



REPORT



NSW WOOL INDUSTRY & FUTURE OPPORTUNITIES

A report to the NSW Department of Primary Industries from Miracle Dog, Poimena Analysis, Scott Williams Consulting and DAFWA

Supporting Papers

Paper 4: Profitability of wool and other broadacre enterprises



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NSW Wool Industry and Future Opportunities

A report to the NSW Department of Primary Industries from Miracle Dog, Poimena Analysis, Scott Williams Consulting and DAFWA

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Profitability of wool and other broadacre enterprises

Contents

Introduction	2
Situational Analysis	2
Implications for the wool industry	13
References	15

Introduction

The NSW sheep flock and associated wool production has undergone significant changes over the last 25 years. This paper briefly examines available public information in relation to the productivity and profitability of wool and ‘competing’ broadacre enterprises in NSW (and other Australian states).

Accessibility of publicly available data which provides **direct** comparisons of enterprise profitability between sheep (lamb and wool), beef, cropping and mixed farming enterprises at a regional (high rainfall, sheep wheat and pastoral) is relatively limited (although very good benchmarking data is commercially available from some companies).

Situational Analysis

..... *broadacre farming of sheep, cattle and crops is a ‘tough’ business*

Over the last 20 years, profitability across all broadacre farms Australia wide has, on average, been more negative than positive (Figure 1), especially during the prolonged drought periods in the 2000’s.

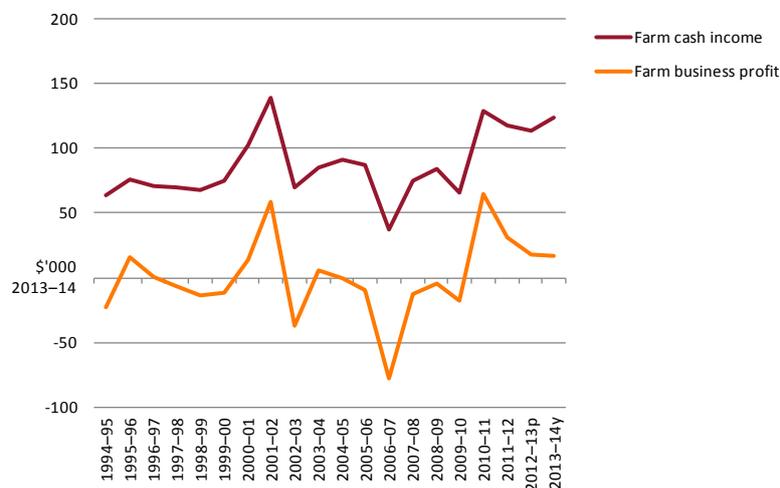


Figure 1 Financial performance, all broadacre industries¹

Rates of return on investment (ROI) for broadacre businesses (Figure 2) have been similarly low (excluding capital appreciation which had a big impact in the 2000’s as demand for agricultural land grew)². The rate of return for cropping properties has been higher than other enterprises.

¹ ABARES (2014d).

² There may be some doubt about the definitions related to ABARES financial performance data, given the persistent poor and even negative business profit figures. However, it is the only publically-available source of such data and provides average results. As shown later, profitability within a sector varies significantly.

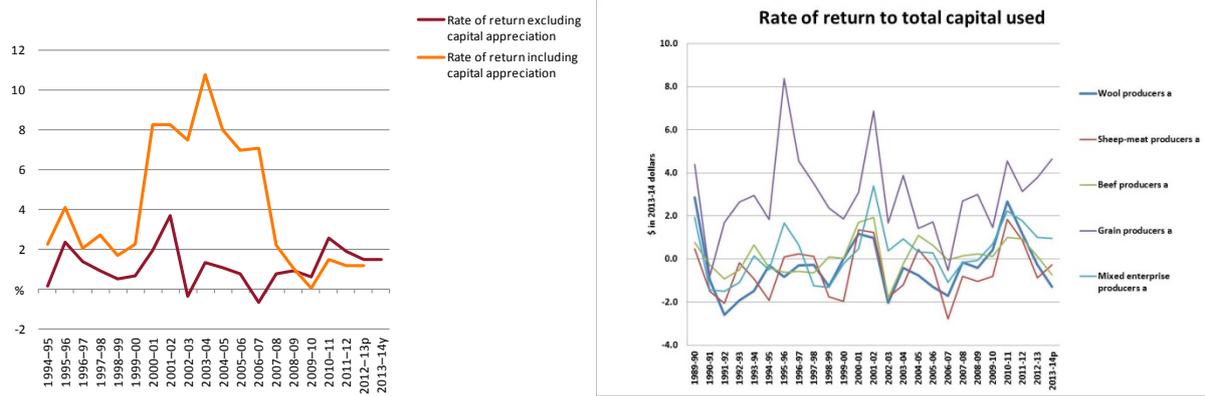


Figure 2 Rate of return, all broadacre industries^{3, 4}

... and it's no different in NSW

In 2013/14 in NSW, 35% of all farms had, on average, negative farm cash income⁵, 68% had negative farm business profit and the rate of return on all capital (excluding appreciation) was 0.5%. Very few non-farm businesses would accept that sort of financial performance.

Since 2000, broadacre farm profitability across NSW has been variable and predominately negative, especially during the period of the prolonged drought

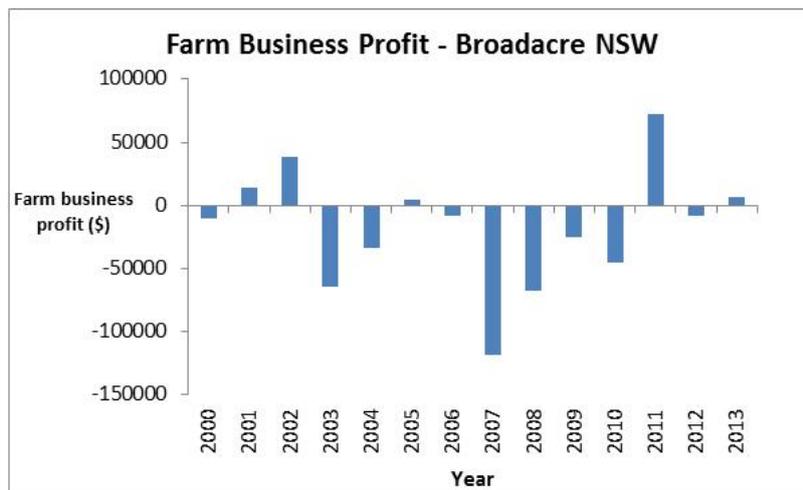


Figure 3 Farm business profit – all broadacre enterprises NSW⁶

The following (Table 1) are selected physical and financial estimates for broadacre industry farms across NSW⁷ in 2012-13, as produced by ABARES from their Australian agricultural and grazing industries survey (AAGIS)⁸. While only a snapshot of one year it provides further evidence of the low profitability and poor ROI of many broadacre enterprises. In 2012/13, all livestock enterprises performed poorly financially.

³ ABARES (2014d)

⁴ Martin, P. (2014)

⁵ Note: ABARES farm cash income is 'total cash receipts' – 'total cash costs'

⁶ ABARES (2014a)

⁷ ABARES (2014a)

⁸ AAGIS is estimated to cover 68% of Australian farm business units

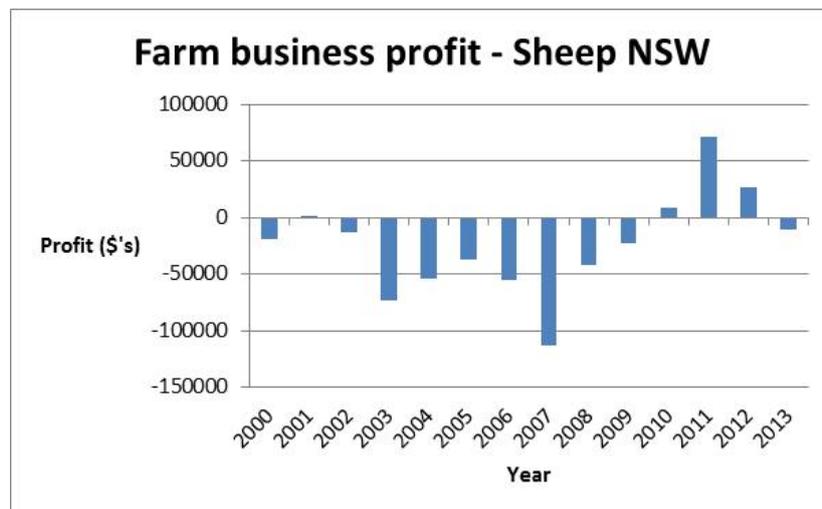
Table 1 Selected physical and financial estimates for broadacre industry farms across NSW, 2012/13

	Sheep only	Sheep-beef	Mixed farms	Beef	Cropping
No. of farms in survey	1,711	2,658	5,110	5,150	2,457
Average farm area (ha)	7,604	3,369	1,347	747	3,654
Average sheep numbers (head)	3,690	2,092	1,746	100	953
Wool produced (kg)	14,718	7,610	6,808	306	4,890
Average profit (\$)	-4,900	-8,640	-18,930	-29,620	159,670
Rate of return (%)	0.7	0.3	0.6	-0.6	4.1

..... or for sheep producers

The situation is similar for sheep enterprises with 23% having negative farm cash income, 62% negative farm business profit and the rate of return on all capital (excluding appreciation) of 0.2%.

Similar to the results shown in Figure 3, profitability across the NSW sheep industry has also been low for more than a decade (Figure 4), although returns have improved in the period 2010 to 2012 on the back of better seasonal conditions and improved commodity prices (wool and sheep-meat)


 Figure 4 Farm business profit – all sheep enterprises NSW⁹

..... wool tends to be only a small proportion of broadacre farm receipts

It is important to note that specialist sheep and wool producers account for only about 30 per cent of Australia's wool production with most wool and sheep meat production occurring on mixed enterprise farms, particularly on mixed livestock-crop industry farms¹⁰.

Furthermore, on average, even "specialist" wool producers only derive 51% of their farm receipts from wool, while a mixed farming sheep enterprise receives only 14% of farm receipts from wool¹¹. While this data is now quite dated, the changing nature of broadacre farming operations over the last decade has probably further reinforced this situation (i.e. wool receipts lower as a proportion of total farm receipts)

⁹ ABARES (2014a)

¹⁰ ABARES (2014d)

¹¹ ABARE (2000)



.... terms of trade for broadacre enterprises fall, and likely to continue

Data from a range of sources shows that the terms of trade for broadacre industries, including the wool industry, have and will continue to fall as prices paid for inputs exceed prices received for outputs, and productivity gains have been insufficient to compensate.

ABARES¹² analysis (Figure 5) shows productivity in the broadacre industries has grown at an average rate of 1 per cent a year between 1977–78 and 2010–11, though the rate for the sheep industry was zero (table 2) over the period.

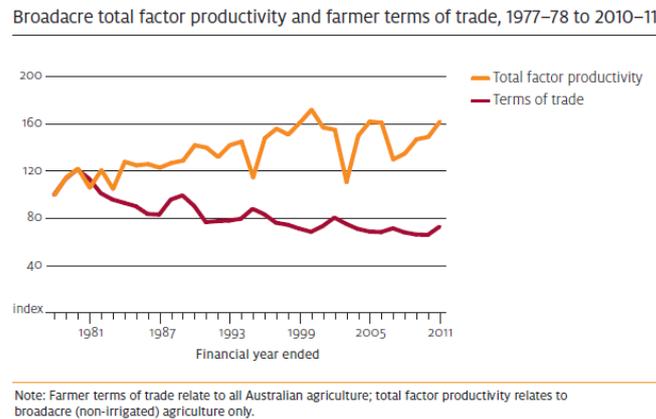


Figure 5 Broadacre TFP and Terms of Trade (1977/78 to 2010/11)

Table 2 Productivity growth – broadacre enterprises, 1977-78 to 2010-11 (ABARES 2013)

Broadacre industry	Total factor productivity growth (%/year)
All broadacre	1.0
Cropping	1.5
Mixed crop-livestock	0.9
Beef	0.9
Sheep	0.0

However, ABARES¹³ also notes that since the mid-1990’s there has been some productivity growth in the sheep industry (1.4% per year from 1999 to 2010), coinciding with a fundamental shift in industry focus away from wool and toward slaughter lamb production (table 3).

Table 3 Average annual sheep input, output and productivity growth by period (%) (ABARES, 2013)

	Productivity growth	Output growth	Input growth
1977-78 to 1987-88	-2.1	5.2	7.3
1988-89 to 1998-99	-2.9	-10.4	-7.5
1999-2000 to 2010-11	1.4	-4.5	-5.8

¹² ABARES (2013)

¹³ ABARES (2013)

Hutchings¹⁴ stated that farm costs have been increasing at approximately three times the rate of farm prices received (Figure 6 from Reserve Bank of Australia series G05). This has resulted in a 3% per annum decline in the farmers' real terms of trade, totalling 41% for the 26 year period from 1982 to 2008. Farm productivity would therefore have to grow by at least 3% per annum in real terms in order to maintain stable farm profitability.

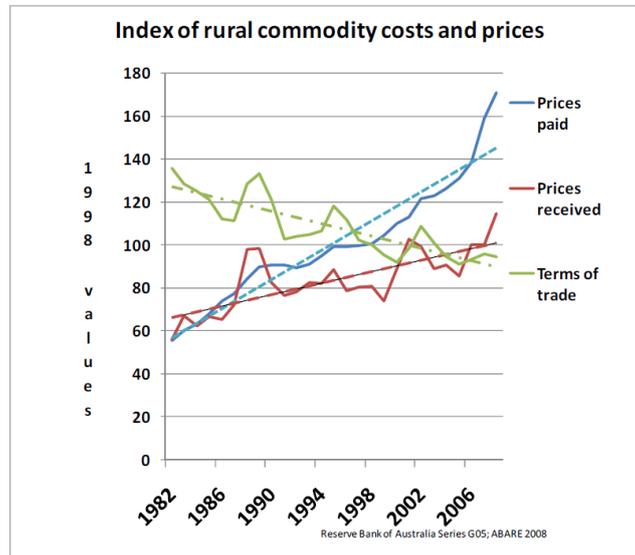


Figure 6 Prices paid vs prices received

A high level summary of all cash costs for sheep enterprises in NSW (average per farm) over the last 20 years, showing how costs have continued to increase, is shown in Figure 7.

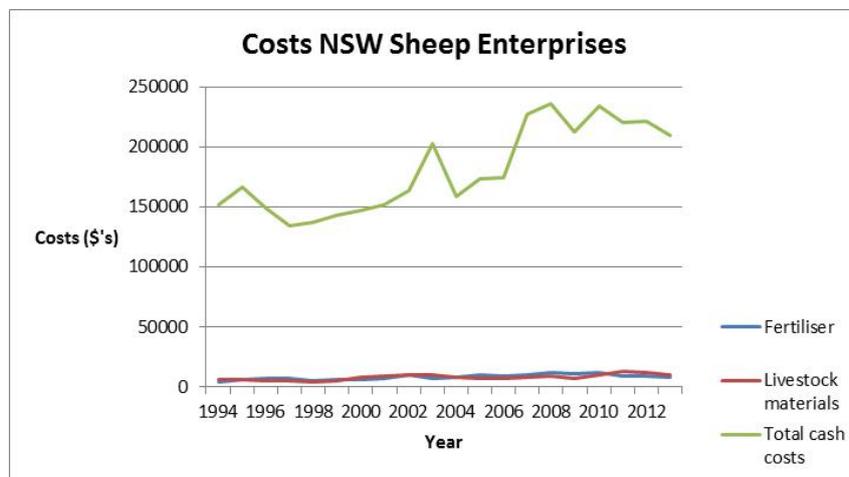


Figure 7 Major cash costs (ABARES)¹⁵

Looking ahead, the reducing terms of trade experienced by broadacre farmers (and all commodity producers) is expected to continue¹⁶.

¹⁴ Hutchings, T (2007)

¹⁵ ABARES (2014a)

¹⁶ Sacket, D. (2004)

..... *how does the profitability of wool compare with other broadacre industries*

While publicly available analyses that make direct comparison of enterprise profitability across broadacre sectors / enterprises is relatively limited, five sources of relevant information are referred to here and show the variable nature of profitability over time, within and between broadacre sectors.

One of the most comprehensive benchmarking studies of broadacre enterprises is presented by Holmes & Sackett¹⁷. The location of benchmarking participants for 2013 covered 6 states, with a predominance in NSW. Figure 8 presents a comparison of net profit (in units of \$/Ha/100mm of rainfall) across a range of enterprises for the 16 year period from 1998-2013.

The report noted that:

- Over the 16 year period, dual purpose enterprises¹⁸ have had the highest average enterprise profits followed by dryland cropping, and prime lamb then beef and wool
- The most recent year, 2013, cropping enterprises were easily the most profitable, followed by dual purpose, wool, then beef with prime lamb least profitable
- There is a large range in average enterprise profits within a sector between years, especially cropping.

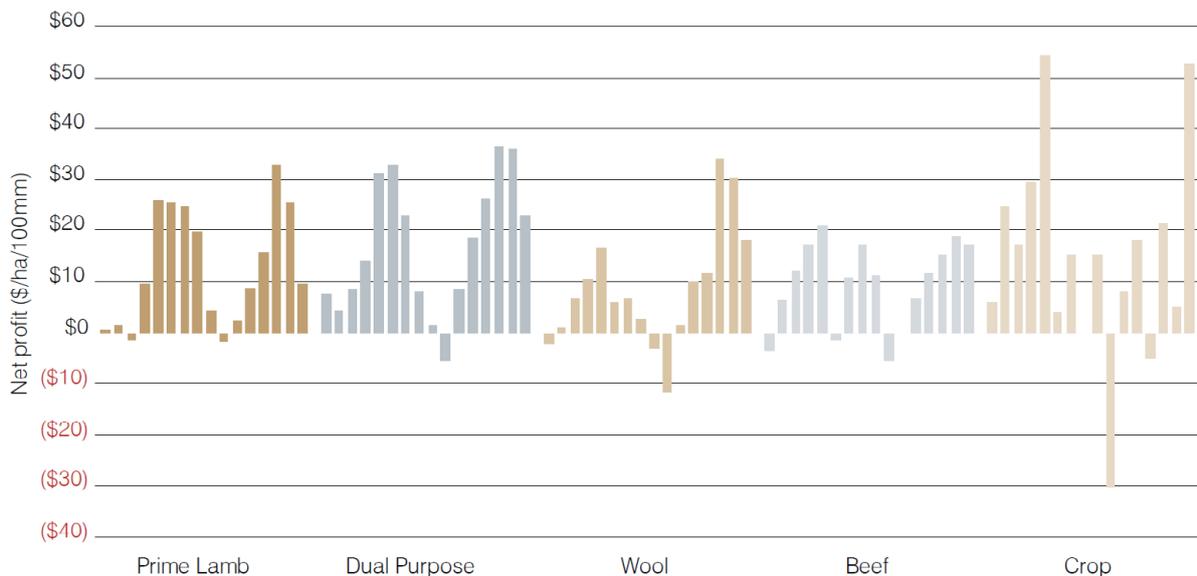


Figure 8 Gross Margin (\$/Ha/100mm annual average rainfall) by broadacre enterprise (1998 – 2013)

The AgInsights report also presented data on enterprise profitability across three rainfall zones (low <500mm long term average, medium 500 – 650 mm, and high >650mm). Averages across 5 years (2008-2013) showed:

- In the low-rainfall zone cropping was most profitable followed by dual purpose and wool
- In the medium-rainfall zone, dual purpose was most profitable followed by wool and cropping
- In the high rainfall zone, there was little difference between prime lamb, wool and dual purpose

¹⁷ Holmes & Sackett (2014)

¹⁸ AgInsights notes that a dual purpose enterprise consists mostly of merino ewes joined to terminal or maternal sires, often run alongside a self-replacing merino flock.

Finally, the report observes that ‘worry less about the choice of enterprise than how well the enterprise is managed’.

A further analysis¹⁹ modelled the profitability of sheep wool and meat enterprises at four locations across southern Australia (Mortlake, Rutherglen, Naracoorte and Cowra) and with varying commodity price scenarios (low and medium ewe price, high and low fine wool micron premiums, high and low meat prices). It found that:

- The dual purpose enterprise using Merino ewes was consistently the most profitable enterprise, followed by prime lambs, then the self-replacing Merino enterprises, with Merino wethers the least profitable enterprise. When a large price premium existed for super-fine wool (i.e. five year average price, 1999-2003), the super-fine Merino yearling enterprise was as profitable as the dual purpose enterprise.
- Running a dual purpose enterprise offers producers some resilience against changes in commodity prices, supporting the option that many producers with self-replacing Merino flocks have been taking, that is joining a portion of ewes to terminal sires.

Modelling undertaken by NSW DPI^{20 21} examined the relative profit (\$/Ha) for key sheep enterprises using relevant market prices for a well fertilised environment at Yass, NSW.

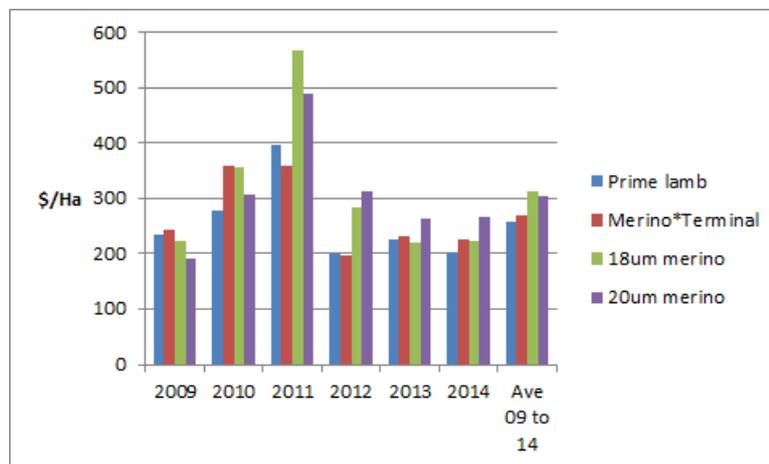


Figure 9 Profitability across sheep enterprises at Yass NSW (2009-2014)

The modelled results (Figure 9) show considerable variation between enterprises between years, most likely as a result of price relativities between sheep, wool and lamb/sheep meat. For wool enterprises, relative profitability was greatly influenced by micron premiums (in this example between 18 and 20 micron where micron premiums were much higher in 2010 to 2011 than 2013 and 2014). The outcomes of the modelling in terms of the performance of wool enterprises may surprise some.

The modelling was also undertaken across several NSW locations as shown below (Figure 10) for both 2013 and 2014. Because the profit figures /ha are different for each of the locations, the results were expressed as a percentage of the lowest enterprise’s profit for each location (Note: comparisons between locations are not valid). Key conclusions drawn were:

- Prime lamb enterprises may be marginally more profitable than straight wool enterprises, especially in 2014 when prime lamb prices were higher and wool prices were lower.

¹⁹ Warn, L., Webb-Ware, J., Salmon, L., Donnelly, J. and Alcock, D. (2006)

²⁰ Graham, P. (2014)

²¹ Graham, P. (2015)

- 20 micron wool enterprises were slightly more profitable than 18 micron, in part reflecting the lower premium for fine wools at the time.

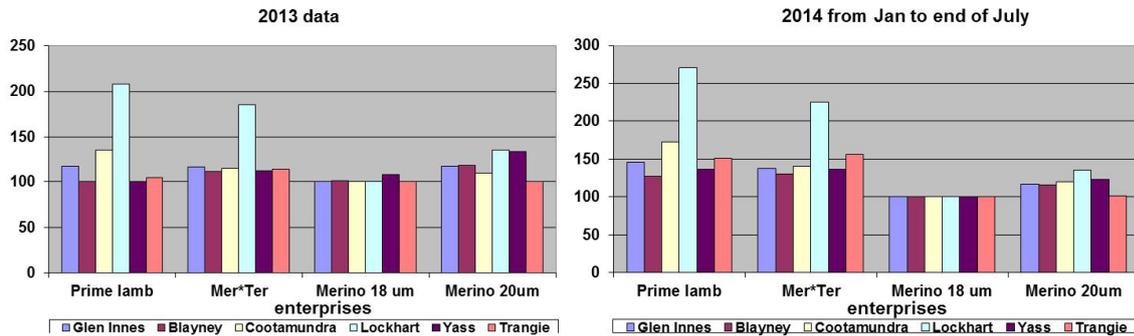


Figure 10 Profitability across sheep enterprises by location in NSW

In Victoria, the Department of Primary Industries Livestock Farm Monitor Project²² for the years 2008-09 and 2009-10 showed (Figure 11) that farm level profitability data was higher for prime lamb production than wool production across three regions in Victoria, reflecting high lamb prices.

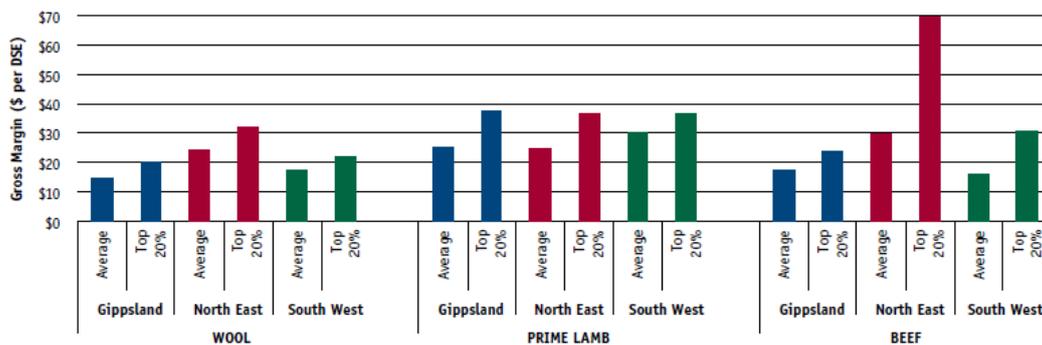


Figure 11: Gross Margin returns for wool, prime lamb and beef (\$/DSE)

Finally the NSW DPI website²³ provides a vast array of example gross margins for numerous livestock (1,000 sheep or 100 cows) and cropping (per Ha) options. Table 4 provides just a snapshot of some of these for 2012, but they largely support the general findings of other analyses, albeit for one year. It should be noted that wool prices were strong at the time.

²² <http://www.depi.vic.gov.au/agriculture-and-food/livestock/sheep/victorias-sheep-meat-and-wool-industry/victorias-sheep-meat-and-wool-industry-summer-2011>

²³ <http://www.dpi.nsw.gov.au/agriculture/farm-business/budgets/livestock#Beef-gross-margins---December-2012>



Table 4 Example gross margins for numerous livestock enterprises

Enterprise	Total Income (\$'s)	Total variable costs (\$'s)	Gross Margin (\$/Ha)
Sheep			
• 1st Cross Ewes -Terminal Rams	\$135,777	\$84,518	\$191.98
• 18 micron merino x merino	\$95,197	\$48,120	\$229.65
• 20 micron merino x terminal	\$137,178	\$82,687	\$220.61
• 20 micron merino wethers	\$52,471	\$32,832	\$178.53
Cattle			
• Yearling (Southern/Central NSW)	\$57,561	\$22,827	\$164.62
• Young cattle (0-2 teeth) Heavy feeder steers	\$54,642	\$11,924	\$100.75
• Japanese Ox - grassfed steers (0-6 teeth)	\$74,406	\$20,426	\$109.72
Cropping			
• Canola (Central West). All per Ha	\$736.00	\$470.61	\$265.39
• Wheat: Short Fallow (No-till) Central Zone – West (after Canola)	\$495.00	\$295.60	\$199.40
• Durum Wheat: Long Fallow. Central Zone - West	\$627.00	\$358.90	\$268.10

.... how does sheep production interact with cropping

Since the 1990's, large amounts of land that had run livestock, especially sheep, was converted into crop production. However, will that trend continue? A recent analysis by Woods²⁴ suggests (Figure 12) that this linkage may have decoupled - 'while crop areas increased at the expense of sheep numbers in the main sheep states for the twenty years from the mid-1980s onwards, since 2007 the link between sheep numbers and crop area looks to have changed, supporting a view that the Australian flock may have reached base level'. Woods also suggested that 'the "base level" view fits with farm financial benchmarking results of recent years, which show sheep to be profitable relative to other enterprises'.

²⁴ Woods, A (2014)

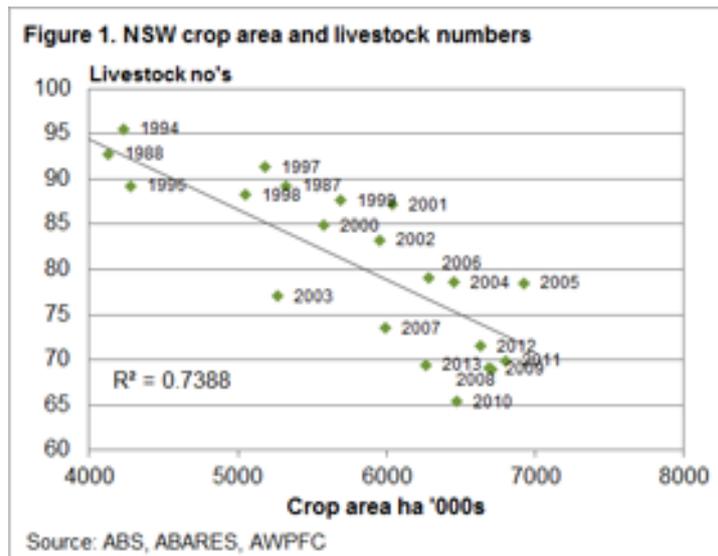


Figure 12 NSW crop area and livestock numbers

A further study by Hutchings²⁵ (2009) suggested that the role of sheep in the mixed farming enterprise in south-eastern Australia is to reduce the exposure of the business to the relatively high risk of financial losses with dryland cropping. The analysis found that in all districts sheep have a cost of production about half that of cropping (as well as a large investment in machinery), and crop yields are more sensitive to rainfall variability. Hutchings considered that 'sheep therefore reduce the risk of loss when compared with continuous cropping. In broad terms cropping needs a wheat price above \$220/tonne, and a drought frequency of less than one in three years to break even'. While 'on average' cropping may generate higher cash flows than sheep, 'if either of these criteria fall below these levels then sheep rapidly become critical to the survival of the farm business'. As a result Hutchings concluded that there may be a greater role for sheep in the relatively higher risk, low rainfall, mixed farming areas of eastern Australia than is currently the case.

Nevertheless, farm business profit (Figure 13) for sheep enterprises over the last 20 years has been elusive, especially when compared to cropping²⁶. But as indicated above, is 'the wheel' turning slightly?

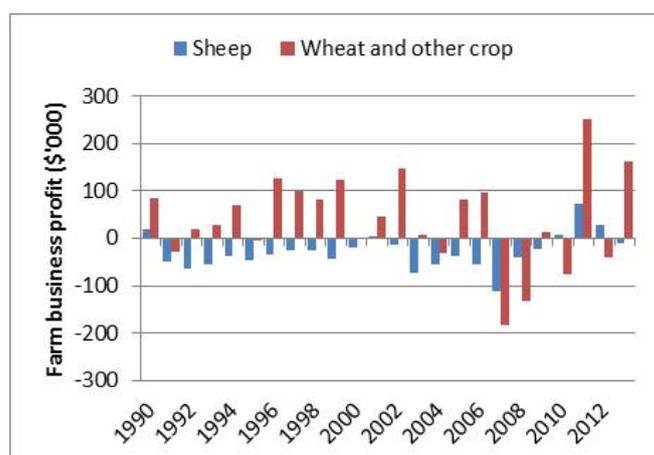


Figure 13 Farm business profit – sheep versus cropping NSW

²⁵ Hutchings, T. (2009)

²⁶ ABARES (2014b)

.... so what might the price of wool do?

ABARES²⁷ predicts that wool prices will rise in nominal terms by around 16% between 2013/14 and 2018/19. In real terms, however, ABARES projects that wool prices will increase by just 3% over this period. As Figure 14 shows, this nominal increase will be outstripped by increases in the price for lamb and mutton, but is on par with the projected increases in prices for beef. It is better than the ABARES projection of the trends for wheat prices.

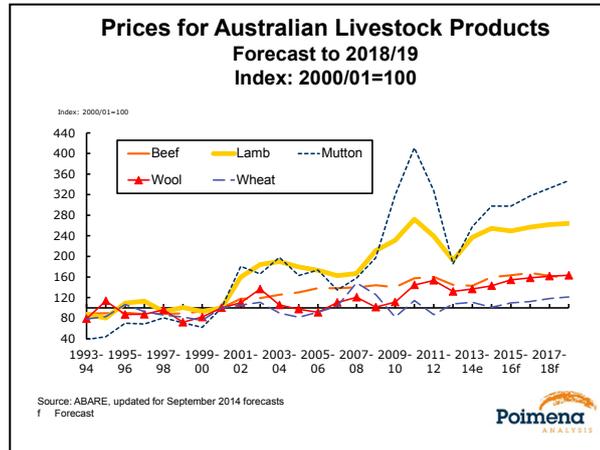


Figure 14 Prices for Australian Livestock Products

As noted earlier, over ten years ago Holmes, Sackett & Associates²⁸ argued that all commodity producers, including woolgrowers, would continue to suffer from declining terms of trade and that only productivity gains (increased efficiency) and product quality improvements could offset these declines.

At the time, Independent Commodity Services predicted wool price changes out to 2029 (Figure 15).

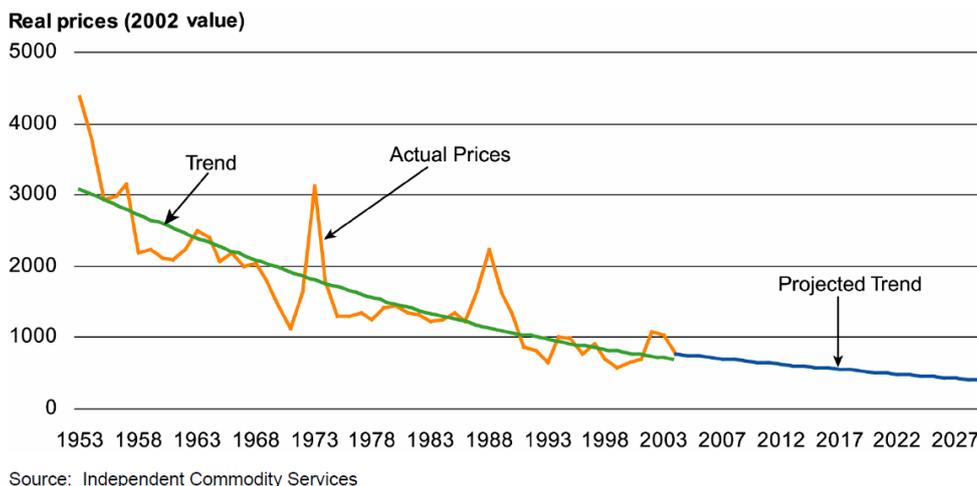


Figure 15 Real prices and trend for 21 micron wool

²⁷ ABARES (2014c)

²⁸ Sacket, D. (2004)



Based on this prediction, it was concluded that producers would need to reduce the cost of production by 1.4% to 2.1% to match declining prices. To do this, two options were proposed by Holmes Sackett & Associates:

1. Reduce the cost of production; and / or
2. Increase the value of the product

Holmes, Sackett & Associates proposed that for wool growing to remain profitable in 2029, producers would need to:

- Implement genetic improvement programs (which at the time suggested to focus on fibre diameter reduction to improve product value rather than increased fleece weight).
- Make productivity gains on a broad range of fronts (genetics, pasture, labour productivity)
- Seek major structural change primarily related to labour (increase efficiency) and enterprise size (larger)
- Gains that improve per head (genetic) and/or per hectare productivity should be the priority and don't fall into the cost cutting trap, as that is likely to yield little or no gain unless it focuses on improved labour productivity.

To put the impact of productivity growth into perspective, a recent analysis by Sackett (2014)²⁹ suggested that had productivity growth for the wool industry kept pace with that of cropping over the last 25 years, the current financial performance of a wool enterprise would be the equivalent of having an Eastern Market Indicator of 1804 cents (compared to 1140 cents at the time).

Investing to increase productivity and profitability

If an enterprise or industry is un-profitable, this can tend to develop into a deepening spiral, that is lack of profits reduces investment into key profit drivers (e.g. new technology, fertilisers etc) which further reduces profits which further reduces investment and so on. Many unprofitable enterprises tend to 'live off their equity' for as long as possible. At an industry level unprofitability is less likely to attract external investment

Securing greater investment into the industry will be an important future driver. Much has been written about foreign investment in agriculture. It is not the role of this review to make a judgement about the value of foreign investment or otherwise, but it does note the commentary by the Australian Farm Institute³⁰ when it states that 'Foreign investment has had a very important role in funding the development of many industries in Australia, including in the agriculture sector. Australian governments need to be extremely careful not to take actions that discourage foreign investment'.

Implications for the wool industry

Current trends are:

- Broadacre farmers' terms of trade, including those of woolgrowers, have declined as input costs outstrip prices received
- Average productivity increases for the sheep and wool industry have been poor in the past, although some turn-around may be evident more recently. It is important to note however that over the last two decades wool production has gone finer in an effort to improve product quality (and thus price) rather than quantity.

²⁹ Sackett, D (2014)

³⁰ Keogh, M. and Tomlinson, A (2015)



- The real price of wool is likely to decrease over the longer term but ABARES prediction is for a 3% real increase out to 2018/19, which is positive for wool,
- Direct comparisons of enterprise profitability between sheep (lamb and wool), beef, cropping and mixed farming enterprises at a regional (high rainfall, sheep wheat and pastoral) level are not widely available or accessed.
- But from available analyses it would appear that:
 - The relative profitability of different enterprises (e.g. wool versus cereals) varies on a season by season basis, most likely dependant on relative commodity prices and seasonal conditions
 - While wool enterprise profitability has been relatively poor over 20 years, there is significant variation between producers:
 - Many producers are performing well
 - Sheep enterprise profitability has improved in the last few years on the back of improved seasonal conditions, a change to higher valued products and overall better commodity prices for wool and meat, but
 - Anecdotally, profitability has been very low for superfine wools where micron price premiums have reduced dramatically in recent times.
 - Sheep producers have increasingly shifted their focus from wool to meat production – not abandoning wool but moving from a sole wool focus, to mixed farming enterprises, with wool being one of their diversified product lines.
 - The majority of wool is produced on farms which also produce other products (sheep-meat certainly but also beef and crops) providing somewhat of a 'buffer' against commodity prices.
- While on average returns from cropping have been higher, sheep and especially wool production are more resilient to poor seasonal conditions than cropping or beef production, and may provide an important risk management strategy in the future.

The implications for wool producers, industry and Government remain consistent with those referred to in past years and include:

- There is a need for more, and greater use of, publicly available information to enable producers to make relevant comparisons of broadacre enterprise profitability so as to enhance future decision making.
- As the terms of trade for wool producers and other broadacre enterprises will continue to decline, it will be crucial that producers seek to rapidly and permanently increase productivity. This can be done at all levels – pasture, animals (meat and wool quality and quantity) and labour efficiency.
- It appears that there are opportunities for significant increases in animal productivity within the sheep and wool industry.
- If wool industry productivity and profitability does not improve, increases in production are unlikely and there could be further falls with a shift from wool production to either lamb production or out of sheep.
- A possible outcome in relation to production by region may be:
 - Wool production increases in pastoral areas may be unlikely because of management and predation pressures.
 - A greater focus on wool sheep in mixed farming areas (especially more marginal areas) is likely as a climate variability risk mitigation strategy.
 - Increases in high-rainfall areas will largely depend on the relative price / profitability of lamb versus wool (but with merino ewes playing a continuingly important role)



- The existing situation of wool being produced on mixed enterprises is likely to remain an important strategy in the future.
- Increased investment in the wool industry would be beneficial
- There are large amounts of NSW and Australian broadacre farm-land more generally that is well suited to wool production.

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