Vertical co-ordination in the New Zealand lamb supply chain: implications for breeders, finishers and processors

A thesis presented in partial fulfilment of the requirements for the degree of

Master in Applied Science

Institute of Food, Nutrition and Human Health
Massey University

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1999

Abstract

In 1998, the New Zealand sheep industry exported approximately 347,100 tonnes of sheepmeat to international markets. In 1996, the total number of sheep in the country was 47.3 million head with 9.5 million hectares dedicated to sheep and beef cattle enterprises. Traditionally, sheepmeat has been directed towards commodity markets, but a more recent strategy has been to target premium markets for specialised lamb cuts. Vertical co-ordination among participants in the New Zealand lamb meat supply chain (breeders, finishers, processors, marketers and retailers) is necessary to compete in premium markets overseas.

New Zealand's seasonal pastoral systems are characterised by their heavy dependence on external variation (i.e. weather, market prices). Seasonal pasture production determines a well-defined lamb supply pattern and affects the price that farmers receive for their produce. Adequate price setting for vertically co-ordinated participants is therefore necessary in order to achieve a consistent supply of sheepmeat for international markets.

Long-term contracts between New Zealand producers and processors would be a feasible vertical co-ordination mechanism. However, contracts can only be established if participants agree on product specifications and price. Farmers therefore need to know their cost of production on a $/kg lamb meat basis in order to be able to negotiate a price for their sheep.

The aim of the research was to appraise the importance of vertical co-ordination through forward contracting for the New Zealand lamb industry and to assess measures to control the risk exposure of lamb producers and processors. The research also aimed to provide processors, finishers and breeders with a better understanding of producers' risk-return profiles.

The source of physical and financial information was the New Zealand Sheep and Beef Cattle Farm Survey for the 1995-96 season. The software Stockpol® was used to simulate the biological performance of sheep enterprises on different pastoral production systems. Activity-Based Costing (ABC) was then applied to determine cost of lamb production for participants in the supply chain. A discrete stochastic programming (DSP) model was also developed to evaluate the impact of variation in lamb production cost for participants under alternative conditions for business and financial risk. Risk was considered by simulating different weather conditions and by varying biological production and financial parameters.

The average cost of production of a kilogram of lamb meat at the farm gate for all farm classes was estimated at NZ$ 2.88. This break-even point is the market price at which direct and overhead expenses, including the cost of capital, are covered. The average price received by farmers for lamb meat during the 1995-96 season analysed was NZ$ 1.97/kg. This price was NZ$2.33 /kg in 1997 and the estimate price for 1998 is NZ$ 2.13 /kg. This cost of production varied for the farm case studies according to their financial structure, biological efficiency parameters (lambing percentage, wool production lamb growth rates) and wool and lamb purchase prices. The simulation results showed that pasture production and utilisation (influenced mainly by weather conditions and farm management skills) has a big impact on the cost of lamb

production. The modelling exercise suggested that a mix of contractual arrangements for the premium produce of the farm and spot market bargaining power for the remainder would be the optimum alternative for farm managers.

The use of ABC for farm planning purposes can be considered as a means to control both 'risk exposure' and 'risk impacts'. The assessment of cost of production under possible scenarios of DM production could be used to evaluate innovative contractual arrangements between producers and processors.

The study showed that supply chain synchronisation in the New Zealand lamb industry is necessary for targeting premium markets, and that a deep knowledge of participants' risk-return profiles is essential for building trust between participants in the supply chain. Traditionally, New Zealand farmers have worked in an adversarial environment, while new market requirements for their products require the opposite.

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Author:	Oscar Efraín Montes de Oca Munguía.
Year:	1999.
Degree:	MApplSc (Agricultural Systems and Management).

Acknowledgements

I would like to express my most sincere appreciation to my supervisors Nicola Shadbolt and Warren Parker for their unlimited support, sympathy and patience during the completion of this thesis. I also acknowledge Chris Dake for his accurate comments and feedback.

I want to express my gratitude to all the people that offered me their friendship during the last couple of years. They provided the encouragement that kept me going.

Finally, I want to sincerely thank the governments of Mexico and New Zealand for funding this once-in-a-life-time opportunity to undertake postgraduate study.

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