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Prepare Don't Predict

Presentation to the Grains Research and Development Corporation Update for Crop Farm Advisers, Crop Year 2009

Bill Malcolm

Department of Agriculture and Food Systems

University of Melbourne.

The Brief

The Brief given to me from the Grains Research and Development Corporation was:

Grain-growers are increasingly interested in cost-effective farming: how are rising costs, variable climate and other factors likely to change farming over the next 5-10 years.

Soothsaying

Tackling such a Brief, warrants a few words about soothsaying. Soothsaying is the art or gift of prophecy (or the pretence of prophecy) by supernatural means. It is the practice of foreseeing future events by obtaining secret knowledge through communication with divine sources and through omens, oracles, signs and portents. Most people do not have this facility. Most people who claim to have this facility do not have it either.

The Future

Knowing about the future is, and always has been, problematical. Most of our knowledge about the future is uncertain. Still, there are a few certainties about the future. For certain:

- The future will arrive
- The future will a different world; they will do things differently there
- Much about the present will be present in the future
- Much about the future cannot be known
- Current farmers will age, depart and (sometimes) be taxed
- Another 3 billion people will arrive in the next 40 years
- Some important principles that work now will still work in the future
- Much of what we believe to be right now will be known to be wrong
- The things that we currently think will be the major factors affecting our lives will not be so
- The things that will be the major factors affecting our lives will be things that we have not even imagined will be so

Now, re-read the list above. The answer to the question posed in the brief is 'we do not know much and cannot know much'. We do not know for sure and we cannot know for sure. If we do not know for sure what will happen, and we cannot know for sure what will happen, what does it mean for what we do in running farm businesses today? The sensible response to the uncertain future is 'Prepare, don't Predict'.

‘Prepare, don’t Predict’ means setting your business up to withstand whatever the future can throw at you, for good or bad, to defend against and exploit chance. Prepare, don’t predict means do not just be ready for that which can be expected from what we know, but consider even the happening that is very rare but has very big consequences if it happens. The expected or predictable do not have the same size effects on a business as the unexpected and unpredictable. The things that will affect businesses the most are the things we know about the least or the things we can do least about.

The argument is that the best we can do in business is to use what we do know about how the world works in its current form to help us prepare for however the world may work in the future. That is, divine the big principles that have and are likely to continue to determine significantly what happens how and why in your business, count on those principles working for you in the future, and maximize the opportunity for these principles to work for you in the future. Some of these big principles are:

- The laws of supply and demand
- The principle of comparative advantage
- The principle of diminishing marginal returns
- The principle of increasing risk
- The probability principle
- The risk versus return principle
- The ‘big booms have big busts’ principle
- The ‘whole of business’ principle
- The ‘all farm systems and their managers are unique’ principle
- The ‘quality of management is the hidden, unmeasured input to success and failure’ principle
- The ‘question is the answer’ principle, and
- The ‘we don’t know much and can’t know much’ principle

The key to preparing for the future is to employ solid understanding of these principles in making decisions about running your business. Taken together, the operation of these principles lead to the one rule for managing farm businesses: prepare don’t predict.

Hotter, drier, more volatile

In the past decade or more farmers around Australia have had to deal with changed growing seasonal rainfalls and hotter and drier weather than they had farmed with in most of the previous 4-5 decades. Note: the hotter and drier that is expected to be ‘the norm’ in 2070 and is compared with 1990 conditions, is roughly the hotter and drier conditions farmers have farmed with in the past 10 years, and similar to the conditions in which they farmed from the 1890s to the 1940s.

Governments around the world have decided that businesses and people are helping to make things hotter and drier, and are going to introduce policies to get people and businesses to operate differently to stop them helping make things get even hotter and drier. Stated intentions of governments around the world make it clear that farmers will have to start to bear some of that their share of the costs of carbon emissions from their inputs, and the carbon emissions

arising directly from their businesses, that impose on other people and potentially on future generations of people.

Climate change is commonly represented as a phenomenon and problem of a technical nature. It is more useful, in a business problem-solving sense, to regard changes in climate as an economic problem. This is because the solutions for farm businesses, to survive and prosper in the future changed natural and economic environment in which they will operate, are economic solutions.

If things go roughly to plan and emissions trading schemes are introduced in the Australian economy, and overseas economies, businesses will be able to change how they operate if it is economic to do so, and buy and sell rights to emit carbon from within the local economy and from overseas if these are economic solutions. As ever, farm businesses will have to adjust to the new operating environment that will affect not only their businesses but also the businesses of their main competitors. The best farm businesses will do so well, as they have in the past, by using the old solution: increase productivity, change their scale of operation, adopt new technology and manage all the bits and pieces of the whole system very well. As ever, management will be the key. The solution to the extra costs that will be imposed on farm businesses by economy-wide responses to changes in climate will be to get bigger and better at what they do. Still, some of what we do now in response to what we think the future might hold will not be what we would have done if we knew now what we will know in ten years time.

Medium Term

Big booms bust big. It is extremely difficult when in the middle of change to know a lot about it: if you think you know what is happening you don't understand the situation! Still, it is knowable that the financial folly of the past decade is rapidly being squeezed out of systems and economies and economic behaviours will evolve into something different. Equally, while it is knowable that the downturn will not and cannot be brief – the depth of it is unknowable. The interesting question is what will emerge in the medium term.

Economies around the world are immersed in the beginning of the most severe financial catastrophe that has occurred in financial markets since the 1930s. Massive losses in world wealth are occurring. Bad banking with asset prices seriously out of line with fundamentals and high risk redefined as low risk, aided and abetted by inadequate fiscal governance, has plunged advanced economies into recession and caused growth in the emerging economies to slow markedly. It is folly to think catastrophes such as this one end any time soon - a decade maybe.

Prior to the most recent 'long boom' from the late 1960s to the early 1990s there were runs of full employment-high inflation-stagflation-high unemployment-high inflation- high unemployment and, finally, in the 1990s sustained low inflation and in the 2000s low unemployment.. Throughout, the opportunistic shorter-term imperatives of the political cycle intermittently outgunned, slowed, contradicted, and diverted from, medium term imperatives of sound economic policy. As it will continue to do so in the future. (This is something that can be predicted with confidence!).

Governments around the world are embarking on fiscal policies involving massive injections of liquidity to stimulate economic activity. Global economic growth, not to mention share values of public companies, are plummeting from the levels of the previous five years. Continuing economic decline will take us back to where we were a decade ago. The failure of most countries in the good times of the long boom from the early 1990s to 2007 to invest well and build capacity for fiscal stimulus in preparation for the inevitable bust means that recovering and

rebuilding economic activity will be a slow, gradual process. The substantial overhang of the Great Bad Banking Asset Pricing Debacle of 1995-2010 will hang over us for the next decade.

Agriculture

The prices of agricultural and other primary commodities are rapidly regressing to their mean values; achieving the impressive double of exposing the flawed short term ‘analyses’ of both the oil and food doomsayers who had the world running out of oil and food, and of the agri-boosters who had farmers headed for pastures of plenty in a new golden age for farming.

Like the 1970s commodity price boom, the 2007 surge in commodity prices was the result of prolonged strong economic growth, causing strong industrial demand and rising incomes and demand, and this demand running up against constrained supply. World grain stocks declined steadily through the 1990s and early 2000, while declining growth in yields since the 1980s and regular widespread crop failures kept stocks low. As it happens, despite significant increases in global grain output in 2008, diminished but still significant growth in emerging economies and still low inventories, will buffer to some extent the declines in agricultural commodity prices.

Note that some genuine experts about productivity in agriculture (e.g. Phil Pardey and Julian Alston) are ‘bullish’ about the rate at which the long run decline in agricultural commodity prices will proceed because they are bearish about the prospects for future productivity growth in agriculture based on declining investment in research and development. They are saying the decline in farm prices is caused by productivity increases and as this slows then so too will the rate of decline in real farm prices. There is a strong chance that the rate of decline in agricultural prices may slow. This is not the same as saying long run real farm prices will stop declining and start increasing.

A technological-managerial optimists scenario is that world-mobile capital with embodied current technology and world class management, in combination with cheap and undeveloped land in emerging and yet-to emerge economies around the world, could work wonders for agricultural production, if not for prices or productivity, in the future as in the past. The power elites dragging the chain in institutional and political reform in the cheap-land emerging and yet to emerge economies are the most significant barriers to the technological-managerial optimists scenario coming to be.

Protectionism

The folly of protectionism - ever-present at the best of times – and stepped up a notch following the recent bout of high food prices, will do plenty to harm exporting farmers world-wide. The recent US Farm Bill, as ever, has plenty in it for US farmers and nothing for US taxpayers or for competing exporting farmers. It is not just more of the same as, ominously, a new ‘revenue assurance option’ makes the protection provided to US farmers even less transparent than ever. The rising spectre of protectionism world-wide in response to the current financial crisis carries the chance that the for the next decade could see less free trade rather than more free trade, with significant implications for the economic fortunes of Australia’s farmers.

Carbon Pollution Cost

This is the context in which some economies around the world, including Australia, are about to introduce carbon pollution trading schemes. Whilst there remains much that is unknown and some that is unknowable about the human contribution to increased carbon dioxide, nitrous oxide and methane to the atmosphere and to changing temperatures and rainfall around the

world, public policies to reduce emissions of greenhouse gases, predicated on managing the risk of global warming, are being drawn up.

In the Australian context, to date, not a great deal is known well about the potential changes in rainfall and temperatures that could happen in particular parts of the country. Nor is a lot known about potential positive and negative effects on the physical productivity of agricultural activities in particular regions nor about the sizes of the potential impost of a carbon charge on different types and sizes of farm businesses.

Most preliminary work that has been done so far has looked at possible effects of a carbon charges on a mythical farming world. The potential costs of introduced carbon charges to farm systems are estimated as if the changed carbon charging system was not actually introduced at all, and farmers continued farming as though the carbon charges did not exist or did not affect them and how they farmed.

It is usually understood that all models are only partial representations of reality. Simple but not simplistic is the rule, with the degree of simple being dictated by the question at hand. Currently estimates of effects of carbon charges on farm systems have the common logical flaw of comparing the performance of a business in a changed future situation with the performance of the business in the current situation, as if farms have the choice of an unchanged future. By definition, in a dynamic agricultural economy, the *status quo* is not an option. With a will, economists are modelling farm systems and using them to compare how current farm systems work in their model. Sometimes the models are merely simple, other times they are simplistic. Often the technical complexities of the systems being modelled are poorly represented and time, dynamics, risk and management angles are given little or no serious consideration. Yet, these things are the key to future farm operations.

The approach commonly used is called comparative statics, and apart from poor technical representations of the farm system, mostly assumes away the in-between time, dynamics, management, risk and so on. While it is possible for sound simple models to provide meaningful information, once the line from simple to simplistic is crossed we're quickly into the realm of the fantastic. Then the model is mistaken for reality and 'Strewth, stand back you lot - the future we have made up is a lot different to the current situation we have made up, and the implications for farmers are dire'. It is always worth remembering that the first sets of estimates about the effects of forthcoming economic changes that may be on the edge of the known are usually wrong.

If all this is not quite bad enough, the results about costs of global warming are generally presented as a compound rate of change, along the lines 'farmers will be worse off by cumulative 10% or 20% of some measure (profit, higher costs, lower yields) in 10, 20, 30 or 50 years. Anyone who knows anything about the iron law of compounding knows that a big number sometime in the future can be the result of quite a few very small numbers compounding annually. This is often the case in estimates of costs of carbon pollution to agriculture: a 10 per cent increase in costs by year 30 amounts to an annual compounding rate of 0.0032 per cent. Arthur Ha and Helen Mitchell of the Victorian DPI have identified the very small annual costs to farm businesses implied by the compounded rates in the main studies of costs of climate change that have been done for Australian farming.

The proper comparison to ascertain possible effects of change is between alternative futures, including the journey that is taken to get there. In this case the comparison has to be between the performance of farm businesses into the future with and without the carbon charge. In reality,

the effects of carbon charges on a farm business will depend on how that business changes operations and farms in the future in response to the carbon charge, and how other farmers in Australia and around the world too respond. Farmers adapt their systems continuously, thinking variously and as required about today, tomorrow, next week, next season, next year, and the next 3, 5, 10 years. The single-dimensional and timeless uses of the term 'farm adaptation to climate change', along with presumptions about prescience about the future that simply cannot exist, are inhibiting understanding and sensible debate about farming and climate change.

In principle, increased CO₂ can have beneficial effects on plant growth while reduced growing seasonal rainfall has the opposite effects on plants that are adapted to different seasonal rainfall patterns. In principle, relative costs and profitability of competing activities in mixed farming systems will be changed by carbon charges that cannot be 'passed through' to consumers. There is an important time dimension to these considerations. In Australia's farming case, in the short and medium term, exporting farmers unable to change to less polluting activities and unable to pass on any of the carbon costs, will bear the cost of carbon charges imposed on them. Carbon charges have implications for the land values of agricultural activities least able to avoid the incidence of carbon charges by changing to something else or passing costs on.

Over a long time, ultimately, consumers will bear most of the costs of extra costs of agricultural production, as farm systems adjust (long run supply more elastic than consumer demand). Note: the concept of incidence of an added cost is critically important to understanding implications of emissions trading schemes. The principle is that with time, extra costs are not paid where they are laid. They end up being redistributed through competitive markets and adjustments by businesses, to end up being paid either by consumers or producers. Over a long time, consumers bear most of the added costs. In popular discourse, people focus on the financial incidence (who writes the cheque) for an extra cost. The true cost- the economic cost - is the result of the interplay of demand and supply in competitive markets and time, where businesses adapt and new prices are formed that encapsulate effects the added cost burden has on quantities supplied and demands, and the producer and consumer responses to the changed quantities and prices in the market. A further insight, from Pizzey, Jotzo and Quiggin (2008) is that consumers will bear the cost anyway, either as being where the quid stops in market transactions or as taxpayers paying for regulatory measures. There is no hiding from the costs of carbon pollution.

Specifics

A further part of the Brief for this paper mentioned, in typical bureaucratic-speak:

- 'Drivers' of change – now and in the future, including costs, climate, prices
- Strategies for lower costs and higher profits

In part the answer to this part of the brief is 'same, same'. Real prices for farm products will most likely continue to fall as they have since 1300 AD, though at varying rates compared with the past, or maybe just not increase. Real costs of farming will rise in the future as they have in the past with continued competition for resources from the rest of the economy, and growing real incomes (at least post-economic recovery down the track). The share of national income attributable to the non-agricultural segments of the economy grows more rapidly than the agricultural sector share of national income, because of the low responsiveness of demand for agricultural products as people become wealthier. This results in rising real costs for the agricultural sector to attract resources in competition with the non-agricultural sector of the economy.

The main source of change will be new technology and knowledge that increases the productivity of variable inputs to production, and causes farm prices to fall, and new technology and knowledge that makes increases in size of operations possible; and enables more output per unit of overhead cost, particularly fixed labour and management and the opportunity cost of land. These innovations, along with rising real costs and declining real prices for output, are the so-called 'drivers' of change.

The major strategies for lower costs and maintaining profits will continue to be having high standards of operations for the technical aspects of farming, especially timeliness and crop husbandry; having the business gearing right to achieve growth in equity yet service debt, in most circumstances; intermittent, regular expansion of area cropped either by prudent purchase or lease or share arrangements; managing exposure to income risk by good yield management plus some price cover that is mindful of yield risk; using technology to intensify crop sequences and yields; and, above all, exploiting the ever-growing potential for economies of size made possible by developments in the capacity of cropping equipment and able to be captured as long as the capacity of the equipment is fully utilized.

Some Plausible Stories

Disappointingly but true cannot make decisions about the past. Thus the unknown and unknowable are central to decisions. Guesses about the future can no more be avoided than making decisions can be avoided. Not guessing, not making decisions, are actions. Guesses about the future cannot be anything but poorly informed, as no matter how well we might understand what has happened and what is happening, the future is always has new wrinkles to it. There are always new and unpredictable sources of uncertainty. As Reserve Bank Governor Glenn Stevens (-) said:

the key issues remain deciding how much to stake on a particular view of the outlook, and how much to think about the consequences of the forecast and associated policy being wrong'.

The best we can do is to tell some plausible stories.

The basis for plausible stories is the platform of disciplinary principles that explain well, for the past and the current situations, the way things seems to work. Applying these types of principles to agriculture in Australia enables us to tell a plausible story about agriculture in Australia in the future.

It is plausible that:

- 'Hang back', 'wait and see' and 'sneak up on' policies to respond to both the world-wide economic crisis and carbon pollution measures are prudent.
- Just as the very good farm businesses currently earn rates of return on capital that are competitive with other good investments in the economy, this will also be the case in 2030, 2070, or any time you care to name. Profits and asset values will adjust to make this so.
- Fewer and fewer farms will produce more and more of the gross value of agricultural production. Large and large-medium operations will be commercial; the rest will be something else.
- Increasing the size of farm businesses will be the main strategic response to added costs imposed by carbon pollution costs. Added cost burdens associated with policies deriving

from the world becoming hotter and drier will strengthen the imperatives for businesses to get larger to maintain competitive returns on capital. Cropping could be favoured over livestock in areas where both are possible.

- In broadacre cropping without much livestock the potential for expansion to achieve economies of size are massive – we may have just started on this front. The chief constraint to economies of size in cropping will not be technical or management constraints but the financial limits set by the principle of increasing financial risk. Where these limits will be set will depend on the quality of the banking and the quality of the farm manager and the business they run.
- The end of the modern-day long boom and subsequent economic downturn, alongside uncertainties and costs associated with carbon taxing, will adversely affect the growth in agricultural land values. In the recent past decade, if investors believed farm land was going to increase by 7-10 per cent per annum, or more, and if it did so, then any price per hectare made it a good investment. Plenty of operators from the sharp end of town worked this out early too. Reality has a way of re-asserting itself in the valuation of assets, and regression to the mean remains a powerful force. Like all other asset values, real farm land values go up and go down.
- Hitherto, world agricultural supply has continued to outstrip growth in world demand for it, keeping real prices for agricultural commodities on the downward trend, though its a split decision about the rate of decline, with least support for the notion that the very long term trend in farm prices will reverse and rise.
- The better farm businesses to will continue earn competitive annual returns to capital, on average, with the usual significant fluctuation around this mean. High-gearing is still high risk in farming in Australia. Running with a much greater share of debt than competitors requires a greater share of good luck too.

To sum up

There is a lot about agriculture that has not changed in the past 4000 years, and a lot that has changed. The essential nature and attraction of agriculture to farmers has been remarkably consistent through time, though the type and scale of the challenges continually change. If the economists are right and we're in for a sustained period of tough economic times, and if the scientists are right and the world becomes a hotter drier place to farm, then the three biggest challenges for farmers will be (i) responding to severely constrained economic circumstances in Australia and around the world, (ii) farming and changing on a day to day, season to season, and year to year basis in what may be continued and lengthy runs of hotter and drier and more volatile seasons and (iii) adapting to the challenges and re-acting to the opportunities created by policies to reduce carbon pollution around the world. Equally important and more immediate, making good decisions about running the business in the face of product prices coming off high levels places even greater importance than usual on skilled management and operations. Positives could be exchange rates and tough economic times increasing the comparative disadvantage of competitors.

References

Phil Pardey and Julian Alston have done much work on, and know more about, agricultural research and development and agricultural productivity, than just about anyone for quite a way; in many publications.

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