

Selling raw wool by forward contract: A qualitative analysis of the pros and cons

Authors: Elizabeth Jackson ¹
Mohammed Quaddus ¹
Nazrul Islam ²
Zohurul Hoque ¹
John Stanton ^{1,2}

¹ Curtin University of Technology

² Department of Agriculture Western Australia

Abstract

Australian farmers have been warned of increases in wool auction price fluctuations since 2000 (Kingwell), yet 85% of producers continue to sell their wool on the highly volatile, open-cry auction system (Bolt 2004). It has been suggested that forward selling is one method available to farmers to manage price risk and stabilise income (Liddle 2004). This research is a qualitative analysis of the pros and cons for forward contracting. Focus groups were conducted in regional Western Australia to gather the opinions of wool producers to assess why this selling method, despite its advantages, is over-shadowed by the auction system. Results suggest that income stabilisation and price risk management were the two major pros of the forward contract method of selling raw wool although these were strongly over-shadowed by the list of cons: pricing, complexity, dominance of the auction system and production risks.

Key words

Wool, forward contract, auction, supply chain, qualitative analysis.

Introduction & aims

Market analyses and farm management literature warn of a declining wool market and an increase in the volatility of prices (Lowe 2005 and Perry, Bailey and Delforce 2005) which is in direct contrast to the literature on the wool selling behaviours of Australian farmers that shows how 85% of farmers still use the auction system (Bolt 2004). The auction system has been characterised as being “defective due to volatility, [exposed to] possible manipulation, [have] unpredictable time constraints and [be] an unnecessary intermediary participation in the communication channel” (Wool Industry Review Committee 1993, p. 75). Such an anomaly has given rise to many questions about the selling behaviours of Australian wool producers and their responses to the current market conditions. If the auction system so severely contrasts the demands of the current environment, why is it so popular and why are more risk-averse selling methods, such as forward contracts, not adopted? This research aims to reveal the pros and cons of the use of forward contracts from a “users” perspective with the intent of understanding why so few farmers, approximately 11% (Coad 2000), use this system which has the benefits of offering income stabilisation and price risk management (Barnard & Nix 1979; Miller 1986; Musser, Patrick & Eckman 1996; Fraser 1997; McLeay & Zwart 1998; Coad 2000; Kingwell 2000; Champion & Fearn 2001; Bolt 2004; Brakenridge 2004; Cuming 2004 and Liddle 2004)..

Background Literature

Australia is the world’s largest supplier of apparel wool (Lowe 2005) and earned the nation \$2.34 billion worth of export income in the 2004/05 financial year (Wahlquist 2005). Wool prices have been falling since the 1990s largely due to a decrease in global demand from the highly competitive price and manufacturing characteristics of substitute products, like cotton and synthetics (Perry 2005, O’Donnell, Bailey, Delforce and Dickson 2005 and Ashton 2003). While China is a large and secure buyer of over half of Australia’s wool (Bolt 2006), its domestic demand for the commodity, which accounts for 65% of the Australian wool exported to this market, has been dropping (Perry 2005 and O’Donnell et al 2005). In addition to this, The Woolmark Company (2005a) has attributed price declines to factors such as poor economic conditions in continental Western Europe, a dip in Japan’s economic growth, declining value share in women’s wear and low cotton prices. Medium to long term forecasts for wool prices also reflect bad news with sheep numbers likely to

increase as mixed grain/sheep producers re-stock their properties after the 2002/03 drought (Perry 2005). While there will be more sheep, the extra wool production will enter a market in which a lack of improvement in demand for wool has been attributed to the predicted slow-down in the global economy and difficult economic conditions in Europe, the United States and Japan (Perry 2005 and The Woolmark Company 2005a).

Declining wool prices since 1989 have seen woolgrowers' incomes suffer and specialist wool growers have seen negative farm-business profits (Kingwell, Bathgate and O'Connell 1999 and Shafron, Martin and Ashton 2002). Interestingly, despite warnings of increasing commodity price fluctuations and encouragement for farmers to better manage their price risk (Barnard and Nix 1979 and Kingwell 2000), the past fifteen years has seen the total percentage of the Australian wool clip being sold at auction increase from 80% (Piggot 1990 and Teasdale 1991) to 85% (Bolt 2004). A peak was reached from 1988 to 1991 when an average of over 90% of the national clip was sold at auction (Seale 1996).

The popularity of the auction was borne from the Reserve Price Scheme. The collapse of the Scheme, in July 1991, uncovered how the industry had basically become structured around this some-what inflexible auction system (Wool Industry Review Committee 1993). The industry found itself comfortable, to the point of rigidity, with the auction system and unwittingly discouraged less price-risk, alternative selling systems to farmers (Wool Industry Review Committee 1993; Musser, Patrick & Eckman 1996).

Some thirteen years after the Reserve Price Scheme's demise and despite efforts to introduce electronic and other selling alternatives to the industry (Bolt 2004 and Liddle 2004), the open-cry auction system remains dominant (Bolt 2004). Current selling alternatives include, but are not limited to: Sale by Tender, Retained Ownership Programs, Forward Contracts, Tops Auction, Laser Matched Interlots, Charging Structure, Premier Wool Newcastle, Offer Boards, Broker Exchange Desk (available through Elders or Landmark) (www.elders.com.au and www.landmark.com.au 2004) and Futures and Options contracts (www.sfe.com.au 2004).

Many authors discuss the risk-averse nature of farmers (Bond and Wonder 1980; Pluske and Fraser 1995; Coad 2000 and Pannell, Malcolm and Kingwell 2000) and

comment on the benefit of forward contracts in terms of their stabilisation on income. Barnard and Nix (1979) give us a British agribusiness definition of forward contracts and aptly describe as a tool of turning price uncertainty into price certainty. The principal benefits of forward contracts to farmers discussed in the literature are based on the concepts of price risk management/uncertainty and income stabilisation (Barnard & Nix 1979; Miller 1986; Musser, Patrick & Eckman 1996; Fraser 1997; McLeay & Zwart 1998; Coad 2000; Kingwell 2000; Champion & Fearn 2001; Bolt 2004; Brakenridge 2004; Cuming 2004 and Liddle 2004).

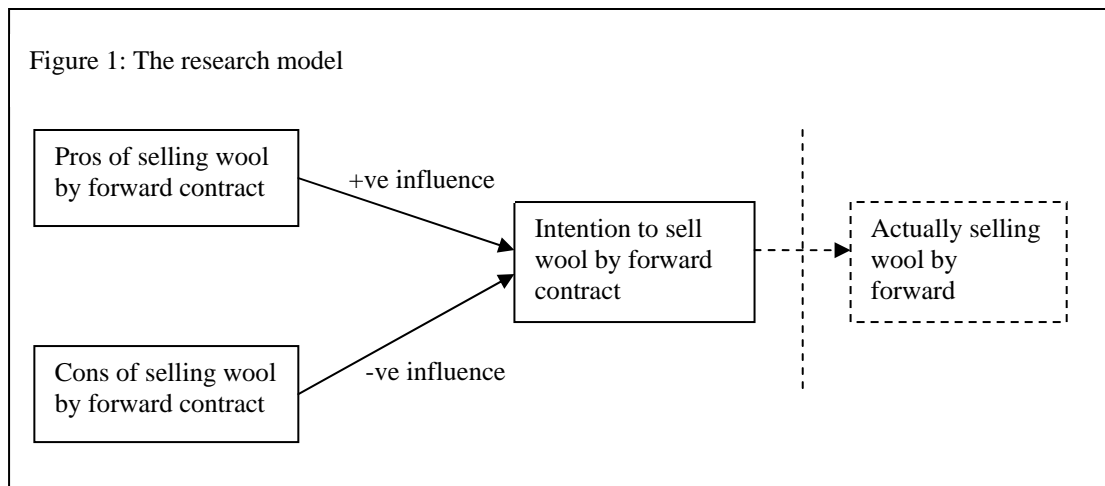
Further to these advantages, Goss (1987) points out the benefits of forward contracts in terms of industry. He advocates that this form of selling possesses informational efficiencies for industry in that markets that efficiently project their prices into the future can have “unbiased anticipations of subsequent spot prices” (p. 225). In turn, this has the benefits of enabling markets to perform to their optimum in terms of price discovery and also assists them in minimising the adjustment costs of industry-specific agents who offer forward contracts.

This view is supported by the New Zealand Merino Company (Brakenridge 2004) which has made public the benefits of forward contracting to industry as being guaranteed supply of wool to processors, superior quality control by processors and, most importantly, the building of relationships with wool growers. In fact, Champion (2004, p. 18) says that “the proportion of forward contracts has dramatically increased over the past 5 years...” and The Woolmark Company (2005b) reports that less than half of New Zealand’s wool is now sold at auction. From this, it can be deduced that farmers in Australia are, in fact, managing their risk in terms of wool sales less effectively than in the past; in comparison to their New Zealand neighbours.

Despite these benefits to growers and industry, it was found by Coad (2000) that only 11% of producers sell their wool by forward contract in Australia. It is therefore the aims of this research to understand the pros and cons of the forward market selling system as experienced by its users: producers, buyers, brokers and exporters.

Research Method and Design

Figure 1 shows the model for this research.



This exploratory research is characterised as interpretative since it attempts to form structures out of the interpretation of opinions. Focus groups were used to seek people's descriptions and experiences of selling raw wool by forward contract and also to enhance the concept of human interaction on discussing ideas to develop solid structures about the pros and cons of forward contracting (Fisher 2004).

Five, electronically-driven focus groups were conducted with members of the Western Australian wool industry in Perth, Kojonup, Merredin, Esperance and Northampton. Voluntary participants for all focus groups were selected through the researchers' various industry contacts.

The first focus group, conducted in Perth in October 2004, gathered together seven non-farming members of the local wool industry; including brokers, merchants, processors, a farm consultant and researchers. Curtin University's Graduate School of Business (GSB) provided the Group Support System (GSS) technology and the Strategic Communication (STRATCOM) facility, installed with MeetingWorks 6.2 (<http://www.entsol.com/>), to conduct the focus group. This technology allows for simultaneous, electronic capture of participants thoughts for the facilitation of goal-directed tasks. In addition to the participants, such a session requires a facilitator to run the meeting and a chauffeur to operate the computer system. The session for this research involved 1) generating, 2) discussing and 3) evaluating the pros and cons of using forward contracts to sell raw wool as perceived by the participants. This session ran for approximately three hours.

Upon welcoming the participants, each focus group was conducted as follows:

- The facilitator (one of this project's researchers) outlined the aims of the research project and the purpose of this particular, exploratory stage.

Participants were told of the process that was going to be undertaken and that there was going to be two, distinct sections of the focus group: the advantage and disadvantages of the wool auction system and the advantages and disadvantages of farmers using forward contracts to sell their wool.

- The chauffer (an external consultant) introduced participants to the STRATCOM technology and how it was going to be used to collect and generate information from the group's input.

The first stage of this focus group entailed electronic brainstorming the pros and cons of the forward contract method of selling wool. Participants were able to type their random ideas into their individual laptop computers. These ideas were collected by the GSS and were shown to the group from time-to-time without the identification of individual participants thereby making all inputs anonymous.

The second module was the "Discussion mode" which involved the participants arranging the ideas into pros and cons as a group. Each of the 69 ideas generated during the previous stage/module were discussed in an open manner and were either categorised as a pro, con or deleted (due to repetition). The pros and cons were then further grouped into like-factors whereby five major pros and 16 cons were identified; some of these had sub-factors attached.

The final GSS module was that of "Evaluation". During this stage, participants openly discussed the five pros and ranked them in order of importance. Following this, the same, open-discussion approach was taken for the 16 cons. The participants rated each of the pros and cons from one (lowest rating) to 10 (highest rating) for which the GSS was able to generate an average of each item as well as a variance (as a measure of disagreement).

This entire process was then repeated for the wool auction system however, due to time constraints, the final module of "Evaluation" was not completed. A total of 57 items were identified which were grouped into 17 pros and 7 cons.

Similar sessions were conducted in the previously specified regional locations for wool producers. For these sessions the GSB's more simple Mobile Group Support System (MGSS), installed with AnyZing 5.0 (<http://www.anyzing.com/>), was used to run the meetings and capture the data. On these occasions, a computer technician and observer were also part of the research group. The format was slightly different for the regional sessions and used a scenario to encourage participants to express their

views. The scenario revolved around a fictitious character, Bob Smith, who was said to be an experienced grain producer but had just purchased a property next door and needed advice on how to sell the wool from the sheep that had been purchased with the new farm. Brainstorming was conducted around the following issues:

1. What advice would you give Bob with respect to selling his wool?
2. What other ways are there to sell wool in Australia?
3. As far as you are concerned, what are the advantages to Bob (by selling using forward contract)?
4. As far as you are concerned, what are the disadvantages to Bob (by selling using forward contract)?
5. Given what you have heard so far, how would Bob know how much better off he is?

Raw data gathered from the focus groups was coded and analysed using Atlas.ti 5.0 (<http://www.atlasti.com/index.php>).

Results

The research method, as described earlier, was strictly followed to conduct the group session. The *electronic brainstorming* module of GSS yielded a great many responses from all participants. Table 1 shows the comments associated with the “pros” of using forward contracts to sell raw wool from the two types of groups.

Table 1: Evaluation of “Pros” of Forward Contract for selling wool in WA

Non-wool producers	Wool Producers
Pricing: <ul style="list-style-type: none"> • Price security • Provision of an alternative selling strategy to auction • Reduce price uncertainty 	Pricing: <ul style="list-style-type: none"> • Provides peace of mind • Provides price satisfaction • Opportunity of better price risk management
Business processes: <ul style="list-style-type: none"> • Improved knowledge of earnings • Transfer of risk from grower to buyer 	Business processes: <ul style="list-style-type: none"> • Provides income security • Improved opportunities for budgeting & planning • Simple method of selling
Industry aspects: <ul style="list-style-type: none"> • Increased liquidity of the forward market for wool 	

The most noteworthy elements of Table 1 are the advantages to pricing and business process management that are offered by forward contracting as a method of selling raw wool. The dominant advantages of forward contracting in general were the

ability for a price to be set which lead to improved farm business management, this appeared to be mediated by the achievement of peace of mind.

It seemed that the non-wool producers were responding to the research question from their own points of view but also from their knowledge of farm business systems. They clearly understood that the issues of price security and stabilisation of risk were important factors to wool growers however this group also added an additional dimension to this argument in terms of the benefits to their own organisations. For instance, forward contracting of wool also provides the various members of the wool supply chain with price security, product quality knowledge and improved business systems but also has the advantage of adding liquidity and through-put to their forward-buying operations.

Table 2 reveals an extensive list of the major cons of forward contract method of selling wool in Western Australia. Similar process was used to evaluate the themes as per the research design.

The “cons”, or disadvantages of using forward contracts, also strongly revolve around the issue of pricing however the issue of business process enhancement has been over-shadowed by the issues of complexity, the dominance of the auction system and the limits of farm production systems.

In terms of pricing, the major point of discussion for both groups was the issue of locking in an unfavourable price. This concept was closely linked to the issue of the extreme dominance of the auction system which provides the daily, weekly, monthly and annual benchmark price for wool sellers and buyers alike. It seemed that the worst fate for both groups was to be caught with a forward price that did not equal, or better, the auction price of the day. This feeling was compounded by concepts of the forward contract system not offering any room for improving opportunity or being optimistic. Terms such as “locked in”, “uncertainty” and “unprofitable” ran rife during this discussion.

Table 2: Evaluation of “Cons” of Forward Contract for selling wool in WA:

Non-wool producers	Wool Producers
Pricing: <ul style="list-style-type: none"> • Risk of locking in an unfavourable price • Difficulty of price forecasting • Growers’ cost of production not always known • It seems wool price does not matter to growers • Profit-makers are opportunistic and favour the price volatility of auction 	Pricing: <ul style="list-style-type: none"> • Risk of locking in an unfavourable price compared to that offered at auction • Inflexibility of “locking” in a price • Perception of forward contracts giving a lower price
Complexity: <ul style="list-style-type: none"> • Paper work • Negotiation • Pricing • Cost of administration 	Complexity: <ul style="list-style-type: none"> • Paper work • Discounts associated with wool quality • No one is able to provide a reliable value for wool on-farm
Dominance of auction system: <ul style="list-style-type: none"> • Industry familiarity • Institutionalisation of the system • Provides the industry price benchmark • Point of trade for lines not sold by forward contract • Mills tend to buy on a “just-in-time” basis • Lower percentage of income from wool • Difficult to terminate a forward contract 	Dominance of auction system: <ul style="list-style-type: none"> • Forward contracts only available for particular lines • Forward contracts lack the volatility of auction • Risk of selling to an financially insecure buyer • Wool sold by forward contract ends up at the auction • Requirement for fast cash
Production systems: <ul style="list-style-type: none"> • Production risk (not producing to the quantity and quality) 	Production systems: <ul style="list-style-type: none"> • Production risk (not producing to the quantity and quality)

Once again, the non-wool producers group gave some diversity to discussion with their take on the issue of pricing including the difficulty of negotiating a forward price with growers. They said that this was difficult in terms of forecasting a price using market reports but the difficulty was intensified because many growers consider wool a by-product of meat production so place little monetary value on their wool and/or are unfamiliar with their costs of production so have little knowledge on where to start negotiating a price. It was, once again, commented by both groups that the auction price is often the starting point for price negotiations and for what is considered a “fair deal” for price setting.

An issue that was raised during the discussion of “cons” that was not discussed by either group in terms of “pros” was the perception of complexity associated with forward contracts. Both groups were adamant that forward contracts are much more frustrating to use, or are avoided, due to the amount of paper work and fine-print involved; this, of course, was based on a comparison to the operation of selling wool at auction. Ironically, it was also said that forward contracts are “easy to use” in terms of convenience and speed of sale.

One of the key points that arose from discussing the cons of forward contracts for the sale of raw wool was the dominance of the current auction system. Despite its popularity, there was much criticism of this system with comments being made like “It’s too volatile”, “It’s inefficient” and “It doesn’t allow for market signals on quality to come back to the grower”. However grower and buyer familiarity of the auction system and its provision of a yardstick for success or failure upon the transaction of a wool sale are evidently more important to the two groups than the aforementioned criticisms.

In terms of the industrial aspect of forward contracts, it seems that the auction system offers a place for growers to dispose of their “off-lines”, or lines of non-premium wool that are not sold by forward contract. It also appears that buyers have accepted the auction as being the dominant system and actually prefer to buy on an “as needed” basis rather than taking a more structured approach to their buying processes; as is done by the New Zealand industry.

Another criticism of forward contracts was that, like futures and options trading, there was the perception that buyers that use these alternative selling methods are more not as financially secure as those operating within the auction system. It was thought that using auction is a guarantee for wool payment. Similarly, it was thought that auction system is a convenient avenue to access “fast cash” where as forward contracts only offer payment upon closure which may not coincide with unplanned business or personal cash flow requirements. From the non-producers point of view on this issue, their dissatisfaction of forward contracts lay in the inability to cancel or terminate the contract due to unforeseen circumstances.

The final issue of discussion was that of the declining contribution of wool to the farm income. This was raised by the non-producer group who said that the decrease in sheep per farm and falling wool prices contributed to producers’ lack of interest in trying new ways of selling their wool thus, again, making the auction system the preferred method of selling raw wool.

In terms of on-farm production processes, the greatest disadvantaged of forward contracts in the minds of both groups was the fear of the producer not being able to fill the contract of wool quality or quantity. These comments predominantly came from participants who had experience with forward contracts for grain for which seasonal conditions impact heavily on the producer’s ability to meet contractual

requirements. In fact it was mentioned by one participant that he was recommended to only ever sell up to 30% of his annual grain crop by forward contract however such a recommendation was never made about his wool clip. It seemed that participants who placed more emphasis on their wool production, were more familiar with their flock and annual clip and had experience with selling their wool by forward contract were less concerned with such production risks.

Discussion

It has been established that only some 11% of Australian wool growers use forward contracts to sell their wool while some 85% use the auction system (Coad 2000). The pros of forward contracts found in this research were principally associated with their assistance with business planning and improvement of price security however the list of cons was much more extensive and revolved around the issues pricing and negotiation, complexity, the dominance of the auction system and production risks.

An investigation of the technical aspects of forward contracts found that their principal benefit were stabilisation of income, price risk management and improved cash flow management. It was also determined that forward contracts provide industry with benefits such as informational efficiencies, improved price discovery, improved manufacturing quality control and better stock management. Further to this, inquiries into forecasts of the wool industry revealed that prices are likely to fall and become more erratic. The literature showed that farmers can be characterised as being risk-averse in their decision-making so will shy away from volatile selling systems that will add to the uncertainty of their production processes. Despite all these findings from the literature and market information, this research supported the initial fact that far fewer wool producers use the forward contract system than the auction system; it also provided some insight into why this is the case.

The comments of the seven non-farming and twenty six farming participants of the focus groups aligned with findings from the literature that forward contracts are useful tool for stabilising income and managing price risk. It was also acknowledged, in line with the literature, that forward contracts assist with farm management processes in terms of income and stock control. The only issue that was not found in the literature but was raised in the focus groups was the benefit forward contracts bring to the liquidity of wool industry.

The issues raised upon discussing the cons of forward contracts clearly account for, but not necessarily explain, why so few producers sell their wool via this method. Both groups have an innate fear of “locking in an unfavourable” price for wool. This issues leads to that of the dominance of the auction system which apparently dictates to both producers and non-producers alike as to whether taking a forward contract was a good or bad idea at the time of its closure. Further to this, it appears that the Australian wool industry, unlike its New Zealand neighbour, has structured itself around the auction system in terms of its buying and processing activities. Investigation of the New Zealand wool trading system showed that an increase in the amount of forward contracts being taken out to buy raw wool has enable brokers to guarantee supply of wool to processors which in turn allows for improved quality and stock control systems. All this, of course, contributes to improved business relationships between producers, buyers and processors.

Complexity associated with taking out forward contracts, for both producers and buyers, and also the production risks associated with growers not being able to fulfil a contract were also suggested as contributions to the lack of interest in forward contracts.

From this discussion, it can be seen that there are range of perceptions that account for the lack of use of forward contracts for trading wool in Australia. The pros that were outlined contribute positively to producer intentions to adopt the use of forward contracts while the cons contribute negatively, as shown in the research model for this paper. While these pros and cons may not be viewed as logical in terms of what the literature and market analyses show, they explain the lack of interest in forward contract use and the dominance of the auction system for selling raw wool.

Conclusions

This paper presents the findings of five focus group sessions carried out with a range of Western Australian wool industry stakeholders. Responses from seven non-wool producers (including brokers, merchants, processors, a farm consultant and researchers) and twenty six wool producers were used to determine the pros and cons of selling wool by forward contract. The focus group sessions, conducted using computer-aided Group Support Systems, were held at Curtin University’s Graduate School of Business (Perth), Esperance, Kojonup, Merredin and Northampton. Results

from the Perth focus groups were analysed using MeetingWorks 6.2 while data from the regional focus groups were analysed using Atlas.ti 5.0.

The results suggest that there are two principle benefits of the forward contract system for both wool producers and non-wool producers: stabilisation of income and price risk management. These benefits were found to align with farm management literature on forward contracts however the list of cons, or disadvantages of selling raw wool by forward contract, gathered from the research was found to be much more extensive than those outlined in various academic and market literature. Overall, the cons were found to revolve around issues of pricing, complexity, the dominance of the auction system and production risks vastly; the list of cons vastly out-numbered the list of pros.

This study contributes to the wool commerce literature in the following ways. It used a qualitative field study approach to answer the research question, thus making the research exploratory in nature. The use of the computer-aided Group Support System combined the views of a range of wool industry stakeholders in order to gain a fresh insight into the opinions of a broad spectrum of industry members.

Our immediate future goal is to develop a behavioural model based on a combination of findings from the literature and results from these focus groups. A questionnaire will also be developed in order to test the validity and reliability, via quantitative research methodology, of the model in terms of its application to the Western Australian industry.

References

- Ashton, D. 2003, *Economic outlook for sheep and wool*, Department of Agriculture Western Australia, Perth, ABARE Conference Paper 03.9
- Barnard, C.S. and Nix, J.S. 1979, 'Uncertainty and farm organisation and planning' in *Farm Planning and Control*, 2nd edn, Cambridge University Press, Great Britain, pp. 382-389.
- Bolt, C. 2004, 'AWH to set up wool auction', *The Age*, April 7, 2004, Retrieved: June 21, 2004, from <http://www.theage.com.au/cgi-bin/common/popupPrintArticle.pl?path=articles/2004>.

- Bolt, C. 2006, 'Wool prices warm up on European buying', *The West Australian*, 16 January 2006, p. 27.
- Bond, G. and Wonder, B. 1980, 'Risk attitude amongst Australian farmers', *Journal of Agricultural Economics*, vol. 24, no. 1, pp. 16-34.
- Brakenridge, J. 2004, *Contracts gain traction*, media release, New Zealand Merino Company, Christchurch, 5 July 2004, Retrieved: October 13, 2004, from <http://www.nzmerino.co.nz/news/merinonews.asp?id=230>.
- Champion, S.C. and Fearne, A.P. 2001, 'Alternative marketing strategies for the apparel wool textile supply chain: Filling the communication vacuum', *International Food and Agribusiness Management Review*, vol. 4, no. 3, pp. 237-256.
- Champion, S. 2004, 'Customising to the needs of the customer – Insights from the New Zealand merino experience', *Proceedings of the Agribusiness Sheep Updates 2004*, Department of Agriculture Western Australia, Perth, Australia, pp.18-19.
- Coad, A. 2000, 'Hedging strategies for price risk management by wool producers in Western Australia', PhD Thesis, University of Western Australia.
- Cuming, M. 2004, 'Bank sees no future in futures', *The Land*, August 12, 2004, Retrieved: August 16, 2004, from <http://theland.farmonline.com.au>.
- Elders 2004, Retrieved: November 4, 2004, from http://wool.elders.com.au/sell_alt.asp.
- Fisher, C. 2004, *Researching and writing a dissertation for business students*, Prentice Hall, England.
- Fraser, R. 1997, 'Seasonal variability, land values and willingness-to-pay for a forward wheat contract with protein premiums and discounts', *The Australian Journal of Agricultural Resource Economics*, vol. 41, no. 2, pp. 139-155.
- Goss, B.A. 1987, 'Wool prices and publicly available information', *Australian Economic Papers*, vol. 26, no. 49, pp. 225-291.
- Kingwell, R., Bathgate, A. and O'Connell, M. 1999, 'Wool in Western Australia research, development and education', *Australian Agribusiness Review*, vol. 7,

- paper 12, November 8, 2004, Retrieved: July 7, 2004, from <http://www.agribusiness.asn.au/review/1999V7/99WoolWA.htm>.
- Kingwell, R. 2000, 'Price risk management for Australian broadacre farmers: Some observations', *Australian Agribusiness Review*, vol. 8, paper 2, September 10, 2004, Retrieved: September 10, 2004, from <http://pandora.nla.gov.au/tep/10045>.
- Landmark 2004, Retrieved: November 4, 2004, from <http://www.landmark.com.au/>.
- Liddle, J. (ed), 2004, 'Is there a future for wool futures?', *Wool Record*, vol. 163, no. 3720, p. 1.
- Lowe, S. 2005, 'The outlook for sheep products', in *Farm Budget Guide 2005*, Farm Weekly, Western Australia, pp. 96-102.
- McLeay, F. and Zwart, T. 1998, 'Factors affecting choice of cash sales versus forward marketing contracts', *Agribusiness*, vol. 14, no. 4, pp. 299-309.
- Miller, S. 1986, 'Forward contracting versus hedging under price and yield uncertainty', *Southern Journal of Agricultural Economics*, vol. 18, no. 2, pp. 139-146.
- Musser, W.N., Patrick, G.F and Eckman, D.T. 1996, 'Risk and grain marketing behaviour of large-scale farmers', *Review of Agricultural Economics*, vol. 18, no. 1, pp. 65-77.
- O'Donnell, V., Bailey, D., Delforce, R. & Dickson, A. 2005, 'Agriculture', *Australian Commodities*, vol. 12, no. 4, pp. 639-640.
- Pannell, D., Malcolm, B. and Kingwell, R.S. 2000, 'Are we risking too much? Perspectives on risk in farm modelling', *Agricultural Economics*, vol. 23, no. 1, pp. 69-78.
- Perry, R. 2005, 'Sheep industry outlook to 2009-10', *Australian Commodities*, vol. 12, no. 1, pp. 58-60.
- Perry, R., Bailey, D. and Delforce, R. 2005, "Wool", *Australian Commodities: Forecasts and issues*, vol. 12, no. 3, p. 482
- Piggot, R. 1990, 'Agricultural marketing', in *Agriculture in the Australian Economy*, 3rd edition, D.B. Williams (ed), Sydney University Press, Australia.

- Pluske, J. and Fraser, R. 1995, 'Can producers place valid and reliable valuations on wool price-risk information?', *Review of Marketing and Agricultural Economics*, vol. 63, no. 2, pp. 284-291.
- Seale, J. 1996, 'Wool selling options - Strengths and weaknesses', *Wool Technology and Sheep Breeding*, vol. 44, no. 4, pp. 303-310.
- Shafron, W., Martin, P. and Ashton, D. 2002, *Profile of Australian wool producers 1997-98 to 2000-01*, ABARE Research Report 02.7, Australian Bureau of Agricultural and Resource Economics, Canberra.
- Stanton, J. 2005, *Western Australia's agri-food, fibre and fisheries industries 2006: Market information for investors, traders and businesses*, Western Australian Department of Agriculture, Bulletin # 4670, Retrieved: 16 January 2006, from http://www.agric.wa.gov.au/servlet/page?_pageid=449&_dad=portal30&_schema=PORTAL30&_p_reference_path=798_IKMP_NAVIGATION_PORTLET_260&_p_start_url=&_p_home_url=&_p_show_menu=&_p_login_url=&_p_topic_id=20120&_p_topic_name=0AAP0SL0WOOL0&_p_no_summpage=N&_p_apname_img=
- Sydney Futures Exchange 2004, 'Wool Futures & Options', Retrieved: November 4, 2004, from <http://www.sfe.com.au>.
- Teasdale, D. 1991, 'Wool preparation, marketing and processing', in *Australian Sheep and Wool Handbook*, D.J. Cottle (ed), Inkata Press, Melbourne, pp. 311-366.
- The Woolmark Company 2005a, *AWS Concise Annual Report 2005 - Market Overview*, Retrieved: November 9, 2005, from <http://www.woolmark.com/upload/AWSConRep05WEB.pdf>.
- The Woolmark Company 2005b, *New Zealand Wool Exports (media release)*, Retrieved: 14 October 2005, from <http://www.wool.com.au/LivePage.aspxId=2239>, 21 August 2005.
- Wahlquist, A. 2005, 'Getting in for their chop as wool frays', *The Australian*, 22 July, p. 29.
- Wool Industry Review Committee 1993, *Wool – Structuring for Global Realities*, Commonwealth of Australia, Canberra.