Economics and RISKHerd

Many of the existing Australian Government tax policy instruments relevant to grazing in rangelands are a response to high levels of production and income variability. Extensive livestock enterprises are characterised by longer term income variability because of time required to rebuild livestock numbers after major droughts. To assist with policy decisions the RISKHerd model was developed. This model can analyse the effects of different tax structures and other policy instruments on property profitability.

An important feature of the RISKHerd project is the evaluation in terms of both income measures and measures relating to the sustainability of the natural resource base. The RISKHerd model has the ability to mix biophysical and financial processes through modeling rangeland grazing enterprises. This project ran from September 198 till February 2002, under the guidance of a steering committee comprising of industry and policymaker representatives.

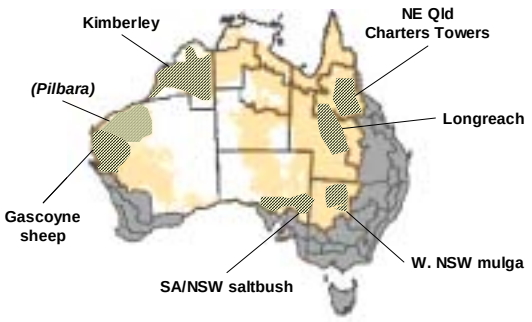
The project was carried out by CSIRO's CAZR with Queensland's Department of Natural Resources and NSW Agriculture, with the support of national farmers' groups, and the collaboration of pastoralists in various areas of the rangelands.

The project involved the application of the RISKHerd computer model to case studies from diverse regions of the Australian rangelands. In each region the project constructed a simple model of a producer's managing lifetime, with theoretical stock movements. The model links climate, soil, pasture, animals, management and financial outcomes with feedbacks. Modest family properties were modeled, typically with a turnover of $250-$400k a year.

Based upon the type of management used in different regions the RISKHerd model was used to simulate how different herd valuation methods might affect management in realistic enterprises coping with realistic climatic variability and realistic markets. Under steady state conditions it was found that:

- Average cost valuation was almost always more profitable than Market valuation.
- The difference was much smaller for sheep than cattle properties, and smaller or reversed if the herd built up quickly due to acquisition or improved reproduction levels.
- Contrary to expectations, Market valuation didn't favour trading strategies *on average*, although it did minimise tax paid in poor years.
- It *was* generally true that Market valuation promoted lower stocking rates. Where the amount could be determined, it was of the order of 0.5% utilisation. It highlighted that, there is a trade-off between short-term financial returns and long-term environmental condition.

The rangelands of Australia showing areas occupied by sheep or cattle; this region was the scope of the RISKHerd project.



The result was consistent: as long as the total time taken to build the herd back up was more than the time taken to de-stock (or have stock die) in a drought, Average cost valuation remained more financially attractive than Market valuation. All the other factors simply altered the margin by which this was true.

The RISKHerd model examined 7 valuation methods in all. In general they fall between the average cost and market methods in terms of how close to market value the herd is.

They also fall in between these methods in terms of the resulting financial benefits and resource costs.

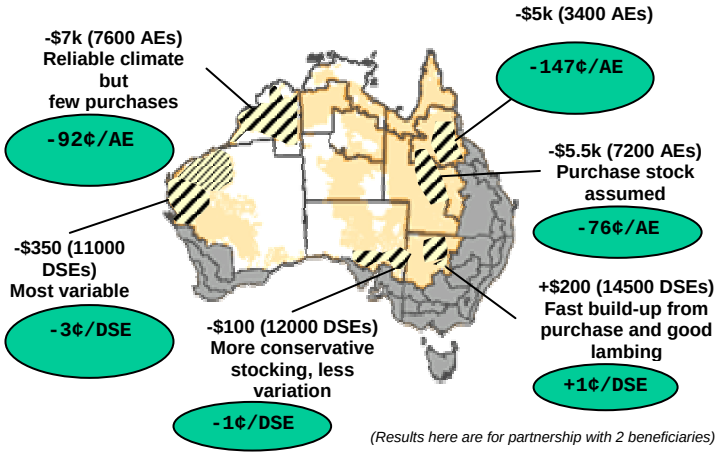
Thus the need to vary stock numbers (almost inevitable in a variable climate like Australia's) means that Average cost valuation is usually financially advantageous overall. But it also creates a big tax problem in dry years when de-stocking should be carried out.

There are some notable opportunities to consider changes that could reduce tax related public investment in the grazing industries, whilst benefiting the long-term future of the industry and its land use. An eventual move towards a more market-oriented herd valuation system could permit the removal of livestock elections and even re-consideration of income averaging. Benefits could include better signals in relation to sustainable resource management, a better ability to respond to emerging technologies that assist with self-reliance, and a reduction of cost to the public purse.

Such a change would be at a short term financial cost to pastoralists which could be argued to be comparable to the long-term financial implications of the resource changes promoted by low valuations, at least in the regions where we have been able to formally assess these. However, there are *major* transition costs, which industry would not be likely to accept in their entirety. The reports on this show some reasoning as to why this is so and why it might still be in the public interest to consider such a transition.

This study has focused on grazing management in the more remote and lightly settled parts of the continent. Obviously changing the system would have implications for agriculture in other regions, and the findings of this study do not necessarily apply equally to these. Even *within* the rangelands it is worth emphasising that there are significant regional differences driven by climate variability, average productivity, enterprise type, access to markets, and institutional factors such as property size and access to rural town services. The regional analyses provided by the RISKHerd reports give guidance on how these factors play out differently across regions.

The average on-going annual post-tax cost of switching from Average cost to Market valuation (with size of simulated enterprise in no.s of stock) and cost per head, with some reasons for key regional differences as modeled



(Results here are for partnership with 2 beneficiaries)

The list of policy instruments which were explored were developed in collaboration with a reference group of policy-making and lobbying representatives.

The policies included:

- Farm management deposits.
- Tax averaging
- Livestock elections.
- A stock valuation system.

The information revealed using the RISKHerd computer model has been discussed both with the grazing industry and policy makers.

There are seven reports in the RISKHerd series, which expand on the basis for the work summarized here.

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