agri benchmark

Beef and Sheep Network

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Benchmarking Australian and US Feedlots

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Benchmarking Australian and US Feedlots

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The authors

Table of contents

1 Introduction

1.1 Background

It has been observed that 150-day grain-fed beef prices in Australia are similar to those in the US, suggesting that the higher prices being paid in the US for feeder cattle probably reflect a significantly lower cost of production in US feedlots. This could be due to economies of scale (as US feedlots are generally much larger), a longer history of grain fed production, lower labour costs (availability of Mexican labour) or access to cheaper and better feed (corn). Another reason could be a lower cost and higher efficiency beyond farm gate, i.e., in transport, slaughter and distribution. These issues could potentially be further addressed in an extension project, based on the findings reported here.

1.2 Objectives

The objectives of the study are to answer the following questions:

1. Do Australian feedlots receive similar prices to US counterparts for equivalent grainfed cattle?
2. Do Australian feedlots pay less for equivalent feeder cattle than their US counterparts?
3. If so, can cost disadvantages or lower efficiency in Australian feedlots explain the lower price paid for feeder cattle in Australia?
4. What other factors could explain the observed feeder cattle and fed cattle price differentials?

1.3 Working steps

In Chapter 2, some more evidence is gathered for the price gaps between Australia and the US Prices. Chapter 3 explains the methods and data used. Chapter 4 compares the productivity indicators and production systems used by the feedlots chosen for the project. Chapter 5 provides an in-depth analysis of the cost, returns and profitability of the feedlots on the basis of a kg live weight sold. This is added by a breakeven and sensitivity analysis in Chapter 6 to reflect price volatility and changes in input-output price relations. Chapter 7 has a summary of the findings.

1.4 Limitations of the study

There are certain limitations to the study which need to be taken into account when interpreting the results.

1. Data availability

In some cases, the extent of data collected was limited and obtained under strict confidentiality agreements with the feedlots. This refers to the following items:

a. **Capital assets** (machines, buildings, equipment)
   It was not possible to obtain detailed inventories of these items. Instead, groups of items were formed such as
   i. all moving machines (with wheels),
   ii. processing, handling, loading facilities,
   iii. water, roads, office,
   iv. pens, lots, bunks, hospitals, feed handling, storage.
   The implications were however, negligible, because the main aim of producing

these lists was to calculate depreciation and this is still possible with the aggregate data obtained.

b. **Feed rations and feed prices**
With feedstuff and feed costs being a major business factor in feedlots, it was difficult to obtain information on single feed components and prices. The feedlots provided the average ration typically fed as opposed to the actual ration for every individual group. An average per-ton price of the entire ration was calculated. This enabled the analysis to correctly reflect total purchase feed costs but did not breakdown feed costs into single components.

c. **Animal categories and finishing groups**
The sizes of the feedlots analysed do not allow a differentiation into pens and every single animal category produced by the feedlot. For the purpose of this study it is not necessary, either. As a consequence and in agreement with the feedlot managers, the animals were grouped using the most relevant and appropriate differentiation criteria to reflect economic differences between the groups (see Chapter 3).

2. Sample size

Two feedlots from Australia and one feedlot from the US were analysed. For the US feedlot, data were used from two feedlots, but because they were similar in size, type of cattle fed, and management, the data were aggregated to reflect a representative feedlot. That is, there would be little benefit to analysing two feedlots separately given the similarities. To obtain a broader picture, it would be worthwhile to include more operations in the analysis. On the other hand, by doing so we would not expect dramatically different results or conclusions from the cross-country comparisons.

3. One point in time

The results reflect the calendar year 2009. With variability of beef, livestock and input prices increasing, results should be interpreted within the 2009 price context.

4. Product types and markets

The feedlots analysed produce different types of animals for different markets. This was addressed by differentiating the calculations and results into several subgroups to increase comparability.

2 Method and data

Data sets for one representative US feedlot (based on two actual feedlots) and two Australian feedlots were set up in cooperation with the industry and based on facilitation of contacts by MLA and Kansas State University. The year of analysis is the calendar year 2009. Results are annual results and may reflect more than one cycle.

A complete set of **physical** and **economic/financial data** was recorded and analysed with the tools available from agri benchmark (TIPI-CAL model). For data collection, the agri benchmark standard questionnaire was used and explained and discussed with the feedlots. The method is explained in a recent paper (Deblitz 2010).

The feedlot data were provided by commercial feedlot companies under strict **confidentiality** agreements. These required restricting information in this report about the name of the companies, the location of the feedlots and the exact size of the operations.

The model environment of TIPI-CAL can handle up to 5 '**groups**' of animals which can have different specifications and can be analysed separately or in any combination desired. Differentiation of groups is subject to the user's preference and research question. Groups are differentiated when their characteristics lead to different economic results which are basically determined by the following characteristics:

1. **Physical performance**: sex [bulls, steers, heifers], breeds, feed rations, ages, weights, finishing periods, daily weight gains, mortality, carcass yield
2. **Prices**: livestock prices, beef prices [markets], feed prices, seasonality

It is important that one group can run more than one cycle per year, like in the feedlots analysed here.

The **farm names** indicate the total number of animals sold per year. For example, the AU-15K sells approximately 15,000 (15**K**ilo) animals per year. Numbers in farm names are rounded. Details on the number of animals sold and the one-time capacity of the feedlots are provided in Chapter 4.

Initially, a 150 day feeding regime was to be analysed to maintain full comparability between the feedlots. However, when gathering the data from the feedlots, the real-world situation did not always reflect 150-day cycles in all feedlots. It was therefore decided to analyse the data in three subgroups:

Subgroup 1: **All finishing groups** (different ages, weights and sex)

Subgroup 2: **Steers** only (different ages and weights)

Subgroup 3: Cycles of around **150 days** only (beef steers with different weights)

Live weight or carcass weight?

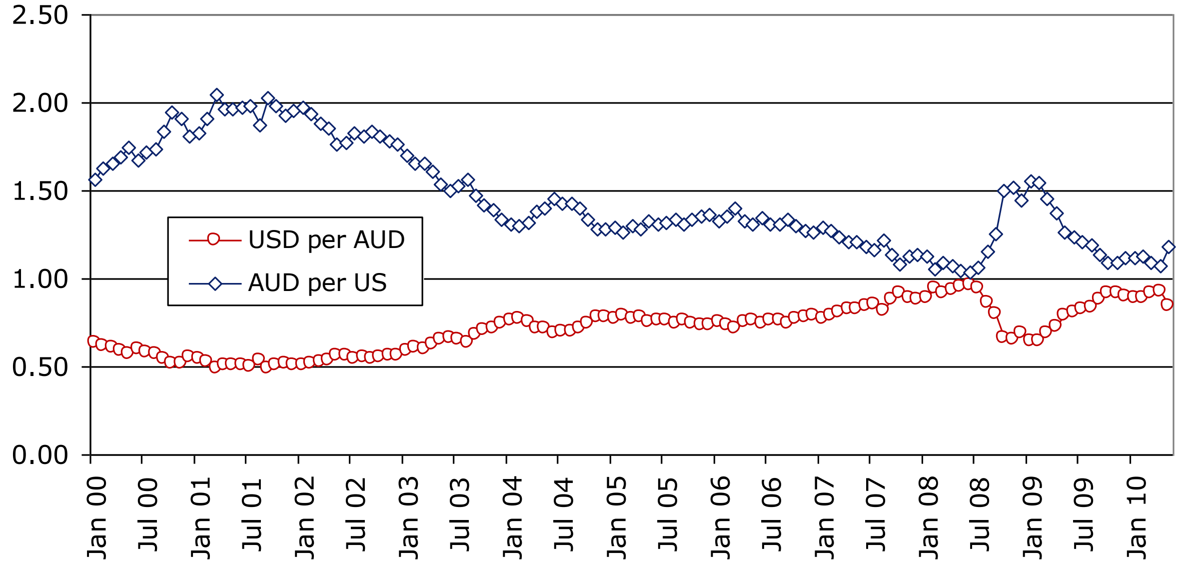
Once data are collected, they must be made comparable by using a common denominator. For the comparison between the US and Australia, the best denominator would be the carcass weight (CW) of the animals sold. This is because the CW refers to the product which is traded between the countries and which competes in the US and international markets, mainly in Asia.

However, due to different approaches in calculating dressing percentages and hence carcass weights between the US and Australia (see details in Chapter 4), it was decided to present the results on a per kg live weight basis. With one exception, the direction of differences between US and AU feedlots (for example AU figures are higher than US-figures or vice versa) are identical irrespective of whether live weight or carcass weight is used as a basis but they are on different levels due to the differences in dressing percentages. The exception is feed costs in one case and is further explained in Chapter 5.1.

Exchange rates

USD-figures were converted into AUD using an exchange rate for the calendar year 2009 of 1.28123 AUD per USD. Figure 1 shows a monthly time series of the USD-AUD exchange rate from January 2000 through May 2010. On average, the AUD appreciated significantly against the USD over this period until the end of 2008 when it depreciated significantly to rebound almost to the pre-crisis level. As all figures in this report are expressed in AUD-terms, it should be taken into account that the changes in exchange rates can over- or under compensate national price changes. This is particularly true for the time series data in Chapters 4 and 5. A constant price in USD would appear rising in AUD-terms with an appreciation of the AUD against the USD. This means that at least part of the price developments observed between Australia and the US may derive from changes in the exchange rates.

Fig 1. *Exchange rate USD vs. AUD 2000-2010 (monthly rates)*



Source: Australian Reserve Bank

3 Prices and weights in Australian and US feedlots

Price series were collected for US and Australian feedlots to examine price trends over time and to confirm the initial hypothesis of US feeder cattle prices being higher than in Australia. In addition to feeder cattle prices, prices for finished cattle also were analysed.

Method

Prices for feedlot entry cattle were collected in a similar fashion in Australia and the US. Prices paid for cattle at slaughter are reported on a dollar per kg carcass weight basis in Australia and on a live weight basis in the US. It was decided to convert Australian figures to a live weight basis so that the relative prices between feedlot entry and feedlot exit could be compared. Further, due to different approaches to calculate dressing percentages, converting the Australian carcass weight figures to live weight figures was easier and more consistent instead of converting US live weight figures in to carcass weight figures. More details on the dressing percentage issue are provided in Chapter 4.

Monthly prices were obtained for each market and the US prices were adjusted to AUD by using the appropriate exchange rate sourced from the Australian reserve bank. Australian carcass weight prices were adjusted to live weight using an assumed dressing percentage of 56 percent. Prices paid for finished cattle in both countries are FOB packer prices paid on feedlot exit, thus the comparison generated is relatively accurate. There can be a variation in yields and this can impact the conversion from carcass weight back to live weight but the yields reported for all classes of feedlot cattle in Australia were consistently between 55 and 57 percent.

Findings

The kg live weight prices for comparable weight groups are presented in Figures 2 and 3. The time series on beef (finished cattle) is provided in Figure 4. The scales in all figures were harmonised to allow comparability. Australian beef price data were only available from 2004 onwards. Figure 5 displays the ratio of US-to-Australia prices for the different price series. Key features of Figures 2 to 5 are:

1. While Australian and US 150-day grainfed cattle sale prices were closer in 2009, on average, the US prices are considerably higher than those received by Australian feedlots.
    - On average US grainfed cattle prices of roughly equivalent weight to those in Australia sold for a 24% higher price between February 2004 and February 2009.
    - These higher grainfed cattle prices could reflect more efficient upstream processing, distribution, transport and retailing in the US, enabling processors to pay more for finished animals.
    - Alternatively it could reflect higher cost of production in the US in cow/calf or back grounding stages.
    - This differential was much lower in early 2008 and again through much of 2009. This could have reflected the weak beef demand conditions in the US over the period, and consequent losses suffered by US feedlots (while Australian feedlots made a profit in 2009).
2. There is a much closer price differential in the finished prices compared to the feeder prices. The live weight (LW) prices received for finished cattle in the US averaged AUD 0.47 per kg LW or 24 percent more than the Australian prices from February 2004 to February 2010. In contrast, the average prices paid by US lot feed for steers from 318 to 408 kg was AUD 1.22 per kg LW or 70 percent more than Australian lot feeders paid for their steers of similar weight. For the lighter steers the difference paid was AUD 1.38 per kg LW or 77 percent higher for the US feeders compared to the Australian feeders
3. US prices for feeder cattle are higher on a per kg basis for lighter animals relative to their heavier counterparts whereas prices paid in Australia are similar for the different weight feeder cattle. The US prices paid for light feeder steers from 272 to 318 kg averaged AUD 3.15 per kg LW from January 2002 to February 2010 whereas steers of 318 to 363 kg averaged AUD 3.02 and steers from 363 to 408 kg averaged AUD 2.93. Australian steers sold over the same period in contrast averaged AUD 1.77 for steers less than 330 kg and AUD 1.75 for steers from 330 to 400 kg. This price slide (i.e., higher price for lighter cattle) is due to the fact that the cost of gain is typically less than the cost of cattle on a per pound basis. The fact that Australia apparently doesn’t see this relationship would suggest the cost of gain in Australia feedlots is similar to the price of calves. That is, feedlots might be indifferent between buying weight or putting it on because it all costs the same.
4. There seems to be more variation in both the US feeder cattle and beef prices compared with Australia.
5. US finished cattle prices are a little higher than prices received in the AU. Reasons for this could be many. There is likely to be some processing efficiencies in the US and their distribution costs to market is likely to be less. It does mean that if all other costs of production were constant, the US feedlotters could pay more for their feeder cattle.
6. As Figure 5 shows, differences between the US and Australian prices have not narrowed much over time. It does appear that there is a seasonal different potentially, i.e., US prices are relatively stronger at certain times of the year than others.

Fig 2. *Monthly feeder cattle prices in Australia and US 2002-2010 (AUD per kg LW)*
US average 318-363 & 364-408 kg; Australia 330-400 kg

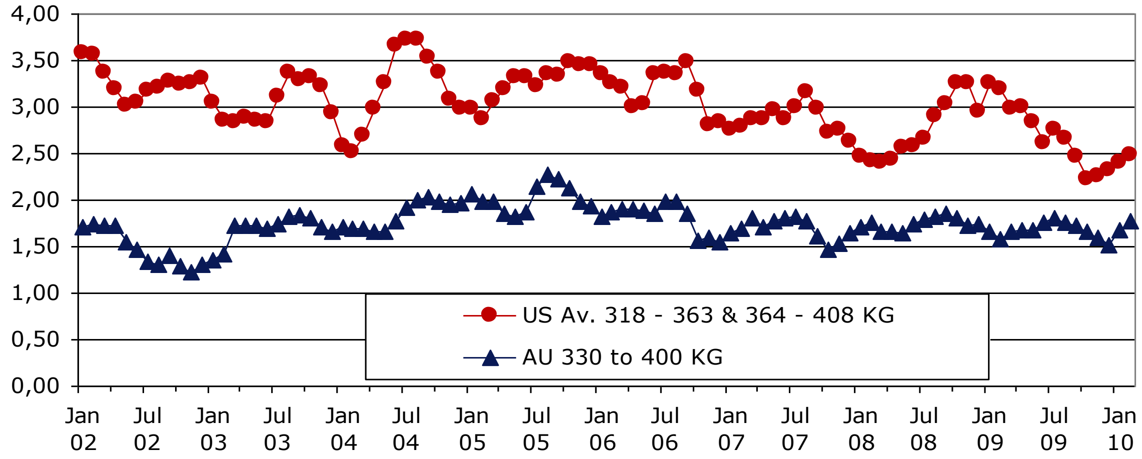


Fig 3. *Monthly feeder cattle prices in Australia and US 2002-2010 (AUD per kg LW)*
US average 272-318 kg; Australia less than 330 kg

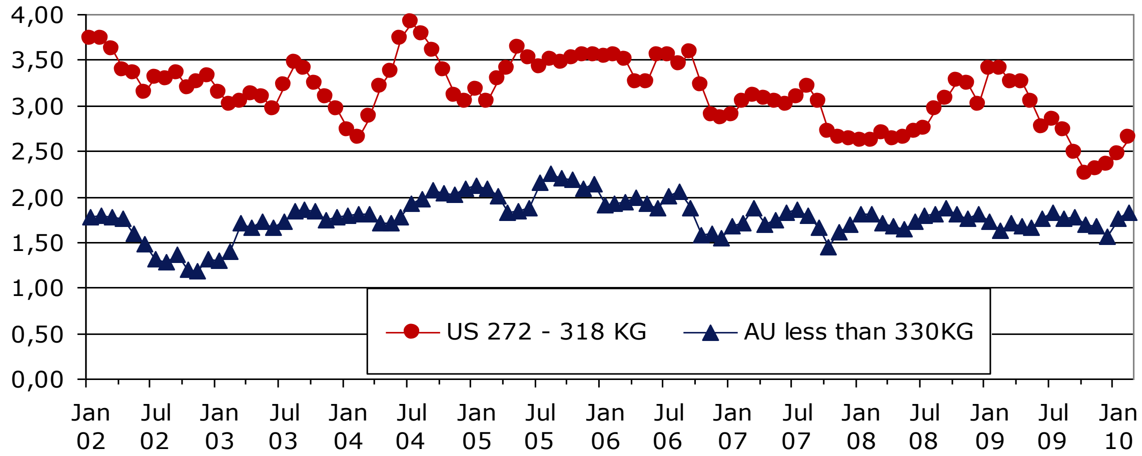
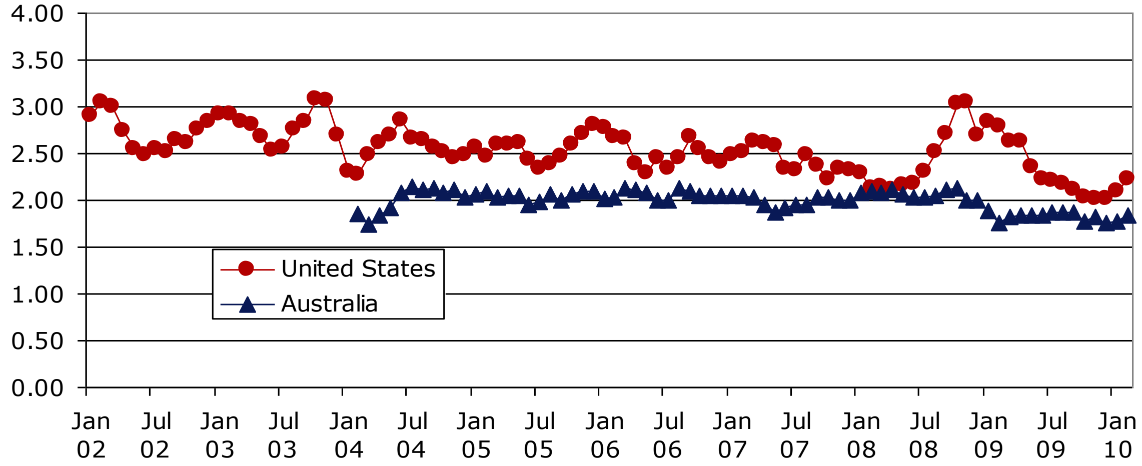
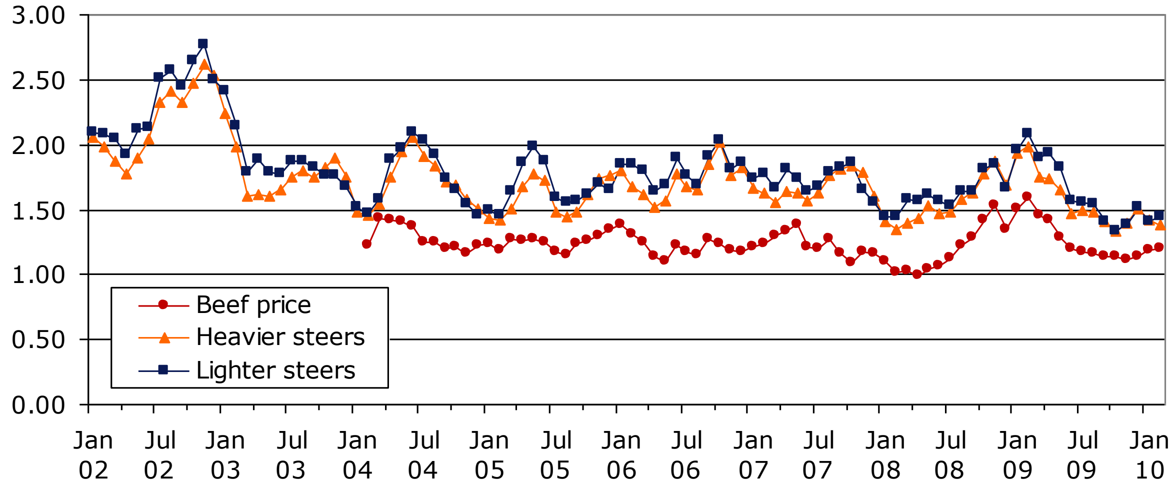


Fig 4. *Monthly finished cattle beef prices in Australia and US 2004-2010 (AUD per 100 kg LW)*



Source for all charts: MLA's NLRS, USDA

Fig 5. *Price relations between US and AU prices 2002-2010 (AUD terms) (US-prices divided by AU-prices)*



Source: MLA's NLRS, USDA

4 Physical indicators

While the study originally aimed at a finishing period of 150 days in both the US and Australia, Table 1 shows that there is quite a variation in feeding periods between and within the feedlots.

It should be noted that behind the average feeding periods there is quite a large variation. For example, the 142 to 170 days reported for the US are group averages. Of the 550 lots of steers considered (total of two yards) the average was 142 days, but the individual lots ranged from 98 to 210 days.

Tab 1. *Finishing periods and animal numbers*

	AU-15K	AU-45K	US-75K
From (number of days) *	70	117	142
To (number of days) *	350	117	170
Average number of cycles per year **	1.32	2.96	2.40
Number of animals sold per year	14,500	44,700	75,000
Approx. one-time capacity (number)	8,200	15,100	31,250

* These days are averages across multiple pens (for example 550 pens in the US-75K). There are fewer and more days for some of the individual pens.
** Estimated based on finishing period and pen cleaning times.

As the feeding periods impact the number of animals per year, the table also shows the estimated average number of cycles per year as calculated in the model.

There is further variation in a number of performance data. There were four groups coming close to the 150-day period, on average, aimed for: Group 1, 2 and 3 in the US feedlot and Group 2 in the Australian AU-15K feedlot.

Animal numbers

The **finishing periods** vary between 70 days for the domestic steers in AU-15K (Group 1) to 350 days for the Wagyu-Holstein crosses to Japan (Group 4+5) in AU-15K. Group 2 in AU-15K is a 150 day period principally targeting the export market. Groups 1-3 in the US feedlot come close to 150 days on average. However, only Group 2 was selected for the comparison of the 150 day cycle with AU-15K because both groups are beef steers whereas the other groups in the US feedlot are heifers or mixed steer/heifer lots. Group 4 in the US-75K is Holstein steers that are fed for an average of 170 days.

Death losses are generally low from a minimum below 0.5 percent in AU-15K to a maximum of approximately 2 percent in Group 4 of US-75K. The rest of the losses oscillate around one percent.

Breeds and categories

Prevailing **breeds** in all feedlots are Angus and other British breed (crosses). The two exceptions are Wagyu-Holstein crosses in Group 4+5 in AU-15K and Holstein steers in Group 4 in US-75K. Animal **categories** are predominantly steers with heifers only in Group 1 and mixed steers and heifers in Group 3 of the US feedlot.

Ages and periods

The **ages at start** indicate that all animals have undergone a backgrounding process before arriving at the feedlots. The youngest ages are just less than one year in the US feedlot as are the Wagyu cross animals in AU-15K. Animals in AU-45K are approximately 15 months old.

The **ages at end** also vary significantly. Again, the youngest animals are between 15 and 17 months old and originate from the domestic steer production in AU-15K as well as from the US feedlot. Animals from AU-45K are older and finished at 19 months of age.

Weights

Weights are determined by the category, breed and feeding of the animals before they enter the feedlot but basically vary with the age of the animals. Thus, US-weights tend to be lower than weights in the AU feedlots. Entry-weights in the 150-day group are 460 kg in AU-15K and 364 kg in US-75.

Exit-weights of animals going from Australia to Japan are relatively high and homogeneous around 640 kg live weight in AU-45K. They are even heavier in the AU-15K (700 kg LW +) Cattle for the domestic market are significantly lighter than those produced for the export market. The US-cattle weigh between 540 and 610 kg on average.

Conclusion: In the 150-days fed groups, Australian cattle are older and heavier than in the US. This can be a significant contributor to different feeder prices as younger, lighter cattle tend to have a higher per kg price.

Special case dressing percentage

An eye-catching difference between the US feedlot and its Australian colleagues is the dressing percentage (DP). DP in the US feedlot ranges between 63 and 64 percent while the DPs in the Australian feedlots varies between 56 and 58 percent. While this is a complex issue, the following are contributing factors:

1. US carcass weights include kidney, pelvic and heart fat (KPH), typically between 1.5 to 2.5 (and up to 3.5) percent of carcass weight (Alberta Department of Agriculture and Rural Development, 2010). Australian carcass weights exclude KPH and thus will be lighter.
2. Dressing percentage is calculated based on hot carcass weight in both countries. In the US, cattle are weighed on feedlot (saleyard) and a pencil shrink of 4 percent is applied. In other words, the live weight used as a basis for calculating the dressing percentage is 4 percent lower than at the moment the cattle are weighed. As carcass weights do not tend to change within 2-4 days without water and feed, this procedure lifts the dressing percentage accordingly. In Australia, the recording of live weight is recommended after a 12 hour curfew. This is 15 to 18 hours from muster to weighing (DPI, 2007). US dressing percentages might be more variable if there is not the same curfew applied in order to get a consistent live weight. However, at the moment of writing it was not clear how big the impact of these potentially different treatments really is.
3. The US feedlots used in this analysis would typically use Beta2 agonists like Zilmax and Optaflexx, but not necessarily on all cattle. Among other effects, their administration to the cattle in the last 20-40 days of finishing results in a dressing percentage that is 0.5-1.0 percent higher.
4. Calves that have been backgrounded with grain prior to the feedlot (such as would be common for the US feedlot) would yield 0.1 to 0.2 percent higher than those backgrounded without grain (like in the AU feedlots).

The total of these differences may account to a maximum of 7.7 percent difference in carcass yield which is close to the difference of approximately six percent observed in the feedlots analysed here. It is also assumed that the different procedures and approaches are priced into the carcass yield beef price. It is therefore not necessary to make modifications to the beef price for the comparative analysis.

Daily weight gain

Daily weight gain (DWG) is one of the most important performance indicators and therefore is shown separately in Figure 5. It is calculated as

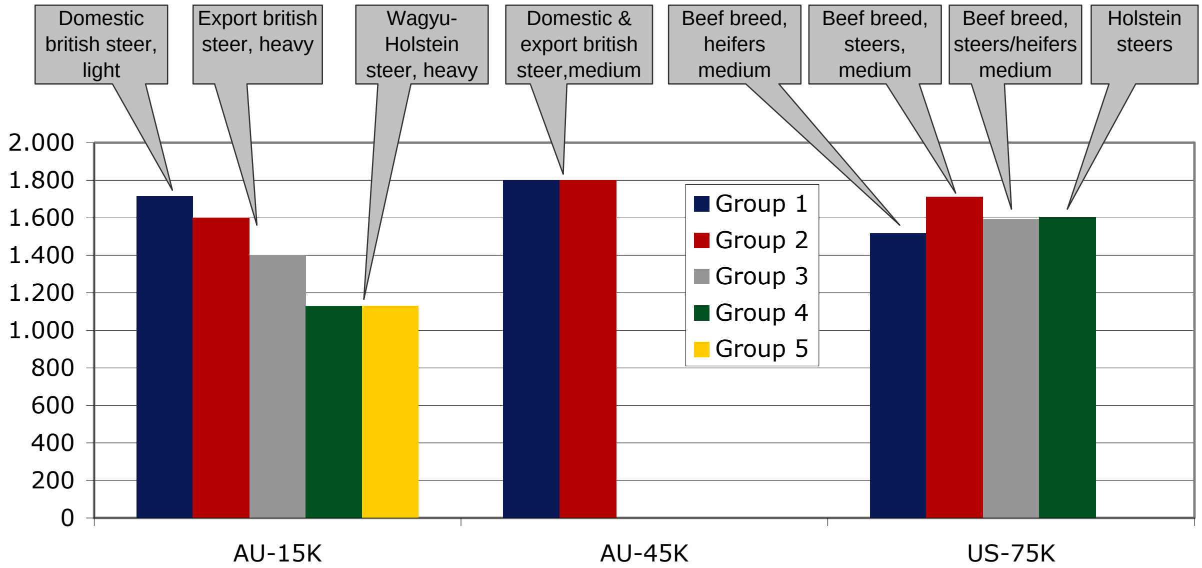
(LIVE WEIGHT AT END – LIVE WEIGHT AT START) / (AGE AT END – AGE AT START).

Generally, the fewer days on feed the higher is the average daily weight gain. For the 150-day animal lots, Australia's AU-15K group 2 has a weight gain almost identical to the average of the four cattle lots in the US.

As Figure 5 shows, the highest DWG is achieved by AU-45K finishing British breeds for export to a medium weight (117 days on feed). DWG are lowest for the Wagyu-Holstein crosses.[1]

[1] These cattle are deliberately fed a lower energy higher roughage ration to optimise the marbling at the end of feeding period. The lower growth rate and consequent higher labour costs/kg gained is compensated by the premium price they receive.

Fig 5. *Daily weight gains*



5 Cost, returns and profitability

5.1 Total costs for the average of all groups

Table 2 and Figure 6 shows for each feedlot the total average cost for all groups analysed. A more differentiated analysis for a breakdown of groups starts in Chapter 5.2.

Total costs are relatively close to each other and vary from AUD 206 per 100 kg live weight (LW) in AU-45K to AUD 245 in US-75K.

Conclusion: The 2009 average cost of production for all groups analysed was higher in the US feedlot than in the AU feedlots, due almost solely to the higher cost of feeder cattle.

There appears to be a minor size effect when comparing AU-45K and AU-15K but not when comparing these farms with the US feedlot.[2]

When looking at the percentage composition of the total cost (Figure 7), it becomes clear that animal purchase costs represent between 58 and 66 percent of total costs and purchase feed costs between 27 and 31 percent. Together, these cost items represent between 91 and 93 percent of the total costs.

Conclusion: For all groups analysed, US animal purchase costs on a per kg LW (output) basis are higher in both absolute and relative terms.

Conclusion: For all groups analysed, in absolute terms, feed costs in the US feedlot are slightly higher than in the AU feedlots.[3]

Note: The last conclusion is the only finding that would look different when using carcass weights: On a CW basis, feed cost in AU-15K are **higher** and in AU-45K **lower** than in US-75K.

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[2] However, data from the *agri benchmark* Result Data Base show that a small Kansas feedlot producing 7,200 animals per year has higher costs of AUD 8 per 100 kg CW compared to the larger feedlot (US-75K) supporting the existence of economies of size in the US feedlot industry.

[3] Over a longer period of time, feed prices in the US appear to be lower than AU prices but the recent trend for a portion of US grain to go into ethanol production may alter future US and Australian feed grain price relationships.

Tab 2. *Total cost, average of all groups analysed (AUD per 100 kg live weight)*

	AU-15K	AU-45K	US-75K
Animal purchases	121	131	162
Feed (purchase feed, fertiliser, seed, pesticides)	66	57	67
Machinery (maintenance, depreciation, contractor)	3	1	0,4
Fuel, energy, lubricants, water	5	3	2
Other non-factor costs	6	7	9
Total labour cost	7	6	5
Total land cost	0	0	0
Total capital cost	0	1	1
Total	208	206	245
Total excluding animal purchases	87	76	84

Machinery and fuel costs as well as labour costs (for these see Chapter 5.5) are lower in the US feedlot. In the case of machinery costs there seems to be a size effect. The size effect could also be assumed for the fuel cost. Another reason appears to be related to fuel prices. In the last ten years, petrol prices in Australia have been between 50 and 80 percent higher than in the US. For Diesel, the picture is less clear. In most of the last ten years, Australian prices were slightly higher (up to 10 percent), but in some years even five percent lower than in the US. In 2009, however (the year of comparison here), diesel prices in Australia were almost 25 percent higher than in the US.

Conclusion: Machinery and fuel costs are lower in the US feedlot, driven by size effects and fuel prices.

Fig 6. *Total cost, average of all groups analysed (AUD per 100 kg live weight)*

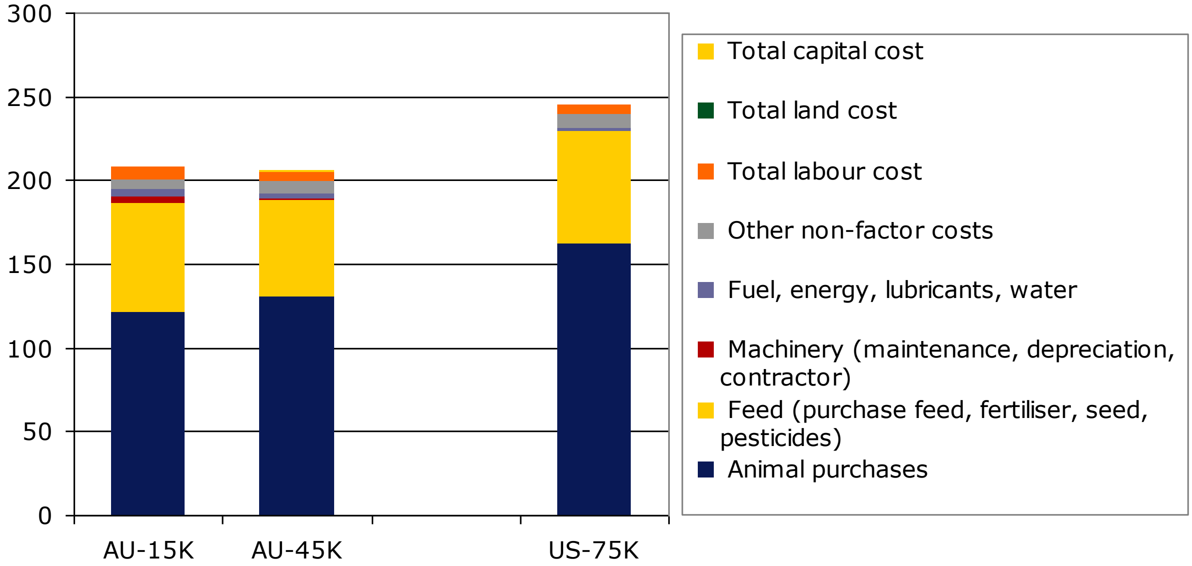
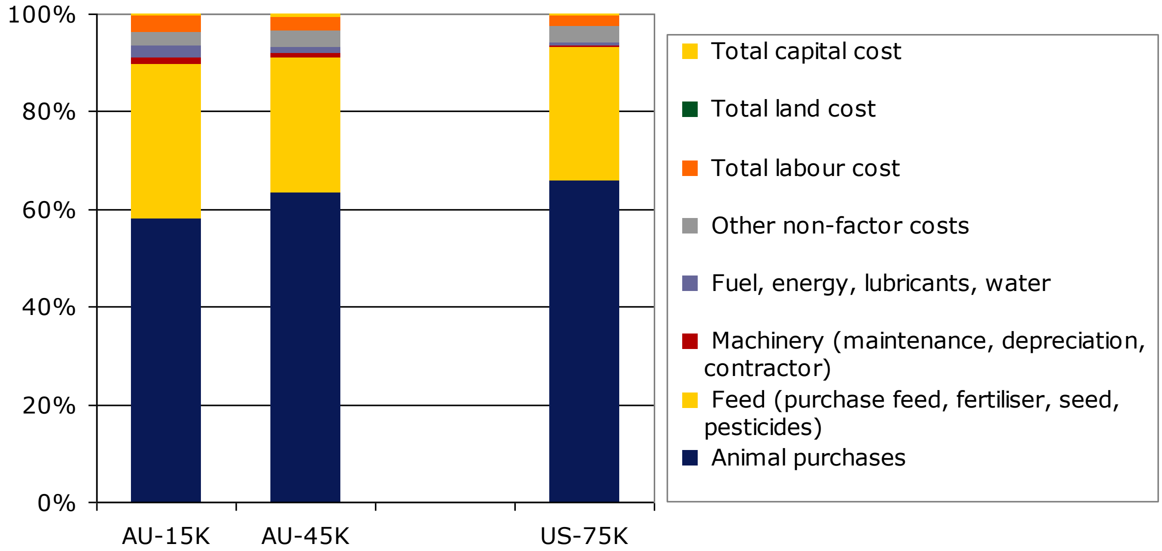


Fig 7. Composition of total cost, average of all groups analysed



Explanation:

Factor costs:	Labour (wages paid and imputed/opportunity costs) Land (rents paid and imputed/opportunity costs) Capital (interest paid and imputed/opportunity costs)
Non-factor costs (NFC):	All costs except factor costs

5.2 Total costs for subgroups

The above conclusions are valid for the weighted average of all groups produced. In the following, the analysis was differentiated into three subgroups.

Subgroup 1: **All finishing groups** (different ages, weights and sex), as above

Subgroup 2: **Steers** only (different ages and weights)

Subgroup 3: Cycles of around **150 days** only (beef steers with different weights)

The differentiation into steers and 150 day periods is only relevant for AU-15K and US-75K. The AU-45K finishes steers only, but does not have finishing periods of 150 days. As a consequence, for AU-45K only the average of all groups is shown. Results for the different subgroups are shown in Table 3 and Figures 8 and 9.

When comparing the subgroups **within** the feedlots, the **major findings** are:

- In AU-15K, costs for the *'Steer'* and *'150-day'* subgroups are lower than for *'All groups'*. The reason is the slightly higher feed cost in the Wagyu-Holstein costs which is due to their lower DWG.
- In US-75K, the *'150-day'* group has almost identical costs with the average of all groups (including heifers) and only slightly higher costs than the steer groups (150 days + Holstein steers). The group has relatively high costs for animal purchase. The reason is different feeder cattle prices: they are higher for the 150-day beef breed group than for the Holstein group. On the other hand, the Holstein group has higher feed costs.

The comparison of the **'*150-day*' groups** between AU-15K and US-75K reveals the following:

- **Animal purchase** costs in AU-15K is AUD 44 per 100 kg LW lower than in US-75K (74 percent of US-75K).
- **The aggregate feedlot cost, excluding the cost of animal purchases**, is almost identical between the Australian AU-15K steers and 150-day animals and the US steers and 150-day animals.
- The AU-15K 150-day group had lower feed, other non-factor and capital costs, but these were **offset** by higher costs for machinery, fuel and labour.
- **Purchase feed** costs are AUD 2 per 100 kg LW lower in AU-15K than in US-75K (97 percent). On the other hand, the proportion of feed costs in total costs is lower in US-75K (26 percent) than in AU-15K (30 percent).
- **Machinery & fuel costs** are AUD 4 per 100 kg LW higher in AU-15K.
- **Labour costs** are AUD 2 per 100 kg LW higher in AU-15K than in US-75K (38 percent).

Tab 3. *Total cost by subgroups (AUD per 100 kg live weight)*

	AU-15K			AU-45K	US-75K		
	All groups	**Steers**	**150 days**	**All groups**	**All groups**	**Steers**	**150 days**
Animal purchases	124	126	**123**	131	162	163	**167**
Feed	67	60	**60**	57	67	64	**62**
Machinery	3	3	**3**	1	0	0	**0**
Fuel, energy, lubricants, water	5	5	**5**	3	2	2	**2**
Other non-factor costs	6	6	**5**	7	9	8	**8**
Total labour cost	7	7	**7**	6	5	5	**5**
Total land cost	0	0	**0**	0	0	0	**0**
Total capital cost	0	0	**0**	1	1	0	**1**
Total	214	208	**204**	206	245	242	**245**
Total excl. animal purchases	89	82	**81**	76	84	79	**78**

Fig 8. *Total cost by subgroups (AUD per 100 kg live weight)*

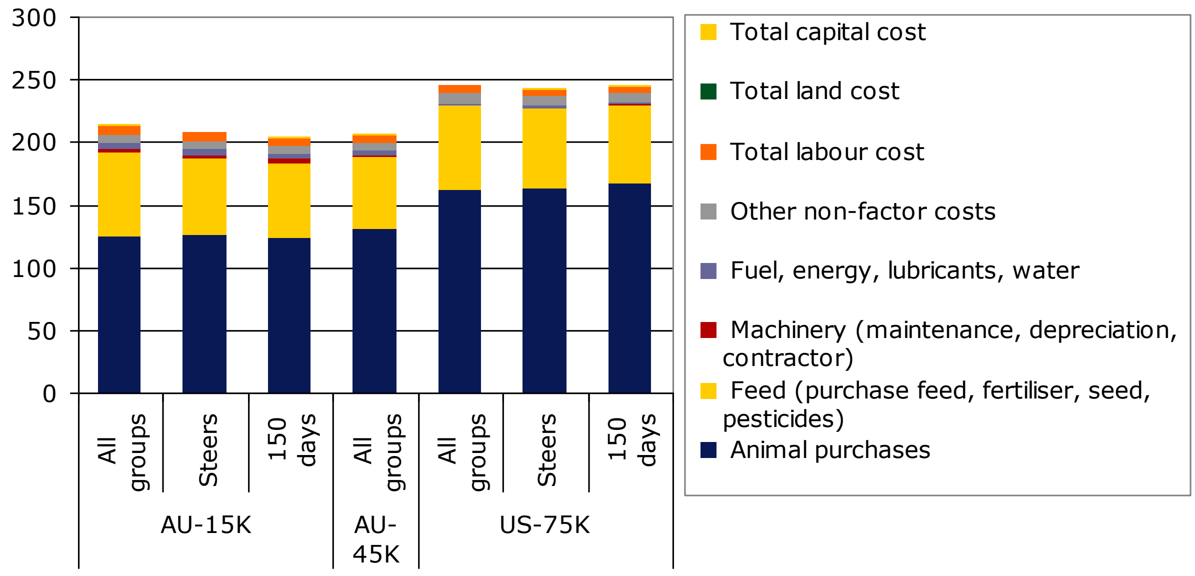
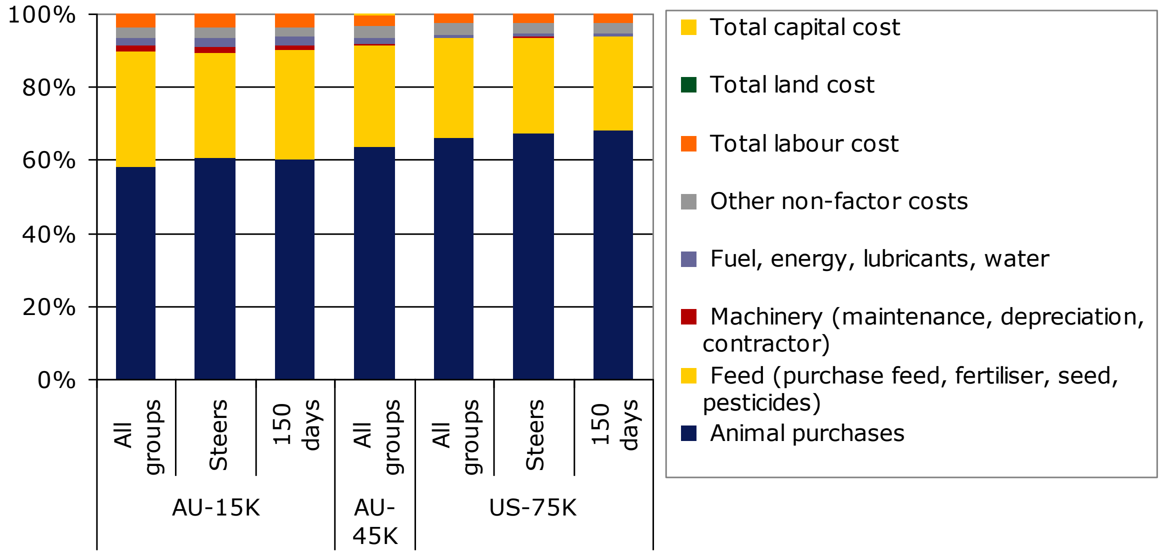


Fig 9. Composition of total cost by subgroups



Conclusion: For the '150-days' subgroups, the initial hypothesis of the US feedlot having higher animal purchase costs can be confirmed.

Conclusion: Excluding the cost of feeder cattle, the aggregate of other costs in Australian feedlots is similar to the US.

Conclusion: For the '150-days' subgroups, the initial hypothesis of the US feedlot having lower feed costs can **not** be confirmed.

Conclusion: For the '150-days' subgroups, the initial hypothesis of the US feedlot having lower labour costs can be confirmed.

5.3 Livestock (feeder prices and animal purchase costs)

A further examination of the **livestock (feeder) prices** is shown in Table 4 as well as Figures 10 and 11. It allows the following observations:

- On a '*per head*' basis and for the average of all groups, the US prices are between seven and 12 percent higher than the Australian prices.
- The difference is even larger for the prices per 100 kg LW of the feeder cattle where the US prices are between 22 and 34 percent above the Australian. One of the reasons is that the Australian feeder cattle are heavier on average.
- In the '150-day' cycle the price difference per head is AUD 155 (12 percent) and the per 100 kg LW price is almost 50 percent higher in the US feedlot compared to the AU-15K feedlot.
- In an additional calculation, the prices of the feeder cattle were referred to the beef sold. They were calculated on a '*per kg live weight (LW)'* and per '*kg carcass weight (CW)*' basis and represent the purchase costs of the animals. The conclusions for the carcass weight prices were presented above. For the live weight prices, the differences between the Australian and the US feedlots are even higher due to the higher dressing percentage in the US feedlot.

Conclusion: Livestock (feeder) price differences on a per head basis are higher in the US feedlot and significantly higher on a per kg live weight basis (feeder) as well as on a per kg LW and CW basis of beef sold.

Tab 4. Absolute and relative livestock prices

Absolute values	**AU-15K** All groups	Steers	150 days	**AU-45K** All groups	**US-75K** All groups	Steers	150 days
Per head feeder	783	772	**851**	819	876	877	**1,006**
Per 100 kg LW feeder	210	200	**185**	191	256	247	**276**
Per 100 kg CW sold	216	219	**219**	229	254	256	**261**
Per 100 kg LW sold	124	126	**123**	131	162	163	**167**

Relative values	**AU-15K** All groups	Steers	150 days	**AU-45K** All groups	**US-75K** All groups	Steers	150 days
Per head feeder	89%	88%	85%	93%	100%	100%	100%
Per 100 kg LW feeder	82%	81%	67%	74%	100%	100%	100%
Per 100 kg CW sold	85%	86%	84%	90%	100%	100%	100%
Per 100 kg LW sold	77%	77%	74%	81%	100%	100%	100%

Fig 10. Livestock prices per 100 kg (left axis) and per head (right axis)

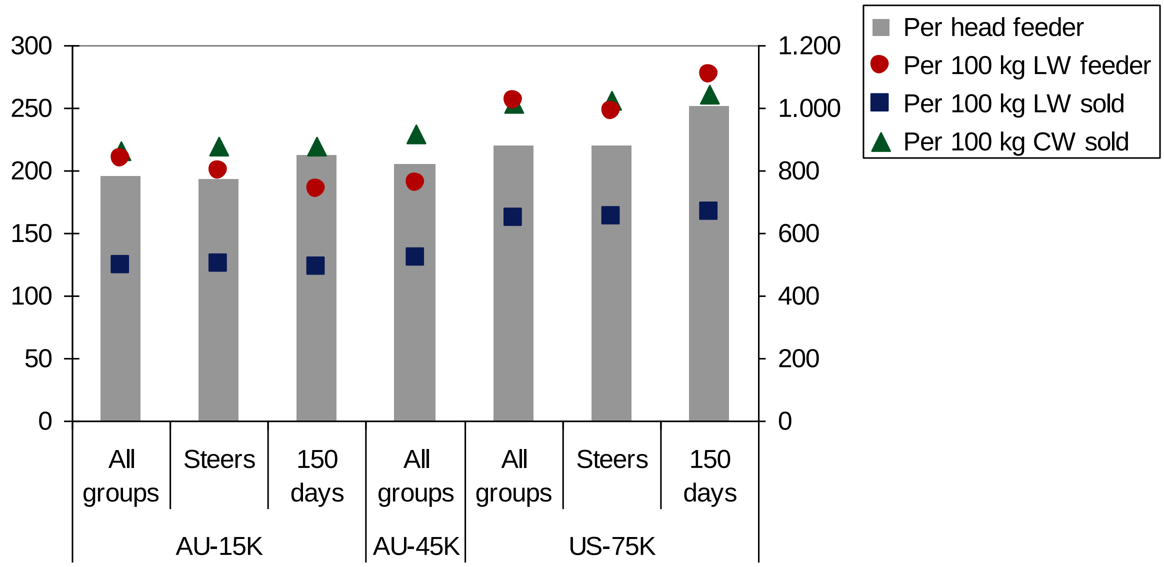
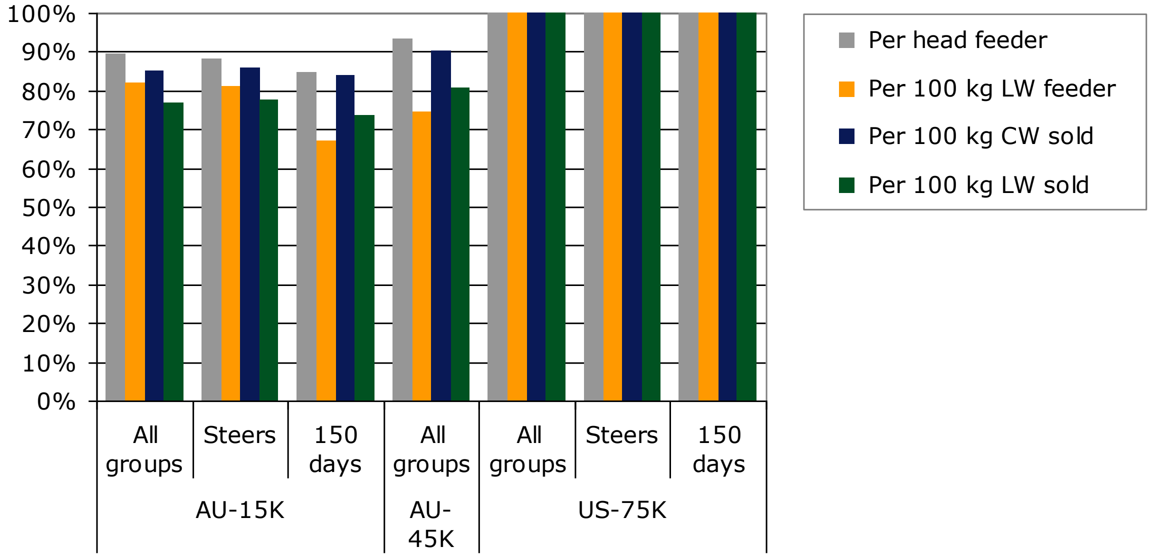


Fig 11. Livestock prices relative to US feedlot (=100)



5.4 Feed prices and costs

With purchased feed and feed prices being the other major cost component, Figure 12 shows the average weighted feed price for the feedlots analysed. Compared with the US-75K, average weighted feed **prices** are AUD 18 per ton lower in AU-15K (93 percent of US-75K) and AUD 28 per tonne higher in AU-45K (111 percent of US-75K). As Table 3 indicated, this transfers into lower feed costs for the Australian feedlots on a per kg LW basis.

One of the reasons for the differences in Australian feed prices in 2009 is the location of the feedlots. A poor harvest in 2008 in areas surrounding the AU-45K feedlot meant that relative prices were higher than in the case of the AU-15K which had both a better winter crop and also a summer crop harvested from April 2009 onwards.

Grain prices 2000-2009

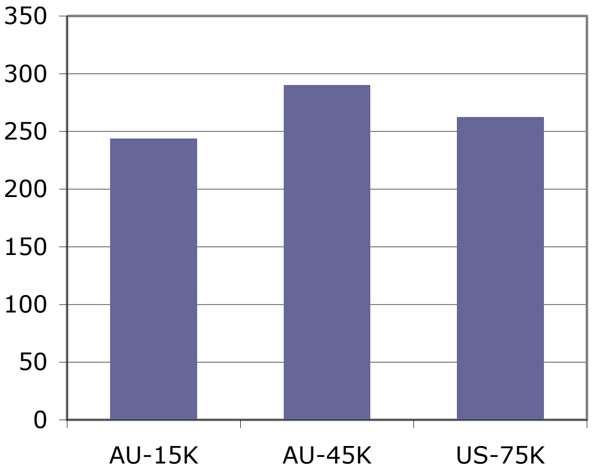
In order to assess if feed prices in the 2009 year were representative of earlier years a price series was collected for US (Kansas) maize prices and converted to AUD using a monthly exchange rate so that they could be compared to Australian barley and sorghum prices. The Australian prices were sourced from Australian commodity statistics less $10 because the stated price was a delivered to principal market estimate. Freight to key feedlots being generally located in the grain growing areas was considered as $10 less.

The graph in Figure 13 clearly indicates that over the 2000 to 2009 time period prices of Australian grain were generally higher than in the US. The picture around the start of 2009 however was less clear before the gap began to increase again. However, it is fair to conclude that over the last decade the US has had a cost advantage in grain and this should be reflected generally in their ability to pay more for feeder cattle.

This suggests that the conclusion from the 2009 snapshot analysis that Australian feed costs are slightly lower than in the US is probably atypical and that Australian feedlots do ordinarily suffer small feed cost and aggregate non-animal cost disadvantages.

Fig 12. *Feed prices (AUD weighed average price per ton feedstuff in ration)*

Average feed price (US$ per ton)



Feed prices relative to US-feedlot (=100)

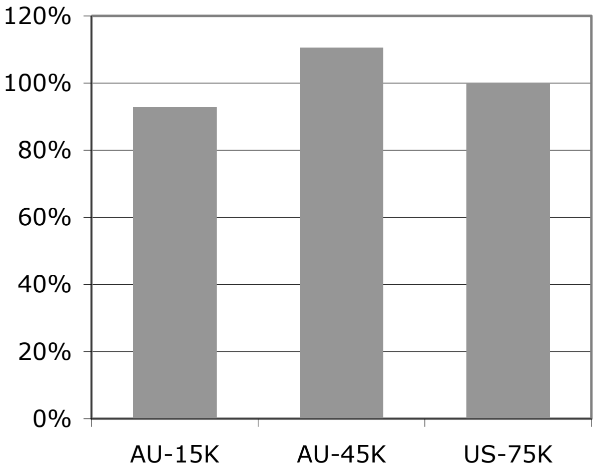
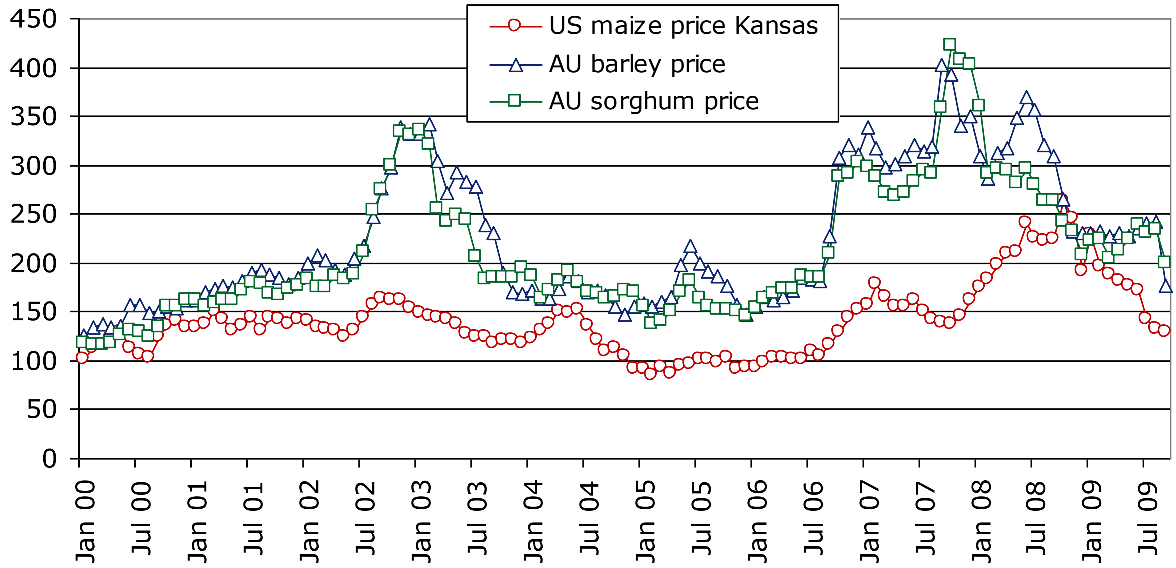


Fig 13. *Feed prices US maize and Australian barley and sorghum and estimated as delivered feedlot 2000 to 2009 (AUD per tonne)*



Source: Australian Commodity Statistics, Kansas Agricultural Statistics

5.5 Labour: wages, productivity and costs

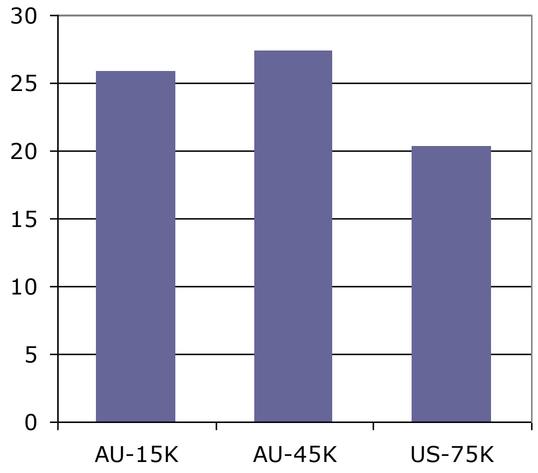
As shown in Figure 8, with labour being a relatively minor cost component, US-75K has an advantage of AUD 3 per 100 kg LW over AU-15K in the '*150-days*' group. To analyse labour more closely, labour costs were split into its two components: wages and productivity. Differences between subgroups were minor. As a consequence, only the result for all groups are shown.

Figures 14a.1 and 14a.2 reveal that wage levels in the Australian feedlots are about one third higher than in US-75K. Physical labour productivity is measured in *kg beef sold per hour labour input* and is shown in Figure 14b.1 and 14b.2 and ranges from 200 kg in AU-15K to 255 kg in AU-45K. Thus labour productivity in AU-15K is about 80 percent of the US feedlot whereas labour productivity in AU-45K is 104 percent of US-75K. When looking at labour costs in 14c.1 and 14c.2, it becomes clear that this advantage can not compensate for the higher wages paid in AU-45K. Labour costs in US-75K are therefore lower than in the AU feedlots. The higher economic labour productivity, measured as *beef returns (revenues) divided by labour costs* per kg live weight of US-75K is another indicator for this.

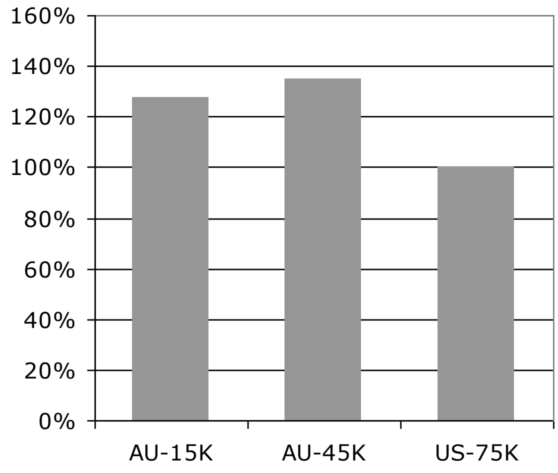
Conclusion: Australian feedlots have higher labour costs, driven by higher wages and partially lower labour productivity.

Fig 14. *Labour: wages, productivity and costs*

a.1 Wages paid (AUD per hour)



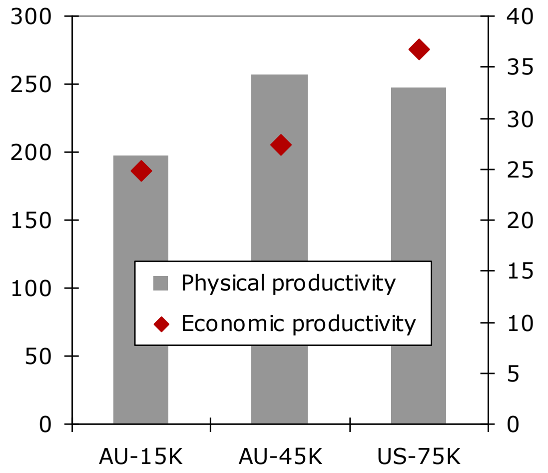
a.2 Wages relative to US feedlot (=100)



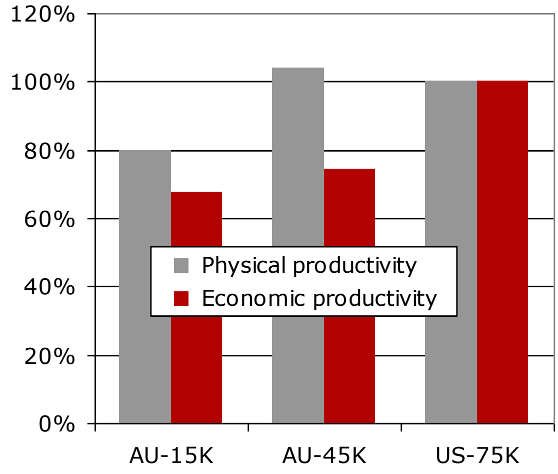
b.1 Physical & economic labour productivity

left axis
kg beef per hour

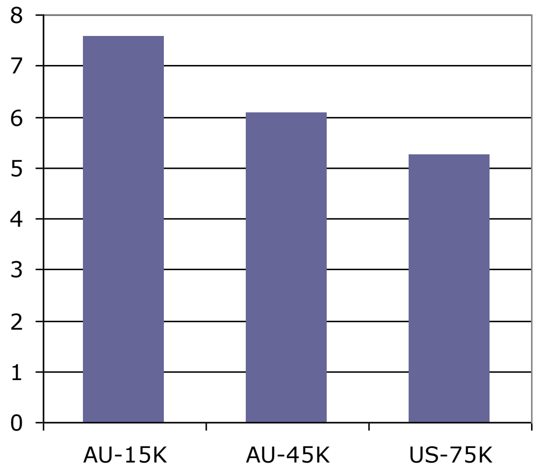
right axis
AUD revenues
per AUD labour cost



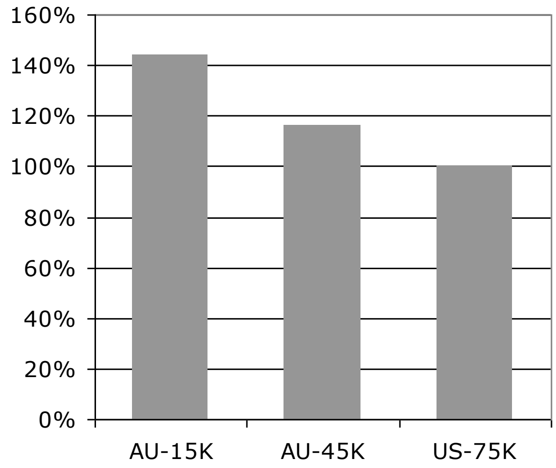
b.2 Physical & economic labour productivity
relative to US feedlot (=100)



c.1 Labour costs (AUD per 100 kg LW)



c.2 Labour costs relative to US feedlot (=100)



5.6 Beef prices

Apart from costs and productivity, beef prices and resulting revenues are the other important information required to obtain the economic picture.

Figure 15 shows the beef prices obtained by subgroups. It can be seen that live weight prices are rather similar and only slightly higher in the 'all groups' subgroup of AU-15K, an impact coming from the high prices of the Wagyu-Holstein animals. Live weight prices for the '150-day' groups are 17 percent higher in US-75K. This basically confirms the findings in Chapter 3.

Conclusion: Beef prices per kg live weight for all subgroups are higher in the US feedlot.

Further, if one assumes a competitive market where on the long run average price equals cost, then the fact that both livestock and beef prices are higher in the US than in Australia might simply mean that it costs more to produce a calf in the US than it does in Australia. Figure 17 additionally shows that a) beef price / feeder price relation is wider in Australia in percentage terms (but is not in absolute terms) and b) seems to follow a cyclical pattern.

Fig 15. *Beef prices (AUD per 100 kg live weight and relative to US-75K)*

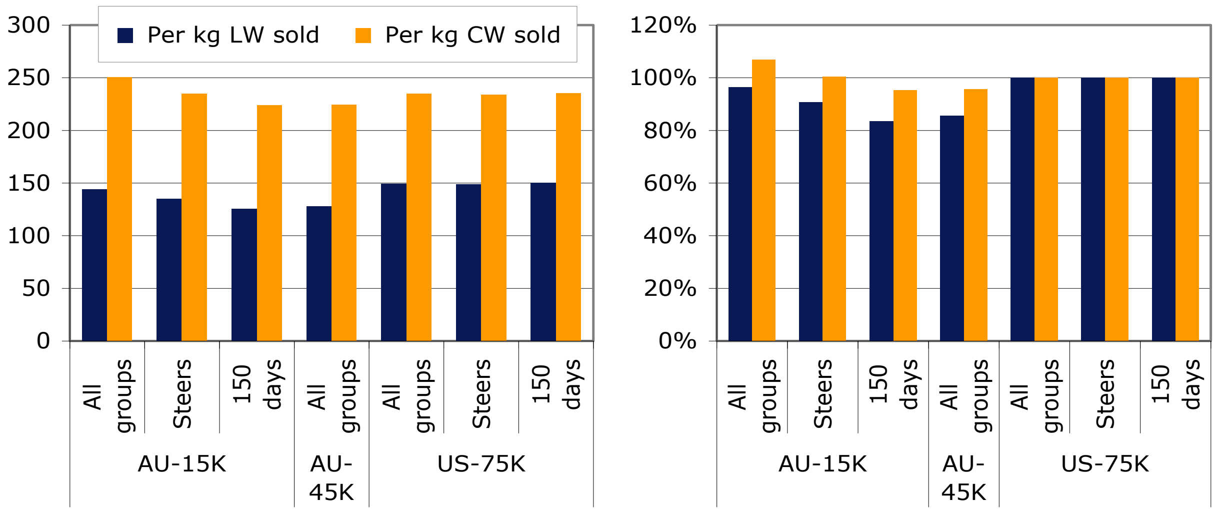
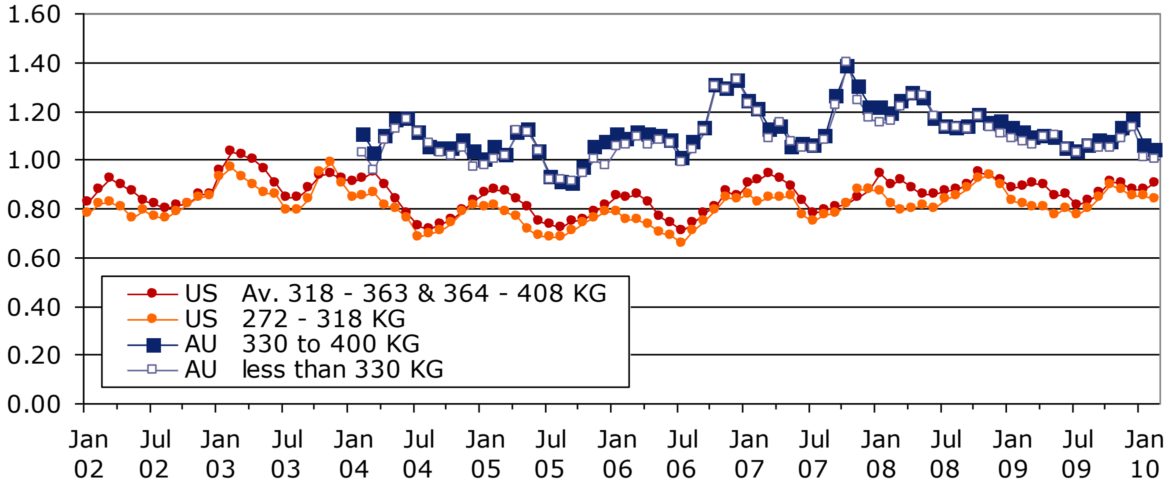


Fig 16. *Price relations between beef and livestock prices in US and AU in national currencies (beef price in relation to feeder cattle group indicated in legend)*



Source for both figures: Own calculations, Kansas State Statistics, MLA

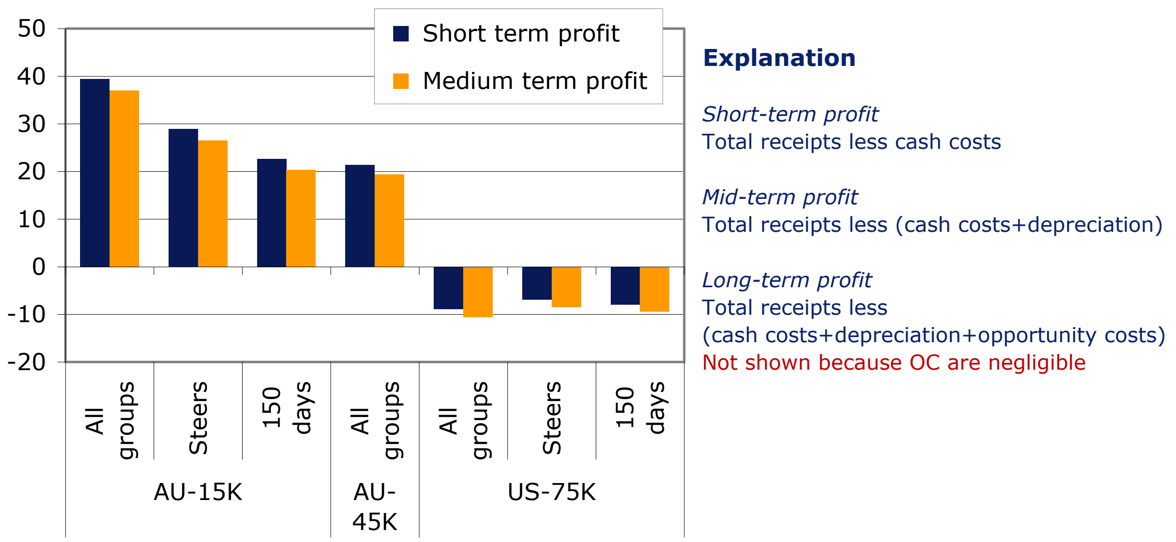
5.7 Profits

As Figure 17 shows the Australian feedlots had a significantly more profitable year in 2009 than the US-75K feedlot. However, this does not necessarily imply that the cattle feeding sector in Australia is much stronger financially than the US as 2009 was the most unprofitable year for finishing steers, on average, in the US in the last decade (Langemeier, 2010). As mentioned in Chapter 1, it is important to remember that this analysis is a snapshot of a point in time (i.e., 2009) and these results may, or may not, hold over a longer time period.

Figure 17 shows the short-term and mid-term profitability (see explanation in chart). Again, the Wagyu-Holstein group in AU-15K has a significant positive impact on the profit via its high beef prices. However, even the '150-day' groups makes a profit of around AUD 20 per 100 kg LW whereas US-75K makes a loss of AUD 9 per 100 kg LW. In AU-15K, this means a mid-term profit margin of nine percent.

Conclusion: In 2009, the Australian feedlots were considerably more profitable than the US feedlot.

Fig 17. *Profits (AUD per 100 kg live weight)*



Source: Own calculations

6 Breakeven prices

The above results are based on a specific set of prices and their relations for the feedlots selected and for the calendar year 2009. Due to price and performance variability, price relations may change from year to year, resulting in different levels of profit and loss.

To capture some of the possible variation in prices and performance, a breakeven analysis on key variables was performed.

Table 5 shows the breakeven prices for beef and livestock in the feedlots analysed. Breakeven is defined as the total returns matching the total costs.

As the Australian feedlots make a profit in the 2009 situation, their breakeven beef prices are lower and the breakeven livestock prices are higher than the initial values. For example, in the 150-day cycle, the breakeven beef price is approximately nine percent lower than the initial price and the breakeven livestock price is approximately 17 percent higher than the initial value.

The contrary applies to the US feedlot, which needs a four percent higher beef price and a six percent lower livestock price than the initial one to breakeven.

__Tab 5.__ Breakeven beef and livestock prices (AUD per 100 kg LW and percent)

	AU-15K All groups	AU-15K Steers	AU-15K 150 days	AU-45K All groups	US-75K All groups	US-75K Steers	US-75K 150 days
Break-even beef prices (AUD per 100 kg live weight)							
Present price	251	235	224	224	235	234	235
Short-term break-even							
AUD	211	206	201	203	244	241	243
in % of present price	84%	88%	90%	90%	104%	103%	103%
Mid-term break-even							
AUD	214	208	204	205	245	242	245
in % of present price	85%	89%	91%	91%	104%	104%	104%
Break-even livestock prices (AUD per 100 kg LW of feeder cattle)							
Present price	210	200	185	191	256	247	276
Short-term break-even							
AUD	277	246	219	222	242	237	263
in % of present price	132%	123%	118%	116%	94%	96%	95%
Mid-term break-even							
AUD	273	242	216	219	239	234	261
in % of present price	130%	121%	117%	115%	94%	95%	94%

Source: Own calculations

7 Conclusions and summary

1. US feedlots generally receive higher live weight prices for equivalent finished grainfed cattle than do Australian feedlots, though the differential can fluctuate markedly from month-to-month. Put another way, the 2009 average cost of production for all groups analysed is higher in the US feedlot than in the AU feedlots, due mainly to the higher cost of feeder cattle.
   a. US 150-day fed cattle within the feedlots studied received a 17% higher live weight price in 2009, on average.
   b. This differential is probably historically a little larger with an historical price series indicating an average 24% differential.
   c. The fact that the 2009 grainfed price differential was squeezed is perhaps explained by the difficult demand conditions in the US, which saw lower fed cattle prices and the most negative feedlot margins ever witnessed in the US (compared with positive margins in the Australian feedlots studied).
2. Australian feedlots pay considerably less for feeder cattle in both per head and per kg live weight terms than their US counterparts.
   a. The US feedlots studied paid 12% more for feeder cattle per head and 50% more per kg live weight.
   b. Again, this differential is probably historically a little larger – with imperfect time series data from 2004 indicating a 70-80% higher price in the US.

3. Cost disadvantages or lower efficiency did not explain these price differentials in 2009, as aggregate costs (excluding the cost of feeder cattle) per kg produced was similar in Australian and US feedlots.
    a. Australian feedlots had higher costs for machinery, fuel and labour[4], but these were almost fully offset by slightly lower costs for feed, 'other non-factor costs' and capital.
    b. Daily weight gains achieved were similar in Australia and US feedlots for 150-day fed animals.
4. Historical time series data on feed prices suggests that US feedlots would normally have a significantly feed cost advantage, but that this differential was not evident for most of 2009.
    a. As feed cost is the second largest cost factor for feedlots (behind feeder cattle cost), this would suggest that US feedlots may normally have a small non-feeder cattle cost advantage overall, helping in small part to explain the feeder cattle differential.
    b. US grain prices relative to those in Australia were inflated in 2009 by the low A$/US$ exchange rate.
5. Factors that can help explain the lower price of feeder cattle in Australia are:
    a. the lower cost of producing feeder cattle and calves in Australia – as US cow-calf operations tend to be very small, confined to marginal land and need to routinely supplementary feed in winter;
    b. Australian feeder cattle tend to be grown out for longer (older) and to higher entry weights on cheaper pasture than those in the US. This can be a significant contributor to different feeder prices, as younger, lighter cattle tend to have a higher per kg price.
    c. US feedlot labour, machinery and fuel costs are lower than in Australia, all relatively minor but they do add up to AUD 8 per kg in some cases.
    d. In the longer term, grain prices have generally been lower in the US. This is another reason why US feedlots have traditionally been able to pay more for their feeder cattle.

When interpreting the results, it should be mentioned that the study can only provide a snapshot of one year (2009). Changing price relations between beef, livestock and grains can alter the results significantly.

8 References

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[4] The higher labour costs in Australian feedlots were driven by higher wages and partially lower labour productivity.