businesses that supply inputs to farming and businesses that assemble, process and distribute farm products to consumers are a larger, and often more critical part of the food and fibre industry than is farming itself. Yet we have no consistent body of data covering the whole of the food and fibre industry."

1.3 Available Data Series on Wool Marketing Charges

In compiling a 'wool price index', the Department of Statistics records auction prices for wool and on costs to f.o.b. separately (Dept. Stats, pers comm, 1976). The service charges in this series (auction to f.o.b.) are made up of a broker's delivery and cartage charge and port charges.

The New Zealand Wool Board has, from time to time, prepared estimates of various marketing charges incurred by wool from farm gate (or from sheep's back) to overseas mill. These estimates have not been made on a regular basis and have not been regularly published to the knowledge of the author. However, estimates have been found for the 1971-72 season, for February 1973, and for the 1973-74 and 1974-75 seasons; such estimates have not been consistent in charge categories included and it has been difficult to accommodate such information in one series. Also, these estimates have usually been made on the basis of an 'average' bale of wool with little attention given to quantity flows and marketing channels; however, the estimates do highlight any large and significant changes. The New Zealand Wool Marketing Corporation has taken over the role of the Board with respect to marketing charge assembly and has published a Table (Table 6.9) for the first time in the Corporation's 1975-76 statistical handbook entitled:

> Illustrative 'Farm to Mill' Marketing Costs Greasy Wool Exports Via Auction as at 1 January 1976.

The Table includes 10 marketing charges including 7 in the category farm gate to f.o.b.

A study on wool movement costs carried out by the Economics Division of the Ministry of Transport (Anon, 1970) quantified both charges and flow data. However, the study referred to a specific year (1968-69), the quantity data were obtained by survey, and no attempt was made to monitor either charges or quantity flows in later years. In addition, only handling and transport charges were included; charges in broker's stores, testing etc., were not included in the study.

A study by Woods (1971) assembled various woolbroking charges from 1946-47 up to 1965-66. Woods also identified quantities of wool flowing through various marketing channels from 1952-53 up to 1967-68; neither series has been updated.

The Battelle Report (Anon, 1971) reported typical distribution costs associated with auction and privately marketed wool; however, this was another instance of a set of marketing costs being collected without subsequent follow-up.

It can be concluded that no satisfactory marketing charge series exists for wool over the 1970-1976 period. In addition, changes in the degree of transport, handling and scouring activities to which wool is subjected have not been accounted for in any estimates of average or aggregate marketing charges.[1]

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[1] In this report marketing charges have been defined to include scouring.

CHAPTER 2

CURRENT STUDY IN PERSPECTIVE

2.1 Objectives of Study

The objectives of the study were:

1. To prepare a model of the New Zealand aggregate cost structure of the marketing chain for wool from farm gate to f.o.b.

2. To analyse trends in the cost structure between 1970 and 1976.

3. To identify areas within the marketing chain where cost savings could possibly be made.

2.2 Methodology Adopted

A major question faced early in the study was whether to analyse marketing cost data in terms of charges levied or in terms of factor costs. It was decided that factor cost identification and assembly should be preceded by an analysis of marketing charges in order to establish priority areas for the more demanding factor cost investigation, to establish bases for charges, and to give an overview of the various wool marketing charges currently existing.

The study is largely historical; marketing charges for each of the six years ending 30th June 1971 up to 30th June 1976 have been identified and trends presented. Wool quantities (bale numbers and tonnages) flowing each year between various sectors in the marketing chain have been estimated and applied to unit charges in order to build up a set of aggregate wool marketing charges for each of the six wool selling seasons covered.

The estimation of aggregate charges has been facilitated by means of a mathematical model representing the various wool flows from farm through to f.o.b. The model has also been useful in providing a framework for the collection and assembly of data on individual wool marketing charges.

2.3 Organisation of Report

Chapter 3 of this report describes the model formulated in this study and details the data and assumptions used in its construction. Results from the model in terms of average and aggregate charges for each activity centre and for broad marketing functions are presented in Chapter 4. Chapter 5 contains a discussion of the implications of these results and possibilities for further research.

CHAPTER 3

DESCRIPTION OF MODEL, DATA AND ASSUMPTIONS

The model spans the wool marketing chain from farm gate to ship. Within this part of the marketing chain a number of types of 'activity centres' have been defined; each activity centre represents a number of marketing activities and each activity is assumed to be associated with a unit charge. Throughputs for each activity centre and quantities of wool subjected to each activity are estimated and hence the aggregate charge associated with each activity, with each activity centre, and with each type of activity centre are derived. Quantities of wool transported between activity centres are also estimated and aggregate charges for transport built up in a similar way.

The numbers of activity centres and activities are shown in Table 1. A diagrammatic representation of wool flows included in the model is shown in Figure 1.

In the following description of the model, information pertaining to each activity centre and each wool flow is presented separately. The description is limited to assumptions made, data used, and data deficiencies. Much of the data including throughputs, flow quantities and unit charges, are given in Appendix Tables at the end of this report.

The model was developed in computer programme form on a Burroughs B6700 computer; programming was in Fortran.

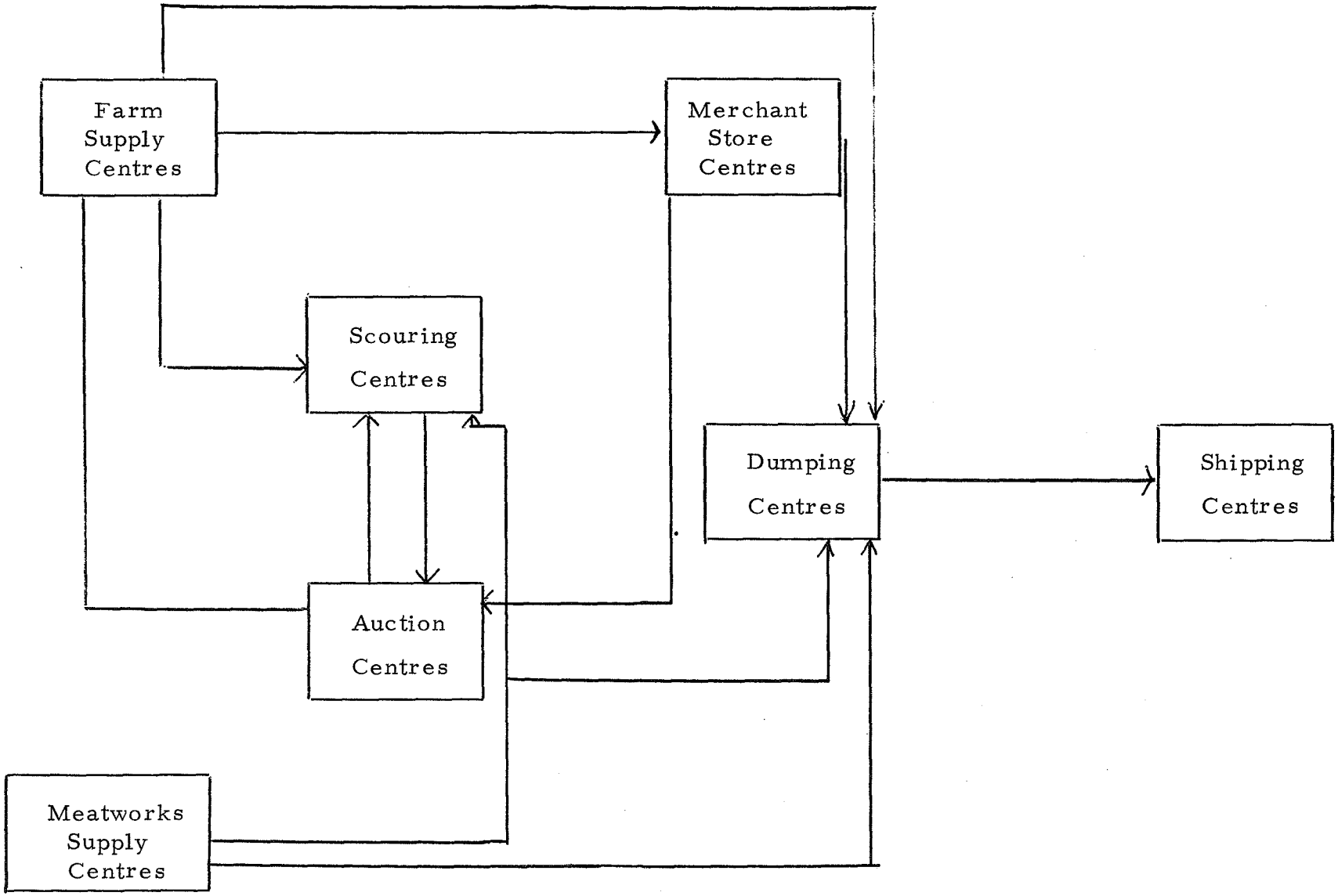
TABLE 1

Numbers of Activity Centres and Activities

Type of Activity Centre	Number of Activity Centres	Number of Activities
Farm Supply Centres	106	0
Meatworks Supply Centres	30	0
Private Merchant Store Centres	8	0[a]
Auction Centres	8	14
Scouring Centres	7	1
Dumpstore Centres	8	4
Shipping Centres	7	3

[a] Three 'imputed' charges could be included here if so desired.

FIGURE 1 : Diagrammatic Representation of Wool Flows Considered in Model



3.1 Farm Supply Centres

3.1.1 Farm supply centre activities.

These centres are treated as the origins of all shorn wool flows. Activities such as shearing, classing, pressing etc., have not been included in this study so that no marketing activity is assumed to occur in these centres.

Farm supply centres are defined as counties and number 64 in the North Island and 42 in the South Island (106 in total). Wool despatched from each county in each season has been estimated by applying the proportions of all wool produced in NZ for each county to the total amount of wool despatched each season from all farms.

Proportions of wool produced by county for the years ending 30 June 1972, 1973 and 1974, are given in Appendix Table 1. This data series was unavailable for the 1970/71 season and data for the series were not available for the 1974/75 and 1975/76 seasons. Average proportions derived from the 1971/72, 1972/73 and 1973/74 years were used for the 1970/71, 1974/75 and 1975/76 years.

Total weights of greasy wool despatched from farms for each year have been assembled in Appendix Table 2. These amounts do not include wool despatched from farms on sale sheep, sheepskins etc.

3.1.2 Flows out of farm supply centres.

3.1.2.1 Farm supply centres to merchant store centres (private purchases).

The total quantity of wool purchased privately in NZ for each year is given by 'auction centre region' in Appendix Table 3. These quantities include purchases by the New Zealand Co-operative Wool Marketing Association (Ltd). To estimate the amount of privately purchased wool flowing out of each county, the following procedure was used:

1. Each county was assigned to a particular auction centre region on the basis of the assignment principles outlined in section 3.1.2.6.

2. The total amount of wool despatched from all counties assigned to each auction centre region was calculated by adding together individual county outflow quantities.

3. The proportion of wool sold privately for each auction centre region was calculated.

4. This proportion was applied to all counties assigned to that particular region to estimate the quantity of wool sold privately for each county.

5. It was assumed that 80 per cent of privately sold wool from each county was transported directly to merchant stores situated in the main auction centres; the other 20 per cent of privately purchased wool was assumed to be transported direct to scouring centres.

Information on the mode of transport used by private buyers to transport wool to stores was not readily available. As a result, modes were assumed similar to those for wool transported from farm to auction centre (see section 3.1.2.6).

Whilst a number of private buyers may transport wool from farms in their own vehicles, it was assumed that private buyers' transport costs would be similar to those of road carriers; hence, imputed charges for transport from farm to merchant store were the same as charges calculated in section 3.1.2.6.

Because much of the data available were expressed in numbers of bales or charges per bale, and because bale weights vary from season to season and from centre to centre, a matrix of bale weights was set up to enable conversions to be made whenever necessary. This bale weight matrix is given in Appendix Table 4.

3.1.2.2 Farm supply centres to scouring centres (private purchases).

As indicated in the previous section, it was assumed that 20 per cent of all private purchases in each county was transported directly to scour.

Counties were assigned to one of seven scouring centres on the basis of shortest distance and wool from each county was assumed to be transported to its appropriate scouring centre. Whilst this assumption may not be entirely valid, no other suitable information was available.

Assumptions on transport mode and calculation of imputed transport charges for this flow are similar to those contained in section 3.1.2.6.

3.1.2.3 Farm supply centres to dumpstores (growers' greasy wool auctioned in U.K.).

Greasy wool auctioned in UK on account of growers comprises only a small proportion of wool despatched from farms. Quantities of wool sold by this method over the past six seasons for each auction centre region are given in Appendix Table 5. To estimate the quantity of wool from each county sent direct to dumpstores, a similar procedure was used to that described in section 3.1.2.1.

Modes of transport and transport charges were assumed similar to those for wool transported from farm to auction centre (see section 3.1.2.6).

3.1.2.4 Farm supply centres to scouring centres (growers' scoured wool auctioned in U.K.).

Quantities of wool sold by this method over the past six seasons are given by each auction centre region in Appendix Table 6. Figures in Appendix Table 6 were converted to a greasy equivalent basis by assuming a 72 per cent yield. Whilst wool yields do vary from centre to centre, and from season to season, it was considered that the additional accuracy

that would result from the incorporation of a yield matrix (by centre by season) was not worth the additional effort involved. Counties were assigned to scouring centres as described in section 3.1.2.2. The quantity of greasy wool from each county destined for scours was calculated using the same procedure as described in section 3.1.2.1. Assumptions on transport mode were similar to those for wool transported from farm to auction centre (see section 3.1.2.6). Estimates of transport charges were made in accordance with procedures outlined in section 3.1.2.6.

3.1.2.5 Farm supply centres to scouring centres (growers' scoured wool auctioned in N.Z.).

Nearly all this wool was scoured and sold at auction in Napier. Hence, it is assumed that the only wool sold by this method is derived from farm supply centres assigned to Napier. These quantities are given in Appendix Table 7 and have been converted to a greasy basis by assuming a 72 per cent yield. The method used in defining individual county flows to Napier, given the total amount of greasy wool concerned, is similar to that used in section 3.1.2.1. Assumptions on transport mode and estimation of transport charges for this flow are similar to those in section 3.1.2.6.

3.1.2.6 Farm supply centres to auction centres.

This is the major flow from farms and is calculated as a residual of total despatches from all farm supply centres assigned to auction centres less all other flows out from these supply centres. The assignment of farm supply centres to particular auction centres was made on the basis of:

1. The results of a survey of use made of transport by South Island farmers carried out by the Agricultural Economics Research Unit (AERU) in 1975/76 (Ambler, unpublished data, 1976).

2. Transport charge differences between auction centres for particular counties. An exception was the assignment of counties to Wanganui and Wellington where substantial quantities of wool apparently in the Wanganui hinterland travel to Wellington and Napier, apparently due to price discounting at the Wanganui auctions; this discounting is due to the necessity of buyers having to transport wool post sale on their own account to the ports of Wellington or Napier.

Transport charges from farm supply centres to auction centres were estimated for each year for both road and road-rail modes of transport. The most central town in each county was chosen to represent the focal point from which the distance from farms in that county to the nearest auction centre was estimated. Mountain ranges and the distribution of the sheep population within the county were taken into account in the choice of this town. The distances from the central town to the nearest auction centres were then recorded. The rail centre was chosen as the closest centre to the central town. The average road distance from farms to the rail centre was then estimated from the distance between the central town and the rail head, the size of the county and the railway route through the county. A minimum distance of eight kilometres was assumed. Rail distances from rail centres to auction centres were then derived. Road and rail distances from counties to dumping centres and scouring centres were derived in a similar way.

Road rates for the transport of wool for the appropriate distances were derived from the Ministry of Transport Road Transport rate schedules for the various Road Transport Areas. All rates were updated to 1 January 1976 by appropriate percentage increases derived from the Ministry of Transport; these percentage increases depended on

when the last schedule for each particular area had been produced. January 1, 1976 rates were then deflated by an index derived from National Rate Increases over the period 1970 to 1976 to derive rates applicable on 1 January for each year 1971 to 1976. The ensuing rates for the earlier years were not considered entirely accurate since use of the national rate deflation factors may have led to over-estimates of rates in earlier years for some areas.

Rail rates were frozen from November 1971 until February 1976. Rail rates for the appropriate distances were derived from NZ Railways scale of charges for wool existing on 1 January 1972, 1973, 1974 and 1975. Data from New Zealand railways on revenues generated from wool transported from farms confirmed that the average rate per tonne for these four years was practically unchanged. The same total revenue data were used to construct an index of rates (assuming 1973/74 = 100) so that individual rates applicable in 1970/71 and 1971/72 could be derived from the individual frozen (1973/74) rates; the appropriate indices were:
1970/71 = 83 and 1971/72 = 94.

To arrive at charges for the road-rail mode of transport from the farm, the appropriate road and rail charges were added together. However, in the case of wool destined for auction, not all brokers' stores receiving wool were equipped with rail sidings; estimates of proportions of wool arriving at auction centres by rail requiring a further road transport element are given in Appendix Table 8. In the case of wool flowing to scouring centres, private merchant stores, and dumpstore centres, any extra road charges due to inadequate rail facilities were not included due to lack of data.

The proportions of wool leaving South Island counties by road or road-rail were derived from the AERU Transport Survey (Ambler, unpublished data, 1976). North Island proportions were estimated taking into account South Island patterns, as well as the presence of rail facilities, the 64 km limit, and comparative distances and costs.

3.2 Auction Centres

3.2.1 Flows into auction centres.

3.2.1.1 Farm supply centres to auction centres. Quantities flowing and charges are as described in section 3.1.2.6.

3.2.1.2 Merchant store centres to auction centres.

Quantities of privately purchased wool flowing to auction are shown by auction centre in Appendix Table 9. It is assumed that transport is by road, and rates used for these movements have been classified as 'local rates'. Because of the difficulty in assembling local rate schedules for each auction centre, scouring centre etc., it was decided to use the rate pertaining to Christchurch City for all 'local' movements of wool. In fact, two estimates of local cartage rates for wool were obtained, one from the Christchurch cartage rates schedule (37c/bale) and one from Auckland City cartage schedule (29c/bale), both rates applying as of 1 January 1976. Whilst it is recognised that substantial differences could apply between centres, the extra effort involved in collecting the extra information and gauging its applicability, was considered not worthwhile. The 37c/bale applying to 1975/76 wool movements was deflated by the 'town' national road rate increases over the period 1971 to 1976 to obtain estimates of charges for the earlier years.

3.2.1.3 Scouring centres to auction centres.

Napier is the only auction centre where scoured wool is assumed to be auctioned. This flow then is similar to that described in section 3.1.2.5 and Appendix Table 7, except that the flow is now of scoured wool. It is assumed that transport is by road; road rates used in these movements have been estimated as described in section 3.2.1.2.

3.2.2 Auction centre activities.

Greasy wool throughputs of the various auction centres over the past six seasons are given in Appendix Table 10. Total throughputs include greasy wool flowing directly from farms and a little wool originally purchased privately flowing from merchant store centres. Auction throughputs of scoured wool have already been given in Appendix Table 7.

If the flow from merchant stores (Appendix Table 9) and wool reauctioned (Appendix Table 11) are both subtracted from the total auction throughput of greasy wool, the resulting auction throughputs provide a benchmark with which to compare estimates of the flow of greasy wool into auction centres estimated by the residual method as described in section 3.1.2.6. Agreement between the two sets of throughput figures would validate the assumptions concerning the assignment of counties to auction centres, and the data concerning the proportions of wool produced in different counties. Such comparisons are made in section 4.1.

Activities for which charges have been defined within the auction centres include:

1. Sheep's back to store insurance including earthquake cover; it has been assumed all wool despatched to auction incurs this charge.

2. Receiving, warehousing, weighing, cataloguing, advertising and fire insurance (a consolidated selling charge for greasy wool). This charge was levied on a part commission basis

up to and including the 1974/75 season; up to that time the charge varied with the price of wool. After the 1974/75 season, the charge was set at a flat rate per kilogram.

3. A consolidated selling charge for scoured wool.

4. Delivery out of store to door including a normal rebrand, capping bales etc.

5. Reclassing. Only small quantities of wool have been reclassed; these are shown by centre in Appendix Table 12.

6. Binning. A substantial proportion of wool was binned before auction. Quantities binned are given by auction centre in Appendix Table 12.

7. Interlotting. Quantities of wool interlotted are given by auction centre in Appendix Table 12.

8. Blending. It has been assumed that 10 per cent of wool sold at auction was blended post-sale.

9. Extra branding, renumbering and special colours. The first two of these charges have been assumed to apply to all wool sold at auction that is destined for Eastern Europe and China; specially coloured marks have been assumed to apply to wool destined for China only.

10. Extra Storage. It has been assumed that 25 per cent of all wool sold at auction incurs storage charges after prompt date; the extra storage requirement was assumed to average three weeks.

11. Pre-Sale Testing. Quantities of auction wool pre-sale tested over the period are shown in Appendix Table 13. No charge was made by brokers for coring for pre-sale testing; costs involved were assumed to be offset by

reduced handling. Testing charges over this period were met by the New Zealand Wool Marketing Corporation. Tests were assumed to be for yield only.

12. Post-Sale Testing. Quantities of wool tested for yield post-sale over the period are shown in Appendix Table 13. Charges include a coring charge and a testing charge. It was assumed that in the beginning of the period (1970/71 season) only 5 per cent of post-sale yield tests also required micron tests; this percentage increased over the period and it has been assumed that 30 per cent of post-sale tests required micron tests in the 1975/76 season. Interpolation was used to determine percentages for intervening years.

13. Buyers' charges. These have been assumed to represent 2 per cent of the auction price of wool.

14. Wool levy. The proceeds of this levy are used for research, development and promotion; hence this levy has been considered a marketing charge. The basis for this charge changed in 1974/75 from a flat rate to a percentage of gross proceeds (3 per cent).

The stabilisation levy and the individual grower retention levy introduced in 1976 have not been included as marketing charges. These two levies could be considered to be associated with the smoothing of prices to growers rather than with marketing costs. In addition, these two levies only came into effect at the beginning of the 1976/77 season; the current analysis was undertaken only up to the 1975/76 season.

The levels of the above charges for the six seasons are given in Appendix Table 14. It should be noted that brokers' charges are set at a national level so the various charges do not vary between auction centres. Charges for testing are those of the New Zealand Wool Testing Authority; the second testing house in New Zealand, Wool Testing Services Ltd., is believed to set

very similar charges. Testing charges and the wool levy have been described here as activities in auction centres but have been included here for reasons of convenience only; aggregate wool levy proceeds are presented separately to auction charges whilst testing charges have been included in 'selling' activities.

3.2.3 Flows out of auction centres.

3.2.3.1 Auction centres to local mills.

Purchases of wool by local mills over the six seasons are shown in Appendix Table 15. Local mills obtain NZ wool from three major sources.

1. Greasy wool purchased at auction.

2. Greasy wool purchased privately.

3. Scoured wool purchased privately.

In the last two years under consideration, these three sources of wool for local mills accounted for 95 and 98 per cent respectively of their total purchases. Details of local mill purchases for these two years are given in Appendix Table 16.

Wool purchased at auction by local mills has been assumed to account for 50 per cent of all local mill purchases (see Appendix Table 16). This flow is viewed as a 'sink' in that no further flow of this wool is considered. No transport charges have been assessed for this flow. The total loss from auction centres to local mills has been distributed between the auction centres in proportion to the throughput of each auction centre.

3.2.3.2 Auction centres to scouring centres.

Specific information on flows from auction centres to scours is extremely scarce. The way in which these flows have been established can be regarded as very crude but has been necessitated due to the scarcity of data.

Since information is not available on the throughputs of the various scouring centres, throughputs have been estimated from various scouring centre capacities and the total quantity of wool scoured in New Zealand (excluding greasy wool scoured by local mills for their own use). From the estimated throughput of an individual scouring centre is subtracted:

1. Greasy wool that is scoured and destined for auction in UK (see section 3.1.2.4).

2. Greasy wool that is scoured and destined for auction in NZ (section 3.1.2.5).

3. Greasy wool purchased privately that is sent direct to scour (section 3.1.2.2).

4. Slipe wool sent direct to scour (section 3.4.2.1).

The remaining throughput of each scouring centre has then been assumed to be derived from the nearest auction centre or centres. Estimated throughputs for each scouring centre are referred to further in section 3.5.2.

Most wool despatched from brokers' stores to local scours is transported by road. The calculation of local rates used for this flow is described in section 3.2.1.2. Where wool is transported from brokers' stores to non-local scours, rail rates as described in section 3.1.2.6 have been applied to the appropriate distances involved.

3.2.3.3 Auction centres to dumpstores.

Wool that does not flow from auction centre to scour is assumed to flow to the nearest dumpstore centre. Certain proportions of auction wool are assumed to be dumped at the broker's store as described in section 3.7.2; this wool is assumed to incur no transport charge;

wool that does flow from auction centre to independent dumpstore is assumed to be subject to charges as given in Appendix Table 17.

3.3 Merchant Store Centres

3.3.1 Flows into merchant store centres.

3.3.1.1 Farm supply centres to merchant store centres.

Quantity flows and charges are as described in section 3.1.2.1.

3.3.2 Merchant store centre activities.

It has been assumed that there are eight merchant store centres, one in the same location as each auction centre. Calculation of throughputs for these eight centres over the period under consideration have already been described in section 3.1.2.1.

Since information on the type of handling, storage, blending etc., undertaken by private buyers is scarce, and because private buyers do not set explicit charges as such, it has not been possible to establish costs of private buyers or to assign charges to the various activities. However, as an option for use in the model, a set of imputed charges has been estimated, and is shown in Appendix Table 18. It is stressed that use of these charges in the model is optional.

3.3.3 Flows out of merchant store centres.

3.3.3.1 Merchant store centres to auction centres.

As indicated in section 3.2.1.2 and Appendix Table 9, a small proportion of wool 'in store' is assumed to flow to the nearest auction centre. Transport charges have been estimated from local rates as described in section 3.2.1.2.

3.3.3.2 Merchant store centres to local mills.

Local mills purchase a proportion of their greasy wool from private buyers (Appendix Table 16). These purchases have been estimated as making up 27 per cent of all local mill purchases for each year. This flow is also viewed as a 'sink' in that no further flow of this wool is considered. No transport charges have been calculated for this wool. The total flow from merchant store centres to local mills is then distributed between the merchant store centres in proportion to the throughput of each centre.

3.3.3.3 Merchant store centres to dumpstores.

It is assumed that all remaining wool 'stored' is eventually exported and therefore flows from merchant stores to dumpstores.

Road transport is assumed for these flows. Charges assumed for these flows are local rates as described in section 3.2.1.2.

3.4 Meatworks Supply Centres

3.4.1 Meatworks supply centre activities.

These centres are treated as the origins of all slipe wool flows. Activities such as the sliping process, pressing etc., have not been included in this study so that no marketing activity is assumed to occur in these centres.

Meatworks supply centres are defined as individual meatworks and number 30. Slipe wool produced at each centre has been estimated by applying the relative proportion of all sheep and lambs killed by each works to the total amount of slipe wool produced in New Zealand each season.

Proportions of sheep and lambs killed by works are based on the year ending 30 September 1975 and are shown in

Appendix Table 19. Total slipe wool production in New Zealand over the period under consideration is given in Appendix Table 20.

3.4.2 Flows out of meatworks supply centres.

3.4.2.1 Meatworks supply centres to scouring centres.

The proportions of total slipe wool production that have been scoured are shown in Appendix Table 20. These proportions have been applied to slipe wool production from individual meatworks to estimate the individual flows from meatworks to scour. It is assumed that slipe wool flows to the nearest scour; it is recognised that this assumption is very crude and that a significant proportion of slipe wool arriving at scours probably originates from meatworks situated in other regions. It is further assumed that wool is transported from meatworks to scouring centres by road.

Charges for road transport have been estimated by establishing distances between meatworks and scours and applying a similar procedure to that described in section 3.1.2.6.

3.4.2.2 Meatworks supply centres to dumpstores.

It is assumed that all wool from each meatworks supply centre not despatched to scours flows to the nearest dumpstore centre. Most slipe wool transported from meatworks to dumpstore is carried by road; it is assumed in this exercise that all is carried by road. Charges for road transport for this flow have been estimated by the procedure described in section 3.1.2.6.

3.5 Scouring Centres

3.5.1 Flows into scouring centres.

3.5.1.1 Farm supply centres to scouring centres (private purchases).

Quantity flows and charges are as described in section 3.1.2.2.

3.5.1.2 Farm supply centres to scouring centres (Growers account for auction in UK).

Quantity flows and charges are as described in section 3.1.2.4.

3.5.1.3 Farm supply centres to scouring centres (Growers' account for auction in NZ).

Quantity flows and charges are as described in section 3.1.2.5.

3.5.1.4 Meatworks supply centres to scouring centres.

Quantity flows and charges are as described in section 3.2.3.2.

3.5.2 Scouring centre activities.

As described in section 3.2.3.2, throughputs for each of the seven scouring centres have been derived by allocating all scouring carried out in New Zealand (except that carried out by local mills on own account) to the scouring centres on the basis of the relative scouring capacities of the seven centres (shown in Appendix Table 21). The relative scouring capacities of the seven centres have been estimated by assigning each of 34 individual scouring works to one of the seven centres and aggregating for each centre the total scour train width of these individual scours.

The quantity of wool scoured in New Zealand over the period is given in Appendix Table 22.

The only activity within the scouring centres for which a charge has been defined is the scouring activity itself. The single charge includes such activities as handling, rebaling, etc. Appendix Table 23 gives indicative unit charges for scouring for the period under consideration.

3.5.3 Flows out of scouring centres.

3.5.3.1 Scouring centres to local mills.

It has been assumed that scoured wool purchased privately accounted for an average of 23 per cent of all wool purchased by local mills (Appendix Table 16). This flow is viewed as a 'sink' in that no further flow of this wool is considered. The total flow of this wool has been distributed between the scouring centres in proportion to the scouring capacity of each centre. No transport charges have been calculated for this flow.

3.5.3.2 Scouring centres to auction centres.

Quantity flows and charges are as described in section 3.2.1.3.

3.5.3.3 Scouring centres to dumpstores.

The residual scoured wool from each centre is assumed destined for export and flows to the nearest dumpstore centre. However, as indicated later in section 3.7.2, some scoured wool (20 per cent) is assumed to be dumped at the scour and therefore carries no charge for this flow.

It is assumed that this scoured wool flow involves a local road charge as described in section 3.2.1.2. For the balance of wool scoured at Feilding, rail cartage rates to dumpstores in Wellington have been used.

3.6 Local Mills

3.6.1 Flows into local mills.

3.6.1.1 Merchant store centres to local mills.

Quantity flows and charges are as described in section 3.3.3.2.

3.6.1.2 Auction centres to local mills.

Quantity flows and charges are as described in section 3.2.3.1.

3.6.1.3 Scouring centres to local mills.

Quantity flows and charges are as described in section 3.5.3.1.

3.7 Dumpstore Centres

3.7.1 Flows into dumpstore centres.

3.7.1.1 Farm supply centres to dumpstores.

Quantity flows and charges are as described in section 3.1.2.3.

3.7.1.2 Auction centres to dumpstores.

Quantity flows and charges are as described in section 3.2.3.3.

3.7.1.3 Merchant store centres to dumpstores.

Quantity flows and charges are as described in section 3.3.3.3.

3.7.1.4 Meatworks supply centres to dumpstores.

Quantity flows and charges are as described in section 3.4.2.2.

3.7.1.5 Scouring centres to dumpstores

Quantity flows and charges are as described in section 3.5.3.3.

3.7.2 Dumpstore centre activities.

It is assumed that there are eight dumpstore centres, one associated with each auction centre. Dumpstores can be situated either at brokers' stores (broker/dumpers) or independently from brokers' stores (independent dumpers). The relative proportions of dumping carried out by broker/dumpers and independent dumpers for each dumpstore centre are given in Appendix Table 24. It has been assumed that 20 per cent of scoured wool is dumped at scours. Dumpstore activities for which charges have been defined include:

1. Handling in at dumpstore. This charge only applies to that wool dumped at independent dumpers.

2. Dumping. Charges differ according to whether dumping is carried out by a broker/dumper or independent dumper. Charges also vary according to whether wool is single or double dumped. For scoured wool it is assumed that all wool is double dumped; for greasy and slipe wool it is assumed that 75 per cent of all bales are double dumped.

3. Unitisation. It has been assumed that unitisation takes place at the dumpstore centre and that up to and including the 1975-76 season 30 per cent of dumped wool was unitised.

4. Packing containers. From 1971/72 a small proportion of wool was packed into containers and it is assumed that this has taken place at the dumpstore. Proportions of wool assumed to have been packed into containers over the period are given in Appendix Table 25.

Charges for these four activities are given in Appendix Table 26. It is assumed that these charges are similar for all dumpstore centres.

3.7.3 Flows out of dumpstore centres.

3.7.3.1 Dumpstore centres to shipping centres.

It is assumed that all dumped wool is exported from New Zealand through one of seven ports. It has been further assumed that wool flows from each dumpstore to the nearest shipping centre.

Charges for transporting auction wool (by road) from broker/dumpers to shipping centres are given in Appendix Table 17. Charges for transporting auction wool from independent dumpstores to shipping centres were assumed similar to local rates as described in section 3.2.1.2, except for the 1975/76 year when the charge assumed was zero since the transport charge from auction centre to independent dumpstore also covered the extra transport to the shipping centre. Charges for transporting wool from scouring centres that carry out their own dumping to shipping centres were also assumed similar to local rates for all scouring centres except Feilding where rail charges to Wellington were used.

3.8 Shipping Centres

3.8.1 Flows into shipping centres.

3.8.1.1 Dumpstore centres to shipping centres.

Quantity flows and charges are as described in section 3.7.3.1. This total flow includes flows from brokers and scourers who carry out their own dumping.

3.8.2 Shipping centre activities.

It has been assumed that there are seven shipping centres for export wool. Throughputs of wool for each shipping centre for the 1975/76 year are given in Appendix Table 27. Reliable individual port throughputs for previous years were not available.

Shipping centre activities for which charges have been assembled include:

1. Wharf handling. This charge includes receipt at wharf and wharf handling up to ship's side.

2. Wharfage and harbour improvement rate.

3. Loading and stowing. These figures have been extracted from Waterfront Industry Commission Statistics and therefore only include labour charges.

Charges for these activities are given by shipping centre in Appendix Table 28.

3.8.3 Flows out of shipping centres.

Flows out of shipping centres are viewed as 'sinks' and are not considered further in this report.

CHAPTER 4

RESULTS

4.1 Throughputs and Flows

Whilst some activity centre throughputs and flow data were presented in Chapter 3, most throughput and flow estimates were generated by the model itself; most of these estimates relied upon not only the initial input data but also the assumptions made regarding flows. Flow estimates generated by the model are presented in Table 2.

One of the more important assumptions made in order to quantify the various flows was the assignment of individual counties to specific auction centres. Auction centre net throughputs resulting from these assumed assignments are given in Table 3 and are compared with actual net throughputs reported by the New Zealand Wool Marketing Corporation (NZWMC). Whilst the estimates do vary from actual throughputs for some centres, most are reasonably close to actual throughputs reported and have therefore been used to estimate aggregate transport charges for wool flowing from farms to auction centres.

It would appear that North Island auction centre throughputs have been overestimated and South Island throughputs underestimated. It is possible that this tendency of the model is associated with the data on proportions of NZ wool production by county shown in Appendix Table 1. On a more localised basis, the overestimation of Auckland's throughput in the last two years is probably associated with the declining sheep : cattle ratio that has not been accounted for in the county wool production proportions which were available only for the 1971/72, 1972/73 and 1973/74 years. Also, the underestimates for Dunedin would appear to be associated with overestimates for Invercargill.

It should be kept in mind that perfection of the flow estimates was not the major objective of constructing the model. It is possible that the model could be improved greatly and discrepancies in Table 3 explained more fully. Whilst the flows in Table 2, disaggregated on a county and centre basis, have been used to estimate aggregate transport charges, errors associated with individual auction centre throughputs have not been compounded in post-auction flows; aggregate charges in auction centres and flows out of auction centres have been based on the actual throughputs shown in Table 3.

The other major validation exercise carried out on the model was the comparison of actual and estimated throughputs of shipping centres. Unfortunately, actual statistics on wool exports by shipping centre were available only for the 1975/76 year. The estimated throughputs for the six years together with the actual throughput for the 1975/76 year are given in Table 4.

The port by port estimates for 1975/76 do not compare favourably with the actual port throughputs reported by the NZWMC. This may be due to a number of reasons, such as:

1. Assembly of privately and auction purchased wools at different centres to where originally purchased.

2. Transport of wool to non-local scours. Although the model had to draw some wool for scours from non-local sources, it is likely that scouring flows are more complex than allowed for in the model.

3. The throughputs of scouring centres may not be directly related to their respective capacities.

4. The minor wool ports of Nelson, Gisborne, New Plymouth and Tauranga also exported a little wool in 1975/76.

5. Shipping services (e.g. frequency of service) vary between ports; thus, wool sold or assembled at some centres may be shipped out of ports distant from those centres. In a survey of wool flows in the 1968/69 season it was reported that a significant volume of bales was sent from dump stores in one port to the ship's side in other ports (Anon, 1970).

In addition, the total port throughput estimates do not agree closely with the total tonnages of wool shipped out of NZ each year. A part of this discrepancy is explained by the fact that the operations of the New Zealand Wool Commission (NZWC) and the NZWMC were not included in the model. In the first three years of interest wool held as stock was placed back on the market by these bodies, thus swelling the actual exports from New Zealand. In 1973/74 and 1974/75 wool was taken off the market by the NZWMC and in 1975/76 was placed back on again. Estimates of quantities involved in these transactions are given in Table 4. Even with these adjustments, discrepancies in the 1971/72 and 1972/73 years are still large and require further investigation.

Overall, the flows that have been used to build up the aggregate charges in this exercise cannot be considered to be very accurate. In fact, the results presented here have suggested that current wool flows cannot be adequately represented by a model based on such simple assumptions as made in this study. This conclusion is in accord with the results established in a survey of wool flows in 1969 (Anon, 1970), that substantial inter-regional flows of wool occur. These have been accounted for in the present model to some extent by the inter-regional flows dictated by scouring capacities but it is evident that inter-regional flows have been under-represented by the model. This, in turn, would lead to under-estimates of aggregate transport charges.

TABLE 2

Flow Estimates Generated

Flow	Year Ending 30 June 1971	1972	1973	1974	1975	1976
			(tonnes)			
Farm to Dump	1,891	1,615	1,990	2,012	2,517	2,356
Farm to Merchant Store	42,171	42,797	43,922	33,048	34,795	42,641
Farm to Scours	21,030	21,473	19,873	16,731	16,695	19,847
Farm to Auction	215,908	208,214	195,315	194,109	201,893	208,156
Total ex Farm	281,000	274,099	261,100	245,900	255,900	273,000
Meatworks to Scours	3,702	4,798	4,500	5,600	8,599	7,599
Meatworks to Dump	39,798	36,002	33,900	26,600	24,901	22,701
Total Ex Meatworks	43,500	40,800	38,400	32,200	33,500	30,300
Scour to Auction	3,558	4,153	3,651	3,682	3,218	3,507
Merchant Store to Auction	2,555	2,072	2,084	2,250	2,761	2,947
Auction to Scour	89,966	107,086	104,774	78,212	94,766	112,015
Auction to Dump	124,449	99,372	84,025	107,041	105,759	89,335
Merchant Store to Dump	37,298	38,422	36,840	24,127	30,370	33,235
Scour to Dump	76,361	94,605	90,226	68,984	85,097	97,172
Dump to Port	279,053	269,253	246,665	228,026	247,597	243,620

TABLE 3

Comparison of Actual Auction Centre Net Throughputs with Estimated Throughputs
(tonnes)

Auction Centre		Year Ending 30 June 1971	1972	1973	1974	1975	1976
Auckland	Estimated	35,504	35,459	32,137	30,762	33,199	34,229
	Actual	31,780	31,008	28,266	27,507	26,634	26,451
Napier	Estimated	39,079	37,833	35,020	35,328	36,543	37,676
	Actual	39,218	38,294	36,518	37,236	37,385	37,973
Wanganui	Estimated	19,734	18,746	17,641	18,217	18,453	19,025
	Actual	17,796	17,006	16,518	17,635	16,852	17,048
Wellington	Estimated	22,619	21,711	19,871	21,016	21,150	21,806
	Actual	21,483	20,579	18,284	17,925	17,145	16,536
Christchurch	Estimated	26,503	25,746	24,356	23,274	24,782	25,551
	Actual	31,190	29,233	28,180	26,604	30,129	33,057
Timaru	Estimated	15,310	14,545	14,047	13,772	14,316	14,760
	Actual	13,750	13,210	12,685	12,420	13,622	15,439
Dunedin	Estimated	24,444	23,294	22,363	21,988	22,858	23,567
	Actual	30,615	29,476	27,980	27,001	28,982	30,981
Invercargill	Estimated	32,248	30,653	29,353	29,227	30,154	31,090
	Actual	28,849	27,556	24,939	25,634	30,024	30,016
TOTAL	Estimated	215,908	208,214	195,315	194,109	201,893	208,156
	Actual	214,679	206,362	193,370	191,961	200,773	207,503

TABLE 4

Comparison of Actual Shipping Centre Throughputs with Estimated Throughputs
(tonnes)

Shipping Centre		Year Ending 30 June 1971	1972	1973	1974	1975	1976
Auckland	Estimated	41,596	38,731	35,044	30,723	33,277	31,643
	Actual	-	-	-	-	-	39,689
Napier	Estimated	58,087	62,510	57,029	54,249	57,195	57,012
	Actual	-	-	-	-	-	39,156
Wellington	Estimated	46,012	42,001	36,774	37,095	35,419	31,938
	Actual	-	-	-	-	-	44,651
Christchurch	Estimated	28,053	23,791	22,714	21,577	24,847	24,338
	Actual	-	-	-	-	-	45,068
Timaru	Estimated	28,561	29,105	27,570	23,603	27,616	29,809
	Actual	-	-	-	-	-	20,380
Dunedin	Estimated	32,564	31,124	28,506	25,436	28,811	28,870
	Actual	-	-	-	-	-	35,982
Invercargill	Estimated	45,190	43,144	39,900	36,221	41,226	40,758
	Actual	-	-	-	-	-	37,048
TOTAL	Estimated	279,053	269,253	246,665	228,026	247,597	243,620
	Actual	294,485	314,864	288,205	214,214	219,072	269,437
Difference		-15,432	-45,611	-41,540	+13,812	+28,525	-25,817
Estimated Disposal of Stocks by NZWMC (or NZWC)		+11,000	+28,000	+ 9,000	- 3,000	-27,000	+23,000
Adjusted Difference		- 4,432	-17,611	-32,540	+10,812	+ 1,525	- 2,817

4.2 Average Transport Distances

'By product' results from the model included estimates of the average distances travelled by wool from farm to auction. These results are shown in Table 5.

Rail clearly dominates the long-haul wool transport but the average distance wool travels by road (farm gate to store) is greater than the prescribed 64 km limit existing during the period. This higher than expected average is probably due to the substantial proportion of wool that does not have easy access to rail.

More confidence is held in the South Island distance estimates of Table 5 than estimates for the North Island. Assumptions on modal split and county-auction centre assignments for the North Island have been made fairly arbitrary; for the South Island such assumptions have been based on a 1974/75 wool and livestock transport survey (Ambler, unpublished data, 1976).

The estimated average of 22 kilometres (farm gate to rail head) is in line with the NZWMC's assumption for their "illustrative" marketing costs" (24 kilometres). However, the 96 km assumed by NZWMC for the rail journey is lower than the 163 km estimated in Table 5. However, when the proportion of wool that moves by road alone is taken into account, the "illustrative" distance of 120 km (24 + 96) is close to the Table 5 estimate of 138 km, so for assessing an "illustrative" charge the NZWMC assumptions could yield fairly representative results.

The modal split figures in Table 5 show that just over half of wool despatched to auction is sent by rail. These proportions are supported by the tonnages of wool reported moved ex farm by NZ Railways (NZ Railways, 1977); these official rail tonnages represented 45-50 per cent of the wool moving ex farm over the six years considered in this study. However, the previous warning is reiterated here: assumptions on modal split have been arbitrarily made, especially those for the North Island.

TABLE 5

Estimates of Average Distances Travelled by Wool - Farm to Auction Centre[a]
(km)

	North Island	South Island	New Zealand
Farm gate to rail head (road)	25	19	22
Rail head to auction centre (rail)	190	125	163
Farm gate to auction centre (road)	103	76	88
Farm gate to auction centre (all modes)	165	107	138
Proportion of wool carried by road-rail	59	46	53
road	41	54	47

[a] These average distances are weighted averages based on the wool flows generated by the model.

4.3 Unit Charges

Most unit charges can be found in the Appendix Tables of this report. However, selected unit charges drawn from the Appendix Tables have been indexed (with 1970/71 = 100), and are shown in the following Figures 2, 3 and 4. For comparative purposes an index showing wage rate increases as well as the consumer price index (CPI) also have been included in these Figures. A further index of sheep farming on-farm costs produced by the Department of Statistics has been shown to be very similar to the CPI and so has not been included.

FIGURE 2

INDICATIVE INDEX OF UNIT TRANSPORT CHARGES FOR WOOL

(1970/71 = 100)

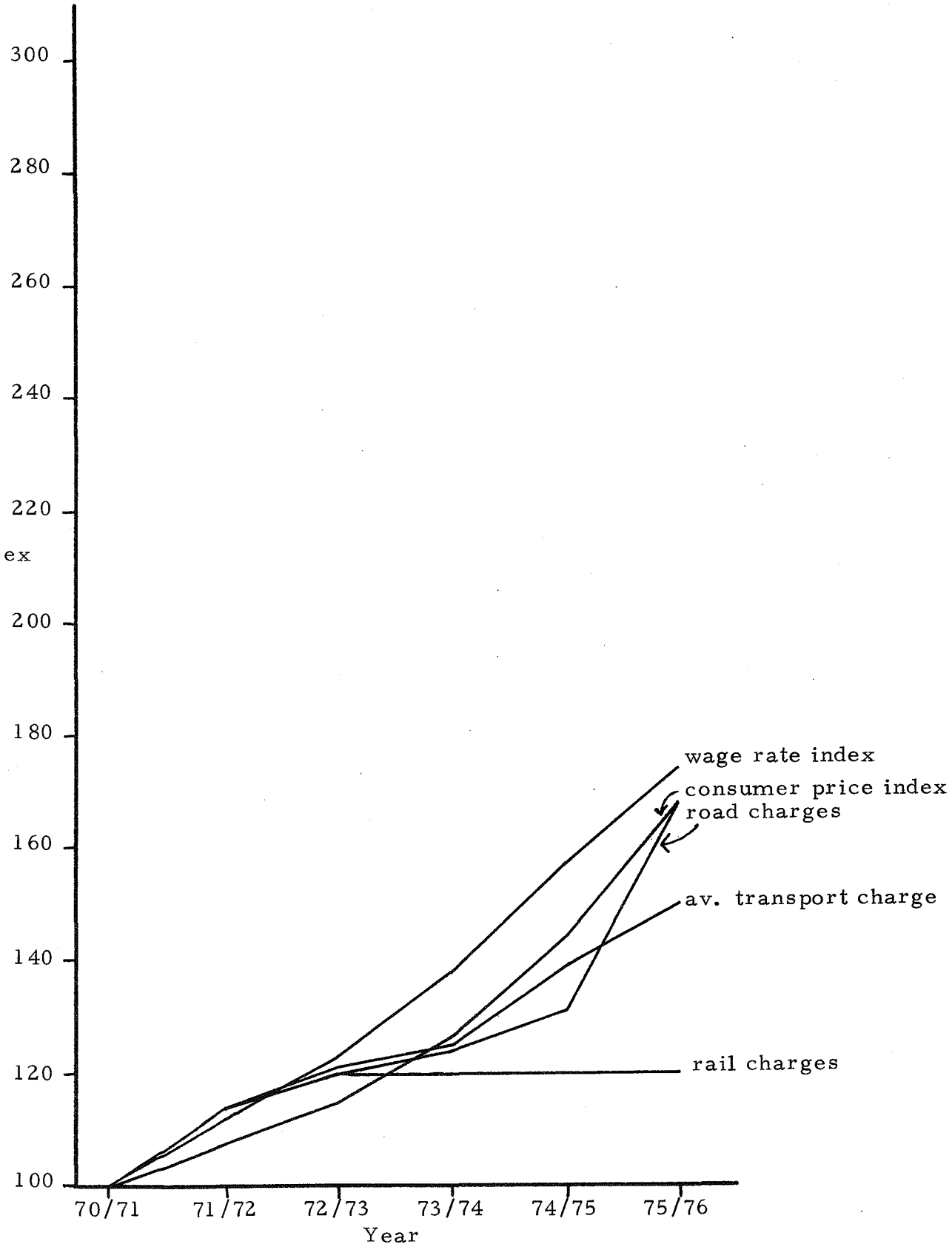


FIGURE 3

INDICATIVE INDEX OF SELECTED SELLING CHARGES FOR WOOL

(1970/71 = 100)

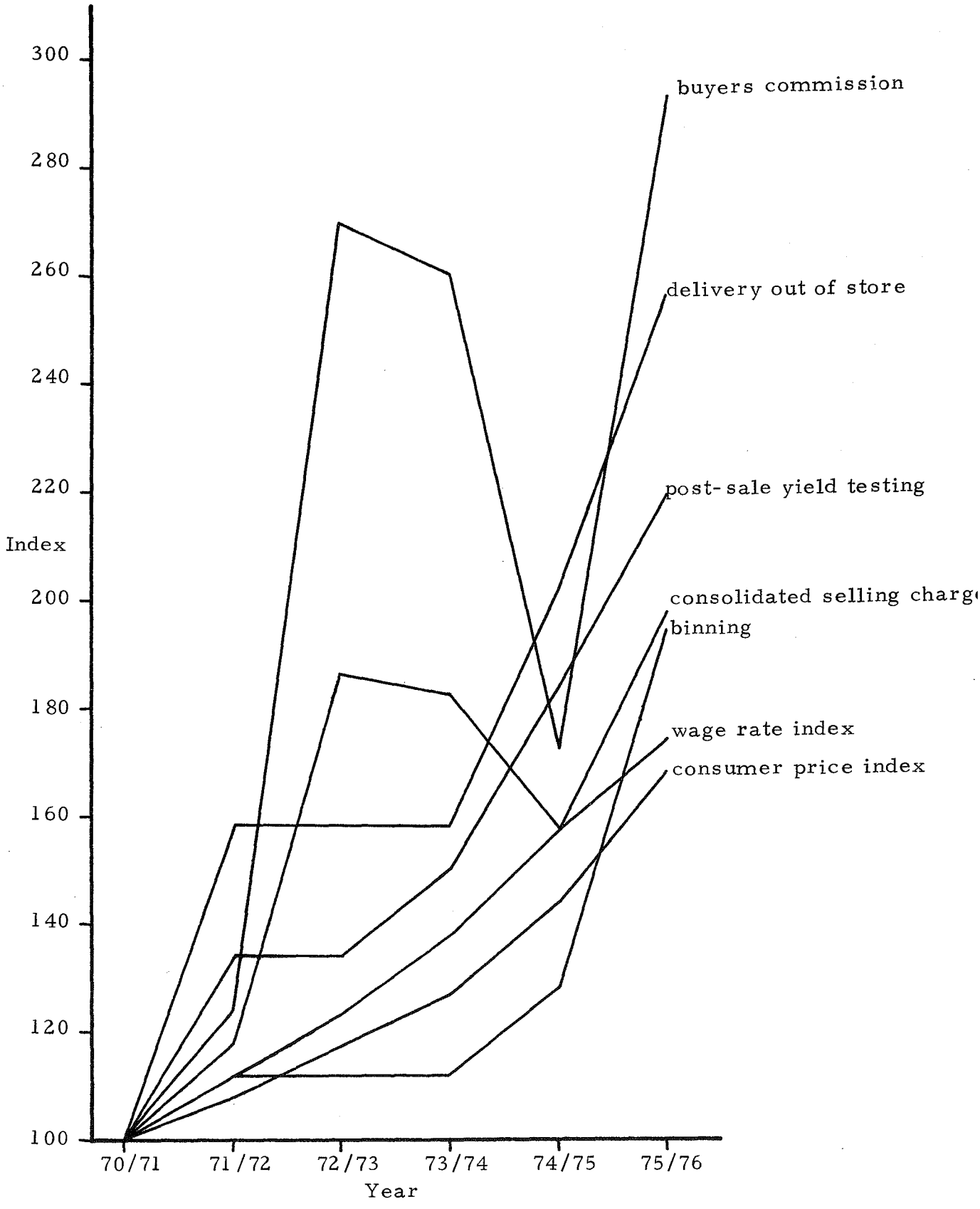
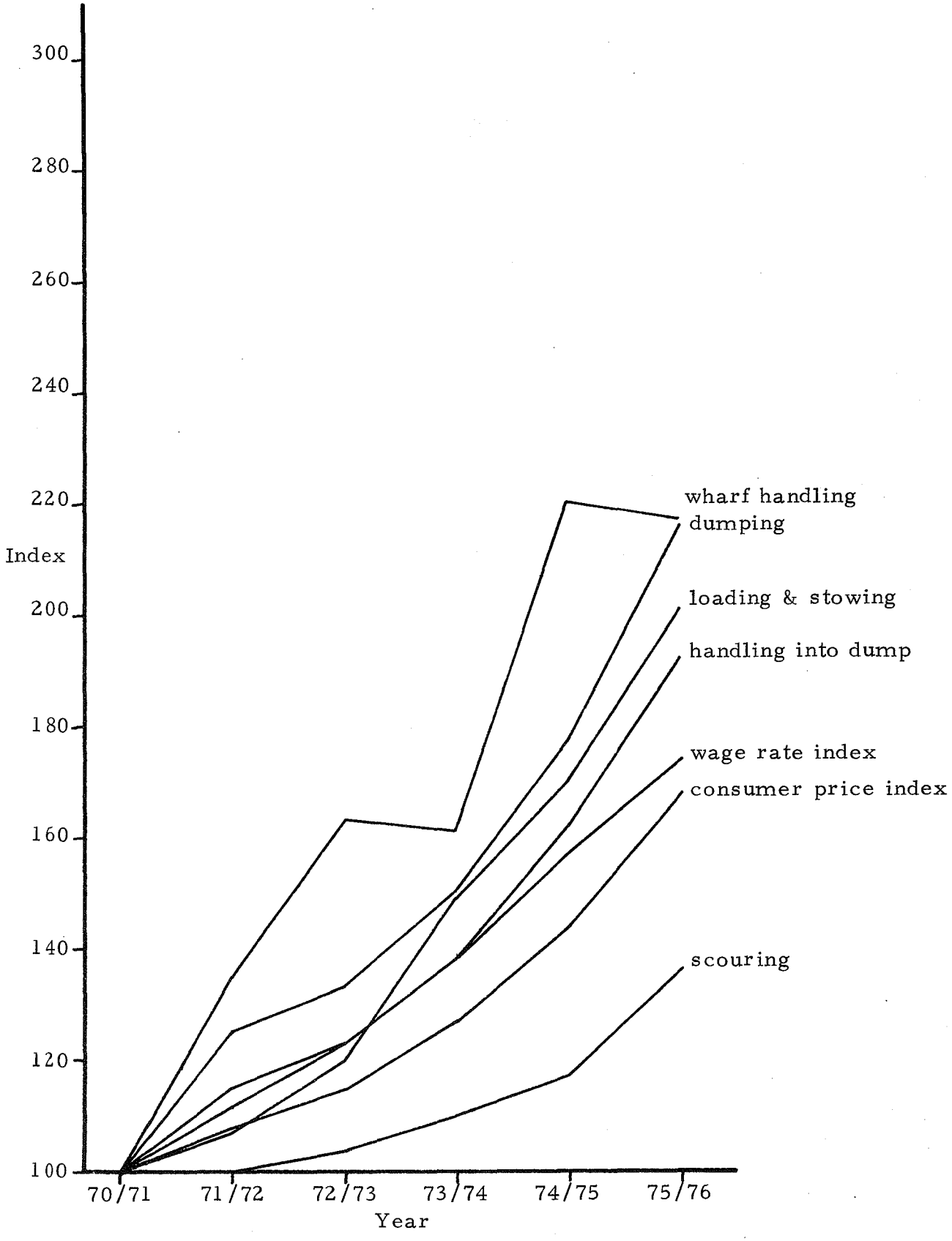


FIGURE 4

INDICATIVE INDEX OF SELECTED POST-SELLING CHARGES FOR WOOL

(1970/71 = 100)



4.4 Aggregate and Average Transport Charges

Aggregate transport charges for each wool flow are given in Table 6; average transport charges per kilogram are shown in Table 7.

Farm to auction centres dominate the aggregate wool transport charge. Likewise, on a unit weight basis transport from the farm to first destination was higher than for other wool movements. In the 1968/69 season study by the Ministry of Transport (Anon, 1970), the total aggregate internal transport costs for wool were estimated at $5.0 million. This study did account for more inter-regional flows than the current study, which for the season two years later estimated the aggregate transport charge at $4.6 million.

It is likely that the aggregate and average transport charges presented here underestimate the actual charges incurred, especially for post-auction transport charges. The reason for the underestimation has been outlined before; wool flows are certainly more complex than the simplifying assumptions made in the construction of the present model.

TABLE 6

Aggregate Transport Charges for Each Wool Flow
($)

Flow	Year Ending 30 June 1971	1972	1973	1974	1975	1976
Farm to Dump	20,338	19,670	25,926	26,102	37,391	39,338
Farm to Merchant Store	469,947	538,175	578,898	442,640	553,527	705,622
Farm to Scour	237,232	276,112	273,147	236,577	269,748	343,219
Farm to Auction	2,375,822	2,603,445	2,621,339	2,663,351	3,092,640	3,492,618
SUB TOTAL (ex Farm)	3,103,339	3,437,402	3,499,310	3,368,670	3,953,306	4,580,797
Meatworks to Scour	22,711	34,251	33,927	43,569	81,479	81,078
Meatworks to Dump	229,133	241,177	239,821	194,229	221,403	227,286
SUB TOTAL (ex Meatworks)	251,844	275,428	273,748	237,798	302,882	308,364
Scour to Auction	6,428	8,628	7,844	8,270	8,665	10,295
Merchant Store to Auction	3,749	3,490	3,712	4,157	6,322	7,169
Auction to Scour	345,125	425,722	427,950	320,187	408,578	501,721
Auction to Dump	207,894	103,177	168,758	223,192	263,162	257,900
Merchant Store to Dump	52,383	62,097	63,945	43,563	64,972	79,144
Scour to Dump	242,947	306,500	293,699	231,189	307,913	381,521
Dump to Port	392,647	498,433	444,686	533,548	489,057	518,912
SUB TOTAL (post auction, etc.)	1,251,173	1,498,047	1,410,594	1,364,106	1,548,669	1,756,662
TOTAL	4,606,356	5,210,877	5,183,652	4,970,574	5,804,857	6,645,823

TABLE 7

Average Transport Charges for Each Wool Flow
(cents per kg.)

Flow	Year Ending 30 June 1971	1972	1973	1974	1975	1976
Farm to Dump	1.08	1.22	1.30	1.30	1.49	1.67
Farm to Merchant Store	1.11	1.26	1.32	1.34	1.59	1.65
Farm to Scour	1.13	1.29	1.37	1.41	1.62	1.73
Farm to Auction	1.10	1.25	1.34	1.37	1.53	1.68
TOTAL ex Farm	1.10	1.25	1.34	1.37	1.54	1.68
Meatworks to Scour	0.61	0.71	0.75	0.78	0.95	1.07
Meatworks to Dump	0.58	0.67	0.71	0.73	0.89	1.00
TOTAL ex Meatworks	0.58	0.68	0.71	0.74	0.90	1.02
Scour to Auction	0.18	0.21	0.21	0.22	0.27	0.29
Merchant Store to Auction	0.15	0.17	0.18	0.18	0.23	0.24
Auction to Scour	0.38	0.40	0.41	0.41	0.43	0.45
Auction to Dump	0.17	0.19	0.20	0.21	0.25	0.29
Merchant Store to Dump	0.14	0.16	0.17	0.18	0.21	0.24
Scour to Dump	0.32	0.32	0.33	0.34	0.36	0.39
Dump to Port	0.14	0.19	0.18	0.23	0.20	0.21

4.5 Aggregate Selling Charges

As most unit selling charges have been reported in the Appendix Tables, selling charges have been broken down only by aggregate activities; this breakdown is shown in Table 8.

4.6 Aggregate Charges by Broad Activity Area

Estimates of aggregate marketing charges are shown in Table 9 under the following categories:

Transport: This aggregate charge applies to all greasy, scoured and slipe wool and includes estimates of all transport charges from farm gate to port.

Selling: This aggregate charge is made up predominantly of auction centre activities although buyers' commission and wool testing charges have also been included.

Scouring: This aggregate charge is for the scouring of all wool in NZ except that scoured by local mills for their own consumption.

Pre-shipment Activities: This aggregate charge includes dumping, unitising and containerising charges, as well as wharf handling, wharfage, and part of the loading and stowing charges.

Wool Levy: This aggregate charge is for administrative, research and promotion purposes.

TABLE 8

Breakdown of Aggregate Selling Charges
($)

Description of Charge	Year Ending 30 June 1971	1972	1973	1974	1975	1976
Sheep's Back to Store Insurance	169,163	202,920	411,428	394,176	263,264	477,214
Broker's Selling Charges[a]	4,999,651	5,692,347	8,393,130	8,156,023	7,331,856	9,531,746
Delivery out of Broker's Store	1,164,421	1,784,780	1,693,575	1,685,362	2,152,694	2,939,200
Rehandling in Store[b]	2,914,901	2,798,473	2,759,783	2,806,980	3,524,816	4,633,396
Buyer's Commission	2,310,690	2,780,723	5,621,907	5,386,736	3,589,264	6,515,610
Wool Testing Charges	300,985	419,264	418,714	414,005	632,371	828,522
TOTAL	11,859,811	13,678,507	19,298,537	18,843,282	17,494,265	24,925,688

[a] Consolidated selling charges for greasy and scoured wool.

[b] Includes reclassing, binning, interlotting, blending, coring, extra branding, and extra storage.

TABLE 9

Estimates of Aggregate Wool Marketing Charges by Broad Activity Area
($)

Broad Activity Area	Year Ending 30 June					
	1971	1972	1973	1974	1975	1976
Transport	4,606,356	5,210,877	5,183,652	4,970,574	5,804,857	6,645,823
Selling	11,859,811	13,678,507	19,298,537	18,843,282	17,494,265	24,925,688
Scouring	8,849,046	10,292,835	10,325,826	8,516,810	10,840,772	14,612,846
Preshipment Activities	5,186,252	5,997,287	6,131,084	6,427,582	8,303,226	9,333,902
Wool Levy[a]	5,029,750	4,880,950	4,642,250	4,310,550	7,958,500	14,285,430
TOTAL	35,531,215	40,060,456	45,581,349	43,068,798	50,401,620	69,803,689
			%			
Transport	13	13	11	11	12	10
Selling	33	34	42	44	35	36
Scouring	25	26	23	20	21	21
Preshipment Activities	15	15	14	15	16	13
Wool Levy	14	12	10	10	16	20
TOTAL	100	100	100	100	100	100

[a] These estimates do not differ significantly from wool levy receipts presented in the Annual Reports of the New Zealand Wool Board.

4.7 Marketing Charges and Wool Prices

Average prices paid for greasy wool at New Zealand auction over the past six seasons, together with estimates of charges incurred by an 'average' kilogram of wool when moving along the most common marketing channel (sold at auction on grower's account, exported greasy) from farm gate to f.o.b., are given in Table 10.

Table 10 shows that marketing charges from farm gate to f.o.b. have made up only 10-18 per cent of derived f.o.b. prices for wool over the years studied. However, in addition to charges shown in Table 10, sea freight, marine insurance, and transport to mill are very significant marketing charges, for example, totalling a further 20.85 per cents per kg. for wool destined to Bradford in the 1975/76 season. Some of the charges making up the farm gate to f.o.b. charges in this report were included in the sea freight rate so the additional 20.85 cents per kg. is probably a slight overestimate of additional charges. Nevertheless, the total marketing charge was probably still over 40 cents per kg. in 1975/76. This estimate does not include on-farm activities such as shearing, shed classing and preparation, baling, and cost of woolpacks; many such activities interact with functions performed later in the marketing chain and so should be included in further studies on wool marketing costs.

TABLE 10

Average Marketing Charges for Greasy Wool Sold at Auction in Relation to Average NZ Wool Prices (cents/kg of greasy wool)

	Year Ending 30 June					
	1971	1972	1973	1974	1975	1976
Average Auction Price	53.42	66.46	143.96	139.19	91.75	157.12
Transport-Farm to Auction	1.10	1.25	1.34	1.37	1.53	1.68
Insurance-Sheep's Back to Store	0.08	0.10	0.22	0.21	0.14	0.24
Broker's Selling Charge	2.28	2.69	4.24	4.15	3.58	4.50
Reclassing	0.20	0.14	0.14	0.15	0.17	0.18
Binning	0.83	0.82	0.89	0.90	1.10	1.34
Interlotting	0.05	0.06	0.05	0.05	0.08	0.11
Wool Levy	1.55	1.55	1.55	1.55	2.75	4.71
TOTAL Charges paid by Grower	6.09	6.61	8.43	8.38	9.35	12.76
Blending	0.19	0.21	0.21	0.21	0.28	0.34
Extra renumbering	0.02	0.02	0.02	0.03	0.02	0.06
Extra Storage	0.03	0.04	0.04	0.05	0.06	0.08
Coring	0.06	0.08	0.09	0.10	0.13	0.17
Testing	0.11	0.16	0.18	0.18	0.26	0.33
Delivery out of Store	0.55	0.87	0.87	0.87	1.11	1.42
Buyer's Commission	1.07	1.33	2.88	2.78	1.84	3.14
Transport to Dump	0.17	0.19	0.20	0.21	0.25	0.29
Delivery into Dump	0.03	0.03	0.03	0.04	0.04	0.05
Container Packing	0.00	0.01	0.04	0.09	0.11	0.10
Unitisation	0.07	0.09	0.10	0.11	0.12	0.15
Dumping	0.68	0.85	0.91	1.03	1.20	1.54
Transport to Port	0.14	0.19	0.18	0.23	0.20	0.21
Wharf Handling	0.21	0.29	0.35	0.34	0.47	0.46
Wharfage	0.21	0.22	0.22	0.22	0.25	0.28
Loading and Stowing[a]	0.69	0.74	0.84	1.03	1.18	1.39
TOTAL Charges Paid by Buyer to f.o.b.	4.23	5.32	7.16	7.52	7.52	10.01
TOTAL Charges to f.o.b.	10.32	11.93	15.59	15.90	16.87	22.77
Derived f.o.b. Price	57.65	71.78	151.12	146.71	99.27	167.13
TOTAL Charges to f.o.b. as Proportion of Derived f.o.b. Price (%)	18	17	10	11	17	14

[a] Only the labour component of these charges is represented here

4.8 Comparison with Other Wool Marketing Charge Estimates

4.8.1 New Zealand estimates.

The NZWMC has reported illustrative 'farm to mill' marketing costs for greasy wool via auction in its 1975/76 season Statistical Handbook (Anon, 1976). These charges are 'illustrative' in that they are based on an average bale weight of 154 kilograms, the movement of 15 miles by road to a rail station and a further 60 miles by rail to the broker's store. Charges in the farm gate to f.o.b. category reported by the NZWMC, together with the corresponding results from the current AERU study are shown in Table 11.

TABLE 11

Comparison of NZWMC Illustrative Marketing Costs with Results of Present Study, 1975-76 Season (c/kg)

Activity	NZWMC estimate	Corresponding AERU estimate
Transport to Store	1.61	1.68
Insurance-Sheep's back to Store	0.23	0.24
Broker's Consolidated Charge	4.50	4.50
Wool Board Levy	4.70	4.71
Buyer's Commission	3.13	3.14
Broker's Delivery Charge	1.42	1.42
Preshipment Charges	1.12[a]	3.97[c]
Overseas Freight	17.94[b]	-

[a] Includes only wharfage, wharf handling and transport to wharf.

[b] Includes some preshipment charges such as dumping.

[c] Includes all preshipment charges.

One of the features of the NZWMC figures is that they appear to correspond with the AERU estimates very precisely; this is largely to be expected since the particular charges reported by NZWMC are standard throughout NZ. This is not the case for the transport charge where it appears that the assumptions made by NZWMC give accurate estimates; the NZWMC estimate of 1.61 c/kg is very close to the average charge estimated by the model (1.68 c/kg).

Perhaps the main feature of the NZWMC presentation is what has been excluded. All charges for rehandling, extra storage, etc., in brokers' stores have been excluded; these charges totalled nearly $5 million in 1975/76.

Another feature of the NZWMC estimates is the combining of various preshipment charges and the sea leg part of overseas freight. The NZWMC 'preshipment' charge is a port service charge which includes only transport from dump to wharf, and wharfage and wharf handling. Other preshipment activities such as dumping, unitising and packing containers are included in the overseas freight rate. Wool testing charges and scouring charges have not been included in the NZWMC series.

Table 12 shows a comparison between results obtained in the current study and charges originally assembled by the New Zealand Wool Board (NZWB) and NZWMC. These latter charges do not appear to have been published but were held by the AERU as a result of other investigations. The comparison shows general agreement between the unpublished estimates and the AERU estimates. Of particular significance is the correspondence of transport charges since each transport charge has been calculated by a different method.

TABLE 12

Comparison of NZWB and NZWMC Unpublished Estimates of Unit Marketing Charges with AERU Estimates (c/kg)

	1971/72		1973/74		1974/75	
	NZWB	AERU	NZWB & NZWMC	AERU	NZWMC & NZWB	AERU
Transport to Store	1.21	1.25	1.40	1.37	1.55	1.53
Sheep's back to Store Insurance	0.08	0.10	0.18	0.21	0.16	0.14
Broker's Consolidated Charge	-	2.69	4.15	4.15	3.53	3.58
Interlotting	-	1.29	1.30	1.20	1.66	1.66
Binning	-	2.33	2.33	2.33	2.97	2.97
Reclassing	-	2.33	2.33	2.33	2.97	2.97
Buyer's Commission	3.66[a]	1.33	2.78	2.78	1.79	1.84
Delivery ex Store	0.88	0.87	0.88	0.87	1.12	1.11
Dumping	1.01	0.81[b]	-	0.97[b]	-	1.14[b]
Wharf Handling	-	0.29	0.36	0.34	0.49	0.47
Wool Levy	-	1.55	1.55	1.55	2.68	2.75

[a] Includes documentation and auction expenses as well as commission.

[b] For double dumping at broker dumpers.

4.8.2 Australian estimates.

A comparison between Australian and New Zealand unit marketing charges for wool for two periods is given in Table 13; exchange rates were close to 1 NZ$ = 1 A$ for the periods compared in Table 13. It is clear that New Zealand charges are lower in most cases; however, care should be taken in interpreting results from this Table as definitions of individual charges could vary. Also, charges based on commission (broker's charges and buyer's commission) vary substantially as they have been based on wool prices which vary between the two countries because of their different wool types.

Transport, insurance, and dumping charges appear similar in both countries. One would expect transport and insurance charges in Australia to be greater than in NZ due to the higher valued wool and greater distances involved. New Zealand dumping charges reported here are those for broker dumpers, and for double dumps; if charges for single dumps made by independent dumpers had been used, the respective NZ figures would have been 1.23 c/kg and 1.45 c/kg for 1973/74 and 1974/75 respectively; these would have been considerably higher than the Australian dumping charges at those times.

TABLE 13

Comparison of NZ and Australian Unit Marketing Charges for Greasy Wool Sold Via Auction

	Australia (Aust. c/kg) Nov. 1973	NZ (NZ. c/kg) 1973/74	Australia (Aust. c/kg) May 1975	NZ (NZ. c/kg) 1974/75
Transport to Store	1.94	1.37	2.24	1.53
Insurance sheep's back to store	0.19	0.21	0.13	0.14
Broker's Charges[a]	5.87[a]	4.15	6.29[b]	3.58
Wool Levy	4.42	1.55	3.55	2.75
Buyer's Commission/ Costs	3.22[c]	2.78	2.93[d]	1.84
Delivery Out of Store	1.34	0.87	2.06	1.11
Dumping	1.01[e]	0.97	1.36[e]	1.14
Cartage to Wharf	0.16	0.23	0.21	0.20

[a] Based on NZ wool values for 1973/74, Australian broker's charges would have been 5.10 c/kg.

[b] Based on NZ wool values for 1974/75, Australian broker's charges would have been 5.66 c/kg.

[c] Based on NZ wool values for 1973/74, Australian buyer's commission/costs would have been 2.44 c/kg.

[d] Based on NZ wool values for 1974/75, Australian buyer's commission/costs would have been 1.61 c/kg.

[e] Estimated from Australian Wool Corporation data.

Source: Australian estimates from McEvoy and Mayman (1975).

Average marketing charges for greasy wool sold via auction and including all charges from farm gate to port are shown for both Australia and New Zealand in Table 14. New Zealand charges appear to have been consistently below those of Australia.

TABLE 14

Average Australian and New Zealand Wool Marketing Charges (farm gate to port via auction)

	Australia (Aust c/kg)		New Zealand[a] (NZ. c/kg)	
	1970	12.00[b]	1970/71	9.42
Nov.	1973	19.99[b]	1973/74	14.53
May	1975	21.58[b]	1974/75	15.22

[a] New Zealand charges here differ to totals in Table 10 as wharf handling and loading and stowing have been deducted to make the components of the totals similar to the Australian components.

[b] Based on NZ wool prices, these three charges would be reduced to 11.38, 18.44 and 19.63 in 1970, 1973 and 1975 respectively.

Source: Australian estimates from McEvoy and Mayman (1975).

CHAPTER 5

DISCUSSION AND IMPLICATIONS

5.1 Charges and Costs

This study was focused on charges rather than costs, the basic difference being the profit component. Also, where more than one activity is carried out by an organisation, cross subsidisation of charges may occur divorcing charges for a particular operation from the actual costs incurred in that operation.

The exercise of relating charges to costs for particular wool marketing activities could be undertaken with two objectives in mind:

1. To assess whether aggregate revenue collected from charges appears 'excessive' in terms of costs incurred. The handling of capital charges usually poses a major difficulty in such an exercise.

2. To assess the relative resource requirement for different operations and the effects of changes in resource costs on charges.

Both types of exercises pose numerous difficulties including access to data. However, it should be kept in mind that the current concentration on charges has been to set the scene for more detailed studies which may attempt to identify cost structures within specific sectors.

5.2 Changes in Marketing Charges

Reductions in marketing charges paid by growers (Table 10) result in direct benefits to growers transmitted through the net price received at auction (i.e. charges are deducted from gross proceeds

by the broker). However, when there is a change in marketing charges post-auction the resulting situation is not so clear. What is most likely to occur is that an increase in buyers' charges are deducted from the clean limits buyers establish before the auction, thus resulting in a lowered auction price. This is certainly so if it is assumed that the price of NZ wool is set on a world market unaffected by NZ wool supply. Alternatively, and less likely, is that wool buyers pass increased charges on to their principals (mills) who either absorb the increased cost of wool or pass it on, some or all of the increase eventually reaching the consumer. Depending on the elasticity of demand for wool at the consumer and intermediate stages, a price message will be passed back to the buyers that the delivered price must be lowered, resulting in lowered auction limits once again. In the longer term therefore, it is the grower who probably bears most of any increased post auction charges.

A decrease in post-auction charges theoretically should have opposite effects. However, because of the complexity of the wool buying trade and the various international merchanting operations, this may not be so clear cut and certainly deserves further exposition.

5.3 Significance of Charges in Different Sectors

5.3.1 Selling.

In absolute dollar terms the selling activities as defined in this study predominate and have contributed between 33 and 44 per cent of the total farm gate to f.o.b. charges during the past six seasons (Table 9). In 1975/76 aggregate selling activity charges totalled some 25 million dollars. This sum was dominated by the broker's selling charges, estimates of buyer's commissions, and rehandling in the broker's store (Table 8).

For this estimate broker's charges, commissions etc., have only been applied to wool sold at auction; this estimate is therefore probably an underestimate of the total selling cost that could be calculated by imputing charges to privately sold wool. Nevertheless, the absolute magnitude of aggregate broker's charges suggests that further attention should be devoted to this area. The fact that there is limited competition in wool broking (since broking charges are all set at the national level) should also be viewed with some concern. However, brokers do compete for wool with private buyers and would appear to have retained a constant market share over the six year period considered (see Appendix Table 3). This would suggest that the costs of private buyers' operations (costs plus profits) may be as high as broker's charges; however, other constraints on the expansion of private buying should be considered before such a conclusion is reached (e.g., 'captive' clients of brokers due to financing arrangements).

Over the past six seasons ending 1975/76, unit selling charges have more than doubled and most charges have increased at a higher rate than either the consumer price index or the wage rate index (Figure 3). Whilst some of these charges (e.g., buyer's commission) are related to the price of wool which increased over the period, others are not (e.g., delivery out of store).

With respect to broker's selling charges, substantial resources provided by the Australian Government seven years ago for a research and development effort into pre-sale specification and sale by sample should be heeded by the NZ Government and Wool Industry. Although Australian wool selling (particularly broking) charges do not appear to have increased at a slower rate than selling charges in New Zealand, it should be borne in mind that the application of results of the Australian research efforts has only commenced recently. For example, 40 per cent of the

Australian clip was pre-sale tested in 1974/75 and 55 per cent in 1975/76; in 1975/76 nearly 60 per cent of grower branded wool was either sold by sample or by reduced showing; only very limited amounts of wool were sold by objective measurement alone. The Australian developments in this field and their relationship to selling charges should be of considerable interest to the New Zealand wool industry.

Buyer's commission (estimated at two per cent) should be regarded as an area of uncertainty. The two per cent assessment assumption, the most common estimate available, raises a number of questions:

1. What is the nature of the component costs it is deemed to cover?

2. Whether it is an accurate average and whether it varies between seasons.

3. Whether woolgrowers should be contented with a marketing charge that varies with the price of wool when no check can be made as to whether high absolute commissions taken by buyers in good years are actually used to subsidise buyers in low absolute commission (low price) years.

4. Since a high proportion of wool is purchased for stock or for future delivery at prearranged prices (not commission buying), is the revenue expectation from such sales equivalent to a two per cent commission?

The extent of competition between buyers is another important area of concern since this is the foundation upon which the auction system rests.

5.3.2 Scouring.

After selling, scouring was the next highest aggregate charge ($14.6 million in 1975/76). However, it is evident from Figure 4 that unit scouring charge increases have been relatively small compared to other charges over this period. Since the scouring industry stands out so clearly in this regard, reasons behind the low charge increases must be worthy of identification and documentation.

Reasons for the relatively small increases in scouring charges may include:

1. International and local competition.
2. Scourers not taking account of fixed costs (plant replacement) in charge fixing.
3. Increased productivity predominantly due to improved technology.

5.3.3 Wool levy.

At around $14m in 1975/76, this aggregate charge is most significant. The disposition of the levy proceeds in terms of NZWB and International Wool Secretariat (IWS) allocations as well as in functional terms such as administration, research and promotion should be fully documented for each year; NZWB incomes and expenditures are detailed in their Annual Reports but it would be helpful if this were combined with IWS expenditures to give an indication of the allocation of the levy proceeds to various activities.

5.3.4 Transport.

At $6.6 million in 1975/76, this aggregate charge has probably been underestimated due to the substantially more complex physical post-auction wool movements than assumed in this study. However, transport from farm to first destination is the major transport cost

to the industry and it would appear that, for auction wool, most of these flows are to the nearest auction centre. The flows of slipe wool and post auction flows added to about $2 million in 1975/76; it would be unlikely that the model would underestimate these flows by more than 50 per cent (that is, it would be unlikely for them to be more than $4 million in total).

Increases in unit transport charges for wool and estimates of average charges paid for transport of wool have been less than increases in wage rate and consumer price indices (Figure 2). This is largely due to the influence of the frozen rail carriage rates from 1972 to the beginning of 1976. Substantial rail freight increases have occurred since then so that the picture presented in Figure 2 could be somewhat misleading. On the other hand, freight rate increases for wool carried by road have risen in a similar fashion to the consumer price index, a substantially lower rate than many other wool marketing charges. This may be due to increased productivity in the road transport industry as stated by Habgood (1976) arising from the use of trailers, larger vehicles, and mechanical handling. Transport of wool in containers has not been accounted for in this study since only a small proportion of export wool has been containerised over the time period considered here. However, as a result of containerisation, transport charges from brokers' stores, scours etc., to port may be considerably altered in the future. Transport of wool to port in containers necessitates empty containers being delivered to the packing site; hence total transport charges will depend in part on the location of container packing sites.

Of perhaps greater impact on wool transport charges will be the concentration of wool cargo through fewer export ports due to containerisation. This will necessitate significant increases in inter-regional wool flows. These additional transport charges will be met by the shipping companies concerned but the charges

will be recovered via the freight rate paid by wool exporters. Theoretically, cargo concentration should allow savings to be made in ship's costs and hence, a lower freight rate should ensue. It is to be hoped that the additional transport charges can be identified as a separate component of the freight rate so that some check on the savings attained can be effected.

Inter-regional flows of wool due to cargo concentration will be carried by rail with the shipping lines negotiating contract rates with NZ Railways; hence, in future years it may be difficult to identify transport charges for individual cargo concentration flows.

5.3.5 Preshipment activities.

Together, aggregate charges in this area totalled some $9.3 million in 1975/76. Over the six year period most preshipment charges have increased considerably more than wage rates and the CPI (Figure 4).

Over the period studied dumping was included in the sea freight rate. This meant the shipping companies met the charge and may have had little incentive to hold dumping rates down since the cost was passed straight on in the freight rate. Due to actions of the NZWMC, dumping has recently been excluded from the sea freight rate.

Port charges have also increased at a high rate (Figure 4). Loading and stowing is a ship's cost and is recouped in the sea freight rate. With increasing containerisation it will be more difficult to identify loading and stowing charges as it was for conventional wool loading; the latter charges were assembled by the Waterfront Industry Commission; however, the Commission does not have access to costs per tonne for container terminal operations. Wharfage and wharf handling charges have been traditionally paid by the shipper but have recently been incorporated into a 'port service charge' which has been equalised for all

New Zealand ports, thus masking differences in charges between ports. This situation does not appear to be conducive to the encouragement of efficiency in port activities. In addition, from the start of the 1977/78 wool selling season, cartage to port, wharfage and harbour improvement rates and wharf handling will all be transferred to the freight rate in the NZ to UK/Europe trade. It is to be hoped that these individual charges will still be available and will not become unidentifiable in the freight rate.

Containerisation should reduce port handling charges for wool. However, simple comparisons into different handling methods can be misleading because of:

1. the utilisation implications of capital tied up in containers:
2. the packing and unpacking considerations:
3. savings in ships' time.

Containerisation will have a significant effect on the throughputs of the traditional wool shipping ports of Napier, Timaru and Bluff, none of which has been designated as a container port.

5.3.6 Comparison of sectors.

The lowest rate of increase in charges is associated with the scouring industry, the industry reputed to be the most competitive within the wool marketing chain. The transport sector appears to have held wool cartage rates to reasonable rate increases but further monitoring of such charges in 1976 and 1977 could reverse this conclusion.

The highest rates of increase have appeared in the selling sector (woolbroking and woolbuying charges). Assessment of woolbuying charges has been made on an average commission basis.

How accurate this assumption is could be questioned. However, the overall increase in brokers' charges should be viewed with much concern.

Wool testing charges, dumping, and other preshipment charges have also increased at a rate above that for wage rates and the CPI; port activity charges are likely to change substantially in form with the greater amount of wool to be containerised from 1977 onwards.

From this brief examination of absolute aggregate charges and of relative unit charge increases, it appears that the selling activity should be given priority in any more detailed study of wool marketing costs. Some priority should be given also to wool buying activities.

5.4 Adequacy of Current Information on Marketing Charges

In assessing the current statistical data base available on wool marketing charges, it should be established why a series is required. A major objective of a marketing charge series is to identify high charge areas and trends in various marketing charges; priorities, in terms of research into industry organisation surrounding highlighted charges and into the potential for technical change and associated research priorities could then be directed more rationally.

Currently the NZWMC annually report statistics on some wool marketing charges from farm gate to mill. This series commenced in 1975/76 and is an 'illustrative' charge approach. The objective of the series is to monitor major changes in principal charges and from this point of view the series is satisfactory. However, the series could be expanded to include more charges, and existing charge categories could be broken down into their components to give a fuller picture of the situation. For example, the 'port service charge' category includes some transport and some wharf handling charges.

The NZWMC series is representative in that it refers to the most common wool marketing channel, greasy wool destined for UK/Europe via the auction system. But quantities of wool flowing along this and other marketing channels are not explicitly reported although much information can be extracted, although with some difficulty, from the NZWMC Statistical Handbook. Aggregate charges cannot be assessed without such flow information and it would appear worthwhile for flow data to be presented by marketing channel. This would provide a valuable monitoring device for marketing channel changes, and depending on extra material incorporated, could assist in identifying the various wool flows that currently appear to occur in such an unco-ordinated manner.

The other main data series on wool marketing charges appears to be of limited value (auction to f.o.b. marketing charges compiled by the Department of Statistics), since it covers only one sector of the marketing chain.

It is concluded that an improved monitoring system of charges and flows should be established by NZWMC.

5.5 Deficiencies in Current Model

The purpose of the model described in this report was to provide a framework for collecting and presenting historical aggregate wool marketing charges. Most charge data has been collected and assembled satisfactorily, except for 'charges' associated with private purchase marketing channels. Such charges do not exist per se, only costs and revenues. Collection of charge data on local transport by individual centres has not been exhaustive but it is unlikely that refinement of data in this area would alter the overall results from the model.

Where the model has shown up to be most deficient is in the area of quantity flows, especially flows post auction. It is apparent that substantially more flows, or quite different flows to what were

expected on a priori grounds, exist. Further definition of such flows would appear necessary if improvement in the accuracy of the model is required.

The fact that the model has encompassed charges only from farm gate to f.o.b. could be considered a deficiency in the current model. For example, changes in the extent of on-farm woolclassing and handling may interact with the extent of rehandling in brokers' stores. At the other end of the chain, the sea freight rate includes many on-shore activities and interaction between the shipping system and preshipment activities is substantial. The integrated philosophy in this regard is so important that it is suggested that future attempts to assemble marketing charges start on the farm with shearing and finish at the overseas mill (i.e. the sheep's back to mill concept).

5.6 Recommendations for Further Study

1. Although rates of increase in unit charges are not as good a guide to technological research priorities as changes in resource costs, they have been used in this study to suggest that wool brokers' activities should be given priority in research aimed at reducing marketing charges. More specifically, studies on the economic implications of the use of sale by sample and objective measurement in brokers' stores, the influence of the seasonal flow of wool on brokers' costs and charges and the influence of lot size on brokers' costs should be initiated.

2. Other priority marketing areas highlighted by the study were dumping, woolbuying, and testing charges. Reasons behind the extremely low rate of increase in scouring charges should be defined and documented. The disposition of wool levy proceeds should be documented more fully by functional area.

3. Methods of charge setting and incentives for reduced charges should be examined with regard to the organisational structure in wool marketing. It would appear that in many instances a lack of incentive to reduce charges may be inhibiting a more efficient wool marketing chain. It appears particularly strange that a producing industry that rejected marketing reform in 1972 on the grounds of loss of freedom and distaste for control and government interference with a free market system, is associated with a handling sector which overall is not particularly competitive. Competition is restricted in transport, woolbroking, dumping, and in port activities. Whilst private buying does constitute a competitive force in the wool marketing chain, constraints on expansion of this marketing channel may be limiting its competitive effectiveness. Such constraints should be examined in further studies.

4. Modelling of the wool handling system should be utilised to compare alternative marketing and handling systems by organisational structure, by marketing function and by marketing channel. In this respect, of even more importance to the further exposition of the link between charges and costs, comparisons need to be made in resource cost terms of different methods of carrying out the same marketing function, and of different marketing channel comparisons. For this, cost data for existing activities and potential activities require identification. Information on charges cannot be used satisfactorily in such exercises but can provide guidelines as to which functions/ channels/activities may be given priority for more detailed investigation.

However, if growers and/or national resources are to be used in such research, it is imperative that the marketing chain be seen as a whole and that potential improvements in one sector

improve efficiency of the whole sector, rather than just in the individual sector itself.

5. No adequate statistical series on wool marketing charges exists. The annual publication of an expanded set of statistics based on that currently published by the NZWMC should be given high priority by NZWMC. This series should include on-farm costs associated with marketing, so constituting a sheep's back to mill concept. To assist in such data being used to more closely monitor changes in the use and balance of the various marketing channels as well as to enable aggregate charge estimates to be made more easily, the NZWMC could publish throughput and flow information by marketing function and channel. Some of this information is currently published by the NZWMC in the 'Statistical Handbook' but a revised presentation should be considered.

6. The sheep's back to mill concept should be accepted as a necessary philosophy in future wool handling and marketing studies. This applies to collection of statistical data, cost comparisons of marketing channels or systems, or technical research into particular activity areas.

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APPENDIX TABLE 1

Proportions of Wool Produced by County for Years Ending 30th June 1972, 1973 and 1974.

County	Proportion of NZ Wool Production for year ending 30th June. 1972	1973	1974
Mangonui	.0028	.0028	.0023
Whangaroa	.0011	.0011	.0009
Hokianga	.0016	.0019	.0016
Bay of Islands	.0055	.0053	.0048
Whangarei	.0067	.0064	.0057
Hobson	.0056	.0051	.0054
Otamatea	.0061	.0057	.0054
Rodney	.0074	.0066	.0058
Waitemata	.0038	.0036	.0032
Manukau City	.0023	.0021	.0019
Franklin	.0039	.0034	.0031
Raglan	.0206	.0186	.0182
Waikato	.0062	.0063	.0059
Waipa	.0051	.0045	.0043
Otorohanga	.0113	.0115	.0110
Waitomo	.0212	.0226	.0226
Taumarunui	.0225	.0224	.0233
Coromandel	.0015	.0016	.0016
Thames	.0009	.0009	.0010
Hauraki Plains	.0012	.0011	.0011
Ohinemuri	.0018	.0015	.0016
Piako	.0030	.0032	.0027
Matamata	.0090	.0083	.0082
Tauranga	.0065	.0063	.0058
Rotorua	.0157	.0143	.0142
Taupo	.0120	.0125	.0117
Whakatane	.0042	.0047	.0046

APPENDIX TABLE 1
(cont'd)

Opotiki	.0018	.0017	.0016
Waiapu	.0101	.0105	.0110
Waikohu	.0128	.0136	.0140
Cook	.0194	.0203	.0205
Wairoa	.0172	.0175	.0180
Hawke's Bay	.0449	.0427	.0428
Waipawa	.0154	.0155	.0159
Waipukurau	.0054	.0053	.0051
Patangata	.0242	.0223	.0229
Dannevirke	.0160	.0152	.0159
Woodville	.0043	.0039	.0042
Clifton	.0027	.0030	.0030
Taranaki	.0008	.0007	.0007
Inglewood	.0021	.0021	.0021
Egmont	.0011	.0011	.0011
Stratford	.0074	.0071	.0074
Eltham	.0015	.0015	.0015
Waimate West	.0001	.0001	.0001
Hawera	.0024	.0023	.0025
Patea	.0069	.0069	.0069
Waimarino	.0088	.0086	.0092
Waitotara	.0050	.0049	.0052
Wanganui	.0108	.0108	.0113
Rangitikei	.0365	.0376	.0397
Kiwitea	.0103	.0109	.0108
Pohangina	.0054	.0056	.0058
Oroua	.0070	.0066	.0072
Manawatu	.0040	.0041	.0036
Kairanga	.0032	.0028	.0029
Horowhenua	.0031	.0031	.0029
Hutt	.0038	.0032	.0031
Pahiatua	.0071	.0074	.0073
Akitio	.0079	.0073	.0078
Eketahuna	.0074	.0070	.0074
Masterton	.0202	.0189	.0206
Wairarapa South	.0071	.0072	.0099
Featherston	.0127	.0123	.0128
NI Total	.5463	.5359	.5426

APPENDIX TABLE 1
(cont'd)

Marlborough	.0122	.0123	.0106
Awatere	.0066	.0067	.0063
Kaikoura	.0044	.0043	.0046
Waimea	.0084	.0083	.0079
Golden Bay	.0014	.0012	.0012
Buller	.0002	.0001	.0001
Inangahua	.0011	.0012	.0011
Grey	.0019	.0019	.0017
Westland	.0013	.0010	.0009
Amuri	.0086	.0090	.0089
Cheviot	.0059	.0060	.0060
Waipara	.0120	.0124	.0118
Ashley	.0057	.0059	.0052
Rangiora	.0017	.0016	.0017
Eyre	.0027	.0025	.0024
Oxford	.0039	.0035	.0036
Malvern	.0120	.0123	.0119
Paparua	.0023	.0023	.0022
Waimairi	.0000	.0000	.0000
Heathcote	.0002	.0002	.0002
Mount Herbert	.0009	.0009	.0008
Akaroa	.0025	.0025	.0024
Wairewa	.0018	.0019	.0018
Ellesmere	.0071	.0073	.0073
Ashburton	.0377	.0388	.0386
Geraldine	.0110	.0109	.0110
Levels	.0070	.0075	.0077
Mackenzie	.0121	.0127	.0125
Waimate	.0182	.0187	.0177
Waitaki	.0169	.0170	.0172
Waihemo	.0042	.0044	.0045
Waikouaiti	.0030	.0031	.0032
Dunedin City	.0008	.0008	.0008
Taieri	.0081	.0083	.0080
Bruce	.0145	.0141	.0137
Clutha	.0271	.0263	.0266
Tuapeka	.0188	.0197	.0190
Maniototo	.0111	.0121	.0120
Vincent	.0122	.0131	.0129

APPENDIX TABLE 1
(cont'd)

Lake	.0053	.0057	.0055
Southland	.0976	.0991	.0992
Wallace	.0422	.0438	.0440
SI Total	.4526	.4614	.4547
NZ Total	.9989	.9973	.9973

Note Wool produced on Waiheke Island, Great Barrier Island, Chatham Islands and Stewart Island, made up less than 4,000 bales in 1973/74 and has been excluded; these omissions, as well as rounding errors, mean that individual proportions presented here do not sum to 1.0000.

Source: New Zealand Agriculture Statistics for the Season 1971/72, Department of Statistics, Wellington, 1975; New Zealand Agriculture Statistics for the Season 1972/73, Department of Statistics, Wellington, 1976; Agriculture 1973/74 1. Sheep, Statistical Bulletin, Department of Statistics, Wellington, 1976.

APPENDIX TABLE 2

Total Weights of Wool Despatched from NZ Farms by Year (1970/71 to 1975/76)

Year Ending 30 June	Tonnes Despatched ('000's)
1971	281.0
1972	274.1
1973	261.1
1974	245.9
1975	255.9
1976	273.0

Note: Above figures include greasy and scoured wool sold at auction, growers UK shipments of greasy and scoured wool, and privately sold greasy and scoured wool; privately sold wool later sold through auction has been included only once; an adjustment has been made for wool resold through brokers' bins. All weights are expressed on a greasy equivalent basis.

Source: Annual Review of the Sheep Industry 1972/73 and 1975/76, New Zealand Meat and Wool Boards' Economic Service, Wellington

APPENDIX TABLE 3

Private Sales of Wool from Farms
by 'Auction Centre Region'

Auction Centre Region	Year Ending 30 June 1971	1972	1973	1974	1975	1976
			(bales)			
Auckland	68,411	62,750	66,267	49,584	60,592	70,687
Napier	44,589	42,863	37,492	30,211	35,210	46,621
Wanganui	30,729	36,622	27,118	19,397	17,321	21,293
Wellington	69,608	68,065	69,595	60,343	64,695	72,765
Christchurch	15,163	16,842	23,340	13,813	16,119	19,045
Timaru	26,542	29,543	33,171	26,229	31,514	35,360
Dunedin	19,022	21,701	22,598	10,317	14,264	13,940
Invercargill	72,733	73,562	81,384	61,704	54,958	70,721
NZ	346,797	351,948	360,965	271,598	294,673	350,432
			(Thousand tonnes)			
NZ[a]	52.7	53.5	54.9	41.3	43.5	53.3
NZ[b]	50.2	51.5	52.8	39.0	40.6	50.3

[a] All privately sold wool

[b] Excludes privately sold wool later resold at auction.

Source: Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Commission, 1970/71 and 1971/72; Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Marketing Corporation, 1972/73, 1973/74, 1974/75 and 1975/76.

APPENDIX TABLE 4

Average Bale Weights 1970/71 to 1975/76 (kg)

Auction Centre	Year Ending 30 June 1971	1972	1973	1974	1975	1976
			(Greasy)			
Auckland	160.97	162.08	161.50	158.19	161.97	159.01
Napier	158.44	157.43	156.24	154.93	156.51	152.90
Wanganui	157.75	157.67	157.16	155.99	157.63	156.27
Wellington	160.14	158.12	155.77	156.17	156.96	153.94
Christchurch	153.57	151.01	151.19	152.54	153.92	151.15
Timaru	152.99	151.48	148.83	148.66	152.28	149.62
Dunedin	153.14	153.20	148.53	148.54	150.47	148.01
Invercargill	160.69	162.38	157.86	157.87	161.70	159.45
Private Sales	152.0	152.0	152.1	152.1	147.6	152.1
Auction Centre			(Scoured)			
Napier	123.42	123.22	126.14	125.12	125.55	126.03
All Slipe Wool	155.0	152.0	152.0	152.0	152.0	150.0

Source: Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Commission, 1970/71 and 1971/72; Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Marketing Corporation, 1972/73, 1973/74, 1974/75 and 1975/76.

APPENDIX TABLE 5

Quantity of Greasy Wool Despatched to Auction in U.K.

Auction Centre Region	Year Ending 30 June 1971	1972	1973	1974	1975	1976
	(bales)					
Auckland	338	149	329	42	211	1,047
Napier	8,238	7,337	8,710	8,341	9,161	6,688
Wanganui	99	94	91	66	38	78
Wellington	1,745	1,193	1,261	1,157	2,646	3,321
Christchurch	232	169	82	0	31	5
Timaru	289	120	193	910	1,176	1,070
Dunedin	361	465	670	805	1,220	1,756
Invercargill	630	723	1,422	1,694	1,611	1,396
NZ (bales)	11,932	10,250	12,758	13,602	16,094	15,361
NZ (kg)	1,900,000	1,600,000	2,000,000	2,000,000	2,500,000	2,264,667

Source: Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Commission, 1970/71 and 1971/72; Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Marketing Corporation, 1972/73, 1973/74, 1974/75 and 1975/76.

APPENDIX TABLE 6

Quantity of Scoured Wool Despatched to Auction in U.K.

Auction Centre Region	Year Ending 30 June					
	1971	1972	1973	1974	1975	1976
	(bales scoured wool)					
Auckland	4,805	3,949	3,003	108	1,250	2,303
Napier	11,296	11,192	10,572	13,997	13,131	13,979
Wanganui	55	35	6	0	0	4
Wellington	978	883	907	688	658	3,496
Christchurch	1,079	819	1,025	290	131	405
Timaru	8,795	7,649	4,814	4,074	4,641	4,640
Dunedin	2,597	2,361	975	62	225	85
Invercargill	2,518	2,391	1,077	383	299	275
NZ (bales)	32,123	29,280	22,379	19,602	20,335	25,187
NZ (tonnes)	5.7	5.0	3.9	3.4	3.6	4.5

Source: Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Commission, 1970/71 and 1971/72; Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Marketing Corporation, 1972/73, 1973/74, 1974/75 and 1975/76

APPENDIX TABLE 7

Quantities of Scoured Wool Sold at Napier Auction

Year Ending 30 June	Net Scoured Weight (Kgs)
1971	3,557,910
1972	4,153,210
1973	3,650,987
1974	3,682,096
1975	3,218,590
1976	3,506,721

Source: Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Commission, 1970/71 and 1971/72; Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Marketing Corporation, 1972/73, 1973/74, 1974/75 and 1975/76.

APPENDIX TABLE 8

Proportion of Greasy Wool Arriving at Brokers' Stores by Road-Rail Requiring Second Road Movement

Auction Centre	Proportion Requiring Second Road Movement
	%
Auckland	30
Napier	100
Wanganui	0
Wellington	0
Christchurch	5
Timaru	80
Dunedin	5
Invercargill	20

Source: Estimates by Transport Division, New Zealand Wool Marketing Corporation.

APPENDIX TABLE 9

Privately Purchased Wool Resold at Auction

Auction Centre	Year Ending 30 June					
	1971	1972	1973	1974	1975	1976
	(bales)					
Auckland	1,379	827	212	331	945	1,587
Napier	3,968	3,202	3,433	2,900	4,050	3,392
Wanganui	328	558	320	369	600	784
Wellington	1,790	1,202	1,108	1,305	1,268	600
Christchurch	610	420	597	769	1,003	1,896
Timaru	1,387	1,287	2,222	1,792	2,106	3,755
Dunedin	1,207	1,563	1,024	1,168	3,215	2,269
Invercargill	6,141	4,575	4,783	6,161	5,516	5,094
Total	16,810	13,634	13,699	14,795	18,703	19,377

Source: Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Commission, 1970/71 and 1971/72; Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Marketing Corporation, 1972/73, 1973/74, 1974/75 and 1975/76.

APPENDIX TABLE 10

Greasy Wool Throughput of Auction Centres Over Past Six Seasons

Auction Centre	Year Ending 30 June					
	1971	1972	1973	1974	1975	1976
	(bales greasy)					
Auckland	199,449	192,770	176,318	175,024	175,913	172,269
Napier	251,839	247,006	238,304	245,404	251,351	254,448
Wanganui	113,192	108,444	105,528	113,469	108,695	109,981
Wellington	136,468	131,640	119,050	116,427	113,494	108,597
Christchurch	204,424	194,524	187,440	175,709	201,032	222,465
Timaru	92,141	89,089	87,861	86,695	95,713	107,627
Dunedin	201,384	194,526	189,768	183,143	199,908	212,799
Invercargill	187,718	175,254	163,263	168,763	197,138	195,011
TOTAL	1,386,615	1,333,253	1,267,532	1,264,634	1,343,244	1,383,197

Source: Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Commission, 1970/71 and 1971/72; Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Marketing Corporation, 1972/73, 1973/74, 1974/75 and 1975/76.

APPENDIX TABLE 11

Auctioned Wool Re-auctioned

Auction Centre	Year Ending 30 June					
	1971	1972	1973	1974	1975	1976
	(bales)					
Auckland	641	628	1,084	806	10,532	4,335
Napier	347	562	1,138	2,160	8,437	2,703
Wanganui	52	29	105	48	1,184	105
Wellington	528	290	563	344	2,994	576
Christchurch	717	519	458	533	4,282	1,863
Timaru	880	597	406	1,360	4,153	683
Dunedin	263	558	366	202	4,084	1,211
Invercargill	2,048	980	498	230	5,947	1,667
Total	5,476	4,163	4,618	5,683	41,613	13,143

Source: Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Commission, 1970/71 and 1971/72; Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Marketing Corporation, 1972/73, 1973/74, 1974/75 and 1975/76.

APPENDIX TABLE 12

Quantities of Wool Reclassed, Binned and Interlotted by Auction Centre[a]

Auction Centre	Year Ending 30 June					
	1971	1972	1973	1974	1975	1976
	Reclassing (tonnes)					
Auckland	337(1)	165(1)	53(0)	603(2)	133(0)	10(0)
Napier	4,593(12)	2,607(7)	2,089(6)	1,625(4)	1,205(3)	720(2)
Wanganui	172(1)	75(0)	76(0)	69(0)	37(0)	32(0)
Wellington	870(4)	337(2)	375(2)	285(2)	95(1)	31(0)
Christchurch	3,572(11)	2,736(9)	2,796(10)	2,527(9)	2,820(9)	2,896(9)
Timaru	2,184(15)	1,563(12)	1,122(9)	1,206(9)	1,435(10)	1,344(8)
Dunedin	6,393(21)	4,433(15)	4,086(14)	4,395(16)	4,281(14)	3,846(12)
Invercargill	2,176(7)	585(2)	1,023(4)	1,158(4)	723(2)	353(1)
	Binning (tonnes)					
Auckland	10,757(34)	9,110(29)	8,405(30)	7,524(27)	7,449(26)	6,198(23)
Napier	12,914(32)	11,531(30)	11,736(32)	12,305(32)	12,009(31)	11,341(29)
Wanganui	3,685(21)	3,191(19)	3,278(20)	3,284(19)	2,989(17)	3,083(18)
Wellington	7,007(32)	6,081(29)	6,196(33)	5,608(31)	4,525(25)	4,441(27)
Christchurch	17,059(54)	15,317(52)	16,312(58)	16,096(60)	16,777(54)	17,079(51)
Timaru	6,467(46)	5,337(40)	5,478(42)	5,975(46)	5,792(40)	5,500(34)
Dunedin	15,823(51)	13,798(46)	13,012(46)	13,421(49)	12,974(43)	12,267(39)
Invercargill	10,803(36)	7,537(26)	8,377(33)	8,788(33)	8,338(26)	7,736(25)

APPENDIX TABLE 12(cont'd)

Auction Centre	Year Ending 30 June 1971	1972	1973	1974	1975	1976
	Interlotting (tonnes)					
Auckland	0(0)	3(0)	0(0)	8(0)	476(2)	2,515(9)
Napier	5,940(15)	4,732(12)	4,670(13)	5,327(14)	5,538(14)	3,687(9)
Wanganui	1,485(8)	1,608(9)	1,885(11)	1,661(9)	1,535(9)	1,504(9)
Wellington	1,295(6)	1,209(6)	526(3)	653(4)	1,634(9)	2,213(13)
Christchurch	2,217(7)	1,793(6)	625(2)	1(0)	40(0)	179(1)
Timaru	283(2)	275(2)	294(2)	32(0)	3(0)	89(1)
Dunedin	5(0)	0(0)	0(0)	0(0)	3(0)	24(0)
Invercargill	0(0)	0(0)	0(0)	0(0)	1(0)	187(1)

[a] Figures in brackets refer to percentages of total auction sales at that centre subjected to the rehandling operation.

Source: Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Commission, 1970/71 and 1971/72; Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Marketing Corporation, 1972/73, 1973/74, 1974/75 and 1975/76.

APPENDIX TABLE 13

Quantities of Wool Tested in N. Z.

	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
Pre-Sale Yield Test (bales)	0	0	0	0	0[a]	57,600[b]
Post-Sale Yield Test[c] (% of bales sold at Auction)	28	31	34	37	40	40
Micron Test (%of Bales tested for yield)	8	10	15	20	25	30
Condition Test[d] (% of scoured bales exported).	95	95	95	95	95	95

[a] Some wool was pre-sale tested in 1974-75 but quantities were insignificant.

[b] Based on an estimate of 2,400 lots tested at an average lot size of 24 bales.

[c] Average lot size tested was 95 bales.

[d] Average lot size tested was 48 bales.

Source: Estimates by New Zealand Wool Testing Authority.

APPENDIX TABLE 14

Unit Charges for Auction Centre Activities

		Year Ending 30 June					
		1971	1972	1973	1974	1975	1976
Sheep's Back to Store Insurance[a]	(c/$100)	15	15	15	15	15	15
Consolidated Selling Charge for Greasy Wool[a]	(c/kg)	2.28	2.69	4.24	4.15	3.58	4.50
Consolidated Selling Charge for Scoured Wool[a]	(c/kg)	2.95	3.40	5.32	5.15	4.48	5.536
Delivery out of Store	($/bale)	0.85	1.35	1.35	1.35	1.72	2.18
Reclassing	(c/kg)	2.072	2.331	2.331	2.331	2.973	4.014
Binning	(c/kg)	2.072	2.331	2.331	2.331	2.973	4.014
Interlotting	($/bale)	1.50	2.00	2.00	2.00	2.55	3.24
Blending (on behalf of buyers)	(c/kg)	1.842	2.072	2.072	2.072	2.643	3.357
Extra Branding	(c/bale)	0.12	0.14	0.14	0.14	0.18	0.23
Renumbering	($/bale)	0.04	0.05	0.05	0.05	0.06	0.08
Special Colours	($/bale)	0.04	0.05	0.05	0.05	0.06	0.08
Extra Storage	($/bale/week)	0.07	0.08	0.08	0.10	0.13	0.17
Pre-Sale Testing (Yield)	($/lot)	-	-	-	-	15.00	17.50
Post-Sale Testing (Yield)	($)	12.50+ 0.20/bale	30.00+ 0.13/bale	30.00+ 0.13/bale	30.00+ 0.18/bale	36.00+ 0.15/100 kg	41.00+ 0.19/100 kg
(Yield & Micron)	($)	17.00+ 0.20/bale	36.00+ 0.13/bale	36.00+ 0.13/bale	37.00+ 0.18/bale	44.50+ 0.15/100 kg	51.00+ 0.19/100 kg
(Condition Test for Scoured Wool)	($)	5.00+ 0.18/bale	6.75+ 0.20/bale	6.75+ (0.20/bale	6.50+ 0.24/bale	8.00+ 0.23/100 kg	9.50+ 0.27/100 kg
Coring	($/bale)	0.36	0.40	0.40	0.40	0.51	0.65
Buyers' Charges[a]	(c/kg)	1.07	1.33	2.88	2.78	1.84	3.14
Wool Levy(for Wool Brd. disbursement)	(c/kg)	1.55	1.55	1.55	1.55	2.75	4.71

[a]Charges related to wool values were based on the following average wool prices:

	(Greasy c/kg)	(Scoured c/kg)
1970/71	53.42	76.99
1971/72	66.46	90.44
1972/73	143.96	186.52
1973/74	139.19	177.97
1974/75	91.75	122.84
1975/76	157.12	217.80

Source: NZ Wool Brokers' Association; Individual Wool Brokers; New Zealand Wool Marketing Corporation; New Zealand Wool Testing Authority.

APPENDIX TABLE 15

Purchases of Wool by Local Mills

Year Ending 30 June	Bales purchased
1971	95,285
1972	93,912
1973	144,870
1974	175,761
1975	91,896
1976	174,319

Source: Statistical Handbook 1975/76, New Zealand Wool Marketing Corporation, Wellington.

APPENDIX TABLE 16

Composition of Local Mill Wool Purchases

Type of Purchase	Year Ending 30 June 1975 bales[a]		1976 bales[a]	
Greasy Wool Purchased at Auction	44,538	(48.5)	86,298	(49.1)
Greasy Wool Purchased Privately	18,930	(20.6)	55,054	(31.3)
Scoured Wool Purchased Privately	24,098	(26.2)	31,528	(18.0)
Total Purchases from three sources	87,566	(95.3)	172,880	(98.4)
Other Purchases[b]	4,330	(4.7)	4,712	(1.6)
TOTAL Purchases	91,896	(100.0)	175,664	(100.0)

[a] Figures in brackets represent percentages

[b] Imports, slipe wool, from growers, etc.

Source: New Zealand Wool Marketing Corporation.

APPENDIX TABLE 17

Charges for Transporting Wool From Broker/Dumpers to Shipping Centres or From Non-Broker/Dumpers to Independent Dumpstores

Transport Charge (c/bale)

Dumpstore Centre	Year Ending 30 June					
	1971	1972	1973	1974	1975	1976
Auckland	20	33	32	34	45	48
Napier	19	22	22	24	26	29
Wanganui	14	16	-	20	25	-
Wellington	28	31	31	32	37	49
Christchurch	40	48	45	49	60	69
Timaru	15	15	16	16	19	27
Dunedin	19	20	22	22	22	35
Invercargill	44	50	54	54	65	63

Note

For the 1970/71 to 1974/75 seasons the above transport charges applied to wool sold at auction moving to shipping centres from broker/dumpers or from auction centre to dump for non-broker/dumpers. For the 1975/76 season the above charges covered transport of all auction sold wool to shipping centres, irrespective of where the wool was dumped.

Source: New Zealand Wool Marketing Corporation.

APPENDIX TABLE 18

Imputed Charges that Could be Used for Merchant Store Centre Activities

	Year Ending 30th June					
Activity	1971	1972	1973	1974	1975	1976
Handling in[a] (c/bale)	13	15	16	18	21	25
Storage[b] (c/bale/week)	7	8	8	10	13	17
Handling out[a] (c/bale)	13	15	16	18	21	25

[a] As for handling in charge at dumpstore centres

[b] As for extra storage charges at brokers' stores; storage for an average period of three weeks has been assumed.

APPENDIX TABLE 19

Proportions of Sheep and Lambs Killed by Meat Works in 1974/75

Meatworks	Proportion of Sheep & Lambs Killed by Works %
Moerewa	1.9
Hellaby-Shortland	2.4
Westfield	3.0
Horotia	3.5
Southdown	2.5
Kaiti	2.7
Tomoana/Whakatu	12.8
Wairoa	1.4
Patea	1.6
Waitara	2.4
Imlay	2.7
Gear	2.4
Feilding	1.9
Waingana	2.4
Longburn	2.2
Nelson	0.8
Picton	1.2
Kaiapoi	1.9
Canterbury	4.4
Islington	2.9
Fairfield	3.7
Smithfield	3.4
Pareora	4.1
Pukeuri	4.0
Burnside	2.2
South Otago	4.8
Mataura	4.3
Makerewa	5.7
Alliance	6.2
Ocean Beach	4.6

Source: Pilling, R.G. and Woods, L.D., unpublished data, 1976.

APPENDIX TABLE 20

Slipe Wool Production

Year Ending 30 June	Production ('000 tonnes actual weight)	Proportion Scoured in New Zealand (%)
1971	43.5	8.5
1972	40.8	11.8
1973	38.4	11.7
1974	32.2	17.4
1975	33.5	25.7
1976	30.3	25.1

Source: Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Commission, 1970/71 and 1971/72; Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Marketing Corporation, 1972/73, 1973/74, 1974/75, and 1975/76

APPENDIX TABLE 21

Relative Capacities of Seven Scouring Centres

Scouring Centre	Relative Capacity (%)
Auckland	20
Napier	26
Feilding[a]	18
Christchurch	5
Timaru	13
Dunedin	8
Invercargill	10
TOTAL	100

[a] Includes scouring capacity in the Wellington area.

Source: Derived from data provided by:
K. Woodford, Lincoln College
G. Weenink, Lincoln College.

APPENDIX TABLE 22

Wool Scoured in New Zealand

Year Ending 30 June	Wool Scoured[a] (Kg of greasy input)
1971	114,898,511
1972	133,469,604
1973	129,123,992
1974	100,338,806
1975	120,093,188
1976	139,163,312

[a] Excludes wool scoured by local mills on own account.

Source: Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Commission, 1970/71 and 1971/72; Statistical Analysis of New Zealand Wool Production and Disposal, New Zealand Wool Marketing Corporation, 1972/73, 1973/74, 1974/75 and 1975/76

APPENDIX TABLE 23

Indicative Scouring Charges for Wool

Year Ending 30 June	Charge (c/kg)
1971	7.7
1972	7.7
1973	8.0
1974	8.5
1975	9.0
1976	10.5

Source: Individual Scourers.

APPENDIX TABLE 24

Proportion of Greasy Wool Dumped by Broker/Dumpers and Independent Dumpers[a]

Dumpstore Centre	Proportion Greasy Wool Dumped by Broker/Dumpers %	Proportion Greasy Wool Dumped by Independent Dumpers %
Auckland	100	0
Napier	80	20
Wanganui	100	0
Wellington	100	0
Christchurch	25	75
Timaru	25	75
Dunedin	60	40
Invercargill	65	35

[a] For 1975/76 Season.

Source: Estimates by Transport Division, New Zealand Wool Marketing Corporation.

APPENDIX TABLE 25

Proportion of Dumped Wool Packed into Containers

Year Ending 30 June	Proportion %
1971	0
1972	3
1973	11
1974	19
1975	22
1976	19

Source: Estimates compiled from various sources.

APPENDIX TABLE 26

Charges for Dumpstore Centre Activities

	Year Ending 30 June					
	1971	1972	1973	1974	1975	1976
Handling in[a] (c/bale)	13	15	16	18	21	25
Dumping[b] ($/bale)						
- broker/ dumpers						
Double dumping	1.00	1.25	1.33	1.50	1.77	2.16
Single dumping	1.20	1.49	1.59	1.79	2.11	2.57
-Independent dumpers						
Double dumping	1.05	1.30	1.38	1.55	1.83	2.48
Single dumping	1.25	1.54	1.64	1.84	2.17	2.89
Unitisation (c/bale)	37	46	49	55	65	78
Stuffing Containers (c/bale)	-	60	60	70	80	80

Notes: [a] Applies only to independent dumpers.

[b] Includes delivery out.

Source: New Zealand Wool Marketing Corporation.

APPENDIX TABLE 27

Throughputs of Individual Shipping Centres

Year Ending 30th June 1976

Shipping Centre	Throughput (tonnes)
Auckland	39,689
Napier	39,156
Wellington	44,651
Lyttleton	45,068
Timaru	20,380
Dunedin	35,982
Invercargill	37,048
TOTAL	269,437

Source: New Zealand Wool Marketing Corporation, Statistical Handbook 1975/76.

APPENDIX TABLE 28

Charges for Shipping Centre Activities

Shipping Centre	Year Ending 30 June 1971	1972	1973	1974	1975	1976
	Wharf Handling Charges[a] (c/bale)					
Auckland	55	85	112	130	160	139
Napier	15	22	18	24	30	31
Wellington	30	67	63	36	85	68
Christchurch	24	32	40	40	40	43
Timaru	8	24	21	17	23	24
Dunedin	43	40	57	60	85	95
Invercargill	40	26	45	48	57	80
	Wharfage and Harbour Improvement Rate (c/bale)					
Auckland	13	14	16	17	17	20
Napier	25	25	25	25	25	30
Wellington	17	17	19	19	21	24
Christchurch	41	41	41	41	43	49
Timaru	41	41	41	41	45	52
Dunedin	43	43	43	43	53	60
Invercargill	58	65	65	65	73	84
	Loading and Stowing[b] ($/tonne)					
Auckland	7.72	8.50	9.71	12.63	14.97	NA[c]
Napier	6.72	6.79	8.05	9.63	11.19	NA
Wellington	9.50	10.70	11.26	13.65	15.74	NA
Christchurch	6.85	7.34	8.50	10.63	11.23	NA
Timaru	6.05	5.84	7.31	8.95	9.96	NA
Dunedin	5.20	5.60	6.30	7.89	8.49	NA
Invercargill	5.50	5.55	6.01	7.19	8.79	NA

[a] Charges for wharf handling have not increased steadily for individual ports over the period due to 'pooling arrangements'.

[b] Loading and stowing charges include labour only.

[c] Not available at time of typing.

Source: Wharf handling, wharfage and Harbour Improvement Rates from Transport Division, New Zealand Wool Marketing Corporation; Loading and Stowing Charges from Annual Reports of New Zealand Waterfront Industry Commission.

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