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Mallee Farming

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Talk presented to the Birchip Cropping Group Field Day

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Introduction

In the future the Mallee is going to be hot and dry. Farming in the Mallee is going to be very profitable sometimes, middling profitable in some years and not profitable at all at times - as has always been the case. In 10 years time there will be less Mallee farmers; they will be farming a little differently to now; and most will earn a good living. The scale of operations will be greater. The rate of change will be faster. Change makes it possible to cope with change. The size of the challenges will be greater, but the capacity to deal with the challenges will be better than now. The past is prologue.

The situation seems to be:

- since the mid 1990s we have had a run of ordinary years in which the timing and amount of annual rainfall have been different from the levels expected;
- there have been fewer wet and fewer typical (expected) seasons and more drier than expected years;
- the drier than expected years have produced lower than expected yields and higher than expected prices for crops;
- despite receiving higher than expected prices per tonne of grain produced, crop farmers have suffered seriously lower than expected profit and net cash flows more often than they had been accustomed too in the previous decades;
- the cumulative effects of a run of poor and bad years has eroded farmers net worth and increased gearing ratios of farm businesses.

Why? Now what do I do?

This recent history raises the question in the minds of farmers farming in the Mallee 'Now, what should I do?' The best thing to do in a farming system is determined by the operation of some big picture general principles of economics and by the specific technical, human, and financial detail of each unique system, with a good dose of risk mixed into the situation as well.

The fundamental big picture general principle that determines the success of any business activity is the principle of comparative advantage. Even in the toughest of times, this principle is hard at work (like the mortgage). The principle of comparative advantage dictates that in a competitive economy land, labour and capital will be used, and profitable, in the activity these resources are relatively best at doing. Mallee farmers have some significant advantages over more climatically favoured areas. Their land has fewer competitive alternative uses than farms in the areas of higher rainfall.

This may seem a somewhat back-handed ‘advantage’. However, the principle of comparative advantage makes it so.

The way land is used is determined not by what a firm is absolutely best at but by what it is relatively best at – or relatively least bad at. For example, farms in a higher rainfall area could be better than the Mallee at both livestock and cropping (or recreational farming). The difference between livestock and cropping profits in the high rainfall area might be less than the difference between cropping and livestock in the Mallee. The result is that with a small decline in cropping profits, farmers in the high rainfall region move out of cropping and into livestock. For the Mallee though, cropping remains the best thing to do. This is the comparative advantage the Mallee has in cropping over its competitors. Nowadays, a significant component of comparative advantage is in the value of land in the less favoured rainfall areas. In higher rainfall areas land values are heavily influenced by non-commercial demand for agricultural land. Commercial farmers can do no better than have the principle of comparative advantage working for them.

Answering the question ‘Now what do I do’ involves keeping the big picture general principles in mind, whilst pondering sympathetically the specifics of individual situations. In this latter regard the Federal and State governments have given more than \$3bn to farmers all over Australia during the three most recent droughts up to the start of 2007. There is plenty of compassion and quite a lot of funds around to help relieve financial hardship for farming families. The big picture general principles dictate that farming is a competitive caper and that over time in wealthy economies we will have fewer farmers: fewer farmers or poorer farmers have been the choices hitherto. The choices seem to be:

- have the same number of farmers becoming poorer on average because they are sharing a farm share of total agricultural income that grows in absolute terms but steadily declines as a proportion of gross national product, or
- have the same number of farmers propped up by massive subsidies from taxpayers and consumers. This has been the approach of Western Europe and the United States, but is not a financially feasible or politically acceptable or economically sensible option in Australia; or
- farmers continuing to change to keep on farming well as important things around them change. Part of this change involves some farmers expanding their landholdings. To do this means other farmers have to sell out to them. The farmers expanding their operation manage on average to maintain returns to capital that are comparable with other uses of capital in the economy. This process has characterized farming in wealthy countries for the past 250 years. Some farmers leave, but the industry goes on.

Crop farmers in Australia are very good at dryland cropping because it does not rain much. This success requires farmers to obey some rules set by others, such as other producers, consumers all over the world, competing users of land, labour and capital, and suppliers of capital to farmers. All this has to be done in a production environment that is constantly changing. The implications are that farmers have to be able to put their product on the market at a price less than the farmers with whom they compete. They have to be able to compete in markets for land, labour and capital. They have to be able to reward those who work for them and who provide capital to them at rates that are commensurate with earnings elsewhere in the economy – and at some point they have to be able to pay back the capital they borrow to those who lend it to them.

These rules mean that to do all these things well crop farmers have to be able to adapt themselves and their businesses to changed circumstances. This means being sufficiently flexible, mentally and

in the business set-up, to adopt and implement successfully changes to their systems. The first step to achieving this 'state of grace' is to face the brutal facts of your business. Facing the brutal facts means doing some sums to define the technical and economic conditions under which your business can prosper, and comparing how those 'required sums' match the reality you are managing. There will always be some farm businesses in which the reality being managed and the state of affairs required to be profitable into the future do not match up well. This can be so even though the business may have a reasonable net worth by community standards. In such situations, this 'superannuation' can be slowly diminished by continuing to farm unprofitably, or preserved by selling the business to a fellow farmer who is better placed to farm it. The biggest threat to the family farm is the farm next door. Facing the brutal reality means making such hard decisions, early. Another brutal reality is that the future of farms of the future depends in part on the rate at which some of their colleagues cease farming. And, in farming, as in many things, the race goes to the fittest.

Drier and more volatile conditions

Chances seem to be growing that today's young farmers will face drier and more volatile climatic conditions than did the generation of farmers who started out in the relatively good times of the 1950s and 1960s, and are now winding down. If for example typical annual rainfall over the coming decade declined by 25 per cent, and nothing changed in the farm systems being used, then yields and net incomes would follow the direction of the rain. But, if the gains in productivity of 2.5-3.5 per cent per annum that have been achieved in cropping over the past 25 years were to continue to be achieved in the future, then farmers will maintain their returns to capital at current levels despite a bit less rain and the continuing cost-price squeeze of 1-2 per cent per annum. Good agricultural research and changes to farm systems are the hope of the side, as always.

Two recent analyses of Mallee farm systems

Tim McClelland recently analysed the economics of the results of trials of four farm systems conducted by the Birchip Cropping Group. In this research the performances of four representative farming systems, designated 'Reduced Till', 'Hungry Sheep', 'Fuel Burners' and 'No Till', were examined and evaluated using economic and technical criteria. Activity gross margins were produced and a number of sustainability measures recorded and examined over number of trial 'paddocks' over a period of six years from 2000 to 2005.

The results of the study indicate that three of the systems – 'Reduced Till', 'Hungry Sheep' and 'Fuel Burners' - over a 6 year period of low average annual rainfall, made similar contributions to profit when looked at across all paddocks and over time. The 'No Till' system trailed the field. 'Reduced Till', 'Hungry Sheep' and 'Fuel Burners' had comparable economic performances. 'Reduced Till' had a mean economic performance similar to 'Fuel Burners' and 'Hungry Sheep', though his system also had a greater 'down-side' risk, with paddocks that lost the largest amounts of money in some years. Conversely, paddocks under the 'Fuel Burners' and 'Hungry Sheep' systems produced the lowest losses in the poor years and, significantly, achieved the highest gross margins by a considerable margin in the good years. 'Fuel Burners' was the least volatile system, closely followed by 'Hungry Sheep'. 'Hungry Sheep' and 'Fuel Burners' had the lowest 'poor' economic performances and the highest 'good' economic performances.

The similarity of economic performance over the run of years means that definitive conclusions about which is the best system for particular farms in the region must, as ever, be made on a case by case basis. The economic information forms part of the information that goes into decisions about which system to adopt. The lack of clear economic differentiation between the performances of systems may be in part a result of the poor climatic conditions experienced at the site over the term of the trial. Still, that is Mallee farming - for some of the time. Results from the trial over a few good years would be instructive too.

There was little difference between each of the systems in terms of resource sustainability. However, 'Hungry Sheep' and 'Fuel Burners' systems were burdened with a high level of wind erosion risk in the summers of 2002-03 and 2004-05, whereas the 'Reduced Till' and 'No Till' activity sequences experienced only low levels of wind erosion. The climatic and soil conditions prevailing at the site over the term of the trial meant it is difficult to draw strong conclusions. The results provide information to farmers about the possible implications of using each of these cropping system in the region over an extended period of low rainfall – something that may become more common in the medium term future than has been the case in the past half century.

Another study, by Brad Knight, used information about a farm in the Victorian Mallee over the period 1998 – 2005 to analyse the profitability of investing in Precision Agriculture and Site-Specific Crop Management technology and farming systems. The farm area was 1400 hectares. Each year, on average, nine hundred hectares of cereals were grown.

Two equipment guidance systems were evaluated for this case study farm. Both guidance systems earned more than 8 per cent real p.a. on the extra capital invested. A Real-Time Kinetic (RTK) guidance system with a precision of 2cm and a capital cost of \$50,000 was less profitable than a Sub-Metre guidance system with 20 cm accuracy and costing \$20,000. Producers who invest in RTK guidance technology would be well-paid to also adopt supporting management practices that enhance crop gross margins or provide other benefits. Investment in GPS guidance technology can be a worthwhile, providing the capital cost is spread over sufficient hectares. This conclusion is endorsed by many Australian farmers who have adopted GPS guidance.

Investment in Zone Management technologies to fine-tune applications of nitrogen within paddocks did not meet the required return on capital of 8 % real p.a. At the level of spatial variability on this farm, 1650 hectares of crop were required for the investment to breakeven with alternative uses of the capital. Alternatively, with the area cropped on this case study farm, variation of at least 2.5t/ha in yield across paddocks was required to justify the investment in the Zone Management investment.

Risk

If a business person wanted to earn very low returns to capital all they have to do is take very little risk. Risk creates returns. Managing farm risk well means establishing the situation of business risk (yield and price risk) and financial risk (debt to equity) that enables the business to grow as rapidly or more rapidly during the good times than competitors can do. It also means having a risk situation that means the business can (i) survive and (ii) exploit the opportunities of the bad times. This is easy to say but only the best farmers can do it. Nevertheless, they are the rules of the game.

The key to managing risk well in farming is to understand the portfolio principle, on and off the farm. This principle is so simple that people sometimes seem to think there is a trap. It simply

means place your capital and sources of earning in a range of places, off the farm and on it. However, there is a bit more to this than just the old eggs and baskets story. The real win comes from putting your capital and sources of earnings into places that are not subject to the same types and extents of risks. Do this right and it is possible to set yourself up in a way that brings in the most return for any given level of overall risk. Or, it brings in the same return but does so with lower overall risk. In practice this means getting some of your total wealth invested off the farm by the middle and later stages of your career at least. Second, it may mean having a mix of activities on the farm. This can reduce some price risk exposure and stabilize income flows somewhat in the face of increasingly volatile seasons. Most important it means having flexibility within the farm system to adapt quickly to the threats and respond to the opportunities created by seasonal conditions that vary markedly, not only in this region but throughout Australia.

How much debt can business stand? With debt it is a case of not too much and not too little. Other people's capital managed well in your business can make your wealth grow faster and bigger than would be the case without it. The right amount of debt for a business is the amount of debt that can be serviced in most years with the most likely levels of interest rates. The critical element here is 'in most years'. The actual amount of debt a business will carry depends on the make-up of the operator and the system; the goals and stage of life of the family; wealth accumulated; wealth wanted; farming skill and so on. The appropriate level of debt will be unique to each farm system, and farmer, and will change at different stages of farming career.

Future

It is always possible to learn something by looking backwards. You can learn a lot looking around now. There is even more to learn from contemplating the future – alternative futures in particular. Contemplating alternative futures is enhanced by defining a small number of possible scenarios and doing some numbers about them. What is involved is looking at the current set of fixed and variable costs of your business and the returns on capital and net cash flows that can be produced with a range of yields and prices and interest rates. This can tell a lot about what will and won't be viable in the future. Imagining the future, and asking the questions 'what if this happens?' is straightforward and useful.

Defining the right questions is the key – the question is the answer. There are usually just a couple of relatively obvious solutions to the question, once the question is the right one.

Farm systems and risk

Traditional Mallee farming, going back to the tough times of the 1930s, was mixed farming. This was the diversified farming model. There are lessons here for some for the future. The alternative model is what can be called the Western Australian cropping model. This is based on exploiting the considerable potential for economies of size associated with capital invested in machinery. Here specialization, the opposite of diversification, is the approach. Specialization in production has underpinned economic growth in the non-agricultural sector since the Industrial Revolution. Specialization is a risk management strategy that is based on being very good at your major (and few) activities. Note: the portfolio principle still has a role. Specialization on farm makes it even more important to have a diversified set of investments off farm. In practice, there will be a spread of systems between these two extreme examples of traditional mixed farms and specialized economies of size operations. The relative prices of labour and capital become important in

decisions about mixed farming versus specialized cropping. Regardless of the system, the first secret to success in Mallee farming is to have your business in a situation such that the opportunities created by the occasional good years are maximized. The second secret is to have your business in a situation such that the opportunities for expansion created by the bad times are exploited to the hilt. Easier to say than to do, but.

Conclusion

Over two thousand years ago, the ancient scholar Hesiod declared 'The father of Agriculture gave us a hard calling'. He wasn't farming in the Mallee at the time, but he could have been.