CONTRACT REVIEW

LIVESTOCK INDUSTRIES WILL TAKE DROUGHT AND MARKET UNCERTAINTY IN THEIR STRIDE

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INTRODUCTION

Firstly, it is important to recognise that, although the session theme has been broken into three related topics, there can be no complete separation of pasture management from financial or livestock management. These issues are intimately linked. In the papers that follow, an attempt has been made to outline briefly the key issues arising from recent research on the following topics:

- Pasture management;
- Financial and tax management; and
- Livestock management.

These papers act as a starting point upon which further discussion and research can be based. They describe some of the most recent thinking on the broad topic of managing uncertainty in Australian livestock industries.

MANAGING PASTURES TO MANAGE RISK

If you understand the importance of pastures for feeding livestock economically and how to manage them well, you hold one of the most important keys to knowing how someone in the livestock industries can “take drought and market uncertainty in their stride”. Pasture management affects and is affected by both financial management as well as livestock management. But that’s not all - pasture productivity and management are closely associated with management (and mismanagement) of soil and, of course, all are dominated by climatic effects.

I will outline some of the main ways in which pastures can be managed in general then point out how these are related to managing risk. Whether you are interested in temperate or tropical pasture management, many of the same principles apply.

WHAT ARE THE RISKS?

Financial risks (including the risk of being profitable!)

Finances are the primary driving force motivating the livestock industries. The risks associated with poor productivity and/or inefficient pasture systems coupled with adverse climatic conditions are that farm viability will suffer from a terminal illness. Pastures offer the cheapest form of sunlight energy capture with which we can feed our ruminants. Scott (1995) calculated the discounted cost of pasture feed per tonne to be as low as $10/tonne.

We know that overgrazing to the point of losing valuable species from our pastures leads to low income. By simulating risk and stocking rates in the mulga lands over a period from 1890 - 1984, Meppem and Johnston (1990) showed that higher levels of pasture utilisation lead to lower yields and greater income variability.

In contrast, early de-stocking leads to greatly reduced need for expensive bought feed and minimises degradation of the pasture capital which represents an important form of productive capital on a grazing property (Scott 1995). When this ‘capital’ is in healthy condition, it is able to respond quickly when favourable conditions return and hence make the enterprise more robust when faced with the next drought.

Climatic risk (without forgetting good seasons)

When one studies a map of Australia’s rainfall variability, one is struck by the vast area which is categorised as having high to extreme variability. In addition, of course, much of Australia has low rainfall expectations. Thus, droughts are part of the familiar scenery throughout much of the nation. For example, in the period from the 1840s to the 1980s, Queensland experienced droughts over approximately 1/3 of those 140 years (Weston 1988). This tells us that we need to be well prepared for...
droughts; pastures can form part of our insurance. Well adapted pasture species can survive even extreme droughts (either vegetatively or as seed) provided that they are not overgrazed. These desirable plants need to be retained so that any favourable conditions experienced following a drought can be productive periods rather than missed opportunities.

Soil risks (and benefits)
Improving pastures doesn’t necessarily remove the risks - it can however change the nature of the risks. McCown and Williams (1990) noted that overgrazing in Northern Australian beef properties has become more likely in dry years due to grazing with animal genotypes well adapted to the climate and to the addition of legumes to those grass dominant pastures, thus alleviating the protein deficiency common on pastures prior to development. When such systems are overgrazed the likelihood of significant soil erosion when rain does fall is greatly increased. If a major erosion event occurs, not only might a grazer lose 5 or 15 tonnes of soil per hectare, they may lose the bulk of the reactive organic matter and the bulk of the soil’s available phosphorus (which is a key driving force behind nitrogen fixation) and thus nitrogen limitations will continue to constrain productivity.

Risks of losing valuable plants (and gaining horrible plants!)
In Australia, it is difficult to keep legumes alive vegetatively through drought periods but they can be retained as viable seed reserves in the soil. In contrast, because of their greater natural capacity to resist desiccation, it is possible to retain valuable grasses vegetatively throughout much of Australia. If these valuable plants are lost, it is a waste either of the natural resource, if they are native species or, in the case of sown species, of the efforts employed to sow them in the first place. Thus, it is essential to retain the desirable species if rehabilitation expenditure is to be avoided. It is also essential to retain them if undesirable weeds and their negative effects are to be excluded from a pasture.

Animal risks (and benefits)
The risks to animals from drought and subsequent loss of pasture will be well known to most. It is useful to remember that non-pregnant grazing ruminants require a sufficient biomass of feed (approximately 600 kg DM/ha for sheep to 1200 kg DM/ha for cattle) of sufficient quality (55% digestible) for them to maintain weight. In order for them to grow and hence produce profit, the biomass and quality need to be greater whilst containing a sufficient proportion of green leaf. Pastures also have critical biomass levels below which they become threatened and these tend to be higher than the levels for maintaining animals. By managing pastures better, their quality and production can be improved (including the quality of standing dead material) and hence the nutritional status of animals, even those experiencing drought, will be improved. The problems of poor conception rates in sheep experienced in many areas in the recent drought can be alleviated by ensuring an adequate supply of quality feed.

PASTURE MANAGEMENT
So, what strategies are graziers able to employ if they are to manage their risk better with better pasture management? None of the strategies alone is sufficient by itself, but need to be integrated.

Choice and establishment of desirable species
The retention or sowing of desirable pasture plants (eg those with satisfactory production potential but also well adapted to survive drought or to produce during drought by exploiting deep soil water resources) is one of the most effective ways to manage production and efficiency problems. This can include deep-rooted pasture species (eg Mitchell grass, lucerne, phalaris) and shrubs (eg tagasaste in some areas). By ensuring our desirable plants survive the drought, they will be able to respond when favourable conditions return and thus assist survival of the next drought. Many plants appear to be particularly susceptible to overgrazing following drought as the capacity of the plant to produce reproductive vegetative buds is diminished (Mott et al. 1992).

Fertilizer strategies
Applying fertilizer to nutrient limited pastures before a drought can result in greatly increased production, higher quality and better persistence of pasture plants. Adequate legume components of pastures are vital to animal production; if legumes are to be maintained thus allowing a grazer to benefit from the resultant nitrogen fixation, then nutrition is of even greater importance.
Weed control

The cheapest and most effective form of weed control is an aggressive pasture.

Irrigation

In a country dominated by rainfall deficits, irrigation is an obvious option to overcome feed gaps and to permit marketing of animal products at a time when the market is short of a particular livestock commodity. Irrigation of even a small part of a property can also permit increased overall stocking rates and minimise expenditure on feed purchases.

Fodder conservation

If carried out correctly, feed can usually be conserved on-farm at a cost far lower than that of bought feed. By conserving feed on-farm the risk of importing weeds is also reduced. Nevertheless, fodder conservation almost always results in a lowering of quality of the original material conserved and thus conservation is normally carried out only with high quality pastures or crops.

Grazing management and stocking rate

Animals graze ‘pastures selectively and thus have an enormous influence on pasture production, botanical composition and plant persistence. Thus, the way they graze a pasture needs to be managed if a pasture is to perform to expectations. When faced with drought, a flexible approach to grazing is needed where grazing pressure is lessened to ensure survival of the desirable pasture species. In general, early de-stocking of pastures in drought has been shown to be the most prudent practice - even given low prices for stock. Flexible stocking rates need to be practised even in good seasons so that the intensity of defoliation can be managed to ensure pasture survival whilst permitting the animals sufficient leeway to select a diet superior than the average of the feed on offer.

RISK MANAGEMENT IN LIVESTOCK SYSTEMS - FINANCIAL AND TAXATION ISSUES

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An important concept when discussing risk and risk management is the notion of ‘total risk’. Much economic analysis of risk in farming systems has been partial in nature - that is individual risks (eg price risk) have been examined in isolation without reference to the importance of that risk relative to the multitude of other risks in the system and how they might interact. Cost-effective risk management involves identifying the risk factors which have the largest impact on business survival and locating effective tools to manage those variables.

Business management identified three broad sources of risk. The first source is often referred to as business risk and describes the variability in returns to the farm assets due to factors such as prices, climate and genetics. A second broad category of risk is financial risk. Financial risk arises from borrowing to run the farm business. Borrowing adds some additional risks to the portfolio. Principal and interest repayments are an additional cost which must be covered by a business whose returns and therefore capacity to pay are variable. Second, interest rates are variable and so add further to total risk. Taxation issues also have an impact on financial risk in that they impact upon the financial structure of the business as do questions of the balance between, and types of, debt and equity finance.

The final category of risk relates to risk factors which are difficult to capture in the same way as some of the more generic farming risks described above. Personal, social and environmental risks fall into this category.

Managing the risk associated with debt

The key element to managing debt is to maintain debt at a manageable level. That is, the costs of servicing debt should be able to be met under the majority of operating conditions encountered. Recent work by Thompson et al. (1996) has investigated the impacts of debt in conjunction with uncertainty in generic farm operating variables (yields, prices, climate, costs and interest rates) and for selected farming systems has revealed debt levels expressed in terms of dollars of debt per DSE beyond which the probability of achieving a cash flow breakeven point declines significantly. The implication here is that
different livestock production systems will be exposed to different forms of uncertainty and, therefore will have different manageable debt levels. Identifying those ‘benchmark’ debt levels will be a critical component for livestock industries in dealing with risk.

Managing cash flow

Variability in farming systems impacts directly on cash flow. It can be shown that access to cash reserves in various forms, or off-farm sources of income, can be critical for farm business survival (Thompson et al. 1996). For example, modelling results for a Northern Tablelands wool/beef property indicate that a reserve of $100,000 in the form of a Farm Management Bond can increase the probability of meeting cumulative farm expenses over a five-year period from 54 per cent to 77 per cent. Similarly, for a Hunter Valley property specialising in beef production, access to $10,000 of off-farm income per annum significantly boosted the net worth performance (ie the value of assets owned by the farm) over a five-year period (Jackson and Davies 1996).

The mechanism at work in both these examples is the availability of cash to meet expenses during periods of short-term financial downturn, irrespective of the cause. This helps to offset the necessity to borrow further and reduce the farmer’s equity in the business. However; evidence suggests that many farmers will sink profits back into the farm business as a means of minimising tax, rather than accumulating a cash buffer or making off-farm investments. A limited understanding of instruments such as Income Equalisation Deposits (IEDs) and Farm Management Bonds (FMBs) emerged as one of the obstacles to the accumulation of cash reserves (White and Kennedy 1995).

Income equalisation deposits and farm management bonds represent a tax effective mechanism for accumulating cash reserves. Both attract interest at the short term Commonwealth bond rate. Deposits are made into the funds during profitable periods, and these deposits reduce taxable income. During downturns, these funds can then be accessed to supplement cash flow, though drawings from the fund then become taxable. Analysis has revealed that where substantial funds can be accumulated, their ability to reduce the risk of business failure can be significant (Thompson et al. 1996).

However, the main value of cash reserves appears to be in coping with relatively short-term (one or two production cycle) downturns. Analysis indicates that the size of reserve that might reasonably be expected to be accumulated or is economic to accumulate is usually not sufficient to offset severe downturns (eg prolonged drought or other unfavourable events lasting several production cycles).

Taxation instruments to smooth income

Farm businesses have access to several instruments designed to deal with period inequity - the fact that an annual taxation accounting period is imposed upon an industry where income patterns are variable, so farmers may find themselves paying higher levels of tax in some years than their longer run average incomes warrant. These instruments include tax averaging which is currently used by about 80 per cent of farmers (Moon et al. 1995), the use of IED/FMBs as explained above and livestock election provisions for spreading the income from the forced sale of livestock.

These instruments have been examined in detail (Thompson et al. 1996) to ascertain their impact on farm business performance under conditions of uncertainty. Taxation was shown to be an important determinant of farm financial performance and in isolation, each of the income smoothing measures listed above led to improved financial outcomes for a range of farming systems. However, once one income smoothing measure had been adopted, the benefits of adding additional instruments to the portfolio were marginal and in terms of managing climate variability, greater financial benefits could be derived from other farm management instruments.

Again, while these instruments can deal with year to year income fluctuations, they are not sufficient to offset long-term adverse circumstances. It appears that many of the financial arrangements for dealing with variability in the livestock industries have a relatively short-term focus.

Dealing with longer-term events

Perhaps a significant shift in thinking is required for many livestock producers to be in a position to deal with severe adverse events. The instruments required to deal with such events are unlikely to be provided by government and are unlikely to be managed adequately through reserves of various types. As a starting point for this discussion, several issues relating to the structural and operational strategies of businesses are outlined briefly below:
The 80:20 rule  Economic analysis of a number of farming systems indicates that the bulk of farm profit is earned in about 20 per cent of years. This raises the issue of livestock producers taking maximum advantage of good operating conditions, to provide a large financial buffer to cope with the poor years especially in the more risky grazing areas. For example, this might entail selling a much larger portion of the flock/herd than normal when prices are favourable, resulting in significant destocking and running the property on a ‘care and maintenance’ basis during poor years. This notion runs counter to the more widely accepted practice of gradual destocking and/or feeding during adverse conditions which aims to maintain the genetic core of a flock or herd.

Spatial diversification  Access to land in geographically dispersed areas might provide a solution to severe localised drought. Stock could be moved between a network of properties, so maintaining stock numbers but reducing supplementary feeding costs. It may provide a viable alternative to the agistment of stock.

Conservative stocking  Anecdotal evidence from farmers who practice this technique indicates that it can pay substantial dividends in terms of increased animal productivity, the maintenance of pasture reserves, lower drought feeding costs and possible reductions in land degradation.

Trading herds/flocks  There is a tendency by many farmers to delay the selling of stock until it becomes absolutely necessary. Often this is based on the need to preserve genetic capital livestock producers feel they have accumulated over many years. However, from a financial viewpoint, running a large proportion of the flock/ herd as a readily tradeable entity can provide significant advantages. Financial modelling of this option for cattle herds in the Northern Tablelands and Hunter Valley regions during drought events indicates that this option is superior to maintaining stock numbers and feeding.

Other options  Opportunistic livestock producers may have access to a numbers of other options for dealing with longer-term adverse conditions. For example, access to irrigation may provide additional feed for livestock. Even in the absence of irrigation, there may be options for harvesting and storing fodder although evidence from the recent drought shows that few farmers have the capacity to hold enough fodder for prolonged droughts. Even so, access to some on-farm feed reserves provides significant financial benefits over purchasing feed off-farm at inflated drought prices. Another possibility is the opportunistic feedlotting of cattle with grain during drought to meet the specifications of grain-fed markets.

Concluding comments  Variability is a fact of life for most Australian livestock enterprises. As a result, farm incomes may fluctuate significantly. Most farmers already use tax averaging provisions to deal with the varying tax burdens that result from this situation. However this will not provide the positive cash flow benefits required to survive long periods of low income such as are caused by severe drought or combinations of other adverse conditions.

Cash reserves and off-farm income/investments have been shown to be valuable risk management tools. Maximising the income which can be earned during good years to accumulate off-farm cash reserves may provide livestock producers with the ability to ride out shorter-term runs of poor conditions.

For longer-term adverse events, other measures may be required and some suggestions are made along these lines. Some of these options would require a relatively large shift in thinking for many livestock producers. However, the evidence suggests that financially, many livestock producers are finding it increasingly difficult to deal with the uncertainty in their production systems. Financial modelling of the traditional strategies used to deal with climatic variability shows that these methods cope with the expected occurrence of poor seasons, but not severe drought events. Some new options are required to deal with events of a catastrophic nature.

REFERENCES


