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The Structure of the Australian Wool Industry

By

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Concern has been expressed by various participants in the wool industry that sufficient competition may not exist in different segments of the market. As a consequence, the prices of some goods and services in certain market segments may be distorted. Further, some participants may have the ability to exploit the market and exert some power in the industry. In this study the structure and competition of various segments of the Australian wool industry are analysed. It was found that although scope for positions of market power exist in the Australian wool industry, the level of market contestability and existence of much peripheral competition in each segment has the effect of keeping those segments of the wool market that are able to exert market power, competitive.

1. Introduction

This study is concerned with the structure of the Australian wool industry. This topic is important in light of recent government policy changes that have occurred in the wool industry and the associated effects this may have on participants in the industry. It must be asked if, in the absence of direct government intervention, it is possible for any segment[1] of the market to exert some power in the wool industry. It is presumed that by exerting that power, the segment in question would do so for its own benefit and to the detriment of other market segments. The power any segment can exercise is directly related to the structure of that segment. For instance, where a monopoly exists, the segment is one firm and that firm has the power to exert influences on firms in other segments of the market. Alternatively, if perfect competition were to exist, no grouping of firms could influence the market.

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1 A segment is defined as a group of participants who each perform the same task in the marketing chain.

In this study the structure of the various segments of the Australian wool market is examined in order to determine whether market power is, or potentially could be, exercised in that market. While individual assessments of segments of the wool industry structure have been undertaken in the past, no complete assessment has been made of all the segments. The objectives of this study are to;

1. identify the structure of the various segments, (ie. the growers, brokers, private treaty merchants and buyers) of the Australian wool market;
2. ascertain whether the market structure is such, that the market operates in the most competitive manner possible, with the potential to maximise benefits to all participants in that market; and
3. identify which segments of the market is most likely to be vulnerable to exploitation.

A number of analysts have only assessed the degree of competition within segments of the wool marketing system, yet not in the system as a whole. In this study, an outline of the theory underlying market structure is explained, with particular emphasis on features which may characterise certain segments of the Australian wool industry. Then a description of the market network and the different segments of the Australian wool industry is presented. The structural aspects of each market segment are then identified. Prior to undertaking these tasks the rationale for this study is presented.

2. Industry Concerns With Market Structures

The buffer stock scheme which operated in the Australian wool industry for nearly 20 years meant that at times the prices prevailing were not an accurate reflection of the supply and demand forces operating in the market. The suspension of the scheme, in the face of growing wool stockpiles and the associated debt of the Australian Wool Corporation has eased the debate over the costs and benefits of such a scheme. A new free market for wool in Australia would ideally provide equated levels of supply and demand in the long run[2]. The adjustment required to achieve this

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2 It is debateable whether the market for wool is entirely free at present with the Wool Realisation Committee's activities designed to dispose of the wool stockpile.

would be facilitated through the nature of information transfer implicit in the prices that prevail in a competitive market.

The Committee of Review into the Wool Industry (Vines 1991) outlined five characteristics that a competitive and efficient free market for wool should exhibit. These include:

- a flow of accurate information about market prices;
- technological innovation in the market which is not concentrated in such a manner as to provide an advantage to any single participant; and
- no excessive barriers to entry or exit;

If these conditions are not met, then the competitive nature of the market could be questioned. Clearly, where collusion in the market occurs, price distortions appear and resources are misallocated.

The characteristics of the theoretical free market outlined by Vines (1991) give rise to a possible fault with the present wool marketing system. That is, the opportunity for, and consequent exploitation of positions of power in the market. This concern was also shared by Philp in the 1962 Report of the Wool Marketing Committee of Inquiry that '..certain combinations among wool buyers which restrict competition at auction are, and have been for many years, present in Australia'. It was thought that the reserve price scheme would reduce the incidence of collusion amongst wool buyers. Under the scheme, the government was playing a direct role modifying and influencing the market through its wool buying and selling activities. In the absence of the reserve price scheme, it would seem appropriate to address this issue once more.

The problems perceived by Philp, are embodied in the nature of the wool market. They are such that the degree to which the adverse effects a limited number of buyers, who undertake collusive behaviour may have on the rest of the industry, could be significant. Due to the different categories of wool and the dispersal of selling centres that exist throughout Australia, there is a concern that in some selling centres for some types of wool there will be few, if any, buyers.

While Philp was concerned with the high degree of concentration evident amongst buyers, buyers are not the only segment of the market who have the potential to exert market power. Any market segment will exploit and exert the power it has. For instance, in recent years, concern has been

expressed on the increasing degree of concentration amongst wool brokers and the effects this has on price determination and competition. Hone and Cairns (1982) stated that the degree of competition in wool marketing is an important issue. Further that a lack of competition in the marketing of wool is a necessary, but not sufficient, condition to justify intervention in the wool marketing chain which is intended to stimulate competition. The Prices Justification Tribunal (1978, cited in Hone and Cairns 1982 p. 61).stated that there was,

> "...little, or at best only superficial, price competition in the wool broking industry and that the commonality of charges between brokers inhibited growers in making a selection of channels through which to sell their goods..."

Part of the requirements for an efficient and competitive market is the presence of a large number of participants, thus ensuring competitive price determination. Collusion is an obvious problem in a free market where any group may find it profitable to pool resources and seek to monopolise certain segments of the market.

A major threat to a free market and the point of most interest in this study, is the inference made by Vines (1991) that the scope for exploitation of positions of market power may exist where there are few buyers, sellers or agents in any part of the market. Clearly there are some factors that would facilitate the occurrence of such opportunities, such as the existence of barriers to entry, the absence of an accurate flow of information, unwanted market fluctuations, a bias in technical adoption, a decreasing marginal cost industry and/or the markets inflexibility. These extent to which these factors are present in the market is revealed by an analysis of the structure of the various market segments.

3. The Theory of Market Structures

In describing the Structure-Conduct-Performance paradigm, Sherer (1980 p5) suggests that

> "...a causal flow from market structure and/or basic conditions to basic performance [exists] ... that permit us to predict [the] ultimate market performance from the observation of structure."

The Structure-Conduct-Performance paradigm is important, as it reveals the crucial role an industries structure plays in determining the performance of that industry. Hence, the Structure-Conduct-Performance

paradigm can be used to explain the concomitant effects likely to result from the four recognised market structures that exist. Another aspect of a market's competitiveness, which arises from its structure, is that of market contestability.

The Structure-Conduct-Performance paradigm is one method available to examine the organisation and behaviour of large industries. The aspects of an industry addressed by the paradigm relate closely to the four characteristics of ideal market performance outlined in Figure 1. These characteristics of supply and demand describe, in part, the structure, and determine the conduct and performance of an industry.

Sherer (1980) states that what society wants from producers of goods and services is essentially good performance. Mason (1939) in describing the Structure-Conduct-Performance paradigm suggests that market performance depends on the conduct of sellers and buyers, their pricing policies, collusive dealings and advertising strategies. Conduct, in turn, depends on the structure of the market. The structure of the market is determined by the number and distribution of buyers and sellers and the degree to which they collude, the demand and supply characteristics of their product, barriers to entry, vertical integration and the ownership of resources and raw materials.

Figure 1

Elements of Market Evaluation

BASIC CONDITIONS	
Supply Side	Demand Side
Cost conditions	Consumer good/Producer go
Elasticity of supply	Elasticity of demand
Product durability	Growth/life cycle

MARKET STRUCTURE
Product standardised or differentiated
Conditions of entry
Number and size of sellers

MARKET CONDUCT
Promotion and product strategies
Price strategy
Production strategy

PERFORMANCE
What? (Allocation efficiency)
How? (Technical efficiency)
Who? (Equity)
Whats new? (Progress)

Source: Froyen and Greer (1990)

3.1 Market structures

The number and size of firms is one important structural component of the market place. Where the size of firms is uniform and each produces a homogenous product, as the number of firms producing that good increases, prices decrease. Four different types of structure have been identified. They are perfect and monopolistic competition, oligopolies and monopolies.

These four different types of structure are, at a fundamental level, identified by the number of firms present in any single sector of the economy and the influence any individual firm is having on that sector. For instance, in perfect competition there are many firms, each small enough not to have any influence on the market. Conversely, a monopolist is a single seller with total influence in the market. In an oligopoly situation, there are only a few firms, each of whose actions are sufficient to have an impact on all participants in the market. Finally, in monopolistic competition, each firm is not large enough to have a significant impact on other participants, yet its actions will be felt.

Problems relating to the competitiveness of a market arise when the influence of a few firms becomes dominant. In the case of perfect competition, the highest degree of competitiveness is defined. Even in a situation of monopolistic competition, the market is sufficiently competitive to allow the maximisation of benefits to all participants. However, in a market characterised by an oligopolistic or a monopolistic structure, it is possible for individual firms to exert the market power they hold, thereby maximising their own benefits at the expense of others in society. The effects of a monopolist are well documented and represent the opposite polar case to perfect competition. However, like perfect competition, a purely monopolistic structure is extremely rare.

Of more interest is the case of an oligopolistic market. The firms in this situation can act in two contrary directions. If they compete with one another, any ability to exert their unique power on a market will not be possible. The result of competitive behaviour amongst oligopolistic firms is that the sector displays all the characteristics of a perfectly competitive market. This is known as the 'Cournot solution' to an oligopolistic market. Alternatively, the firms may collude, fixing prices and achieving a situation akin to that of a monopolistic firm.

In an oligopolistic market, this explanation is dependent on the size of the sellers being uniform. Where there may be few large sellers, small firms will only lower price below the level of large competitors if they stand to benefit from increased sales. As the number of such firms increases, so does the likelihood of independent and aggressive pricing by a single firm. Where a single firm, which is large enough to meet any resultant expanding demand, diverges from the oligopolistic pricing norm and sets prices lower than costs in order to undercut the opposition, only then other firms will find it difficult to maintain the established pricing policy. These effects are enhanced when dealing with a homogenous product and a number of participants are in the market. Where large numbers of small firms operate at the periphery of an oligopolistic industry, they may act in a regulatory manner so that the 2-3 large oligopolists pricing and profits are curtailed. The effect that these smaller firms will have is related to their production capacity and hence their output. On one hand they may not be able to maintain higher levels of production required to deal with an expanding market share and on the other hand, oligopoly firms may not be concerned as the share of such firms is likely to be comparatively small and so will not noticeably affect the oligopolists' sales.

Conditions such as these may occur as a result of an industry recession, where smaller firms must operate at prices well below those of the oligopoly leaders. This results from production taking place at levels below capacity. The extent to which large oligopolists follow smaller firms pricing behaviour will depend on how much of the total market the smaller firms represent. It has been estimated that if large firms lose 10 per cent of total output they will reduce prices to maintain their market share (Sherer 1980). However, large firms may find that at any point, resultant losses in sales or reductions in output may leave them with excess capacity so they may also reduce prices to maintain output levels and economies scale.

Of all the characteristics of the different market structures the number of firms tends to stand out as a distinguishing feature between them. The reason for differences in the number of participants in any market revolve around the question of the barrier to entry and exit to the market. Some features which describe market conditions and result in significant barriers to entry for potential market entrants, include the size of market participants, cost structures, product differentiation and/or economies of scale or size.

3.2 Conduct

The market conduct of a firm is a concept closely related to, and results from the, market structure. Bain (1959) speaks of conduct as referring to the patterns of behaviour that enterprises follow in adapting or adjusting to the markets in which they sell (or buy). Bain listed the actions which would determine an industry's conduct as the:

1. methods by which price and output decisions are made;
2. product and sales promotion policy undertaken;
4. means of coordinating and cross adaptation of price, product and sales promotion policies among competing firms;
5. presence or absence of, and extent of, predatory or exclusionary tactics directed against either established rivals or potential entrants.

Conduct can be thought of as a point midway in the market analysis process, closely related to structure and performance; determined by the structure and descriptive of performance. Vertical integration exemplifies this point. Vertical or horizontal integration may give rise to a firm operating either further up or down the marketing chain or in more than one product market. Horizontal integration by a firm may offer a product differentiated by quality and location. Vertical integration occurs when a number of stages in the process of producing a final good from raw materials are combined in a single firm (Quiggin and Fisher 1988).

Various actions describing a firms conduct often appear as a benefit to consumers and other market participants and may depend largely on the legal framework governing firms. Clodius and Mueller (1961) argue that when all firms in an industry are corporations, then research into the legal structure of such markets yields little explanation of the conduct and ensuing performance. Smaller business organisations which characterise many other sectors of the economy exhibit different management techniques than larger corporations.

3.3 Performance

Clodius and Mueller (1961) define market performance as referring to economic results that flow from the industry as a whole. The performance of an industry or system of markets concerns both government and society, specifically encompassing the national goals related to efficiency,

stability and progress. Bain (1959) describes five dimensions related to performance as the:

1. level of price relative to the average costs of production;
2. relative efficiency of production as it is influenced by the scale or size of plants and firms (relative to the most efficient) and the extent, if any, of excess capacity;
3. size of sales-promotion costs relative to the costs of production;
4. character of the product, including choice of design, level of quality, any variety of product within any market; and
5. rate of progressiveness of the firm and industry in developing both products and techniques of production, relative to evidently attainable rates and relative to the costs of progress.

It has already been mentioned that there is a strong relationship between a market's structure, and the conduct and market performance of firms. Market structure directly affects profitability in many industries and can explain differences in income between participants at various levels in the market.

3.4 Contestable markets

The notion of a perfectly contestable market was described by Baumol (1982 p3) as being a market where " ... entry is absolutely free and exit is absolutely costless." Free entry involves the potential entrant evaluating his expected profitability in terms of the incumbent firms prices before entry of the new firm. Further, " ... a perfectly competitive market is necessarily perfectly contestable ... " (Baumol 1982 p4) yet a perfectly contestable market need not be perfectly competitive. The threat of competitive entry may constrain a profit maximising monopolist to adopt a socially optimal pricing structure. Whether such entry is a possible in a particular industry is the main point discussed in the theory of contestable markets.

The notion of a perfectly contestable market is an extension of the concept of a perfectly competitive market; both descriptions explain an ideal market situation in which welfare to all participants is maximised. Very few industries will approximate the perfectly competitive market ideal, however the concept is used as a benchmark for comparison of different market structures.

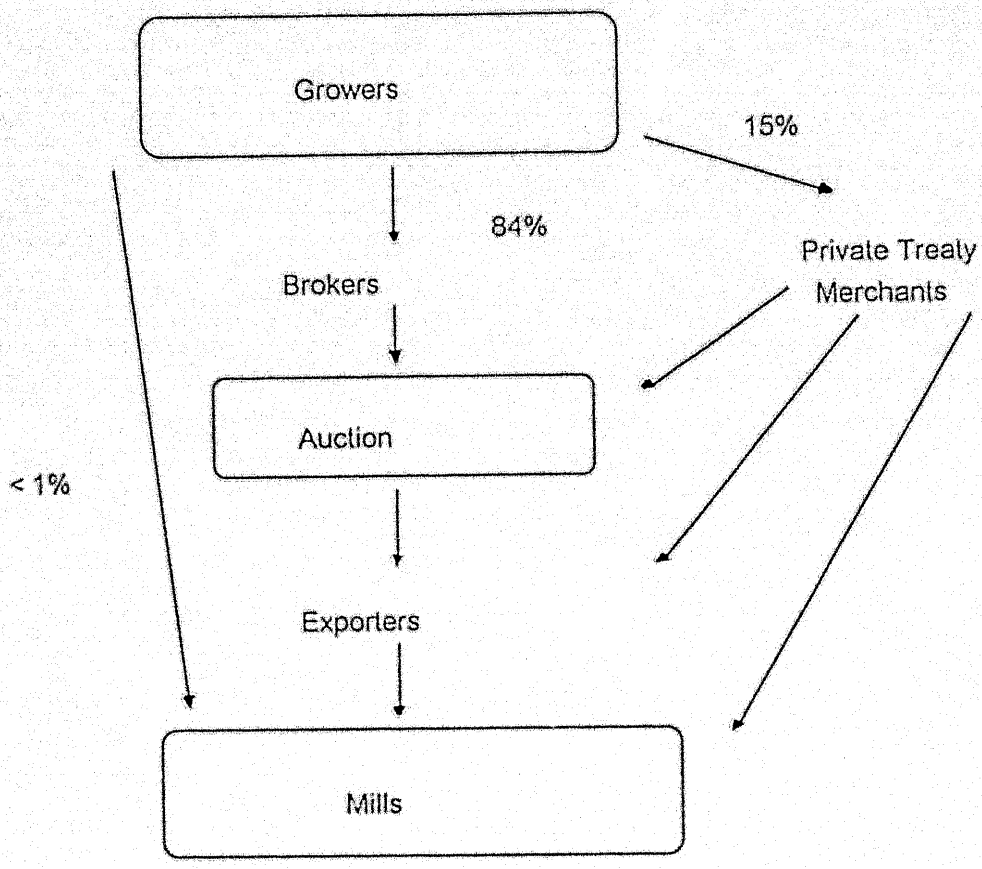
The question of optimality is addressed as the market evolves and the number of firms increases. Fama and Laffer (1972) confirm that it is unrealistic to assume an infinite number of firms per industry, and it is sufficient to assume that where many firms act as if there were an infinite number of firms, then perfect competition will result. Fama and Laffer conclude that under certain conditions, a general equilibrium with two or more firms that do not collude in any industry could be described as being perfectly competitive. Trade Practices legislation in Australia prevents participants from acting in a manner that will restrict the entry of competitors on to the market.

4. The Structure of the Australian Wool Market

The marketing channel for wool can vary greatly. In 1992-93 84 per cent of grower's wool was sent to auction through a broker who usually arranged the sale, storage and sampling. The buyers, who are usually termed exporters or overseas processor representatives, purchase the wool at auction. However, buyers may bypass the auction system and privately purchase wool directly from the grower. In Figure 2, a simplified version of the wool market network is shown. The major segments in this market are the producers, brokers, private treaty merchants and buyers.

Figure 2

Flow of Wool Through Market Segments



In this Section the structure of segments of the Australian wool industry (ie. the wool growers, brokers, private treaty merchants and buyers) is assessed. Particular attention is paid to the market characteristics of each segment, such as the number, size and concentration of participants, the degree of product differentiation and possibilities for increasing economies of scale. Concentration of market participants is measured as a ratio of the market share of any number of firms, but usually the larger participants, as a percentage of total market sales.

4.1 Growers

The production segment of the Australian wool industry is characterised by a large number of wool growers, exhibiting little concentration. Table 1

reveals that the number and zonal distribution of wool producing agricultural establishments in Australia for the period 1987-1992. Growers are constrained from producing a wide variety of wool types by the genetic characteristics of their flock, the climate and feed availability. These factors vary according to the geographic area of production. Typically, wool production is spread over the sheep/cereal grains region or wheat/sheep zone, the sheep/meat cattle region or high rainfall zone and the sheep region or pastoral zone. Each of these areas produces different types of wool which can be segregated into 3000 classifications according to length, strength, fibre diameter and cleanliness. Most wool producing establishments are situated in the pastoral and wheat/sheep zones (see Table 1). While producers in the wheat/sheep zone can change their

Table 1

Number of Wool Producing Establishments in Australia 1987-1991

Activity	1991	1990	1989	1988	1987
Sheep-cereal grains (wheat/sheep zone)	19 560	19 556	20 909	22 121	21 668
Sheep-meat cattle (high rainfall zone)	9244	8747	8184	8182	8544
Sheep (Pastoral zone)	24 298	26 289	25 206	22 246	19 203
Totals	53 102	54 592	54 299	52 549	49 415

Source: Australian Bureau of Statistics (1990c various issues)

production mixes, those operating in the pastoral zone cannot. Hone and Cairns (1982) state that for 1978-79, the four firm concentration ratio in the wool growing industry was around 0.003, that is, four firms accounted for 0.3 percent of total (producer) wool sales. This concentration ratio is not likely to change greatly, even with the increased selling activities and buyer power of grower cooperatives.

Although the financial barriers facing potential new wool growers are considerable, they are not entirely prohibitive. Entry is relatively easy, as is exit from the industry. Further, the volume of entry and exit, and thus

total numbers of participants in the production segment, have little effect on the methods of wool sale, supply and pricing of associated wool marketing services. Of more importance is the size and distribution of growers in relation to the supply of marketing services. In some areas, the presence of a few large growers situated a considerable distance from auction centres may provide scope for only one wool broking service.

There are relatively few options available to wool producers to differentiate their product. However, on farm product differentiation may occur if more effort is put into classing of sheep and wool. Flock management can shift the time of shearing over a period of time, in response to demand patterns in Australia and overseas. Despite this, in order to substantially alter those characteristics which determine the type of wool produced and thereby differentiate the product from others, a producer may have to shift his operation to a different region or purchase a new stock. Both adjustments are costly exercises.

Producers can achieve economies of scale through horizontal integration (ie. by purchasing neighbouring properties). However, this is a slow process and large acquisitions are restricted to a small section of the industry. Further, extensive horizontal integration involves a large financial transaction which may be too great for many single firms in the industry. A strategy available to individual producers is to lower cost structures (eg. by improving sheep handling facilities), however, even this strategy may be beyond some. Vertical integration offers better opportunities for unit cost improvements and associated benefits from large scale operations. Growers have formed cooperatives for marketing purposes where groups of producers pool similar wool clips in order to increase lot size and bargaining power in order to sell direct. As yet there has been little empirical evidence of the savings made by the arrangements.

The vast number of firms in this segment of the industry would seem sufficient, to imply that the segment has a perfectly competitive structure. Further, growers are largely 'price takers'. Hence, the participants have minimal control over the prices received for the goods they produce. In addition, the individual is not directly responsible for any price distortions evident in the market. The apparent ease of entry and scope for potential competition may provide the same effects as actual competition within the

segment. The production segment of the Australian wool industry closely approximates the perfect competition structure.

4.2 Brokers

Previous research into the structure and performance of successive stages in the wool marketing chain has been motivated by a concern for the welfare and exposure of wool growers to other segments in the market. In 1978 the Prices Justification Tribunal received submissions from grower representatives expressing concern that there may be too little price competition in the wool market and that brokers charges were very similar, thus restricting grower choice between brokers. In this manner, the conduct of the brokers, private treaty merchants and wool buyers is monitored by controlling authorities such as the Australian Wool Corporation and ultimately, government.

Auction sales in the 1970s decreased. From 1967-68 to 1976-77, the number of bales handled in the auction system fell by nearly 30 per cent (Taylor and Spinks 1984). From 1977-78 to 1981-82, bale numbers fell by a further 9 per cent. This reduction of throughput in the broking sector meant that the segment had excess capacity. As their capacity was under utilised, the wool broking industry in general was sluggish in responding to changing economic conditions. The larger brokers adjusted more readily than the smaller firms, and were typical of the horizontal integration which characterised the industry in the late 1970s and early 1980s. Two seasons later, in 1983-84, the increased takeover and merge activity of Elders Pastoral and Dalgety Farmers resulted in a 2 firm concentration ratio of 0.84. The two firm concentration ratio has declined since, see Table 2.

Table 2

Concentration of Wool Brokers

	1987-88	1992-93
Two firm ratio	0.61	0.49
Hefferndial index	0.21	0.14

Where there are a sufficient number of wool producers to warrant a number of marketing options, the marketing decisions made by those producers are governed largely by aesthetic rather than economic factors.

Surveys conducted by the Bureau of Agricultural Economics (1982) and Southwell (1991) found that growers selected wool brokers on the basis of long standing business relationships. Wool growers are more concerned with the level of personalised service, local representation and speed of throughput of their brokers. Thus it is not the level of charges, rather the value or the satisfaction the grower perceives to get from the total package that is important. Growers tend to exhibit loyalty to the same pastoral house or broking firm over a number of years. It was also found that growers place little importance on the costs of selling and handling of wool and only in 20-30 per cent of cases did growers change their broker as a result of lower charges (BAE 1982). Growers can be considered to be largely immobile when it comes to changing between wool brokers. Hence, new entrants to the wool broking industry will face considerable barriers when attempting to establish themselves at a profitable level. In response to falling returns from wool production enterprises, growers have paid more attention to their brokers per bale handling and selling charges and have moved to smaller brokers causing the falling concentration ratios.

Edgar (1971, cited in Hone and Cairns p70) showed that the cost-output relationship in the broking industry is consistent with economies of size. Modern sampling equipment enables prompt, and accurate classification of sale lots thus facilitating a rapid turnover of stocks. Smaller, less capitalised competitors who cannot afford the new technology have faced a per unit cost disadvantage compared to their larger rivals. Large storage facilities have a similar effect on per unit costs and are only afforded by the larger broking firms. The marketing network of large wool broking companies is often extensive and new entrants have difficulty in luring customers away from large and often well established pastoral companies.

Entering the wool broking segment of the market as a small organisation is possible as the size of the market share that could be obtained would not be sufficient to provoke retaliatory actions from the larger brokers. Rising costs and the presence of smaller firms have seen the associated profits fall to a point of relative economic efficiency. The similar cost structures experienced by large wool brokers has led to product differentiation on the basis of services offered.

The wool broking industry appears to be oligopolistic, with the added features of product (service) differentiation which provides an element of competition among the larger companies and economies of scale which act

as a barrier to entry into the market on a significant scale. However, smaller scale firm s can enter causing the broking segment to become less concentrated.

4.3 Private treaty merchants

"In 1982-83 ... 16 per cent to 18 per cent of shorn wool was sold through private treaty merchants." (Taylor and Spinks 1984). There are 45 private treaty merchants in Australia, most of which are members of the Federal Council of Private Treaty Merchants. The distribution of these firms is closely related to the concentration of individual wool growing enterprises and the presence of large broking houses. Where the concentration of growers is high, there is more scope for private treaty merchants to operate than where few growers operate. They may also play a speculative role in volatile market situations.

Mannell (1985) suggested that, private merchants provided the essential elements of competition in the wool industry. Private treaty merchants operate in most areas of the market. They expedite the movement of wool to its latter stage destinations by operating often directly with growers, and mostly dealing with comparatively small lot sizes independently of larger broking firms. Further, they may act as buying agents at auctions sales, purchasing specifically for large international wool processors.

The potential for economies of scale in the private merchant segment is related almost entirely to the investment capability of participants. Horizontal integration in the form of mergers and takeovers is the most efficient method for small merchants to approach cost economies. Product differentiation is inherent in the nature of the private treaty merchants' operations, especially from the auction system. The ability of private merchants to adapt to individual clients' requirements enables them to specialise in a buy, sell or export role and operate throughout the wool marketing chain.

The private treaty merchants form a segment of the wool industry which describes a monopolistically competitive market. Financial barriers to entry exist, the size of which depends on the scale of entry of new firms. Horizontal integration characterises this segment of the wool industry and firms that expand in this manner can become larger and approach cost economies. Private treaty merchants can differentiate their services to suit individual clients and are fairly mobile within the market.

4.4 Buyers

Kaine-Jones (1988) concluded that exporters are the strongest buyers in the wool market. Acting on behalf of large overseas wool processors, their bargaining power is considerable. Taylor and Spinks (1984) reported that a fall in the number of firms active at auction, as listed in the Australian Council of Woolbuyer statistics, from 84 to 56 between 1974-75 and 1982-83. The increase of the 2 firm concentration ratio for buyers between 1972-73 and 1982-83 was 4.7 per cent compared with 34 per cent for the broking segment.

Table 3

Concentration of Exporting Companies

	1987-88	1992-93
Two firm ratio	0.18	0.19
Hefferndial index	0.045	0.046

This is indicative of the degree of integration which occurred in the broking segment and the definite function of buyers. Wool buyers are essentially exporters who operate at auction only, as opposed to brokers who liaise with other market segments.

The buying power of these large exporting companies is enhanced by financial relationships with their typically large clients. Domestic buyers compete for investment from clients overseas, seeking to increase their throughput and share of the client's business. Economies of scale in wool buying can only be realised as their market share increases. Per unit costs of shipping, storage, domestic handling and transport decrease with throughput increases. Increased throughput is dependent on expanding client share and is only achieved at the expense of other domestic buyers. Product differentiation becomes more effective as the scale of a buying organisation increases and greater quantities of a wider range of wool types can be offered to clients.

Both the buying and broking sectors of the Australian wool market have been characterised by increased horizontal integration and a rise in market concentration throughout the 1980s. The oligopolistic nature of the wool broking industry has occurred largely as a result of mergers and takeovers, despite this there is a significant presence of smaller firms. The

production and private treaty merchant segments are characterised by many more participants and are closer to the perfectly competitive ideal. However, opportunities for product differentiation and both vertical and horizontal integration exist in both these sectors.

5. Implications

Hone and Cairns (1982) stated 3 factors which should be considered when describing the economic efficiency of the wool market. They are:

1. the relationship between the profits of firms involved in the wool market to the cost of those firms, and whether those costs are excessive, should be looked at in light of the supply of marketing services;
2. competition among such firms will be incentive for firms to operate efficiently and keep costs at economic levels;
3. where competition is lacking, the incentive for efficiency falls away with consequent adverse affects on other participants in the marketing chain.

In light of the above 3 factors, the Australian wool market seems to be efficient. The size of some participants indicates an oligopolistic structure in the broking and buying segments, while the producers and private treaty merchants are closer to perfect competition.

With 65 000 wool producers regionally dispersed, this segment would appear to be relatively competitive. Further the evidence over the past five years would be indicative of the fact that producers can not influence prices. Differences in broker charges have been documented by Bennett (1979) as differing by as much as 30 per cent, however, on the basis of comparisons between the costs of interlotting and bulk classing with charges to growers, Stott (1989 p17) states that " ... there is no reason to suspect that charges to growers do not accurately reflect costs." Brokers arrange the auction of wool and deal with growers, buyers, exporters and private treaty merchants. Brokers prefer to handle fewer large lots of wool at auction, than many small lots. The per unit (lot) costs of handling many small lots at auction are greater than few large lots. Large lots are discounted relative to small lots, though they may be priced at the same per unit amount (Stott 1989). Cost plus pricing in an oligopolistic industry is a common form of profit seeking behaviour and involves margins which are greater than costs by an amount dependent on the

elasticity of demand for the brokers service. Possibilities exist for further integration of a horizontal nature in the buying and broking segments of the market, and this is likely to continue. Broking firms having emerged from the rationalisation that was merge and takeover activity in the 1980s, may be in a position to exploit grower choice in some production zones where private merchant alternatives are in short supply.

Efficient pricing by incumbent firms in a contestable industry, enables entry and exit of other firms at the lowest cost possible (Flint and Mues 1987). The costs of entry into the production segment of the wool market may be largely recouped on exit. A certain amount will be lost in the form of sunk cost, however, the production segment is largely contestable in that respect. Similar conditions exist for entries into the private treaty segment, however geographical distribution of incumbent firms may result in localised retaliatory pricing of services where a potential entrant has capacity to take a significant share of the market.

A similar degree of contestability exists with the broking segment. There are sunk costs associated with entry into this segment, however, equipment and storage can be leased and the nature of the broking operation confined to common broking activities in order to avoid additional costs of specialised equipment. Flint and Mues (1987) outline some fundamental characteristics of the broking industry which inhibit retaliatory pricing actions against new entrants and promote economic efficiency. Primarily, there are organisations such as the Prices Justification Tribunal that monitor large firms but also, the nature of broking charges is such that they are set on a national basis at the beginning of a production season and rarely changed within the season. In all production zones, growers face similar seasonal charges from large brokers who do not want to be accused of discriminating against individual groups of growers. The effect a new entrant will have on the incumbents depends on the scale of entry. The loss of revenue caused by the relatively inelastic nature of the demand schedule for brokers services prevents price wars.

Flint and Mues (1987) suggest that the level of entry and exit of comparatively efficient firms into and out of the broking segment of the wool market implies any barriers to entry or exit are relatively low and that the market exhibits a 'workable' degree of contestability, despite market concentration.

Producers are the only participants in the wool industry who operate independently and who approximate a perfectly competitive market structure. Their industry produces a (largely) homogeneous product for which producers have little control over price. Private treaty merchants operate in most parts of the market chain. The degree of product differentiation they exhibit is characteristic of monopolistically competitive firms. The buying and broking segments of the market show a tendency toward oligopolistic structure, though pricing is efficient due to the presence of many smaller firms in both industries. A workable degree of contestability exists within the production, private treaty merchant and broking segments. The fragmented nature of Australian wool buyers suggests that this market is also contestable, albeit on a small scale.

6. Conclusions

In this study an aim was to identify the structure of the various segments of the Australian wool market, whether those segments are competitive and if scope for market imperfections exits in any of those segments. Four market participants have been identified and the structure of the markets in which they operate defined. They are; growers or producers of wool, brokers, buyers and private treaty merchants.

The changed nature of the wool market in the 1990s will affect all participants, benefiting some and costing others. In recent years, buying and broking firms have undertaken horizontal and vertical integration, with consequent unit cost advantages being realised. Unit costs of growers and private treaty merchants may be reduced in a similar manner, however, these two other participants face considerable financial barriers to integration and rely more on technological improvements to decrease unit costs. The production segment of the wool industry is characterised by many firms dispersed over a great area. These firms face substantial financial barriers to integration though some have formed cooperatives. This segment is not likely to undergo noticeable structural change and will continue to approximate the perfectly competitive market. The suspension of the reserve price scheme for wool also means that the prices received by growers will be a reflection of market conditions (supply and demand) a move further toward a perfectly competitive market.

The private treaty segment of the wool market is the next closest approximation to a perfectly competitive market. There are not enough barriers to entry and too many small firms for this segment to be called an

oligopoly. The nature of product differentiation is also different to an oligopoly. These firms are more mobile than large companies and approach the monopolistically competitive ideal. The size of the market also may not warrant the presence of larger companies where as several smaller firms may function more efficiently. Private treaty merchants will also act as peripheral market share competition for larger buyers and brokers. Charges are set by the private firm at levels slightly below those of the larger firms. The broking industry exhibits little scope for product differentiation and new entrants of modest size may personalise their relationship with growers in order to secure clientele. Growers receive proceeds from selling wool to the private merchant sooner than if they dealt with larger brokers. This also contributes to their choice of a private merchant rather than a large wool broker.

The nature of the differentiated oligopoly which characterises the broking industry is such that price competition between the large participants is minimal and emphasis is placed on maintenance of market share and throughput. Broker pricing strategies are reflected in their attitudes toward maximising profit and/or market share. Profit maximisation equates marginal cost to marginal revenue, while market share pricing is based on average cost (Hone and Cairns 1982). Two or more firms may employ joint handling facilities, and as a result will often share the same cost structures and so will charge similar prices to customers. Incentives for cost reductions in the wool broking industry are less when high prices prevail. Restructure in the form of mergers and takeovers is not considered necessary in times of high prices. However, as potential competitors realise the scope for profit, the incumbents may undertake deterrent pricing policies to keep them out of the market (Taylor and Spinks 1984). When prices are low and smaller firms are suffering, takeover offers from large firms are often accepted as an alternative to bankruptcy. In this manner, horizontal integration is likely to continue. However, the smaller firms that emerged in the higher price period of the late 1980's still remain in the industry.

The Australian buying industry was more fragmented in terms of company numbers and market shares than was broking. The structure of buying is different to that of broking. The size of wool buyers indicates that they may be able to exert some pressure on wool prices at auction. At individual auction sales, this effect will be especially enhanced where

buyers have different requirements, because there may be only limited demand by large buyers for certain types of wool.

Wool producers in Australia operate in a market environment which approximates the perfect competition ideal. Many market participants with similar cost structures operate in a contestable market. The private treaty merchants are distributed widely throughout the wool market and offer a monopolistic alternative to larger oligopolistic broking houses. The buying and broking segments of the wool industry exhibit oligopolistic characteristics that have been described by increasing concentration ratios and varying degrees of vertical and horizontal integration, product differentiation and retaliatory pricing tactics.

In all segments of the wool industry there is scope for competition. The presence of both large and small firms in the broking industry and their distribution throughout Australia means that price distortions enabling excess profits to oligopolists are prevented by the profit seeking behaviour of smaller firms. They (smaller firms) serve as a competitive threat to the more concentrated wool buying and broking segments. However, there are financial barrier to entry on a large scale, for the monopolistically competitive brokers and buyers.

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