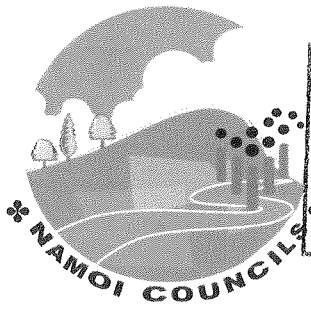
(Attachment I)



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An Applied Example of a Irrigation Water Use Efficiency Project

1. Introduction

Namoi CMA received $3.4m in funding as part of the Community Development Fund (CDF) monies that flowed from the Achieving Sustainable Groundwater Entitlements Program (ASGE) for the Upper and Lower Namoi Alluvial Groundwater Zones.

Whilst a number of Groundwater Zones formed part of the Program, the average reduction in Zone Entitlements to achieve "sustainable yield' was 60%. Irrigators received direct compensation for this reduction.

Part of the total CDF monies (NSW/Federal Government funding), some $990k, was allocated to the Namoi Water Use Efficiency Program which involved 35 ground water irrigators (29 with un-pressurised and 6 with pressurised systems).

2. The Water Use Efficiency (WUE) Project

Whilst the WUE Program was funded by $990k in government monies, the participating irrigators jointly contributed (in cash and 'in kind') $4m. Approximately 70% of irrigator funding was in cash. Thus total funding was $4.99m.

Importantly, the anticipated water savings for use on-farm to improve productivity and maintain viability were 6,830 mgs. Broadly these joint funds were expended on the planning and installation of improved irrigation technology and monitoring of equipment performance plus a small educational/training component.

The Program funded a wide variety of irrigation technology including:

- Centre pivot and lateral move irrigators;
- Sub-surface drip irrigation;
- Flexi-flume to replace open head ditches;
- Piping supply channels;
- Installation of new bores;
- Multiple cells in storages;
- Laser levelling;

- Replacement of gates and pipes;
- Purchase of larger diameter siphons;

Importantly, monitoring included:

- Installation of capacitance probes;
- Sapflow meters;
- EMI surveys and soil testing; and
- Watertrack and Irrimate monitoring.

The average cost per mg of groundwater 'freed up' by the WUE Program was $730/mg. To put this figure in perspective, groundwater entitlements have been traded at well in excess of $2,000/mg given the security associated with the groundwater resource.

3. How does the ASGE WUE Project Relate to the MDB Reforms

The abovementioned WUE Project is an example of what can be achieved by governments, CMA's and irrigators working in concert. Whilst this project related to improved water use efficiency on farm with no return of the efficiency gains to the environment, it takes little imagination to design a similar water use efficiency program which would be totally government funded where the efficiency gains are shared 50/50 between the irrigator and government.

If this logic was applied to the abovementioned ASGE Program and the Australian Government provided all of the funding ($4.99m, including the 'in kind' irrigator component), the cost of acquisition of the groundwater would be $1,460/mg assuming the efficiency gain was shared 50/50 between the Australian Government and the irrigator(s). This is still significantly under the market price of 'traded' groundwater.

Importantly, such programs would be a "win win" for both parties with improved raised socio-economic benefits since despite the loss of 50% of the "efficiency gains" to the Australian Government for environmental purposes, the irrigators had access to more "productive water" and had improved productivity per mg of water utilised.

Conclusion

Experience in the Namoi with water use efficiency programs is that the opportunity exists with government funded programs for "win win" outcomes that actually can result in individual irrigation productivity increases that also result in positive socio-economic outcomes. It also serves to highlight that government sponsored water 'buy back' programs are indeed a very blunt policy instrument which has negative regional socio-economic outcomes. Additionally, experience in the Namoi suggests that the Australian Government could, with properly designed WUE Programs, acquire water at less than its market value whilst supporting improved socio-economic outcomes.

Bruce Brown
Chair
Namoi Councils Water Working Group

(Attachment II)

Australian Agricultural Sector Productivity & Natural Resource Management (Section 3 only)

Paper delivered to the National Sustaining Rural Communities Conference

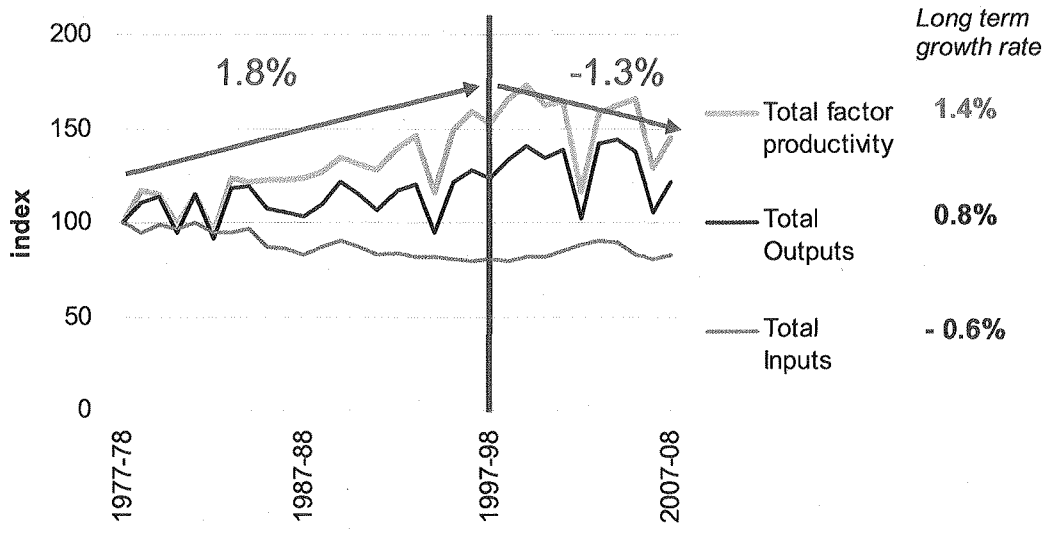
Narrabri
19-21 April 2010

Bruce Brown
General Manager
Namoi Catchment Management Authority

3. More Recent Agricultural Sector Productivity and Profitability Trends

Productivity growth in the current decade is much weaker than during the previous two decades (Figure 5).

Figure 5: Australian Broadacre Agriculture Productivity Growth is Slowing



Source: ABARE, Nossal & Sheng, 2009

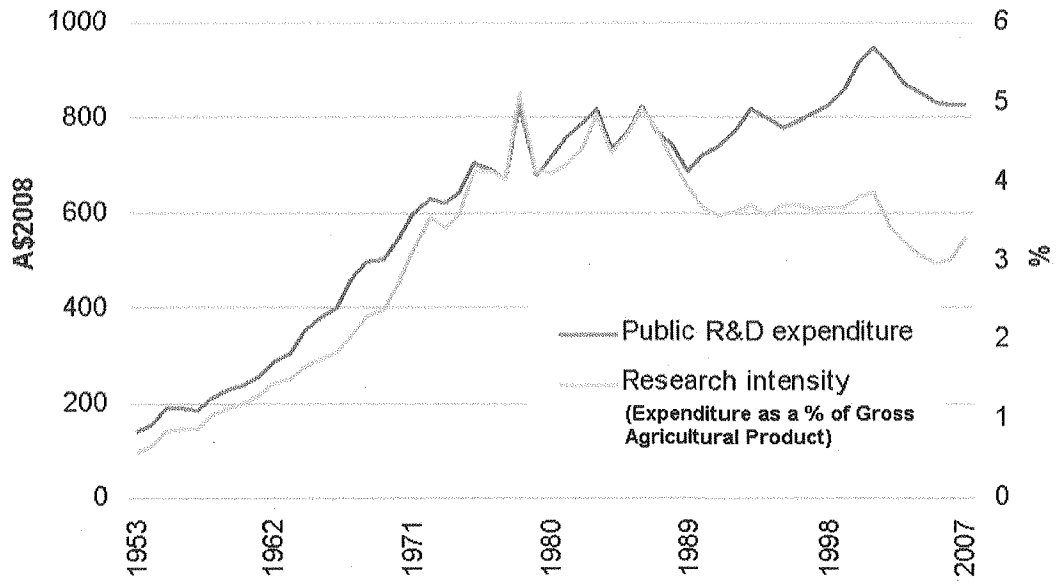
This is occurring at a time when the adaptive capacity and resilience of the agricultural sector will be thoroughly tested by higher Australian Dollar cross rates (short term), and major government policy initiatives such as a reduction in the MDB water extraction cap (median term) and adjustments related to climate change (medium – long term).

Whilst drought impacts during the current decade especially across eastern Australia may have negatively impacted on productivity growth, this trend is also very strongly correlated with a slowdown in the growth of government research and development expenditure since 1980 (Figure 6).

Equally it could be argued that a decline in the condition of natural resources (land degradation, excessive water extraction, etc) over the past three decades has also had some negative impacts on productivity and profitability trends.

Importantly investment in research and development has a lagged impact on productivity with the positive benefits often continuing for periods well in excess of 10-15 years. This slowdown in investment growth could have longer term impacts on productivity growth. Public agricultural research and development expenditure as a percentage of the gross value of agricultural production has also fallen across the same period to a little over 3% (Figure 6).

Figure 6: Growth in Australian Public Agricultural R&D Expenditure has slowed

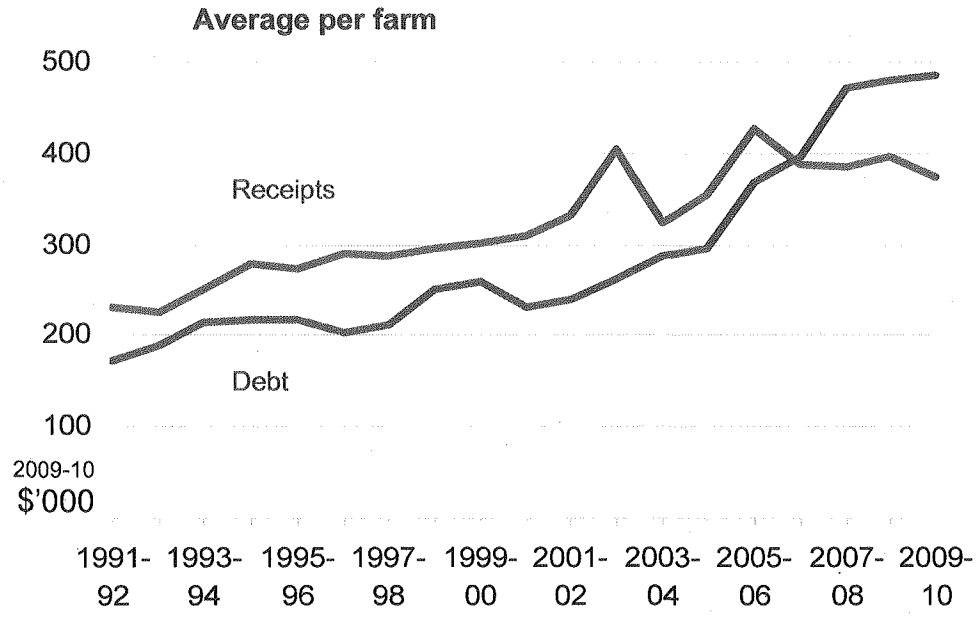


Source: ABARE, Mullen (2009)

It is also interesting to note that the recent Australian experience in terms of slowing agricultural sector productivity growth is a world-wide phenomenon. In a recently published book entitled "Persistence Pays: US Agriculture Productivity Growth & the Benefits from Public R&D Spending" (Alston, Anderson, James & Pardey, 2009) the authors suggest that public policy makers across the globe may have started to take agricultural productivity growth for granted. They claim that worldwide growth in public agricultural investments has slowed and that given agricultural research takes time to generate benefits, public policy makers have become impatient in demanding more immediate outcomes. Notwithstanding this, the authors state that the estimated national internal rate of return to USDA research was 18%.

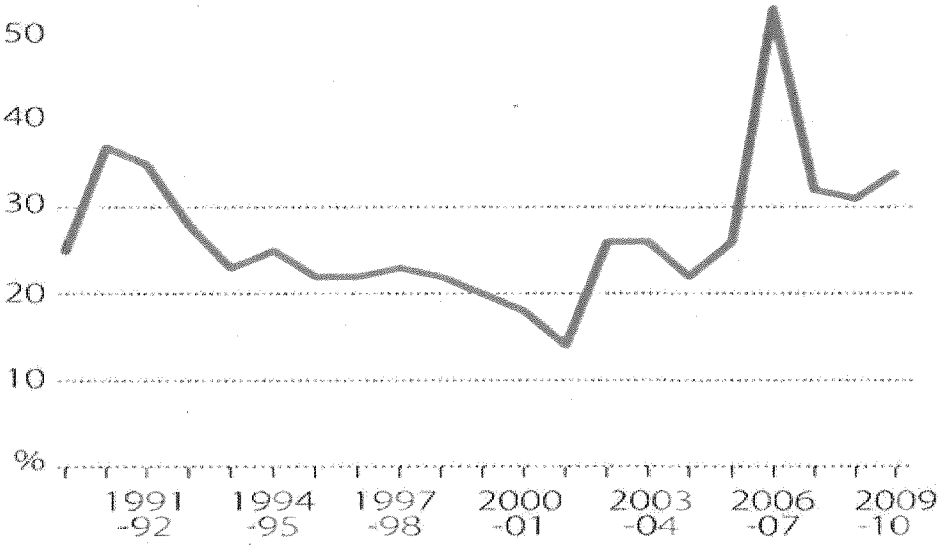
Another trend which has the potential to impact on agricultural sector profitability and adaptive capacity going forward is the recent acceleration in farm sector debt and reduced debt servicing capacity (Figure 7 & 8).

Figure 7: Australian Broadacre & Dairy Farms – Average Receipt & Debt Level Movements



Source: ABARE Farm Surveys

Figure 8: Australian Broadacre & Dairy Farms – Debt Servicing Ratio*

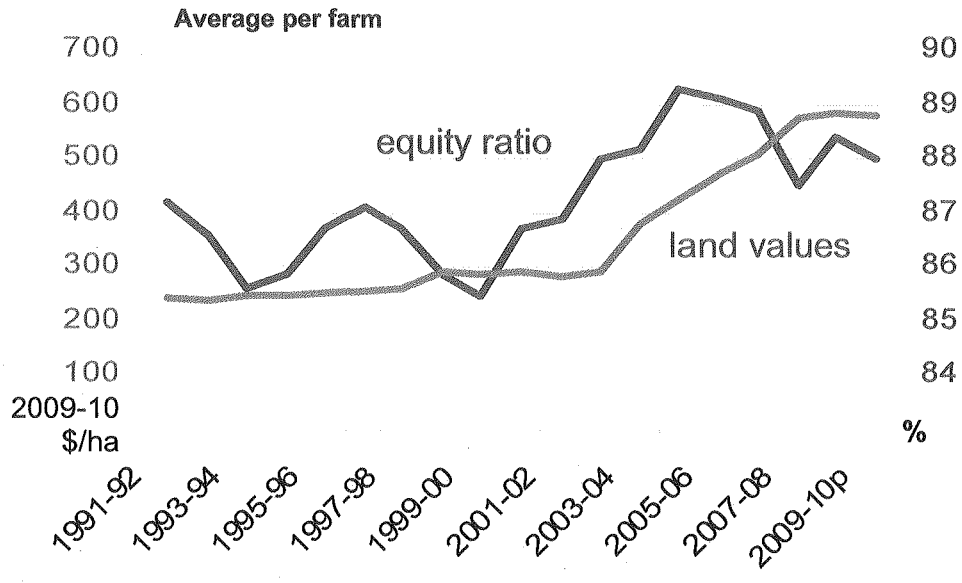


* Percentage of Farm Cash Income expended on interest payments.

Source: ABARE Farm Surveys

Whilst farm business equity levels remain high (currently around 88%) increases in interest rates and any downward correction in land values following their recent upward surge is also course for concern (Figure 9).

Figure 9: Australian Broadacre & Dairy Farms – Land Value & Equity Movements



Source: ABARE Farm Surveys

It is worth noting the apparent disconnect between slowing productivity growth and the surge in land values.