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Can Australia Become the Food Bowl of Asia?

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Can Australia Become the Food Bowl of Asia?

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ABSTRACT

Knowledge decay is arguably the greatest threat facing rural Australia. Knowledge decay allows us to ignore what we have already learnt, allowing for the reinfestation of bad policies. Thus just like a cockroach, a bad policy is difficult to flush (Krugman 2011). In a world full of zombie economics (Quiggin 2010) and the pursuit of a 5 second sound bite we have to examine the proposition of the question. "Can Australia become the food bowl of Asia?" I will retort it's not about to where Australia exports nor how much we export. Rather the question should be how can we make Australian agriculture profitable?

To examine this alternative question, this essay will examine the following three issues: should producers and researcher concentrate on productivity or profit, how do we deal with risks and uncertainties in a policy environment; and finally we examine the logic of targeting Asia or the entire world, in an attempt to negate future flushing.

Keywords: risk and uncertainty, Asia, Australia, food security

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Can Australia Become the Food Bowl of Asia?

Introduction

Knowledge decay is arguably the greatest threat facing rural Australia. Knowledge decay allows us to ignore what we have already learnt, allowing for the reinfestation of bad policies. Thus just like a cockroach, a bad policy is difficult to flush (Krugman 2011). In a world full of zombie economics (Quiggin 2010) and the pursuit of a 5 second sound bite we have to examine the proposition of the question. "Can Australia become the food bowl of Asia?" I will retort it's not about to where Australia exports nor how much we export. Rather the question should be how can we make Australian agriculture profitable?

To examine this alternative question, this essay will examine the following three issues: should producers and researcher concentrate on productivity or profit, how do we deal with risks and uncertainties in a policy environment; and finally we examine the logic of targeting Asia or the entire world, in an attempt to negate future flushing.

Should RD&E Target Production or Profit

The new zombie attacking agriculture and the wider development argument is that increasing production is the key to economic growth. The 'Can Australia become a food bowl' suggests that the challenge for Australian agriculture to increase output. The notion of Asia's food bowl in inexorably linked to the development of northern Australia. Every time I hear or read another discussion about the desire to develop northern Australia, I gauze across to my bookshelf looking for the classic book "The Northern Myth" (Davidson1965). I then wonder if either Davidson's conclusions have been negated by a black swan event (Taleb 2007) or in fact that we need to try and flush again.

Increasing production has recently been draped within a food security mantra, to counter an imminent Malthusian demise. In 1798 Malthus predicted that an increasing population combined with a lack of food production would result in a worldwide population implosion sending the world back to the dark ages. Like many predictions, it has not eventuated. Rather the Malthusian demise argument has had a perverse outcomes preventing agricultural trade from being free and fair (Anderson, K & Nelgen 2010). In Australia the latest call for food security has acknowledged that Australia does not have a problem feeding itself but the rest of the world may face difficulties (DAFF 2012) is another Malthusian threat knocking on the door demanding that we increase production to keep food plentiful and cheap by spending more money on research. I will ask a simple question should we spend research money on helping to increase output or should we spend it on helping agricultural investments make money?

The Malthusian story is and continues to be overcome by the simple economics of supply and demand. For example, demand increases (or stays the same) while supply is constant (or falls) causing prices paid to rise, thereby increasing returns for investment (Keogh 2011). This signal then creates an investment response where more resources are allocated chasing these higher returns. This investment then increases supply (production) causing prices to contract and then resources rush somewhere else chasing the next big return. Then the cycle continues. This is the classic Cobb-Douglas production function where capital chases returns and if badly applied the transaction costs cause net wealth reduction. Thus as we drive to increase productivity we can reduce the rent paid on capital (profit).

Boserup (1965) illustrated that necessity creates solutions and that agricultural capital intensification is a direct response to population pressure (increased demand). Yet time and time again capacity constraints, for example water and labour, are thrust towards the light trying to negate this point that people adapt. The failure to accept adaption means that the individual accepts the standard dumb farmer assumption. I don't. Adaption is everywhere and it can be exceptionally rapid. For example, the fresh tomato industry is rapidly transforming away from open fields to hydroponics (Locke 2012; Paish 2012). Output per unit input increases with hydroponics (Grewal, Maheshwari & Parks 2011) due in part to greater control on climatic variability. As hydroponics require little land resources they can be placed in regions were labour supply is not limited.

The biophysical constraints have favoured the development of low input low output production in Australia (Keogh 2009). This low production is often naively presented as an opportunity to increase the quantity of inputs used by producers. However, the high inputs, high output mantra is not always associated with profitability for three reasons. First, is the technology treadmill where, as already discussed, either the total costs of the transformation, including capital costs of the structural transformation (i.e. fixed costs) and/or the use of new or more inputs increase costs (i.e. variable costs), are not compensated as the long run price falls due to oversupply resulting in lost sunk costs (Mallawaarachchi et al. 2009).

Second, the new inputs or production systems can have negative, real or imaginary, public connotations (e.g. genetically modified organisms) that can reduce prices and or negate market access. Adamson's (2010) examination of antimicrobials in low and high use countries showed that not only did higher use increase cost structures, constrain international market access but there were wider social human health implications. Australia generally, not consistently (Jordan 2007), only registers antimicrobials for animal husbandry use, which are considered of low importance for humans. This separation of registration allows for greater flexibility in management of human diseases and may reduce the rate at which zoonotic diseases develop resistance to antimicrobials.

Third, it may promote production and management systems that are inflexible and may fail to adapt to the inevitable impact of exogenous variables missing from the question, climatic variability, risk and uncertainty, as discussed in the next section.

The research question becomes how to profitability increase in agriculture? By using Makeham and Malcolm's (1981) annual operating farm profit equation the research goal must be to alter one or a combination of variables so that profit increases through time.

$$\pi = (Q \times P) - (VC + LC + FC) + \Delta A$$

Where whole farm profit in a given year (π) is determined revenue which is the quantity (Q) of all products produced times their price (P), less the total costs of running the farm which consists of the variable costs (VC) of producing each product, living costs (LC) for the household unit, inclusive of tax liabilities, and the fixed costs (FC) of the farm enterprise. Fixed costs include operator labour, repayments of borrowed capital. Farm profit is also the change in the value of the asset (ΔA) base. The asset base includes the productive capacity of the natural capital (land & water resources), commercial capital base both on farm (machinery etc), and off-farm (net salaries, shares, etc) and remaining non-serviced debt. It is important to realise that if the only factor keeping the farm profitable in the long run is off-farm income then the farm is not profitable.

Change in asset value can be misleading as borrowing against perceived value of land is just as dangerous as what occurred in the US housing market. It's fine as long as the bubble works. If the real rate of return doesn't justify the land prices then problems will occur. This is what occurred in the rural market in the 2000s and combined with borrowings against unrealised capital gains has caused significant debt on some farms (ABARES 2012).

In order for research to understand how to adjust these variables, a shift from the notion of enterprise research and development (R & D) to whole farm research, development and extension (RD& E) must occur. Industry based R&D generally considers a farm as a single activity, for example either it is a grain farm, or a cotton farm, or a dairy farms, thereby negating the raft of activities a farmer may actually be involved in. We need to consider the whole farm system by examining how farmers operate and respond to climatic variability, determine the cost structure of decisions and the cash flows from those actions. This is the 'grain and graze' R,D&E program who's concepts and goals, which includes increasing profit by 10% (Price & Hacker 2009), needs to be transferred to a wider audience. By examining operating profit and not enterprise productivity, resilience is built allowing for greater flexibility to future shocks.

These new research outcomes will require tailoring into the existing system and the research must clearly justify the economic case of capital transformation and how the notion of climate variability impacts outcomes (Anderson, Dillon & Hardaker

1977). This not only implies a greater level of extension to transfer existing research onto farms but asks the question of who (i.e. government, RDC, other) should provide what research focus. Industry funds may want to consider the incremental changes or dealing with existing RD&E issues and the transformation of existing R&D into on-farm RD&E. However, an increasing proportion of the government funding must be about the big picture for the agricultural sector and the finding the next black swan for profit via blue sky research. It's these big shifts in technology which allow profitable productivity to occur.

Arguably the declining return on capital invested in agriculture has resulted in a brain drain. Firstly, with higher salaries paid to those working in other sectors there has been a net migration of the best and the brightest seeking higher rent for their services. This in part explains the increasing age of farmers in Australia. Secondly, with declining returns and as agriculture shrinks as a proportion of the economic activity, less funds are allocated to regional areas. The associated services of health and community services vital for a sustainable community get whittled away into subsets of concentration further driving the community transformation. By improving profit not only does the opportunity cost from leaving the rural sector increase but the chance of retaining the knowledge base in RD&E services increase.

Risk, Uncertainty, Opportunities & Wrong Policy Signals

In order to help negate the knowledge decay we must also challenge how we evaluate risk and uncertainty. To do this we must remove the reliance on the mean and the median. Farming is about risk and uncertainty. It's about drought and floods. It's about making enough profit in 3 years in ten to get you through the ordinary and resource reserve draining drought years (Egan & Hammer 1996). Most of all it's about having the flexibility to cash in when times are good. Highly constrained and optimised systems without built in flexibility are a detriment to return on capital. With increasing climatic variability and climate change it's not about the mean reduction in rainfall the real issue is about the frequency in which drought events occur. If a farming system can just survive off only 3 good years in ten now, that same farm will not survive if 2 or less good years are realised in the future (Adamson, Mallawaarachchi & Quiggin 2009). To remain profitable under increasing variability the system has to change and will change as the dumb farmer assumption does not hold. This change is not predicted by using trends, means and averages. We need to rethink about how we perceive risk and uncertainty and mange capital resources to make the most of opportunities when they present themselves. Change is non-linear and it can be very rapidly. If flexibility is not considered then agriculture will not be resilient to future challenges.

Confusing policy signals and backflips need to be prevented. For example, the notion of restoring the balance in the Murray-Darling Basin has been given such

disservice via the notion that capital works will solve the problem. It was capital works that gave us the problem (Davidson 1969). For example let us consider a perennial irrigation property and the capital works program, in Figure 1.

Existing production system has a return per Ha is R from using water W. With increased capital investment the new system returns R per hectare by using only water (W'). The water saved is (W-W') and this provides a productivity gain for water use. It is logical to assume that the area irrigated would increase in proportion to the water saved less water surrendered under the capital works program. For simplicity it has been assumed that neither running costs nor maintenance costs increase.

Say then a drought occurs and the available water decreases to Wd, Wd', where the reduction in water is equal (W-Wd = W'-Wd'). Under the 'existing' system RWd is returned from using water (Wd). While in the 'new' system, return is now RWd' from using water Wd, where RWd'< RWd. In extreme drought situations and assuming that all saved water from the capital transformation has also been used by perennial horticulture on farm, then a far greater capital level is exposed than in the existing situation. This then raises the question, if the capital transformation does not increase the level of water security, or the water saved is not used to increase management flexibility then the next drought will cause even greater negative return on capital (i.e. the perennial asset dies).

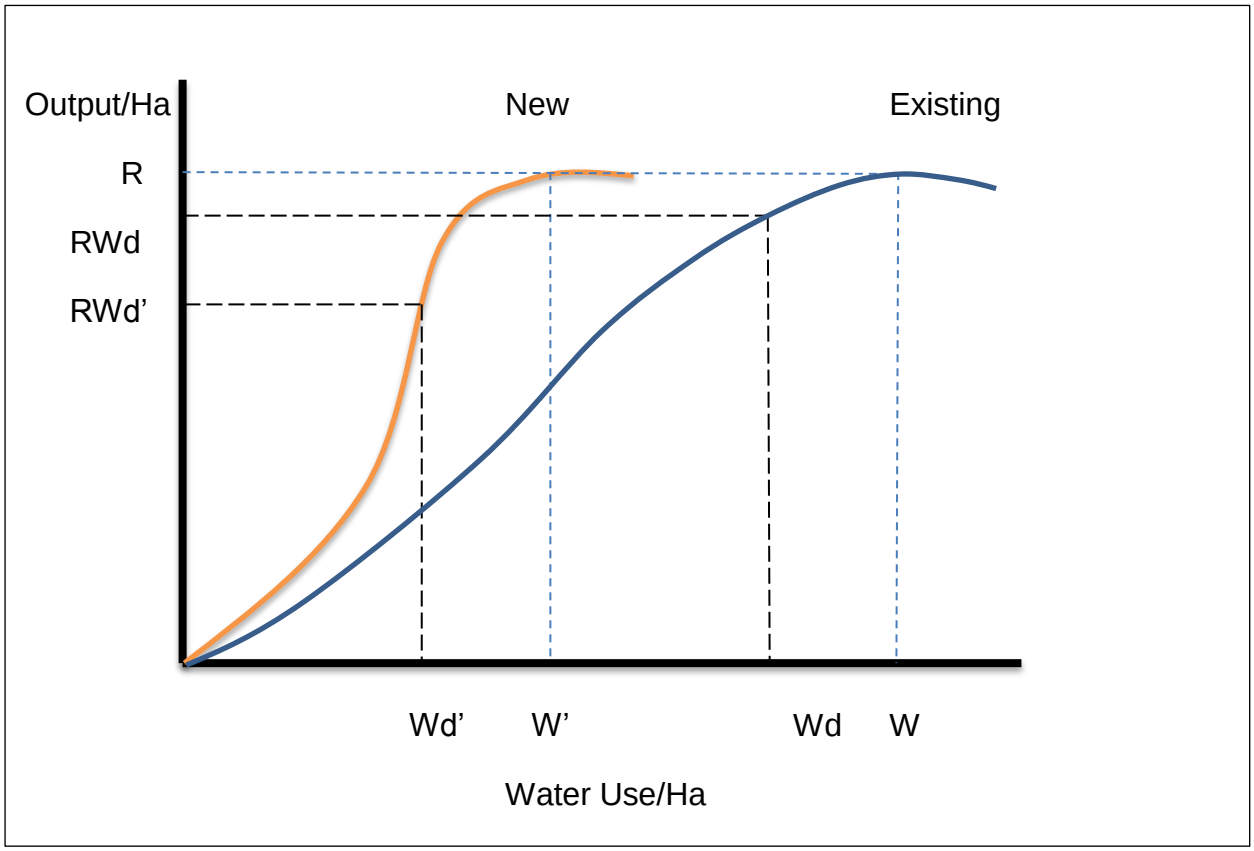

Figure 1 Capital Transformation and Inflexibility

By potentially decreasing the flexibility of the irrigated community I can then paraphrase Davidson's (1969) findings and ask …

> …would the $5.8 billion set aside for on-farm irrigation benefits for the few, be really justified when compared to $5.8 billion pumped into RD &E benefits for all in the farming community?

Not only could the capital works enforce inflexible production systems but the subsidisation of capital then prevents market forces from dealing with the externalities (i.e. salinity) from on-farm use. Salinity not only impacts all downstream water users (i.e. irrigators, urban and the environment) but on dryland systems as well. The drive to use capital to restore the balance is not only a more expensive option (raising opportunity costs issues associated with public expenditure) but ignores the facts that irrigators still wish to engage in the Buy-Back process (National Water Commission 2012). That National Water Commission report determined that the money raised from the sale of those water assets had predominantly been spent locally. Funds have been used to reduce debt, purchase capital to transform the farm or diversify farm income (asset base), buy other water rights with greater security and increase personal finance for consumption now or later.

The water sales have a flow on benefit for those producers who retain their water assets as their long run equity increases due to scarcity. Scarcity is money and the more secure that asset is, the greater its value. This is why high security entitlements receive more per mega litre than general security entitlements when traded. As water is transferred away from irrigation, the opportunity cost of the remaining water for irrigation increases, which in turn increases their farms annual asset value. Sometimes less is more.

Knowledge decay occurs with sudden policy shifts. For example, both the sudden rush to austerity and removal of green tape exposes a serious lack of economic credibility that will cause harm to the agricultural sector in the immediate periods and long run. On one hand the reduction in government spending both here and abroad will reduce demand for products and cut services in regional areas. The negation of services will have long term ramifications as rarely once removed are they re-established and their removal impacts on rural community resilience (Buikstra et al. 2010). The removal of green tape suggests that all the negative externalities are irrelevant (i.e. water and soil quality). Negative externalities threaten the value of natural capital resources by reducing its productive capacity and flexibility for future use, which then decreases future profit. Yes, green tape impinges on individual actions and increases costs. However, I will take a bet that the majority reading this essay would prefer a precautionary principal applied to the coal seam gas industry until the risks are better known and if required safeguarded against with regulation.

Knowledge decay reduces profit in the long run. Not only does it fail to prevent resources moving in response to market and climatic factors but continually attempting to predict the future by using the mean and trends we fail to predict change. For example, the live trade in cattle is one of the most fragile and exposed agricultural industries in Australia. Not only has it faced increasing public criticism but the assumption that the market will always exists is a misnomer. Curtain (2012) reports that in two years the live beef trade quota to Indonesia has halved and that the Indonesians are striving for self-sufficiency. This faith in the mean and long term predicted trends has once again exposed real capital investments by failing to understand extreme events. No, I will not predict what will occur in the future. Rather I will state until either, alternative markets are developed and/or the ability to establish large scale processing that can cope with the seasonality of supply then this industry will face significant restructure either from these mentioned factors or other exogenous variables. We need people who can develop the flexibility and resilience within these systems. As the only truth I know is that sooner or later an unpredicted event will occur in all industries and without resilience the costs will be significant.

Policy needs to focus on negating barriers in trade access (in part caused by international food security policy), interference in market signals, transportation bottlenecks and reducing negative externality costs (e.g. salinity and invasive species). Policy will also have to spend time dealing with the issues of debt and stewardship payments. These issues, if dealt with incorrectly, pose the old age infant industry argument and unproductive resources.

Should we focus on Asia or the World?

I now challenge the second part of the statement, why Asia? This targeting implies perfect knowledge. Perfect knowledge about the future and as discussed predicting the future is a dangerous beast. The inability to understand large deviations from the norm results in some forecasts causing irreversible damage (Taleb 2007).

Australia's agricultural focus shifted to Asia after the second world war when Britain strived for greater economic integration with Europe (Harris 1982). Garnaut's (1989) report helped drive the removal of domestic tariffs and reconfirmed the need for bilateral and multilateral trade deals in Northeast Asia, including APEC. I then ask again why Asia? Why should we just concentrate on Asia? The only way to have robust economic growth in agriculture is to ensure that we are flexible. This flexibility is not just in the way we research issues, produce agricultural products but it also includes who Australia trades with. Why would you concentrate on selling to one group when there are other groups out there who may be willing to pay more for the same product?

The greatest return from economic integration is not from those who you are already closely linked to, rather from the countries with which you are least integrated. We are already well integrated within Asia. To enable robust market opportunities we need to not only cultivate and strengthen the existing links we have with Asia but to explore the next opportunities. With increased flexibility it helps mitigate adverse consequences. The old adage of 'don't put all your eggs in one basket' appears to have been forgotten. In 2010-11 38%, 20% and 5% of the value of exports went to North Asia, South-East Asia and South Asia respectively. While less than 1% went to Russia, less than 2% went to the Americas (excluding USA) and only 3% went to Africa. (ABARES 2011, Table 17). Why wouldn't we aim to sell a pair of wool socks to each person in Russia as well as China? What are the impediments in operating in those markets? Is it like for like or are we locked out? These are the policy questions that need answering. Not a policy on producing more.

Australia needs to take advantage of black swan events occurring in other countries that create opportunities for long term gain. For example, Australia dominates the Japanese beef market due to the 2003 US mad cow outbreak (Adamson 2010). While continuing weird and wonderful shifts caused by policy makers in other countries create opportunities for Australian producers. For example, Argentina's decision to limit beef exports (no doubt for cheaper domestic prices) has caused an expected drop in the Argentinean herd size (Hernandez 2011). Could you imagine the irony of exporting beef to Argentina?

As Asia grows it will provide long term opportunities. In 2011 China decided to boost incomes and minimum wages increased by 22% in 21 out of 31 regions in China, in part to deal with increasing food prices (Rabinovitch 2011). We should not only embrace rising real prices for food but be ready to meet part of the demand that will increase throughout the rest of the world. Demand however, is not always about volume it is also about quality (real or perceived). As real world wages increase opportunities for value adding in Australia expand. The question then returns to agriculture, does agriculture stop at enterprise, the farm gate or should producer's diversity along the production chain and why don't we gaze past Asia?

Conclusion

It's not about productivity, it's not about output but it's about profit. The challenge is not how much food we produce but it's about ensuring that we develop the flexibility into the agricultural sector. The flexibility provides robustness to the inevitable black swan threats and allows individuals to take full advantage of the opportunities when they arrive. An economically robust sector, promotes sustainable communities, which in turn allows for higher salaries negating the brain drain and the investable knowledge decay. The heavy thinking used in this article was done by people long ago yet it appears as though rent seekers don't like the answers that still hold true.

Hopefully, by negating knowledge decay, we may prevent cockroaches from swimming around in the policy bowl.

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