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The contribution of the Australian live export industry

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Prepared for

LiveCorp and Meat and Livestock Australia

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*Centre for International Economics
Canberra & Sydney*

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Contents

Summary	5
Glossary	12
1 Introduction	13
Previous studies	13
2 The live export industry	19
Industry characteristics	19
Volume, values and prices	22
Live export markets	25
3 Farm gate values for live exporters	29
Value chain analysis	29
4 Key determinants of the contribution of live export industry	34
Demand response	35
Supply response	41
Other key factors impacting on the contribution	47
5 Contribution of feeder and slaughter cattle and sheep	50
Diversion of livestock to meat markets	50
Impacts on prices and industry GVP	51
The net contribution of live exporters	53
Sensitivity analysis	53
Comparison with Hassall's Report	55
6 Contribution of dairy cattle and goats	57
Dairy heifers	57
Goats	64
7 Regional and industry wide benefits	66
Regional impacts of the live trade	66
Productivity Improvements	70
Land Values	71
References	73
A Key calculations underlying additional transport costs	74

Boxes, charts and tables

1.1	Domestic impacts of the closure of the live trade	16
2.1	Live trade export value in 2008-09 terms	20
3.1	Notional value chain for live feeder/slaughter cattle, sheep and goats	30
4.1	Expected excess capacity in livestock processing sector by region	38
4.2	Limited options for transition of enterprises	43
4.3	Australian sheep numbers, 1990-2009	45
4.4	Projected sheep numbers per state	46
5.1	Impact of the live trade on production, consumption and trade	51
5.2	Impact of the live trade on farm gate returns for red meat industry prices	52
5.3	Impact of the trade on farm level GVP	52
5.4	Impact of the live trade on cattle and sheep industry GVP and value added	53
5.5	Sensitivity analysis on prices of increasing supply response	54
5.6	Sensitivity analysis on farm level GVP of increasing supply response	55
5.7	Comparing updated results with original study	56
7.1	Livestock export industry value to regional Australia: 2003-2009	67
7.2	Contribution to of the live trade regional farm gate prices	68
7.3	Contribution of the live trade to regional farm level GVP	69
7.4	Contribution of the live trade to regional farm level value added	69
7.5	Potential for Indigenous production is significant	70
7.6	Increase in average land values for beef industry farms	72
A.1	Impact of diversion of cattle from live exports to the processing sector	74
A.2	Total requirement of live cattle export for transport	75
A.3	Total additional cost of transporting cattle for processing	76
A.4	Impact of diversion of all sheep from live exports to the processing sector	77
A.5	Total additional cost of transporting WA sheep east for processing	78

Summary

As part of an ongoing assessment of the contribution of the live export industry to the Australian livestock industries and the wider economy by LiveCorp and Meat and Livestock Australia (MLA), the CIE was engaged to update and provide an independent and comprehensive assessment of the value of the live export industry.

- To estimate the contribution of the live export industry, this study has assessed the potential impact of closing the live export trade on prices and quantities across the entire livestock industry.
 - This study updates the analysis by Hassall and Associates (2006).
- This 'impact' is the differential between farm gate returns and incomes in the live export and processing industries with and without the live trade.
 - The differential has been estimated for the period 2005-06 to 2008-09.
- However, this report does not attempt to directly estimate the impact on the wider Australian economy in terms of jobs and gross domestic product.

Export revenue from the live trade and at farm level is significant...

Over the period 2005-07 to 2008-09, the average annual value of live exports was around \$1 billion in free on board (FOB) terms. Not all this revenue flowed back to exporters and livestock producers because of the costs involved in the acquisition, preparation and transport of these animals.

An important component of this study was to identify the major cost components of the total export value for each of the major classes of livestock exported. The estimated composition of the export values and their associated farm level values — equivalent to farm level gross value of production (GVP) — is shown in table 1.

The table shows that:

- exports of feeder and slaughter cattle and sheep account for 90 per cent of total live exports;
- on average 74 per cent of the export fob value is accounted for by the purchase cost of livestock from producers; and
- the total value of these livestock purchases by the live export industry (equivalent to farm level GVP) is estimated to be around \$742 million each year.

1 Live exports export and farm level value^a

	<i>Export value</i>	<i>Farm gate value</i>	<i>Contribution of farm gate to exports</i>
	\$m	\$m	%
Cattle	589	465	79
Sheep	312	216	69
Dairy heifers	89	58	65
Goats	10	4	40
Total	1000	742	74

^a Average annual contribution over the period 2005-06 to 2008-09.

Source: ABS and CIE estimates.

..but doesn't account for flow-on effects to the red meat industry...

The estimates in table 1 do not, however, fully reflect the total impact of live exports because they do not account for the flow-on effects to the wider livestock industry.

- It is widely acknowledged that the without live exports farm gate returns would be lower because of the lower demand for livestock and the higher transport costs involved in transporting animals to the alternative markets.
- Estimating this total impact requires assessing the 'next' best return for livestock, in absence of the live exports: this would be sales to the processing sector and then onto domestic and export meat markets.

The difference; between the actual GVP and value added actually observed over the period, and an estimate of what would have prevailed '*without*' the live export sector; gives an estimate of the red meat industry benefit provided by the live export sector.

...the contribution of feeder and slaughter cattle and sheep...on prices

The Global Meat Industries (GMI) model was used to analyse the contribution of live exports of feeder and slaughter cattle and sheep on the Australian red meat industry over the period 2005-06 to 2008-09.

- The model was used to simulate the quantity and price outcomes that would occur if these livestock were diverted back through the processing industry. Additional transport costs were added to reflect the fact that producers in some regions would have to transport animals further in order to supply the processing market.

Table 2 shows that the live trade, on average, significantly increases livestock prices across the Australian red meat industry. It shows that '*without*' the live trade:

- the saleyard price of grass fed cattle could have been 4.0 per cent or 7.8 cents per kilogram liveweight lower than was experienced over the period; the price of lambs would have been 7.6 per cent or 12 cents per kilogram lower, while the prices paid for older sheep would have been be 17.6 per cent or 14.6 cents per kilogram lower on a liveweight basis.

2 Impact of the absence of the live trade on farm gate returns for red meat industry prices^a

		2006	2007	2008	2009	Average
<i>Percentage change</i>	%					
Grass fed cattle		-3.5	-3.9	-4.1	-4.5	-4.0
Grain fed cattle		-1.6	-1.3	-1.2	-1.1	-1.3
Lamb		-8.4	-7.2	-8.3	-6.5	-7.6
Mutton		-19.2	-18.7	-21.5	-11.0	-17.6
<i>Live weight prices</i>	Ac per kg					
Grass fed cattle		-6.3	-7.4	-8.1	-9.4	-7.8
Grain fed cattle		-6.3	-7.4	-8.1	-9.4	-3.2
Lamb		-12.4	-10.2	-14.9	-11.4	-12.2
Mutton		-16.2	-14.8	-18.9	-8.5	-14.6

^a Change from the observed case in saleyard terms.

Source: GMI model and CIE calculations.

These price outcomes are national averages *across* Australia, the regional impacts especially in areas directly affected by the absence of the trade would be expected to be higher.

- The large results for prices of older sheep are a function of the additional transport costs that would have to be incurred due to a shortage of processing capacity in Western Australia – which would substantially reduce the average farm gate return to sheep producers in that state.

...on production and exports...

Table 3 indicates the impact of the live trade on meat production, consumption and exports. After accounting for changes in prices identified in table 2:

- beef production is estimated to have been 5.1 per cent or 109 kt cwe higher in the absence of the live trade; and
- sheepmeat is estimated to have been 100 kt cwe or 14.6 per cent higher without the trade.

The majority of this additional product would have been diverted to the price sensitive export markets although domestic consumption of lamb would also have increased marginally.

- For beef, these markets include the United States, Japan and Korea. For lamb and mutton, the United States and the 'other countries' grouping, including those in the Middle East, would have taken the additional product.
- It is important to note that the '*without*' live trade scenario does not result in automatic transfer over of meat consumption, sourced from Australian livestock exported live, to boxed product directly imported from Australian processors.

3 Impact of the absence of the live trade on meat production, consumption and trade^a

		<i>Grass fed</i>	<i>Grain fed</i>	<i>Beef</i>	<i>Lamb</i>	<i>Mutton</i>	<i>Sheepmeat</i>
<i>Key aggregates</i>							
Production	<i>kt cwe</i>	114	-5	109	51	49	100
	%	6.9	-1.1	5.1	12.0	18.9	14.6
Domestic consumption	<i>kt cwe</i>	1	-11	-10	10	2	12
	%	0.1	-4.5	-1.4	4.3	5.0	4.4
Exports	<i>kt cwe</i>	113	5	118	41	47	88
	%	9.5	2.1	8.2	21.5	22.1	21.8

^a Change from the observed case. Values for key variables of the live trade are zero.

Source: GMI model and CIE calculations.

...and on farm level GVP and incomes

Using the price and quantity outcomes from the GMI model, it was found that the live export industry contributed significantly – on a GVP basis – to the *farm level industries*. Without the trade GVP each year would have been:

- \$128 million or 1.5 per cent lower for the beef industry ; and
- \$119 million or 6.0 per cent lower for the sheep industry.

That is, in total, farm level GVP for the red meat industry would have been \$247 million lower each year if the live trade had not been available over the period.

Taking account of the costs involved in supplying the trade, this means that farm level value added or income – essentially the difference between revenue and non-labour input costs (which includes profits) – would have been:

- \$47 million or 3.1per cent lower for the beef industry ; and
- \$64 million or 12 per cent lower for the sheep industry.

Therefore in income or value added terms, the total contribution to the Australian economy is expected to be \$110 million at farm level.

... and for exporters and processors...

Another dimension is the change in GVP and incomes as a result of the non-farm component of the chain – in exporting live animals and also in the processing sector – which needs to be accounted for in valuing the trade.

- In gross margin or value added terms, there is a small difference between the losses for the live export industry and the gains for processors, if the trade were to close.
- Closure of the trade would result in a net gain of around \$11 million to the remainder of the red meat value chain.

For dairy heifers and goats...

The contribution of exports of dairy heifers and goats could not be analysed by the GMI model as it focuses on export of livestock that are traded for feeding and subsequent slaughter rather than breeding.

- Exports of goats were handled separately because these animals are harvested from rangeland managements systems with increased numbers unlikely to be diverted through the processing industry in the short to medium term.

Taking a conservative approach, the contribution of each of these sectors was estimated to average each year in terms of GVP was:

- \$34 million for the contribution of live dairy heifer trade to the dairy industry; and
- \$4 million for the contribution of live exports to the goat industry.

The total contribution of the live exports is therefore ...

This independent analysis shows that the contribution of the live export industry to the red meat industry is significant – both to those producers oriented to live export markets and those to processing markets.

- The total contribution is estimated to be \$248 million in GVP terms and \$110 million in terms of value added across the red meat chain including live exporters and meat processors.
- This is the extent to which GVP and value added is estimated to have been lower if the live trade market option had not been available to producers over the study period.
- These headline numbers are summarised in table 4.

4 Average annual contribution of the live export industry^a

	<i>Total impact of live exports^b</i>		
	<i>Export value</i>	<i>GVP</i>	<i>Value added</i>
	\$m	\$m	\$m
Cattle	589	98	37
Sheep	312	111	62
Dairy heifers	89	34	10
Live goats	10	4	1
Total contribution	1 000	248	110

^a Average annual contribution over the period 2005-06 to 2008-09. ^b Includes estimates of gross and net margins for live exporters and processors.

Source: GMI model and CIE calculations.

...with significant benefits to producers in regional Australia

This report has identified the important regional dimensions of live exports for Northern Australia for cattle and Western Australia for sheep. Without the trade, prices in these regions would suffer falls of:

- nearly 24 per cent for cattle and 42 per cent for older sheep; or
- a reduction in farm gate prices of 37 and 46 cents per kilogram for cattle and older sheep respectively.

Table 5 shows the contribution of the trade to GVP in the broad regions identified and the flow-on to the wider Australian red meat industry.

5 Contribution of the live trade to regional farm level GVP

<i>Region</i>	<i>Beef</i>	<i>Sheep</i>	<i>Total</i>	<i>Beef</i>	<i>Sheep</i>	<i>Total</i>
	\$m	\$m	\$m	%	%	%
Live export regions ^a	79	91	169	21.0	41.6	28.6
Other regions	49	29	78	0.6	1.6	0.8
National	128	119	247	1.5	6.0	2.3

^a A weighted average of regions where transport is required and those where no additional transport is required.

Source: GMI model and CIE calculations.

For live export regions, the GVP of beef producers could fall on average by 21 per cent while sheepmeat producers value of production could fall by 42 per cent.

- While noting that these average encompass a spectrum of impacts at an individual level from mild reduction in incomes for those whose region has relatively small exposure to the trade through to loss of business for producers who have specialised and invested heavily in supplying the live trade.

Comparison with previous studies

Overall the total contribution summarised in table 4 is lower than in the previous analysis by Hassall and Associates (2006).

- Part of the reason for is structural shifts, particularly in the sheep market, that lead to markets that already resulted in very high prices from strong demand conditions, diminishing the impact of the live export trade.
- The study also relies on conservative assumptions on a number of parameters that influence the final result.

Key assumptions behind the results ...

The CIE expects that the impact of these price effects would be sustained due to the lack of viable alternatives at farm level.

- The effects would be particularly acute in regional areas such as the cattle industry across northern Australia and in the sheep industry in Western Australia.

Prices would fall as a result of the diversion of product from live export markets to the meat processing markets: the extent of this fall depends on the supply response by those producers supplying live export markets to lower prices and higher transport costs.

- This has been the subject of wide debate and depends critically on the scope for farm level enterprises – particularly in the Northern Territory and Western Australia – to move out of livestock into alternative enterprises.

We expect that supply would be relatively unresponsive to such a fall in prices. There is limited potential for producers in these regions to shift out of livestock markets into other agricultural enterprises. The prospect for land conversion in the Western Australian sheep enterprises and the northern Australia cattle industries is particularly limited – with these regions producing a high portion of the sheep and cattle for live export markets.

- Falling flock numbers have been cited as rationale for the argument that sheep prices would not fall in a sustained or dramatic way as a result of closure of the trade. However, the value of the live export industry is reflected by the difference in revenue potential *at a point in time* and not in the prevailing price relative to other periods.
- In addition, flock numbers are now expected to stabilise around and grow from current numbers.

Other benefits of live exports

This report also identifies other outcomes that benefit the wider red meat industry that have resulted from the access to and subsequent investment in the live export industry:

- *productivity improvements* – where access to the live export industry has supported a range of changes resulting in strong productivity growth across the broader northern beef industry.
- *increases in land values in both northern and southern beef properties* – where the live export industry has bolstered expected future returns, it is likely to have been a contributing factor to significant investments in land acquisition.
- *a range of other regional economic benefits* – where a net increase across the value of livestock has supported an increase in net farm returns, and broadened the economic base of farms.
 - This includes the benefits to indigenous cattle producers, especially in remote areas, where income and employment opportunities will continue to be reliant on live exports.

Glossary

ABARE	Australian Bureau of Agriculture and Research Economics
ABS	Australian Bureau of Statistics
CIE	Centre for International Economics
CIF	Cost insurance freight
CWE	Carcass weight equivalent
FMD	Foot and Mouth Disease
FOB	Free on board
GMI	Global Meat Industries model
GRP	Gross regional product
GVP	Gross value of production
IF	Integrated Framework
MLA	Meat and Livestock Australia
TFP	Total factor productivity

1 Introduction

The Australian livestock export market supplies a quality product which has enjoyed strong demand over the past decade. Investment in health and quarantining standards, in the adoption of cattle types more suitable to the export market and in infrastructure for specialised transportation, has added significant value directly to this industry and indirectly to domestic and export meat processing industries (ABARE, 2008).

- In key export markets for livestock, refrigeration limitations and important religious and cultural beliefs support the demand for livestock (ABARE, 2008). Livestock exports are not perfect substitutes for exports of beef, veal and sheep meat (ABARE, 2008).

The export of livestock from Australia has resulted in the following key benefits to the livestock sector:

- an additional market for producers to sell their livestock in – which assists with the management of risk;
- a price premium for animals sold in these markets: cattle and sheep producers throughout Australia, including dairy farmers, take advantage of the price premium received for livestock exports to recover costs as necessary (AgEconPlus et al, 2007).
- greater capacity for diversification of activities in mixed farming systems across grains, cattle and sheep enterprises; and
 - resulting in better management of income variability and risk.
- higher overall prices received by Australian meat industries compared with the without live export case.
 - It is widely acknowledged that the livestock export industry maintains prices across the spectrum of Australian livestock markets by representing another source of competition for livestock the supply of cattle, lambs and sheep for processing.

Previous studies

Previous studies have attempted to estimate the value of the live export industry by assessing the costs, or the benefits forgone, of closing the industry. Most of these

reports require updating to reflect developments in the market over recent years, or are based on key working assumptions that have been the subject to debate.

The main studies are discussed below.

ACIL Tasman report 2009

In March 2009, ACIL Tasman presented a report on the cost of closure of the live sheep export industry of Western Australia on behalf of the Western Australian RSPCA. According to this report, 'there is unlikely to be a dramatic or sustained impact on the price of mutton or lamb in Australia' from the closure of the livestock export trade (ACIL Tasman, 2009).

- The forecast impact of closure of the live export markets was a reduction in the value of the sheep meat industry for Western Australia by \$74.5 million at 2006-07 flock levels (ACIL Tasman, 2009).
 - This represents around 12 per cent and 7 per cent of the industry gross value of production (GVP) for Western Australia and Australia, respectively.
- In annual terms, this equates to a reduction in the value of sheep by approximately \$20 million¹ according to Economic Insights's report²).

ACIL Tasman's costing is underpinned by the assumption that lamb and mutton prices will not change as a result of the closure of the export trade.

- That is, a key assumption of the analysis was that there is *no difference* in comparative revenue generated by the next best alternative – the sheep meat industry – which was established as the difference in gross margin received by producers under current circumstances (with the live trade) and without any change in the supply of meat (following closure of the live trade).
- Additional supply in sheep meat from closure of the livestock trade is assumed to be largely absorbed by a similar increase in demand for processed product.
 - That is, offsetting exports of Australian boxed product would result from replacing the slaughter of Australian sheep in live export destinations plus additional exports to third markets.
 - A key assumption by the ACIL Tasman's study was that Australia's processors and exporters of sheep meat would be able to fill new markets that may arise as a result of other countries moving their product to the live export markets that Australia previously supplied.
 - Supply is also predicted to be constrained *over time* by a declining flock number which is provided as another reason why prices would be sustained.

¹ Assuming a real weighted average cost of capital of about 7 per cent.

² Economic Insights (2010).

The assumption that there would be no change to mutton or lamb prices over the longer term, is based on the presence of a program to phase out the industry over four to five years.

- The study proposes an export quota system to facilitate this structural adjustment, phasing out the live trade over 4 or 5 years and reducing the quota by 0.8 million sheep each year for Western Australia.
 - This would enable structural change in the industry particularly in sheep production systems.
- At an average carcass weight of 20 kg per sheep this equates to approximately an additional 16 kt cwe of meat channelled into the domestic and export meat markets each year.

Sensitivity analysis presented in the study shows that the impact of a reduction of the price of mutton would significantly alter these costing estimates.

- For a 50 per cent reduction in the value of mutton, the marginal difference between the 'with trade' and 'without trade' cases for sheep values would increase to \$3–6 per sheep (ACIL Tasman, 2009).
- This equates to an additional 15-30 cents per kilogram at an average carcass weight of 20 kg. For a 'typical' flock, as per ACIL Tasman's definition, this would equate to approximately \$2 200 per flock or \$15 million for the sheep industry.

In our view, the ACIL Tasman study is underpinned by a highly optimistic outlook on the potential for the lamb and mutton industry to maintain current prices. That is, the study does not allow for an additional fall in prices beyond current market differentials between live export and processing markets.

- The ideal evaluation would be to take a modelling approach that recognises how lamb and sheepmeat production interacts with each of its market segments and with other competing meats.

Although the ACIL Tasman report takes the view that additional costs of closing the trade are likely to be marginal, it is expected that the cost of transitioning enterprises and ongoing additional transportation costs for existing livestock export producers will have a tangible impact.

The study only considered the impact to the sheep industry in WA from the discontinuation of the livestock trade, and as such provides rather limited insight into the national costs of discontinuing the trade. An integrated framework which takes into account all livestock industries and regions, and considers the impact on the meat industries throughout Australia is needed to estimate the total costs of eliminating the trade.

AgEconPlus, EconSearch and Warwick Yates & Associates 2007

The report prepared by AgEconPlus et al for MLA and LiveCorp in June 2007 outlines the impacts to regional Australia of the closure of the livestock export industry, including through estimating regional multipliers. This report uses a modelling approach to provide an analysis of the inter-related costs born across the economy of closure of the live trade. Further details of the findings of the study are provided in chapter 7.

Hassall and Associates report 2006

The July 2006 report produced by Hassall and Associates presents estimates of the impact on Australia – in particular regional Australia – of closing the livestock export industry. The results of this study are summarised in table 1.1.

1.1 Domestic impacts of the closure of the live trade^a

	<i>Farm prices</i>		<i>Annual GVP</i>	
	%	Ac/kg lw	%	\$m
Grass fed	-7.1	-9.2	-0.7	-32
Grain fed	-4.1	-9.3	7.2	142
Live cattle	na	na	-100.0	-440
<i>Total cattle</i>	na	na	-5.0	-330
Lamb	-4.1	-7.0	2.6	31
Mutton	-18.3	-16.9	10.5	45
Live sheep	na	na	-100.0	-296
<i>Total sheepmeat</i>	na	na	-11.4	-219

^a Based on an average of years 2002-2004.

Source: Hassall and Associates 2006.

Estimates of impacts using MLA's Global Meat Industries (GMI) model, showed the expected price reductions which may occur in the absence of livestock trade to include:

- a 17 cents per kilogram liveweight basis reduction for sheep;
- a 7 cents per kilogram liveweight basis reduction for lamb; and
- over a 9 cents per kilogram liveweight basis reduction for cattle.

These estimates of potential loss to the industry from the livestock trade relied on estimates for 2002-2004 and surrounding market conditions.

- Based on assumptions about production and associated market factors, the expected loss to the livestock industry from the closure of the Australian livestock exports was estimated at approximately \$220 million each year for sheep, and over \$400 million in the first year followed by approximately \$330 million each year thereafter for the beef industry (Hassall and Associates, 2006).

- That is, in total it is expected to cost \$620 million in the first year and \$550 million each year thereafter (Hassall and Associates, 2006).

The study also quantified the impact of the trade on the wider economy. The National Institute of Economic and Industry Research found that over the past 5 years (up to 2005), the live export industry contributed to the national economy each year:

- 12 924 jobs
- wages and salaries totalling \$987 million; and
- \$1.8 billion to gross domestic product.

This report

The primary focus of this report is to update the key livestock industry results presented in Hassall and Associates (2006), and summarised in table 1.1, around the contribution of the live export trade to the wider livestock industry.

- There is no attempt to quantify the wide impacts on the Australian economy in this document.
- However, it would be expected that this wider impact would be proportional to the relative size of the live trade and its impact on the livestock industries.

One of the most important variables underpinning any analysis of the impact of a closure of the live export industry is the expected *responsiveness* of the supply of cattle and sheep at the farm level to the closure of the live trade. There are, however, different viewpoints on the way in which closure of the live trade would impact producers in the live export and beef and sheep industries. This report also considers the impact of closing the goat and dairy heifer live export trade.

The closure of the live trade would yield a significant increase in the quantity of meat produced as livestock are diverted from live exports back onto the domestic market for further feeding and subsequent processing. This increase in the supply of livestock to the processing sector is in our view expected to cause a reduction in farm gate prices across the board.

- Where many producers would be unable to transition out of respective livestock industries into other industries such as cropping, their production decisions are expected to be less responsive to a reduction in price (that is, supply becomes more inelastic).
- This would lead to a lower elasticity estimate than was (implicitly) used in the ACIL Tasman study.

Using the supply elasticity parameter, the CIE's approach is to estimate the contribution of the live export industry through simulating the potential alternative gross value product of the livestock industry without the live export trade over the

period 2005-06 to 2008-09 inclusive. The GMI model is used to assess the net effects of closing the live export trade to prices, quantities and, subsequently, GVP and farm incomes across the livestock, processing and export industries.

The following chapters present a contextual analysis of the live export industry and a new assessment of the value of the live export industry, in terms of the cost of market closure, using the above approach. A sensitivity analysis is presented to show the impact of a change in the assumption about the responsiveness of supply to the value of the live export industry. This assists in determining the relative importance of this variable to a determination of the contribution of the live export industry.

2 *The live export industry*

The live sheep and cattle industries make a significant contribution to the Australian livestock industry, both directly and indirectly. Directly, Australian sheep and cattle producers earn substantial revenue from the export of live animals to overseas markets. This section identifies the aggregate value of these sales using export numbers, prices and values expressed in free-on-board (FOB) terms.

Live dairy heifer exports will be discussed and modelled separately throughout this study. The industry overview, as well as value chain analysis and estimates of the industry's contribution, are contained in chapter 6.

It is important to recognise that the FOB values commonly reported include a number of additional value chain components that are distinct (and excluded) from the live export industry contribution. These are the additional cost components between the farm gate or saleyard and the point of export, including: transportation costs; feeding; veterinary service fees; industry levies; government compliance costs and other transaction costs. The derivation of the value of the direct contribution of the industry, net of these additional components, will be discussed in chapters 3 and 4.

The live export industry has been consistently important to the red meat industry. It has experienced periods of variability and, more recently, steady growth. For the purposes of this report, the contribution of the live export industry will be evaluated based on an average of the observed outcomes from the four 'recent' years 2006 to 2009.

Industry characteristics

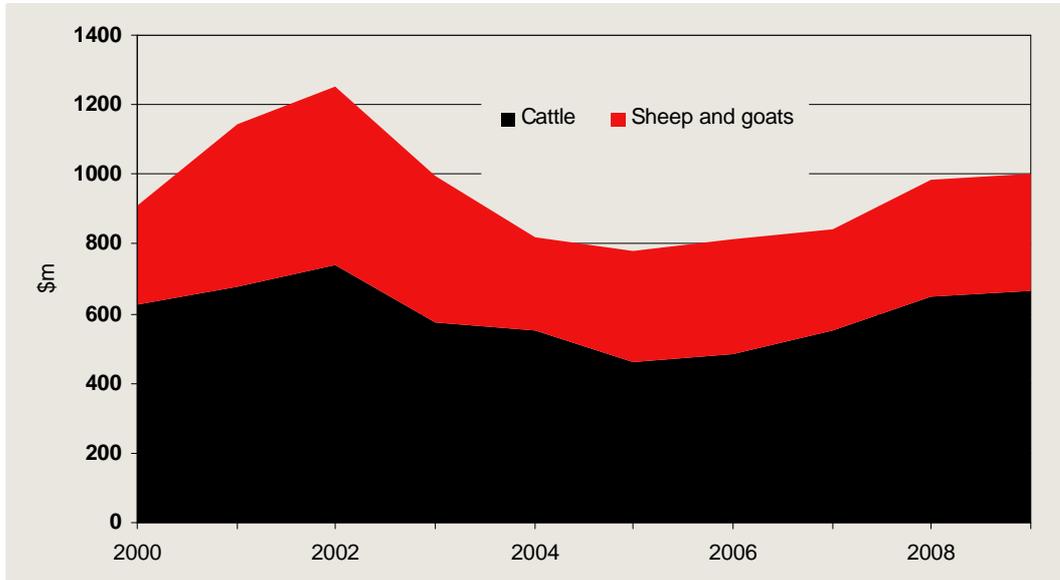
Over the period 2006 to 2009, the export value across all live export industries averaged \$910.6 million each year.

- This compares to a peak of over \$1.2 billion in 2002 (in dollars of the day), achieved prior to 2004.

As shown in charts 2.1 and 2.2, the contribution of live exports to the respective components of the livestock industry varies by type of livestock.

Chart 2.1 shows the value of the sheep, cattle and goat live export industries over the period 2000-01 to 2008-09.

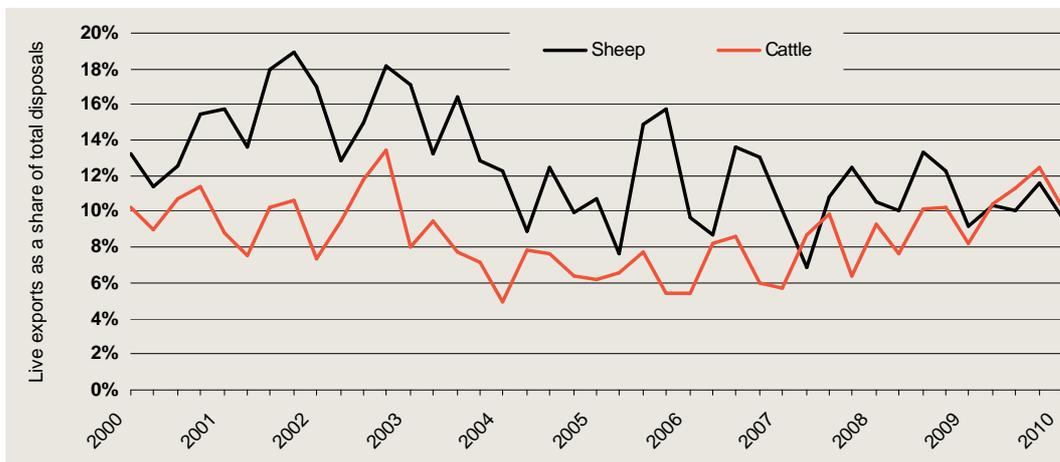
2.1 Live trade export value in 2008-09 terms^a



^a On a free-on-board basis, includes feeder, slaughter and breeding animals.
Data source: ABS 2010.

Chart 2.2 shows the variation in the contribution of live exports to total disposals for each animal.

2.2 Live exports as a share of total disposals^a



^a Table does not include goats
Data source: ABS 2010.

The absolute value of live exports of cattle is greater than that of sheep and goats.

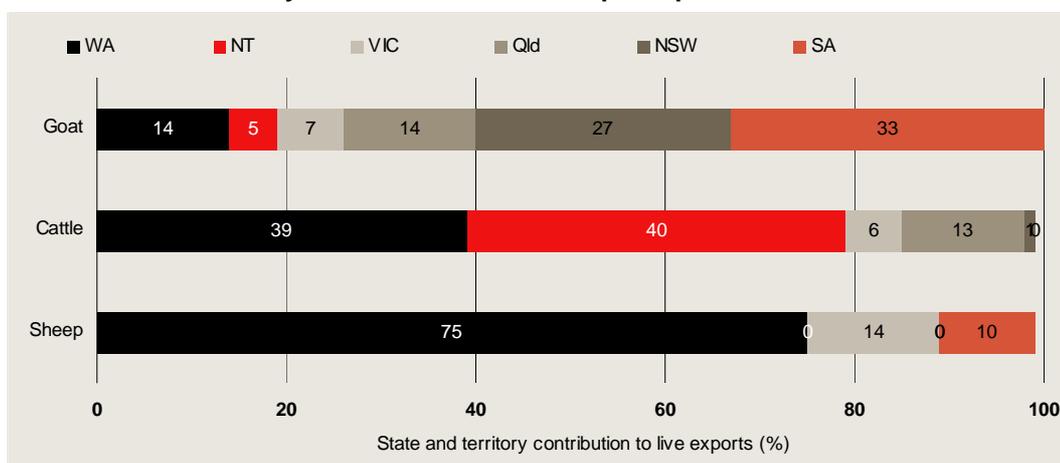
- The average value of live exports over the period 2006-09 was \$588.6 million for cattle and \$311.9 million for sheep (in current prices).
- As a share of total disposals, live cattle exports account for a lower share of total disposals than do live exports of sheep over the last decade. However, the two shares have converged in recent years to approximately 10 per cent.

- In both absolute and relative terms the value of live goat exports is small, averaging \$10.2 million over recent years. However, the market is growing as prices increase and it has future growth potential.

It is important to note that export volumes and earnings are presented for the past decade – with the period 2006 to 2009 shown to be a relatively conservative base to estimate the industry's contribution.

The volume and value of live animal exports varies significantly by state. Chart 2.3 shows the contribution of each state to average live export numbers over the period 2006-09.

2.3 State and territory contributions to live exports period 2005-06 to 2008-09



Data source: LiveCorp 2010.

The northern Australian live cattle industry, particularly in Western Australia and the Northern Territory, has undertaken significant structural adjustments to target the live export market.

- More than 90 per cent of total live cattle exports were sourced from the northern region (ABARE, 2008), including cattle sourced from the Northern Territory (40 per cent), Western Australia (39 per cent) and Queensland (13 per cent) over the period 2006-2009.

The importance of the live cattle trade to northern Australia has increased over time, with over 75 per cent of properties reported to be partially or completely reliant on live cattle receipts (ABARE, 2007). Furthermore, where the live export industry has reinforced breeding and fattening systems geared towards south east Asian (rather than domestic) markets, there has also been a reduction in the number of accredited abattoirs in the region as slaughter cattle were diverted away from the beef trade (ABARE, 2008).

Western Australian ports handle approximately 39 per cent of live cattle exports on average.

- Fremantle accounts for 17 per cent, Broome for 11 per cent, Wyndham for 7 per cent and Port Hedland for 3 per cent.
- The Northern Territory exports approximately 40 per cent of cattle each year, all from the Darwin port.
- The remaining exports leave from various Queensland ports (17 per cent), Portland in Victoria (5 per cent) and a small portion from ports in Victoria (1 per cent).

Most live sheep exports are sourced from Western Australia, which supplies an average of 75 per cent of total exports.

- Fourteen per cent of exports on average come from Victoria, and 10 per cent comes from South Australia.
- In terms of ports, approximately 75 per cent of live sheep exports leave from Fremantle; 15 per cent from Portland; and 10 per cent from Port Adelaide.

The goat industry consists mainly of rangeland goats that are mustered and domesticated rather than intensively produced on properties.

- Subsequently, state contributions to live goat exports have varied considerably from year-to-year, depending on the rangeland goat population and the conditions and prices in other agricultural markets.

With goat supply chains still developing, the annual goat export volumes and state and territory share of total live exports are subject to wide annual variations.

- In recent years the majority of live goat exports have come from South Australia and New South Wales, which contributes 33 per cent and 27 per cent of total exports respectively.
 - Most goat exports have been handled by the Adelaide and Sydney airports.
- The remaining 40 per cent is contributed by Queensland, Western Australia, Victoria and the Northern Territory.

Because many of the goats exported are from rangelands, over 90 per cent are exported by air transport rather than by boat.

Volume, values and prices

In 2009, approximately 954 000 head of live cattle were exported – the highest export numbers since 2003. Furthermore, the export price of sheep has steadily increased over the past decade, reaching an average price of \$100 per head (FOB) in March 2010.

According to LiveCorp and ABS data (2010), live export values (in current prices) and volumes over the period 2006-2009 have been:

- *for cattle* – an average of \$588.6 million (FOB basis) each year in annual export earnings and 794 000 head (inclusive of breeders).
- The average price of cattle in FOB terms, excluding higher value breeders, has been approximately \$656.5 per head
 - or \$3.79 per kg cwe (based on an average live weight of 315 kilograms and a live weight to carcass weight ratio of 0.55).
- *for sheep* – an average of 3.93 million head at a value of approximately \$311.9 million (FOB). (Exports are mainly of ewes, wethers and lambs³.)
 - The average price has been approximately \$76.0 per head, or \$3.04 kg cwe (based on an average live weight of 50 kilograms and a live weight to carcass weight ratio of 0.5).
 - Although the FOB price is not indicative of the farm gate price, this compares to an average saleyard price for heavy lamb and mutton of approximately \$2.62 kg cwe.
- *for goats* – an average of approximately 81 000 goats at an average gross value of \$9.8 million per year.
 - This implies an average price of goats is \$120.7 per head (FOB basis); however the international data for goats is highly irregular and potentially unreliable.

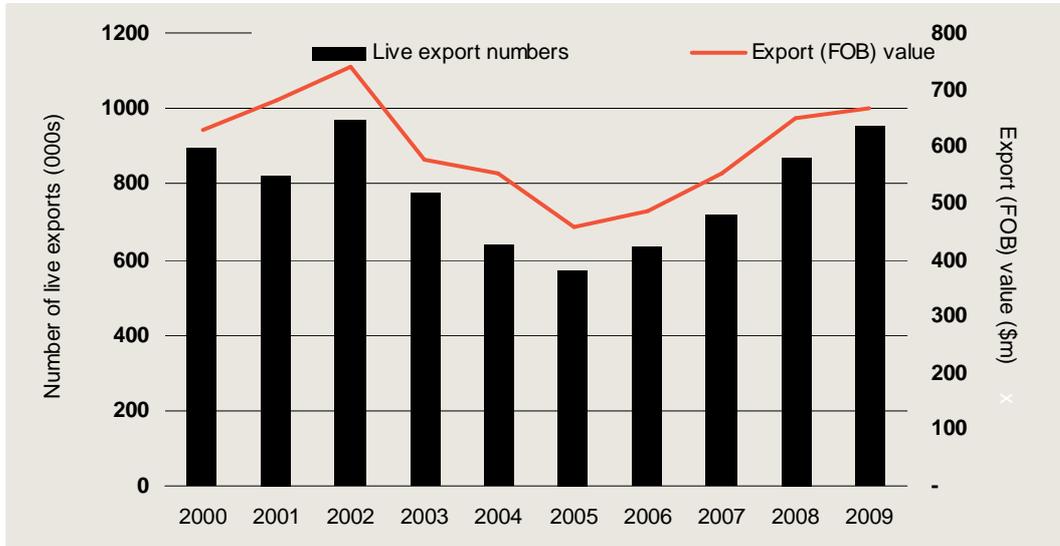
Cattle and sheep

Charts 2.4, 2.5 and 2.6 show the volume and value of trade of live cattle, sheep and goat exports (respectively) in FOB terms over the past decade.

Whilst most live cattle exports are intended for feeding and eventual slaughter, a small but significant number of cattle are exported each year for breeding purposes. This has fluctuated between 2 and 11 per cent of total exports. Breeders receive a significant price premium over cattle intended for slaughter, and their sales are sufficiently significant to affect the average reported FOB prices and values across all cattle types (see chart 2.4).

³ These would be mainly comprised of older sheep although the requirement for animals to be in excess of 28 kg does not preclude 'lambs' from trade. It has been estimated that up to 30 per cent of sheep exports are comprised of lambs.

2.4 Number and export value (FOB) of live cattle in constant prices



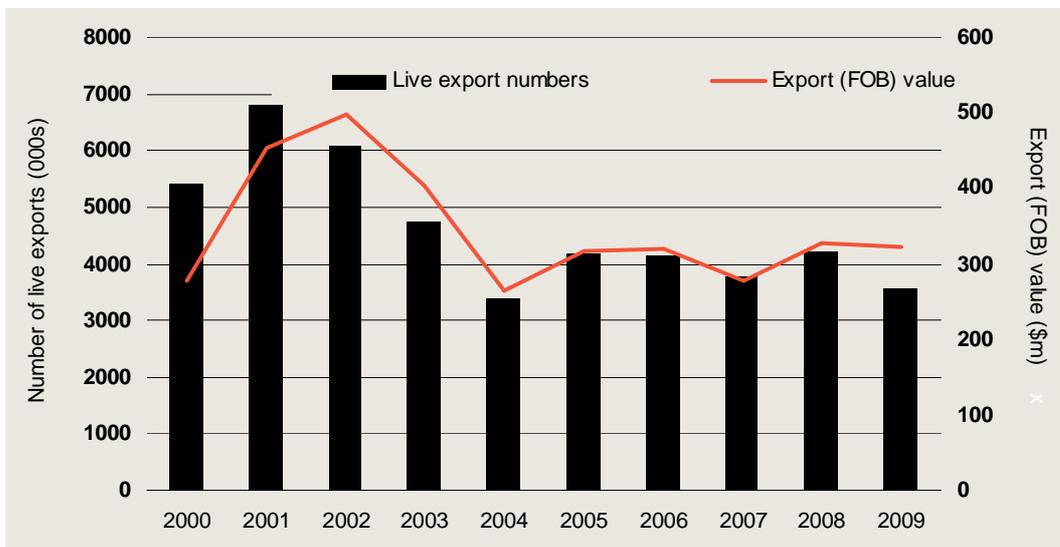
Data source: LiveCorp 2010. Adjusted by The CIE 2010 through RBA Inflation calculator.

While live cattle exports have been increasing rapidly over the past four years, live sheep exports have remained fairly static flat (see chart 2.5). The reduction in the Australian sheep flock, in reaction to conditions in the wool market and the result of transfer of land out of the livestock industries into grain, has had a significant impact on sheep numbers available for export.

- Since 2003, with declining sheep numbers and strong demand from the live trade, the composition of animals being exported has changed away from older culls to younger stock – as a result of flock demographics.

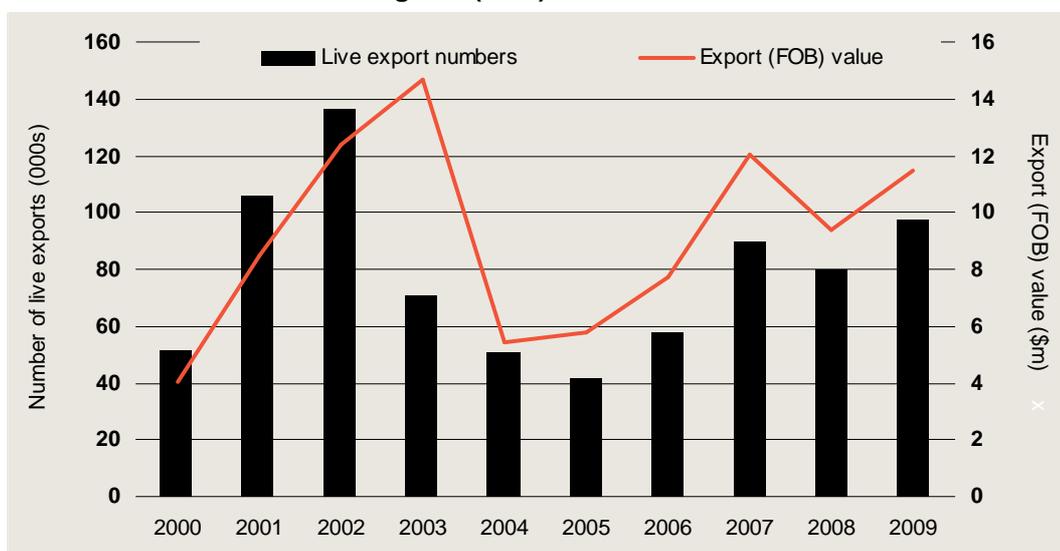
The Australian goat industry is the leading goat meat exporter in the world: the live export market is relatively small but is growing steadily (chart 2.6).

2.5 Number and export value (FOB) of live sheep in constant prices



Data source: LiveCorp 2010. Adjusted by the CIE 2010 through RBA Inflation calculator.

2.6 Number and value of live goats (FOB)



Data source: LiveCorp 2010.

The goat market in Australia is constrained by inconsistent supply and quality due to the lack of established supply chains. Live goats for export are required to be properly prepared in managed systems. This has constrained the supply of goats, despite high levels of return, since expansion of the industry depends on the availability of suitable labour, which is subject to the opportunities available in other livestock and agricultural markets.

- The number of goats under management is steadily increasing, with some pastoralists recognising the potential value of established goat enterprises that provide a regular supply of quality meat.

Live export markets

Despite inherent variations linked to location and characteristics of animals and their meat, the markets for Australia's live exports are all characterised by relatively price inelastic demand and are, as such, high value markets. This section provides an overview of the various destinations for Australia's live animal exports.

Live cattle exports

The markets for most of Australia's live cattle exports are in countries which are relatively close to Australia (within 10 days transport).

The live export of cattle is underpinned by strong consumer demand in Indonesia, with live export numbers growing from 387 000 head in 2006 to 773 000 head in 2009 – or from around 50 to 80 per cent of total export numbers.

- Robust population and economic growth in Indonesia, in addition to recent investment in enhanced feedlot capacity, is expected to result in continued

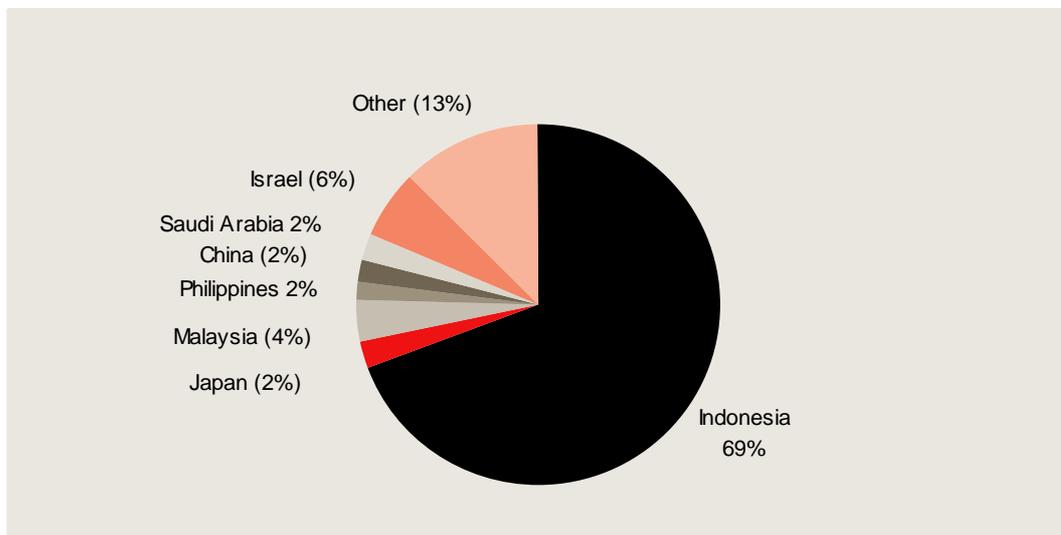
demand growth for Australian cattle over longer term despite recent difficulties in permit provision and enforcement of a maximum individual weight limit of 350 kilograms (MLA Market information, 2010).

The remaining live cattle exports are predominantly in Asia, including the Philippines, Malaysia, Japan and China. While the markets in Malaysia and the Philippines continue to contract, the volume of trade with China has increased. China also represents a higher value market given the heavy influence of the more lucrative dairy cattle shipments.

While the Middle East has played a small role in live cattle exports, there has recently been steady growth in some markets including Israel, Libya and Jordan. Australia also recommenced trade with Egypt, following the closure of trade in March 2006 as a result of incorrect treatment of cattle. Commercial trade with Australia hadn't occurred for some time previously as a result a weak Egyptian currency and economy and the availability of less expensive Brazilian beef imports (LiveCorp, 2010).

Chart 2.7 shows the average share of the main markets for live cattle exports over the period 2006 to 2009, in terms of the *volume* of trade.

2.7 Live cattle export volume by destination – 2006 to 2009



Data source: LiveCorp 2010.

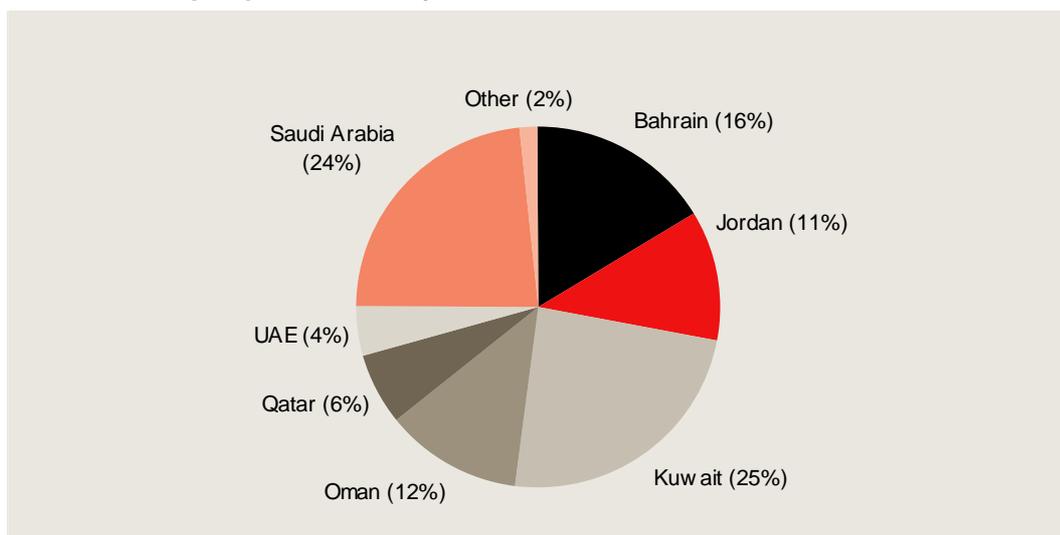
Live sheep exports

The major markets for Australia's live sheep exports are in the Middle East, which took over 98 per cent of sheep exports over the past four years. Live sheep export markets in Kuwait, Saudi Arabia, Oman, Bahrain and Qatar have been particularly important, in terms of the volume of trade. For cultural and religious reasons, the

demand for live sheep in these markets is resilient and Australia provides one of few sources for high quality animals with foot and mouth disease (FMD) freedom status.

Chart 2.8 shows the average share of the main markets for live sheep exports over the period 2006 to 2009, in terms of the *volume* of trade.

2.8 Live sheep export volume by destination – 2006 to 2009

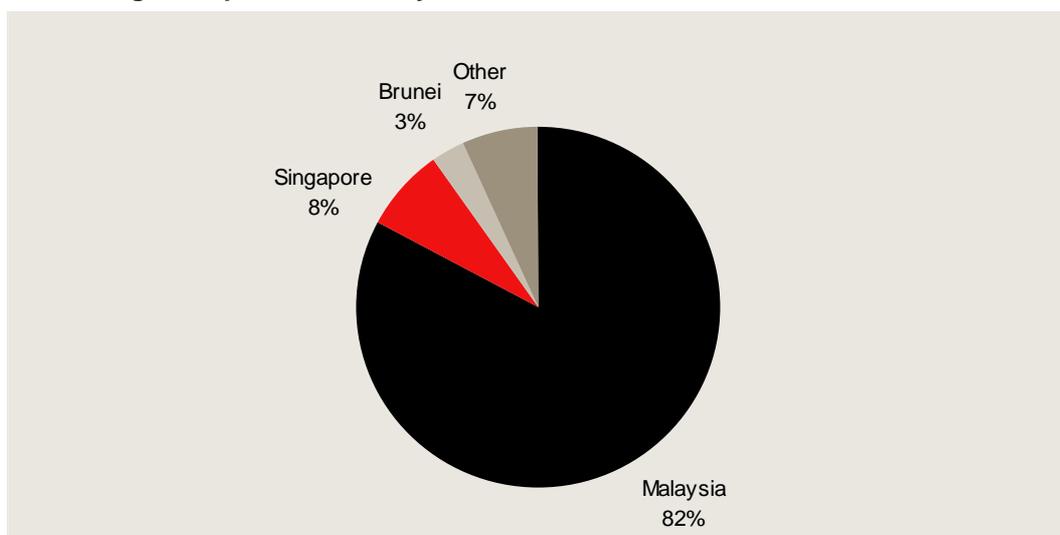


Data source: LiveCorp 2010.

Live goat exports

As shown in chart 2.9, the key market for Australian live goat exports is Malaysia, which has on average accounted for approximately 82 per cent of live exports.

2.9 Live goat exports volume by destination – 2006 to 2009



Data source: LiveCorp 2010.

Approximately 90 per cent of goats exported to Malaysia are intended for slaughter: the rest are imported for breeding, and receive a higher price.

3 *Farm gate values for live exporters*

The export of live animals generates significant value for the Australian economy, within the livestock industry and to other industries. An important step in understanding the value of the live export industry to the broader livestock industry and other industries that provide services to the live export industry – requires estimating the farm gate or saleyard value received by producers for entering the live export market.

This report estimates this difference using the GMI model of the global meat market.

- The period used to establish the industry contribution is the average of the four year period 2006-2009.
- The value of the live export market is reflected in the difference between the farm gate GVP for all producers over the period 2006-2009 and that revenue they would have likely received in the absence of a live export market over this same period.

Using the model requires developing estimates of the farm gate value of live exports. While the previous chapter reported international trade data on Australian live export prices and export values (on a FOB basis), this chapter assesses the portion of the FOB value that is likely to be received by the producer. This farm gate price reflects the return, or premium, for selling livestock to live export market specification.

- The value received therefore would be, on average, equal to or greater than the average price received for selling to a saleyard or abattoir.

Farm gate values for each livestock type has been assessed by identifying the contribution of key components of the value chain and subtracting these cost components from the FOB value.

- The required information has been obtained from the literature, in particular, the Hassall and Associates (2006) and AgEconPlus et al (2007) reports, and from consultation with the live export industry.

Value chain analysis

The value chain analysis carried out for this study has tried to quantify the major cost items incurred from the farm gate to the point of exit from Australia, including the cost of services such as loading and sea/air freight. The largest single cost

component in the overall supply chain to export markets, the cost of sea freight, is highly variable over time and between shipments. This is because of variable capacity utilisation of the specialised ships that have been fitted-out for the live trade.

- Therefore, sea freight, fodder for the voyage, on board stockmen and veterinaries and insurance are *excluded* from the FOB values.

The value chain analysis provides an indication of:

- *the beneficiaries of revenue generation from the live export industry* – where the post farm gate industries receive a significant but variable share across livestock types.
- *the estimated farm gate share of the FOB value of live exports* – where there is reliable data on gross value at port (in FOB terms), this is particularly useful to derive the farm gate value and GVP.

Table 3.1 provides an indicative value chain for live sheep, cattle and goat exports. It is based on average costs over the period 2006-2009.

3.1 Notional value chain for live feeder/slaughter cattle, sheep and goats

<i>Item</i>	<i>Sheep</i>	<i>Cattle</i>	<i>Goats</i>
	<i>A\$ per head</i>	<i>A\$ per head</i>	<i>A\$ per head</i>
<i>Unit price of live export (FOB)</i>	76.0	656.5	67.5
<i>Value chain – costs inclusive in FOB</i>			
Road transport to quarantine/wharf	5.0	17.2	3.5
Transit insurance	0.4	7.7	0.4
Agents' fees	3.1	17.2	1.5
Feeding at pre-export assembly depot	5.0	12.0	5.5
Agistment and handling	4.5		
Wharf charges	0.2	1.5	1.2
LiveCorp	0.9	4.0	0.9
Third party Vet	0.1	3.4	1.8
AQIS and quarantine	0.1	1.3	2.0
Stevedoring and weighbridge	0.8	3.7	0.7
Administration charge	0.8	3.4	
<i>Implied farm gate value livestock</i>	55.0	585.0	50.0
Fodder for voyage	5.0	20.0	5.0
Sea freight and insurance	24.9	167.8	40.1
Stockmen & on board veterinary	0.3	2.0	0.3
<i>Estimated CIF value landed at destination</i>	106.2	846.2	112.9

Source: CIE.

The value chain analysis presented in table 3.1 provides the following estimates:

- an average farm gate price for sheep of \$55 per head, and a landed value of \$106 per head;
- an average farm gate price for cattle of \$585 per head, and a landed value of \$846.2 per head; and

- an average farm gate price for goats of \$50 per head, and a landed value of \$113 per head.

For the purposes of the modelling and this analysis, prices are for animals intended for slaughter and not for breeding. The focus of the GMI model is feeder and slaughter animals that directly contribute to meat supply in each country. The relationship between the trade in breeding stock and how they are used is very difficult to identify and quantify.

- The number of breeders traded varies by livestock type, where only the live cattle export industry export a significant number of breeders annually.
- Total numbers of live cattle exported, intended for breeding, is quite small at 8 200 head with an average value of \$885 per head.

The farm gate value is derived by deducting from the FOB value estimates of the costs incurred in the value chain in taking animals from the farm gate to the point of export. The unit price of live exports in FOB terms has been taken directly from Australian Bureau of Statistics (ABS) international trade data statistics. The cost components, however, have been estimated by drawing on previous studies and from industry consultation.

International trade data also provides information on CIF (cost, insurance and freight) value of trade landed in the importing country. The reliability of this information can vary between countries, and by commodity – depending on the use of reporter or partner country data. CIF values of live trade imports taken from UN trade data have been used to cross check the CIE's CIF value estimates.

- The landed unit value of cattle in the major export destination of Indonesia in 2009 was \$839. The CIE estimate of an average CIF value of \$846.2 per head is therefore consistent with landed prices in international trade data.
- The implied CIF unit value of imports of Australian sheep derived from international trade data is highly variable, so this data cannot be used as a check on the estimates in table 3.1.
- The landed (CIF) unit value of goats in Malaysia, the major goat export market for Australia, was an average of \$124 per year over the past four years.
 - The Australian data on FOB values and volumes for live goat exports is highly variable and unreliable as a mechanism to estimate the unit price of goat exports. However, the landed price reported in Malaysian trade statistics proved a more reliable check that supports the estimates of the CIF value of an average live export goat in table 3.1.

This value chain analysis makes it possible to estimate the revenue streams accruing to the various industries that are involved in the post farm gate elements of the live export trade.

The gross margin generated in the exporting industries, in an average year, can be estimated by multiplying the average number exported by the difference in the CIF price and farm gate price. These revenues are estimated to be:

- \$201 million for live sheep exports;
- \$207 million for live cattle exports; and
- \$5 million for live goat exports.

A significant share of this revenue, estimated to be between 36 and 51 per cent of revenue across the live export industry, is generated locally in Australia. The cost component which tends to be predominantly foreign owned is the shipping industry – which is expected to absorb the majority share of post farm gate costs.

But producers receive the majority of the revenue stream. Table 3.2 summarises the farm gate revenue and total revenue stream expected to be generated by the live export industry in an average year, based on export volumes and prices over the period 2006-2009.

3.2 Farm gate GVP and total revenue from live exports

		Sheep	Cattle	Goats
Average export volume	000s	3 930.7	794.1	81.2
Average FOB value	\$/head	76.0	656.5	67.5
Estimated farm gate return as a share of FOB value	%	72.3	89.1	74.1
<i>Expected farm gate GVP</i>	\$m	215.9	464.6	4.1
CIF value	\$/head	106.2	846.2	112.9
<i>Expected total revenue</i>	\$m	417.3	672.0	9.2

a FOB price and farm gate prices exclude breeders.

Note: All FOB values based on international trade data from LiveCorp 2010 (ABS international trade data), except for live goat exports – adjusted by the CIE to reflect market observations. Prices are shown in Australian dollars. Breeders are not included.
Source: the CIE 201

It also shows the portion of the unit price of cattle (FOB basis) received by producers. This equates to approximately:

- 72 per cent of the FOB value for sheep, or an average of \$216 million each year;
- 89 per cent of the FOB value for cattle, or an average of \$465 million each year; and
- 74 per cent of the estimated *adjusted* FOB value⁴ for goats or an average of \$4.1 million each year.

The remaining revenue is spread across a range of industries that provide services to the live export industry. These include the agricultural industry, such as fodder supply companies and livestock agents, exporting companies and ports and road

⁴ The FOB price for goat, implied through the international trade data is highly variable. As such the FOB price has been adjusted through adding the estimates for the post-farm cost components to the farm gate price.

transport providers. It is important to note that these estimates do not represent the total value that would be lost if the live export trade ceased. This is because they do not account for the alternate revenue potential available to producers or the potential losses in terms of reduced prices for producers in the meat processing industry. Estimates of the *net effects* generated using the GMI model are presented and discussed in chapter 5.

4 *Key determinants of the contribution of live export industry*

The total contribution of the live export industry to all livestock producers can be quantified by estimating the cost of closing the live export industry. In the absence of live export markets, producers directly supplying the live trade would have to send their livestock (ultimately) through the processing sector. This would involve a range of additional costs to those producers supplying the trade direct, and indirect effects on other livestock producers as a result of increased supplies into processing.

- In the medium term, it is expected that there would be an increase in the quantity of livestock in the meat processing sector, but an overall reduction in livestock numbers.

The net effects of closing the live export industry would depend on demand and supply responses, which are expected to result in the following effects:

- *a net increase in livestock for processing and so higher level of output by processors* – the transition of livestock and producer orientation from live export markets back to meat markets via processing is expected to result in a net increase of production of the Australian processing sector.
 - As a result of higher transitional costs of switching livestock to these markets, it would be expected that there would be some adjustment on the supply side in response to lower profitability.
 - In this case, these higher costs are most likely to be in the form of higher transportation costs – in addition to loss of weight and condition as a result of long transport times – as producers pay the cost of redirecting their livestock to saleyards and abattoirs in other regions.
 - These two effects will result in a loss in value compared with the ‘*with live export case*’, that should be reflected, in part, by the current market differential between prices received at the farm gate for the live export industry and processing markets.
- *a net reduction in the prices received by all producers* – compared with the ‘*with live export case*’ – resulting from an increase in the quantity supplied to the meat market;
 - Producers for the live trade are likely to receive lower prices than in live export markets whilst these lower prices would also apply to those producers who had not previously been supplying the live trade.

Demand response

The closure of the live export industry would increase the supply of livestock available for feeding and ultimately for processing through abattoirs. A subsequent reduction in price would be required to rebalance supply and demand in these markets. There are two important factors which would affect these responses:

- *meat processing market capacity* – affecting the production of meat products in each state and, subsequently, the number of livestock possibly requiring interstate transportation; and
- *price responsiveness of domestic and export markets* – drivers of demand such as level of meat consumption, competition from other meats and suppliers and prevailing exchange rates are likely to be crucial to determining this responsiveness.

Meat processing capacity

The potential for red meat processing industries to accommodate the additional supplies of animals would be constrained by abattoirs capacity, particularly in the short term, and the availability of labour. This capacity utilisation across the country may also impact the costs associated with transporting livestock to areas where they can be processed.

Limited data on capacity utilisation, as a result of commercial sensitivity, makes it difficult to estimate the potential impacts for closure of the live trade for each state. There is, however, some aggregate information on both the number of abattoirs and the annual throughput by state – where the throughput levels may indicate an upper limit of demand possibilities.

- While processors may increase throughput by adding shifts and introducing line adjustments, it is not expected that any significant additional meat processing capability would be generated in response to the closure of the live export industry in the short to medium term.
 - Recently, in late 2010 and early 2011, there have been calls for the construction of processing capacity in the Northern Territory and northern Western Australia to reduce the exposure of cattle producers to the live trade and to process older cattle types not required by the Indonesian market.
- That is, we have assumed that existing processing capacity in terms of plant and machinery would have remained at it was over the period 2005-06 to 2008-09, especially in those areas that service the live trade.
 - The operating environment for the processing sector was challenging over this period as a result of a number of factors including low numbers of cattle and sheep available for processing, a high Australian dollar, lower co-product prices and a highly competitive labour market.

- The current economics of opening new plants and the risks involved would have been prohibitive. This is in addition to specific constraints which are identified below for each species.

The upper limit of throughput by the meat processing sector would provide an indication of the number of livestock that would be required to be transported interstate. In turn, this would form the basis for an assessment of additional transportation costs.

Cattle

In the absence of processing facilities in the Northern Territory, there would also be demand constraints in terms of the capacity of the northern Australian processing sector to absorb additional cattle.

- The current abattoir in Katherine has been in moth balls for some time. There would be a need for significant investment in processing facilities in northern Australia, if the live trade were to close, because of high costs including the availability of skilled labour and the highly seasonal nature of cattle turnoff in that area.
- In absence of the live trade, it may be possible that over the long term, one or two facilities may open. But it is unlikely that these could process all diverted live exports. The only realistic option would appear to be to send the majority of cattle east or south for finishing and slaughter.

Cattle from North West Western Australia and the Northern Territory would be required to travel to Queensland, for either fattening in feedlots or on pasture before being sent to abattoirs for processing. Since on average 93 per cent of cattle for live export originates from northern Australia, it is expected that a high percentage of cattle properties would incur the additional transportation costs should they keep operating.

- The cost associated with transitioning cattle to the processing sector would include the cost of transportation for an average of approximately 744 000 head each year including breeders.

Due to the relative isolation of the northern cattle industry, these transportation costs are expected to be high and sustained over time. Where there is a lack of infrastructure for alternative industries in northern Australia, and cropping tends to be limited and heavily cyclical, the response in the cattle industry is expected to be very low compared with the sheep industry – where producers have a range of other options.

It is likely that the cattle processing sector, would have had sufficient capacity to process another 744 000 cattle.

The average number slaughtered over the period 2005-06 to 2008-09 in Queensland was 3.6 million cattle and calves.

- If all cattle exported from the Northern Territory and North Queensland were diverted (eventually) to Queensland, then slaughter numbers would need to increase by 13 per cent from observed levels.

The accommodation of additional cattle in Queensland, in practice, would be handled through a number of mechanisms:

- processors were already below capacity and could increase this utilisation by adding to the number of shifts (requiring more labour or the move from part to full time employment) in the short to medium term;
- by the diversion of cattle originating from northern NSW, routinely slaughtered in Queensland, south for processing in central and northern NSW; and
- investment in more capacity – if the processing sector saw the closure of the live industry as a long term opportunity.

The average number slaughtered over the period 2005-06 to 2008-09 for Western Australia was 0.466 million cattle and calves.

- If all cattle exported from the WA ports were diverted to Harvey for processing, then slaughter numbers would need to increase by 27 per cent from observed levels.

Sheep

Constraints in the processing sector, in terms of the capacity to absorb additional livestock, are expected to be most important for the Western Australian sheep industry. On average, 80 per cent of live sheep exported are sourced from Western Australia.

In Western Australia, over the period 2006-09, an average of 2.96 million live sheep were exported and nearly 5 million sheep were slaughtered each year.

- Potentially this represents a 60 per cent increase in the number of sheep that would need to be processed.

Over the past decade, the highest number of sheep slaughtered annually in Western Australia was 5.45 million sheep in the 2005-06 financial year. This compares to 6 million sheep processed in 2000. Therefore, capacity utilisation in Western Australian for the period 2006-09 is estimated to be above 80 per cent.

- Allowing for recent developments in industry capacity and technological advances, including the recent addition of one sheep abattoir which may add up to 0.5 million in throughput capacity, sheep processing capacity is considered to be around 6 million.

- Therefore sheep processing sector in Western Australia may have spare capacity of up to 1 million sheep. This was confirmed through consultation with processors in Western Australia who reported the most significant impediment to processing 6 million sheep would be the required labour.
 - If processors judged that there would be a permanent change in the market (after notional closure of the trade), they could provide full time positions and training which would make them more attractive in the labour market.
- In the ‘without live export case’, prior to any adjustment in supply, there could be approximately 2.96 million additional sheep sent into the processing sector – amounting to an excess of supply relative to processing capacity of approximately 1.9 million sheep.

Higher value livestock, that is lambs, are expected to be absorbed within the Western Australian processing sector before older, lower value animals.

- However, a significant share of lower value livestock, particularly cull ewes, would require interstate transportation to processors in South Australia.

Bottom line

Table 4.1 summarises the expected demand constraints resulting from capacity constraints in the processing sector, including in the Western Australian sheep industry and northern Australian cattle industry. Details of these calculations are laid out in appendix A of this report.

4.1 Expected excess capacity in livestock processing sector by region

	<i>Exports</i>	<i>Slaughter</i>	<i>Slaughter capacity</i>	<i>Excess capacity^a</i>
	million	million	million	million
<i>Status quo</i>				
Sheep and lambs in WA	2.96	4.96	6.0	0
Cattle in northern Australia	0.74	0	0	0
<i>No live export trade</i>				
Sheep and lambs in WA	0	7.92	6.0	1.92
Cattle in northern Australia	0	0.74	0	0.74

^a The excess capacity refers to the number of sheep and cattle that would require interstate transportation to meat processing markets in the no live export trade scenario. Cattle includes slaughter cattle (0.74 million) plus a small number of breeder cattle. Source: Appendix table A.1 to A.3.

Demand responsiveness in domestic and export markets

An increase in the supply of meat in Australia’s beef, lamb, and mutton markets and associated reduction in market prices should result in diversion of the additional product to the domestic and export markets. The extent to which each market would increase the quantity demanded of Australian meat products would depend on both direct and indirect effects:

- directly, those countries that consume meat from Australian animals exported live will have to move to other sources of supply – which may include Australian meat exports in the form of boxed product; and
- indirectly, increases in exports to most destinations would be expected as a result of higher supply and lower prices – this increase would depend on the responsiveness of demand to the price of Australian export product in each market.

The effect of closing the live trade will be highest in markets where there is limited scope for substitution between live export markets and meat processing markets and where demand for Australian beef and sheepmeat exports is very unresponsive to price.

Cattle and beef markets

Overall, the capacity for Australian meat exports to substitute for the equivalent live export demand depends on the market.

For beef, the prospects for increased sales of boxed beef to South East Asia and the Middle East are improving but off a comparatively small base. Existing dependence on live animals is due to a number of factors:

- the dominance market channels through which Australian livestock are sold – fresh markets as opposed to supermarkets selling imported box product; and
- the challenges associated with the logistics of selling imported beef, including lack of access to storage and refrigeration especially for a large proportion of the south east Asian populations.

Over recent years Australian exports of boxed beef to Indonesia have grown strongly, reflecting some substitution for live exports but also the strength in demand for all beef in Indonesia – which has also benefited live exporters. It is expected that this additional demand will impact both the Australian live and boxed trade.

- While the purchase of beef through supermarkets and food service in Indonesia is emerging, it is expected that purchase through fresh markets will continue to be important for the foreseeable future.
- Therefore not all of the beef that is sourced from Australian cattle will be diverted to demand for imported boxed product. Indonesian consumers prefer fresh meat (freshly slaughtered) if available but there would be an adjustment period before greater acceptance the purchase of boxed beef at wet markets.

This is not the case for other export markets such as the Philippines and Malaysia. In each of these markets, Australian live cattle have been less competitive in the face of direct competition from Brazilian boxed product and Indian buffalo meat (Carabeef) – both countries are classified as not being FMD free. While the Philippines market has taken only small quantities of Australian live cattle over the past four years,

Malaysia has been a more significant destination but faces the same competitive pressures. It would be expected that for Malaysia, closure of the live trade would translate into a relatively minor increase in demand for Australian boxed product.

In terms of Middle Eastern markets, there are a number of reasons why a closure in the Australian live trade would *not* translate into an increase in demand for Australian boxed product.

- As already noted, consumers in this region prefer fresh product consumed the next day after slaughter.
 - Even though with increasing incomes, consumers are more likely to purchase boxed beef through supermarkets, high income households will still purchase meat through fresh markets because of purchasing behaviour of their household staff.
 - In absence of Australian cattle, they are likely to switch to other sources of live cattle (such as Somalia, Sudan, Uruguay and Brazil) or switch to other meats.

There is also limited capacity for the domestic market to absorb quantities of meat especially for cattle reared in north and west Australia. Cattle reared for live export from northern Australia are *Bos indicus* breeds, less favoured by Australian beef consumers, are less likely to grade without additional finishing or post-slaughter treatment. Therefore they may not receive as high a price domestically as they receive in live export markets. That said, these cattle types are becoming increasingly accepted by the trade and consumers in the domestic market.

In time, without a substantive market for live *Bos indicus* breeds, producers may return to a form of production known as 'wild harvest' that existed prior to the opening of the south east Asian and Middle Eastern markets.

- Before the emergence of the live trade, cattle in northern Australia had significantly lower turnoff rates, where cattle was commonly captured or 'harvested' from rangelands to supply manufacturing meat markets such as the United States.

In the short term, however, the available live export breeds would mainly be sent through the processing market to the Japanese ox and the US boxed beef market. Following a closure of live animal exports, the key beef markets for Australian grass and grain fed beef are likely to remain as:

- Japan – expected to absorb the majority of surplus supply of *grain fed* cattle, whilst also taking a significant portion of *grass fed* cattle.
- United States – anticipated to absorb up to half the additional supply of *grass fed* cattle.
- South Korea- expected to substantially raise its intake of Australian beef in both the grain and grass fed markets.

The remaining increase in the quantity demanded of Australian beef is expected to be spread across predominantly Asian countries.

Live sheep and sheep meat markets

Live sheep exports currently represent around 10 per cent of total final sales of lambs and sheep in Australia. As such, if live exports ceased, substantial diversion between markets would also be required. The potential for lamb and sheepmeat markets to absorb the additional supply over the long term depends on their responsiveness of demand to likely changes in prices.

The scope for replacement of Australian live sheep in the Middle East with Australian boxed product is limited: for similar reasons to those identified for beef above. The preference for fresh product remains significant.

- But there is some scope for consumers to substitute towards live sheep and goats from other countries (such as North Africa, China and South America). But these animals are recognised as being lower quality to Australian exports.
- Also consumers could substitute towards other meats.

Increased marketing to supply halal sheep meat to export markets would have to be pursued more aggressively and lamb and mutton export prices would have to fall in order to compete with lower priced competitors such as China and Uruguay.

Over the short to medium term, overseas markets could absorb Australian lamb and mutton.

- For lamb, the key markets that are expected to absorb increased volumes are the United States, the European Union, Japan and, to a lesser extent, China.
 - However, the EU market is currently constrained by a bilateral tariff quota.
- Current exports of Australian mutton are across a wide range of countries including the European Union and some Asian markets – all of these regions would be expected to absorb more mutton in response to higher production and lower prices.

Supply response

A key question is the extent to which the closure of the live export trade would result in an increase in supply of livestock towards the processing sector relative to moving away from beef or sheep production to another enterprise. This would largely depend on producers' appraisal of their situation which would involve consideration of the following:

- *the potential costs associated with the transition from live export markets to meat markets* – including the potential reduction in farm gate prices and/or an increase in transportation costs; and

- *the viability of alternative enterprises and their associated benefits and costs* – which would be a key factor affecting overall supply response.

This section also includes a discussion on the role of current market fluctuations in supply, particularly with respect to the decline in overall flock numbers of sheep. Where the contribution of the live export industry is determined by the difference in actual GVP and potential GVP at a point in time, the potential impact of these supply changes over time is relevant to that contribution. For example, if producers:

- can switch to the processing market without significant price falls or to other enterprises with a minimal fall in profitability – then the contribution of the live trade would be expected to be small; or
- cannot switch enterprises readily and suffer prices that are lower than with the live trade case – then the contribution of the live trade would be expected to be significant.

Supply responsiveness of livestock enterprises

The assumption made about the responsiveness of supply of livestock to prices received (for cattle and sheep) has a number of important implications. The supply elasticity parameter incorporates responses of producers to a change in farm gate prices, where the sensitivity of producers to a change in price which includes the initial decision to transfer existing livestock to the meat processing market and subsequent production decisions, such as to reduce the herd or flock.

If producers have viable production alternatives to the livestock industry, supply responsiveness would be expected to be higher and a change in price would cause producers to leave the livestock industry. On the other hand, in the absence of viable alternatives, supply would be relatively unresponsive and a change in the livestock price would not lead to significant variation in supply.

- As explained in box 4.2, sheep and cattle properties, particularly northern Australian cattle enterprises, do not always have available and viable alternatives.

In the case of relatively unresponsive supply to changes in price, producers would predominantly shift cattle and sheep from the live export market to the meat processing market. As such, the quantity of livestock supplied to the meat processing industry would be higher than under the *'with live export case'*. Producers would then receive a lower price, on average, for their livestock than with an operational live export industry.

The selection of the supply elasticity parameter would need to be reflective of these factors. In the GMI modelling exercise, a relatively inelastic supply elasticity parameter of 0.4 has been chosen. That is, for a 1 per cent fall in price, production is expected to fall by 0.4 per cent.

4.2 Limited options for transition of enterprises

A significant proportion of land that is suitable for alternative production among remaining livestock grazing land has already been converted and the opportunities to convert additional land to crop production are likely to be limited. There are two primary factors underpinning the case for using a relatively unresponsive supply relationship including:

- *land use (agronomic) constraints* – under strong competition for land use, particularly in sheep grazing territory in Western Australia, there has already been significant conversion of land *suitable* to cropping – which offers a higher return per hectare (after accounting for costly labour inputs).
 - Wheat yields have been highly variable in regions on the northern margin of the wheat-sheep zone bordering pastoral areas of SA and WA (ABARE, 2010) – with falling prices observed recently placing such enterprises at risk. Factors such as weed resistance, soil structure and fertility decline are key factors inhibiting the viability of cropping enterprises.
- *capital constraints* – the high capital costs associated with transforming enterprises may preclude a significant portion of land owners from undertaking this shift.

The live cattle industry is thought to be relatively more inelastic than the sheep industry, with high barriers to transitioning enterprises including geographical isolation, seasonal crop conditions and a lack of infrastructure, including irrigation. Although the northern cattle industry is currently a well performing industry, prior to the realisation of high volumes of live animal exports, it was a low value activity.

- According to a recent publication by ABARE (2010), cattle properties in northern Australia had the lowest return on a per hectare basis over the period 2006-07 to 2008-09, but also the highest farm business profit.
- These farms are typically large-scale and extensive grazing properties in the pastoral zone – characterised by low rainfall and less fertile soils.

The responsiveness of supply would also inherently vary by farm structure and location. Both specialist and mixed properties are likely to have already converted from livestock to cropping, where considered viable, as a result of the higher return per hectare offered for crops.

- However, for the purpose of understanding how this variable impacts results, a sensitivity analysis has tested the potential impact of a supply elasticity parameter of up to 0.8.

Trends in livestock supply

A key determinant of the potential prices and farm gate GVP for producers selling to meat processing markets, in the absence of live export markets, is the movements in supply over time.

- However, cattle numbers have remained relatively steady but beef production has increased largely as the result of the increased use of feedlots for finishing cattle.
- The size of the Australian sheep flock has been falling, which is currently at its lowest level since the 1970s.

The fall in WA's flock number is cited by ACIL Tasman (2009) in relation to its view that prices would be relatively unaffected by the closure of the live trade.

- According to the study, there is unlikely to be a dramatic or sustained impact on the price of mutton or lamb in Australia if the live trade ceased (ACIL Tasman, 2009).
- In other words, the logic is that it is unlikely that the closure of trade would dramatically increase meat supply (above the potential increase in demand in current markets) because of the general (and therefore counteractive) trend towards falling supply. The effect then might be sustained prices.

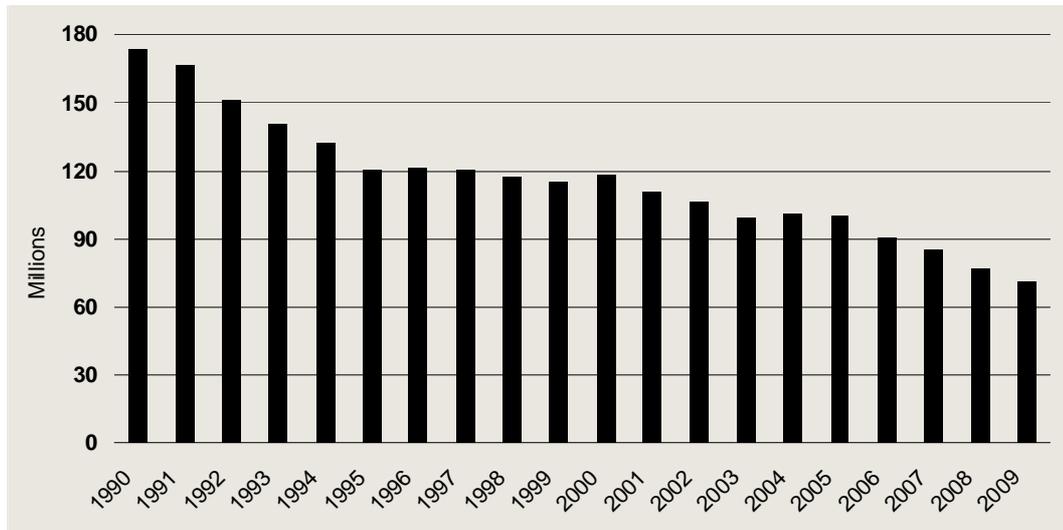
It is important to note that general trends may affect the overall revenue potential in both the presence and absence of live exports – however they do not necessarily impact the industry contribution. To develop an estimate of the contribution of the industry it is the impact with respect to the *baseline* or the '*without live export*' case that is important. That is, whilst supply may have shifted back over a period of time, the value of the live trade is always measured *at a point in time*.

However, clarification on the expected movements in supply over a period of time is also necessary.

- Whilst the national flock size for sheep is falling, this is expected to plateau and sheep numbers to stabilise.
- Cattle numbers also have remained stable for some time although the significance of some parts of the industry has increased over time – namely live exports and lotfeeding.

Chart 4.3 shows the national flock size over the period 1990 to 2009. In 2009, the flock was estimated at 71.6 million head – 57 per cent smaller than in 1990.

4.3 Australian sheep numbers, 1990-2009



Data source: GMI database.

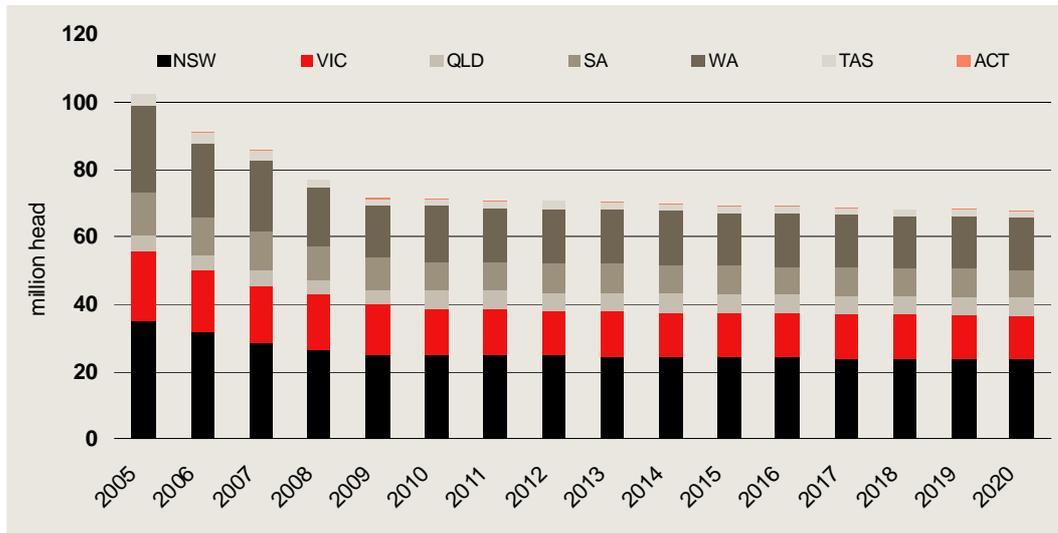
- Various factors have influenced this reduction including persisting drought conditions in most regions, significant structural changes in the markets for wool, lamb and live sheep exports and the higher relative returns from crops and cattle.

Total sheep numbers are projected to continue to fall but at a slower rate compared with that observed over the past 10 years. It is estimated that sheep numbers are likely to stabilise and given historical performance, the shares for each state to also likely to be maintained.

This is because there has already been a significant structural change within the sheep industry – especially in the wool sector. This rate of adjustment should slow as the majority of land that is suitable for grazing has already been converted over to other enterprises – particularly grain production.

Chart 4.4 shows the projections for sheep numbers by state out to 2020 which is based on forecasts for production of meat by MLA and the GMI model. It also accounts for the fact that the number of sheep dedicated to wool production is likely to continue to fall at similar rates to those observed in recent years.

4.4 Projected sheep numbers per state



Data source: MLA 2010. Derived by the CIE 2010 using the GMI model.

Impact of additional transportation costs

As previously identified, a portion of the flock and herd would need to be transported greater distances to reach alternate markets in the event that live export markets close.

To estimate the average cost of additional transportation of cattle from northern Australia and sheep from Western Australia, previous studies were reviewed and industry players were consulted to ascertain current estimates of additional transportation costs. Utilising recent cattle and sheep transportation receipts, earlier estimates (Hassalls, 2006) of additional transportation costs associated with live exports were updated.

Cattle

To calculate the additional transport costs for cattle, the cost of trucking cattle was estimated for:

- NT cattle from Katherine to Roma saleyards in Queensland; and
- WA cattle from Broome to Perth.

The distance from Katherine to Roma is 2 600 kilometres. The current cost is around \$5.45 per kilometre for a 3 deck truck that could transport 80 steers (averaging) 350 kilograms liveweight.

- This is equivalent to \$0.50 per kg liveweight or \$175 per head.
- To be conservative, the transport cost used was \$157.5 per head or \$0.45 per kg liveweight.

- The number of cattle from the Northern Territory expected to require additional transportation is 376 thousand head each year, equating to an approximate increase in transportation costs of \$59 million each year.

In the case of WA cattle, the cost of trucking cattle from Broome to Perth was estimated. Based on a distance of 2 200 kilometres. The same per kilometre transport charge is used above.

- To be conservative, the transport cost used was \$0.45 per kg liveweight or \$140 per head.
- The number of cattle expected to require additional transportation at this cost is 142 thousand head per year, this equates to an approximate increase in transportation costs of \$20 million each year.

Overall the average additional transport cost for cattle would average \$80 million each year over the period 2005-06 to 2008-09.

Sheep

It is estimated that it would cost up to \$25 per head or \$0.50 per kilogram liveweight, above current costs, to transport sheep from Western Australia to South Australia.

- The distance is 2 400 kilometres between Perth and Port Augusta. The current cost is around \$4.80 per kilometre for a 4 deck truck that could transport 400 small ewes or light wethers.
- This amounts to nearly \$29 per head. To be conservative the average transport cost assumed used was \$25 per head.
- Where on average 1.92 million sheep are expected to require additional transportation east each year, this would cost an additional \$48 million every year to be paid by WA farmers (reducing their on-farm return) over the period 2005-06 to 2008-09.
 - In the medium to long term, investments in additional processing facilities would be required.

Other key factors impacting on the contribution

This section briefly examines other macro drivers that would impact on the contribution of the live trade because they impact on both export and farm gate prices received for livestock.

Uncertainties with key export markets

Chapter 2 identified the key destinations for Australian livestock exported live. The characteristics of these markets presents both an opportunity and risk for Australian exporters.

There is a general trend that continued access will depend on a range of government policies pursued in those markets – that have often have conflicting goals around:

- affordability of foods, especially proteins, for households especially in low income groups – including addressing food safety concerns; and
- increased national food security including providing sufficient incomes for producers.

Small changes in the relative importance of these policy settings can have a profound impact on the value of the trade – especially if those governments choose to reduce market access to Australian exporters to achieve domestic price targets.

Exchange rates

The impact of the live export trade also depends on changes in relative prices – in terms of key export markets – this effect also depends on relative exchange rates that impact on the price to users in those markets.

Exchange rate fluctuations have a significant effect on the actual outcomes of commodity prices and export earnings. Over the past few years, the Australian dollar has appreciated against the US dollar, where a strong dollar translates into relatively more expensive Australian exports in other countries. An appreciation of the Australian dollar also places downward pressure on domestic saleyard prices (ABARE, 2009a).

The appreciation of the Australian dollar has contributed to the relatively flat or falling level of beef and veal exports to the United States and Japan – with consumers or purchasers responding to higher local currency prices. These markets are also very responsive to a change in the price in local currency terms.

Yet significant growth has occurred in the Indonesian live cattle and beef export markets, during this period, supported by strong demand and the stability of the Indonesian rupiah with respect to the Australian dollar. These developments are generally seen as favouring live export markets, which are less responsive to price, over those markets which that are more responsive. Therefore, the closure of these live export markets may make the Australian meat industries more exposed to fluctuations in relative exchange rates.

- Changes in exchange rates and the relative risk of selling to different markets would significantly impact on the contribution of the live export trade to the wider red meat industry and economy.
- For this analysis the contribution of the live industry has been analysed at prevailing exchange rates over the period examined.

Freight and compliance costs

The transportation task in the live export value chain includes trucking and shipping costs with a large fuel component. Where smaller vessels are less economic, increases in fuel prices has led to industry consolidation favouring larger vessels (Hassall and Associates, 2006). Investment in vessel capacity over recent years in response to the revenue potential from livestock freight is likely to be sufficient to continue to export, at a minimum, the number of animals exported in recent years.

As illustrated through the value chain analysis (see chapter 3), there are a range of different cost components associated with compliance to animal health and welfare requirements. Standards have progressively tightened as governments have responded to animal welfare incidents and general community concerns.

The cost of compliance would, depending on the market, be borne either by the purchaser of livestock or by the producer at the farm gate. The incidence of these costs would be a function of market forces at the time. Whilst these costs are significant, they tend to be regarded as the 'cost of doing business'.

- Fuel and compliance costs are also significant drivers for export volumes of live cattle and sheep and returns for those exports back in Australia. Increases in these costs would undoubtedly reduce the bottom line of the contribution of the live trade.
- For this analysis the contribution of the live industry has been analysed at prevailing cost levels over the period examined.

5 *Contribution of feeder and slaughter cattle and sheep*

This section of the report quantifies the contribution of the live export industry of feeder and slaughter cattle and sheep to the Australian red meat industry. This contribution will be estimated using impacts on quantities and prices on the Australian cattle and sheep industries that would result from the closure of the live export industry. These impacts were estimated using the GMI model.

- The results are dependent on the assumptions about demand responsiveness across domestic and export markets, and the supply responsiveness of producers that have been used in the GMI model.
- These model parameters are frequently updated and reviewed by CIE in conjunction with MLA to improve the accuracy of the model and reflect contemporary market developments.

Diversion of livestock to meat markets

Tables 5.1 sets out the average annual change in the quantities of beef, lamb and mutton produced and then sold to the domestic market and each export destination over the period 2006-2009 – under the *'without live export'* scenario.

Without any market adjustments, the diversion of cattle grown in northern Australia and diverted initially to Queensland and southern Western Australia for feeding and processing could increase total beef production by around 11.6 per cent.

- After accounting for additional transport costs and impacts on the demand side, the result, increased total Australian beef production by over 100 kt cwe or nearly 5 per cent – the majority of this product would have been exported.
- Australia's major export markets, which are price sensitive, receive the majority of this additional product as a result of lower export prices including the United States, Japan and the other countries group, particularly Russia.
- A key feature of table 5.1 is that demand for Australian boxed beef by Indonesia is lower under the *'without live export'* scenario. This is because without Australian live cattle, all beef in Indonesia would be more expensive than it is now – reducing total demand for all beef regardless of type.

5.1 Impact of the live trade on production, consumption and trade^a

		<i>Grass fed</i>	<i>Grain fed</i>	<i>Beef</i>	<i>Lamb</i>	<i>Mutton</i>	<i>Sheepmeat</i>
<i>Key aggregates</i>							
Production	<i>kt cwe</i>	114	-5	109	51	49	100
	%	6.9	-1.1	5.1	12.0	18.9	14.6
Domestic consumption	<i>kt cwe</i>	1	-11	-10	10	2	12
	%	0.1	-4.5	-1.4	4.3	5.0	4.4
Exports	<i>kt cwe</i>	113	5	118	41	47	88
	%	9.5	2.1	8.2	21.5	22.1	21.8
<i>Key export markets</i>							
	<i>kt cwe</i>						
Total exports		113	5	118	41	47	88
United States		44	0	44	8	4	12
Canada		3	0	3	1	1	2
Japan		26	4	29	4	2	6
Korea		11	2	13	0	0	1
Taiwan		2	0	2	0	2	3
European Union		3	0	3	4	4	8
Malaysia		2	0	2	1	5	6
Philippines		3	0	3	0	0	0
Indonesia		-11	0	-11	0	0	0
Other markets		31	0	31	22	29	51

^a Change from the observed case. Values for key variables of the live trade are zero.

Source: GMI model and CIE calculations.

- Overall, grain fed production would be lower.
 - While the sector faces an advantage through having a higher availability of feeder cattle types (transported from Northern Australia) – this is offset by greater competition by lamb in the domestic red meat consumption.
 - GMI model results show that domestic beef consumption falls, in response to lower sheepmeat prices, by 1.4 per cent. But overall this net impact on lot feeding is small relative to the grass fed sector.

As a result of diversion of sheep through the processing sector, the production of sheepmeat increases by 100kt cwe, or nearly 15 per cent, this tonnage split evenly between lamb and mutton.

- Of this production increase, 88 kt cwe is sold to export markets and the remainder to domestic consumers. The primary destinations for this additional product include the United States and the other countries grouping which includes Middle East countries.
- The increased availability of lamb also flow through to domestic users who increase consumption by 10 kt or 4 per cent. Relative to the size of the industry, this effect on consumption is not significant.

Impacts on prices and industry GVP

Table 5.2 shows that ‘without live export’, on average, livestock prices across the Australian red meat industry would be significantly lower:

- the saleyard price of grass fed cattle could be 4.0 per cent or 7.88 cents per kilogram liveweight lower; and
- the price of lambs would be 7.6 per cent or 12 cents per kilogram lower while the prices paid for older sheep would be 17.6 per cent lower or 14.6 cents per kilogram liveweight basis.

5.2 Impact of the live trade on farm gate returns for red meat industry prices^a

		2005-06	2006-07	2007-08	2008-09	Average
<i>Percentage change</i>	%					
Grass fed cattle		-3.5	-3.9	-4.1	-4.5	-4.0
Grain fed cattle		-1.6	-1.3	-1.2	-1.1	-1.3
Lamb		-8.4	-7.2	-8.3	-6.5	-7.6
Mutton		-19.2	-18.7	-21.5	-11.0	-17.6
<i>Live weight prices</i>	Ac per kg					
Grass fed cattle		-6.3	-7.4	-8.1	-9.4	-7.8
Grain fed cattle		-6.3	-7.4	-8.1	-9.4	-3.2
Lamb		-12.4	-10.2	-14.9	-11.4	-12.2
Mutton		-16.2	-14.8	-18.9	-8.5	-14.6

^a Change from the observed case in saleyard terms.

Source: GMI model and CIE calculations.

These price outcomes are national averages *across* Australia, the regional impacts especially in areas directly affected by the trade would be expected to be greater.

The large results for older sheep prices in percentage change terms is a function of the additional transport costs that would have to be incurred, substantially reducing the average farmgate return to sheep producers in Western Australia.

Table 5.3 shows the impact of the live trade on the GVP of the farm level industries over the period evaluated. On average, cattle and sheep (excluding wool) industries GVP would be 1.5 and 5.9 per cent lower respectively.

5.3 Impact of the trade on farm level GVP^a

	<i>Cattle industry</i>	<i>Sheep industry</i>
	%	%
2005-06	-1.9	-7.0
2006-07	-1.8	-5.5
2007-08	-1.2	-7.2
2008-09	-1.1	-4.1
Average	-1.5	-5.9

^a Change from the observed case in saleyard terms excluding impacts on live exporters and processors.

Source: GMI model and CIE calculations.

The net contribution of live exporters

The average net contribution of the live export industry over the period 2005-06 to 2008-09, as shown by table 5.4, is substantial.

- While the live exports provide substantial benefits to exporters and their suppliers – it does reduce incomes to processors by increasing livestock prices and reducing throughput levels.
- Across all segments, the GVP of the red meat industry would be \$209 million or 2.3 per cent lower each year without the live exports.

While GVP is a measure of output, value added or the equivalent of farm income is a more appropriate measure of the net contribution because it accounts for the additional costs in producing that output.

- Without the live export industry, the income of the red meat industry would be \$99 million or 5.4 per cent lower compared with the '*with live export case*'.

In terms of the relative contribution between the cattle and sheep industries to the total outcome for value added:

- Across the red meat chain including live export operators and processing, cattle accounts for 51 per cent of the total outcome while sheep accounts for 49 per cent.

5.4 Impact of the live trade on cattle and sheep industry GVP and value added^a

		<i>Gross value of production</i>			<i>Value added</i>		
		Cattle	Sheep	Total	Cattle	Sheep	Total
<i>Total benefits</i>							
Farm sector	\$m	-128	-119	-247	-47	-64	-110
Exporters	\$m	-40	-30	-71	-8	-6	-14
Processors	\$m	70	38	108	18	8	25
Total	\$m	-98	-111	-209	-37	-62	-99
<i>Percentage contribution</i>							
Farm sector	%	52	48	100	42	58	100
Red meat chain	%	57	43	100	57	43	100

^a Average impact over the period 2005-06 to 2008-09. Value added is equivalent to farm income and net margins for exporters and processors, that, is total output less input and hired labour costs.

Source: GMI model and CIE calculations.

Sensitivity analysis

As mentioned in the previous chapter, a key parameter around estimating the contribution of the live trade is supply responsiveness of the farm level industries. There are alternative views about the responsiveness of supply that underpin the diverging views on the impact of the closure of the live export industry, and therefore any estimate of its contribution.

- This section includes a sensitivity analysis around the supply responsiveness parameter, to ascertain the importance of this variable to the outcome of this evaluation.

As discussed in chapter 1, alternative views on the response by sheepmeat producers largely depend on their scope to:

- move their livestock away from the livestock sector to processing – which has already been accounted for in this analysis; and
- move to another non-livestock enterprise.
 - As already noted in chapter 2, there is a significant regional dimension to this question.

The key driver then becomes whether producers are better off remaining in the livestock enterprise in the ‘*without live exports case*’ or shifting to another enterprise – say in cropping. This typically would be done through gross margin analysis using returns per hectare.

To analyse this correctly the appropriate modelling framework would be one that directly incorporates alternative enterprises that are possible – and which maximises profit across those enterprises.

- The GMI model focuses on the livestock production only – its interaction with alternative enterprises is through the aggregate supply elasticity.
- To represent the alternative view that it is relatively easy to move out of livestock enterprises – we have re-estimated the contribution of the live export industry using supply elasticities that are larger than those in the headline analysis.

Table 5.5 compares the price outcomes for the headline analysis relative to the higher responsiveness of producers to changes in livestock prices based on:

5.5 Sensitivity analysis on prices of increasing supply response

		<i>Headline analysis</i>	<i>Sensitivity analysis</i>
<i>Percentage change</i>	%		
Grass fed cattle		-4.0	-3.6
Grain fed cattle		-1.3	-0.9
Lamb		-7.6	-6.4
Mutton		-17.6	-16.8
<i>Live weight prices</i>	Ac per kg		
Grass fed cattle		-7.8	-7.1
Grain fed cattle		-3.2	-2.1
Lamb		-12.2	-10.2
Mutton		-14.6	-13.9

^a Change from the observed case in saleyard terms.

Source: GMI model and CIE calculations.

- increasing the supply elasticity from 0.6 for beef to 0.8 – while recognising that over half of Australia’s beef industry is not located in the northern zone; and
- doubling the supply elasticity for sheep and 0.4 for sheep to 0.8 – but making the assumption that producers will substitute more towards cropping even though they have limited scope to do so.

Table 5.5 shows the price impacts are not significantly different. But with some producers moving to other enterprises, the fall in price for producers who remain in the industry has been reduced.

- The primary impact of this change is the quantities of livestock sent for processing – not prices.
- This demonstrates that there would have to be a very large move out of the livestock industry to significantly affect the price results – that flow on to the remainder of the livestock industry.

Table 5.6 compares the farm level GVP outcome between the headline and the sensitivity analysis. Across the livestock industry, including those supplying the live trade, the expected fall in GVP is greater as they have more capacity to respond to a fall in livestock prices as a result of the ‘*without live exports case*’.

- This is to be expected as the GVP calculation is made up of both quantity and price.

5.6 Sensitivity analysis on farm level GVP of increasing supply response

	<i>Headline analysis</i>		<i>Sensitivity analysis</i>	
	<i>Cattle industry</i>	<i>Sheep industry</i>	<i>Cattle industry</i>	<i>Sheep industry</i>
	%	%	%	
2005-06	-1.9	-7.0	-2.3	-8.1
2006-07	-1.8	-5.5	-2.3	-6.5
2007-08	-1.2	-7.2	-2.0	-8.2
2008-09	-1.1	-4.1	-2.1	-5.0
Average	-1.5	-5.9	-2.2	-6.9

^a Change from the observed case in saleyard terms excluding impacts on live exporters and processors.

Source: GMI model and CIE calculations.

However, this analysis does not indicate the GVP or income that is being added by moving those resources into alternative enterprises.

Comparison with Hassall’s Report

Table 5.7 compares the findings from this update with those from the previous study by Hassall and Associates (2006) – a detailed summary of that report is provided in table 1.1.

5.7 Comparing updated results with original study

	<i>Farm prices</i>		<i>Annual GVP^b</i>	
	Hassall (2006) ^a	CIE (2010)	Hassall (2006) ^a	CIE (2010)
	Ac/kg lw	Ac/kg lw	\$m	\$m
Grass fed	-9.2	-7.8	-32	256
Grain fed	-9.3	-1.3	142	-65
Live cattle	na	na	-440	-319
<i>Total cattle</i>	-9.2		-330	-128
Lamb	-7.0	-7.8	31	85
Mutton	-16.9	-14.6	45	5
Live sheep	na	na	-296	-209
<i>Total sheep meat</i>			-219	-119

^a Based on an average of years 2002-2004. ^b Estimates for GVP were estimated in the original report but not for gross margins for live exporters or processors.

Source: Hassall and Associates 2006.

Table 5.7 shows that this update has resulted in a downward revision of the contribution of the live trade to the Australian farm level industry by around \$100 million of GVP in nominal terms.

This revision is due to a number of factors:

- an improved approach that now includes the impact of the live trade on the non-farm components of the red meat chain including recognition of gross and net margins of live exporters and processors;
- a more *conservative* approach especially in the calculation of the impacts of the number of livestock that would be required to be transported (as a result of not having access to regional processing facilities) and the cost of that transport;
 - This change in approach has impacted on the contribution for the cattle industry particularly resulting in a more conservative estimate of the contribution.
- a change in market dynamics especially for older sheep where market prices have increased considerably and composition of the live sheep trade has changed since the original study as a result of declining flock numbers, especially in Western Australia.
 - Over the evaluation period, over 30 per cent of sheep exported were lambs – which is considerably higher than the 2002-04 period where a higher proportion of older sheep, mainly wethers, were exported.
 - Also base for average market returns for sheep with the trade are considerably higher. Over the period 2002-04, average export prices were around \$68 per head. By 2009 average export prices were over \$90 were sustained by steady demand by consumers in the Middle East.

6 *Contribution of dairy cattle and goats*

The analysis using the GMI model focuses on the contribution of the export of feeder and slaughter animals. The contribution of the exports of dairy heifers and live goats is quantified in this chapter.

Dairy heifers

The exports of dairy heifers are small compared with live slaughter cattle exports, and are more variable. However, access to live dairy heifer export markets offers a significant source of revenue for Australian dairy producers, particularly in Victoria.

This section provides an overview of the contribution of live exports to the dairy industry.

- The GMI model, however, does not allow for the distinction of dairy heifers from other slaughter and breeder cattle.
- Therefore, the contribution of live dairy heifer exports have been treated and are estimated separately in this chapter.

We note, however, that it is considered relatively unlikely that the closure of the live export industry for slaughter cattle, sheep and goats would lead to the closure of live exports of dairy heifers. This is primarily because live dairy heifers are utilised as breeding animals and not slaughter animals in the final destination which reduces animal welfare concerns around the point of slaughter.

Industry characteristics

The export of live dairy cattle has become important to Australian dairy farms, particularly in Victoria. According to ABARE Australian Farm Survey results for the period 2003 to 2006, Victorian dairy farms have recorded that the live export of heifers account for approximately 20 per cent of farm profit for a typical dairy enterprise of 200 cows (AgEconPlus et al, 2007).

Farms are increasingly being able to take advantage of particularly lucrative returns in certain markets. For instance, dairy cattle shipments to China averaged \$2 172 per head compared with \$823 for shipments of slaughter cattle in the March 2010 quarter (MLA LiveLink, 2010).

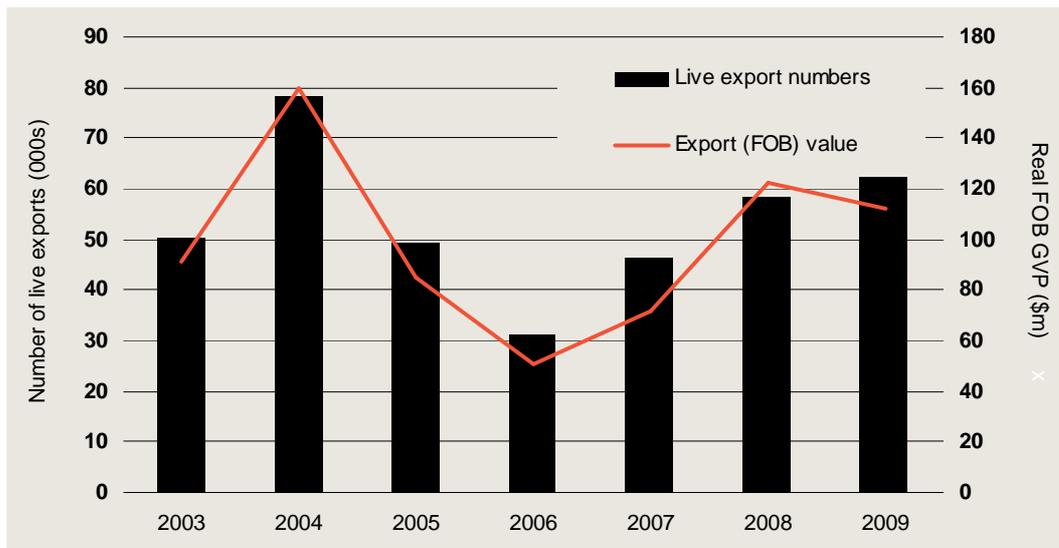
A recent report (AgEconPlus et al, 2007) suggested that there were approximately 2 000 to 3 000 dairy farms in Victoria, out of around 8 000 properties, that contribute to the live dairy industry on a regular basis. These farms may send approximately 10 per cent of their dairy herd for live export (AgEconPlus et al, 2007).

- Across Australia, live export heifers currently represent approximately 4.5 per cent of milking cows (Dairy Australia, 2010).

With significant premiums on offer, some dairy operators have recently adjusted their farming operations to target the live export trade. This essentially involves retaining heifers, rather than sending surplus weaners and calves to 'bobby' calf processors at an earlier age and lower weight (AgEconPlus et al, 2007).

Chart 6.1 shows the number of live dairy heifer exports and corresponding export value in FOB terms in constant prices. The export value in FOB terms has averaged approximately \$89.0 million per year over the period 2006-2009, with an average price (FOB) of \$1 701 per head.

6.1 Number and value (FOB) of live dairy cattle exported



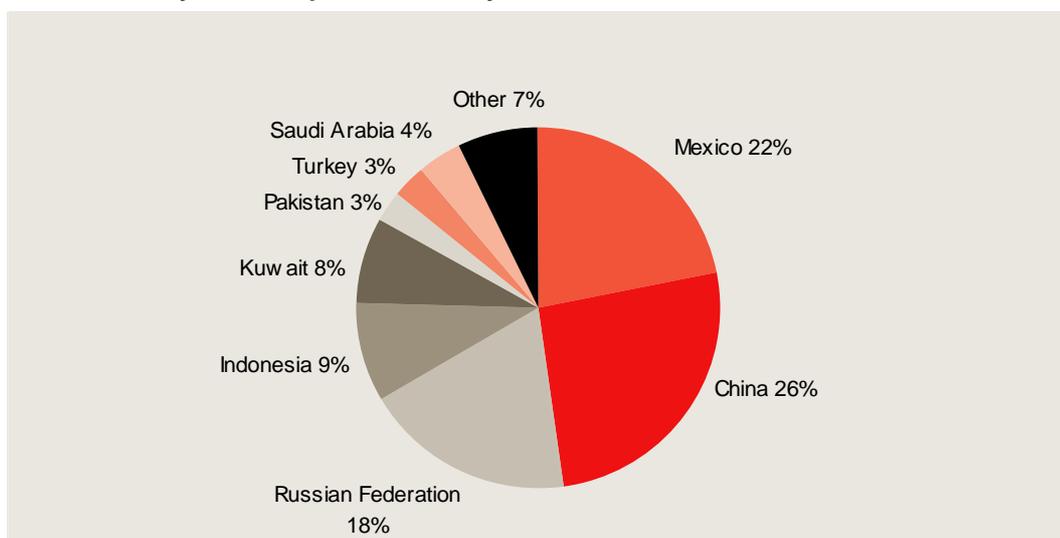
Data source: LiveCorp 2010.

Over time, the largest and most important markets for live dairy heifer exports have been China, Mexico, Russian Federation, Indonesia and Kuwait. In particular, the market in China for dairy heifers has recently shown significant growth – increasing by 54 per cent in the past 12 months (Dairy Australia, 2010).

Chart 6.2 shows the destinations for Australian dairy cattle exports over the period 2006-2009, in terms of the *volume* of trade.

The primary drivers of these exports are policies in China and Russia to establish a domestic dairy industry and reduce reliance on imported milk products.

6.2 Live dairy cattle export volume by destination – 2006 to 2009



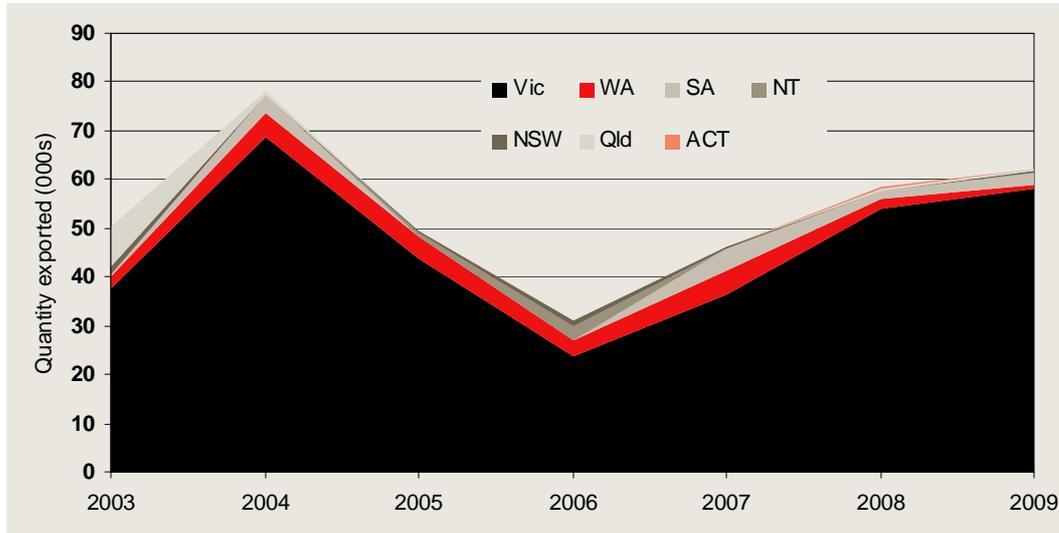
Data source: LiveCorp 2010.

- In Russia, there has been a significant push for higher production and increased food security following the significant loss of production capacity during the Perestroika period.
- An important consideration for exports to China is the sensitivity of authorities to protocols around zoning of cattle from declared arbovirus areas.
- Exports also occur to a range of other Asian countries – such as Vietnam – largely as the result of donor-based programs which also have the objective of reducing reliance on imports.

Victorian dairy cattle exports account for a high percentage of total exports, with all dairy heifers being loaded from Portland in Victoria. However, Western Australia has the highest number of export dairy heifers as a proportion of the size of the industry – reaching 6 per cent of milking cow numbers in 2010 (Dairy Australia, 2010).

Chart 6.3 shows the contribution of each state to live dairy heifer exports from 2003 to 2009. In 2009, live dairy cattle exports approached 60 000 (Dairy Australia, 2010).

6.3 Live dairy cattle export volume by state of origin – 2003 to 2009



Data source: LiveCorp 2010.

Value chain analysis

The notional value chain for exports of dairy cattle is presented in table 6.4, for the period 2006-2009. The farm gate value is estimated by subtracting from the export price (FOB) the costs accruing after the dairy heifer leaves the farm.

6.4 Notional value chain for live dairy heifer exports

<i>Item</i>	<i>Cost</i>
	\$A per head
<i>Unit price of live export (FOB)</i>	1 701.0
<i>Value chain – costs inclusive in FOB</i>	
Road transport to quarantine/wharf	48.0
Transit insurance	30.0
Agents' fees	72.0
Feeding at pre-export assembly depot	48.0
Agistment and handling	81.6
Wharf charges	7.5
LiveCorp	4.0
Third party Vet	96.0
AQIS and quarantine	91.5
Stevedoring and weighbridge	6.9
Administration charge	45.0
Implied value of livestock	1 170.5
Fodder for voyage	90.0
Sea freight and insurance	403.5
Stockmen and on board veterinary	6.0
Gross CIF value	2 200.5

Source: CIE 2010.

- The expected farm gate value is approximately \$1 170 for a dairy heifer (not in-calf), which is approximately 69 per cent of the export value in FOB terms.

The price received by producers is expected to be proportionately lower as a share of the export value (FOB) than for breeder/slaughter cattle, due to higher quarantine, veterinary and other handling costs.

The revenue generated by this sector varies considerably from year to year. However, on average, the total revenue in terms of the CIF value multiplied by the average export volume is estimated to be \$108.8 million a year.

- Producers receive an estimated \$57.9 million a year, total revenue generated for the non-producer industries is approximately \$50.9 million a year.

With the exception of shipping companies, which are foreign owned, the majority of revenue generated by the non-producing industries would remain within Australia. It is expected that shipping companies would receive approximately 40 per cent of this post farm gate revenue – with over 60 per cent generated by Australian-based industries.

Table 6.5 summarises the expected farm gate GVP for dairy producers and total revenue.

6.5 Expected farm gate GVP and total revenue^a

	<i>Units</i>	<i>Live Dairy Exports</i>
Average export volume	000s	49.5
Average FOB value	\$/head	1 701.0
Estimated farm gate return as a share of FOB value	%	68.8
<i>Expected farm gate GVP</i>	\$m	57.9
Gross CIF unit value	\$/head	2 200.5
<i>Expected total revenue</i>	\$m	108.8

^a Average over the period 2005-06 to 2008-09

Source: CIE 2010.

Contribution of live exports to dairy industry

There are two main mechanisms through which the live dairy trade contributes to the dairy industry. The first effect is to create value in terms of higher prices for those in the export industry, and the second is to sustain prices across the domestic industry by reducing the supply of heifers.

Specifically, the price effects include (MLA, 2007):

- *higher prices for twelve to fifteen month old dairy cattle* – where in the presence of the live dairy trade, producers that export may earn an average of an estimated \$1 150

per head and producers selling domestically may earn an average of approximately \$800 per head.

- This represents a significant increase, from the period prior to the development of the live export trade, where producers selling dairy heifers may have earned an average of around \$500 per head.
- *higher prices for weaner heifers* – where in the presence of the live dairy trade, due to restricted supply, producers are receiving average prices of \$500 per head for stock that sold for around \$100 prior to development of the live trade.

These prices are subject to considerable variation. Depending on seasonal conditions and profitability in milk processing, the domestic price of heifers may vary between \$500 to \$1 500 per head. These price effects offer an indication of the potential average differential that may exist in markets with and without access to the live trade.

The potential volume of domestic trade, in the event of no live export trade, is uncertain. The level of dairy heifer exports is approximately 50 000 head each year. The domestic market is unlikely to be able to support this volume of trade, given domestic conditions underpinning decisions to sell or acquire heifers throughout the country. That is, producers wanting to sell heifers to manage cash flow during poor market conditions in one part of the country may not be balanced by producers wanting to acquire heifers as a result of strong market conditions in another part of the country.

Given these uncertainties, the CIE has estimated the value of the trade in a very conservative manner. The approach is to simply estimate and sum the value of the two price effects outlined above. The gross value of the dairy cattle industry would be determined by these price effects and the quantity of heifers and weaner heifers subject to trade.

Impact of value of heifers

First, it is necessary to account for the impact of the live trade on the value of heifers. We know that the 50 000 or so live dairy heifers exported each year would have otherwise been sold on the domestic market, culled or retained on farm. Taking a conservative approach, we could assume that dairy heifers that could not be sent to live export markets in the absence of the trade would be traded domestically.

- Producers would receive an average of around \$550 per head in the absence of the live trade, compared with the current estimated value of \$1 150 per head.

This price includes that paid for dairy heifers in the domestic market prior to the development of the live export market in 2003 (AgEconPlus et al, 2007), plus an adjustment factor for inflation. It is also consistent with estimates of average prices paid for cattle on slaughter markets.

Pregnant heifers and breeders may receive a higher average return than \$550 per head in the domestic market in the absence of the live trade. Pregnant heifers and breeders are more valuable because they are often in calf to quality sires – of better quality than is available in the destination country. In effect, purchasers are getting ‘two for the price of one’.

- However, this price differential is likely to be at least as high within the live export market. Thus, for simplicity reasons, the comparative price point is the average price for twelve month old dairy heifers.

A small number of dairy heifers are traded on the domestic market.

- Heifers traded on the domestic market are currently reported to receive around \$800 per head: they are expected to receive approximately \$550 per head in the absence of live export trade (AgEconPlus et al, 2007).

According to the National Dairy Farm Surveys, compiled each year by Dairy Australia, the proportion of the milking herd that were reported by producers to be traded domestically ranged from 1.3 per cent to 2 per cent of the milking herd over the years 2007-2010. If we assume that just 1 per cent of the national milking herd of dairy/ heifer cows (approximately 1.6 million) is traded domestically, this would equal approximately 13 000 cows.

Impact on value of weaner heifers

It is necessary to estimate the impact of the live trade on the value of weaner heifers. Prices of weaner heifers are also sustained through the presence of the live export market (AgEconPlus et al, 2007).

- Where weaner heifers are reportedly worth approximately \$500 per head in the current domestic market, it is expected that they would be worth around \$100 per head if the live trade closed (MLA, 2007).
- This alternative value aligns with the bobby calf return.

For illustrative purposes, if we conservatively assume that only 1 per cent of the total number of dairy heifers is traded, this implies that approximately 3 000 weaner heifers are sold or retained each year on the domestic market.

The bottom line for dairy heifers

The analysis of the contribution of the live export trade to the dairy industry, through these two price effects, is presented in table 6.6. It is estimated that the live export trade is valued at a minimum of approximately \$34.2 million on average each year.

6.6 Illustration of potential contribution of live dairy heifer export industry

<i>Direct and indirect contribution</i>	<i>Quantity</i>	<i>Value with live trade</i>	<i>Value without live trade</i>	<i>Gross value added</i>
	(000s)	\$ per head	\$ per head	\$m
<i>Direct contribution</i>				
Heifers sold for live export	49.6	1150	550	29.8
<i>Indirect contribution</i>				
Heifers sold on domestic market	13.1	800	550	3.3
Weiner heifers sold on domestic market	3	500	100	1.2
Total				34.2

Source: CIE 2010. Based on ABS data 2010 cat. 7125.0, National Farm Surveys 2007-2010 and MLA 2007.

Goats

Goats have not been included within the formal modelling reported in chapter 5. During the period of this analysis over 90 per cent of goats were from rangeland systems were exported live. It is important to note that an estimated 90 per cent of live goat exports are transported by air, due to availability of cost-effective air freight and lack of shipping options due to limited number of voyages to this market from key supply regions.

- Whilst this makes the live export of goats distinct from cattle and sheep, it would be possible for the live goat export trade to be at risk of closure – if the key issue is the handling of animals in the country of destination.
- Therefore, the farm gate value of live goat exports is included in estimates of the contribution of the live export industry.

The production of goats for live export is highly variable and tends to reflect the level of premium offered in export markets and the availability of labour for 'harvesting' of those goats.

- It is important to note that this situation is now changing with the emergence of specialist goat producers and backgrounders using dedicated breeds or rangeland stock.

It has been assessed that in the case of closure of live exports, that significantly less rangeland goats are unlikely to be captured and sent to processors. However, this situation could change with greater investment in depots in rangeland areas and a move to dedicated production systems – such as backgrounding and breeding from captured stock for domestic slaughter.

- In the without live export case, it is difficult to know how many goats could be diverted through processing especially to the domestic goat meat market which is in its early stages of development.

Given the timeframe of this assessment, we do not expect goats sent to live export markets to be captured and domesticated without the live trade in absence of

significant investments – therefore in the short to medium term there is no alternate revenue generated to be subtracted from the farm gate value.

The value of the live export industry to goat producers is treated as the farm gate value multiplied by the number of live exports.

- Based on the value chain analysis (see chapter 3), the CIE estimates the value of the live export industry to goat producers, on average, to be approximately \$4.1 million.

7 *Regional and industry wide benefits*

This section then goes on to outline the other regional benefits that have resulted from the access to and subsequent investment in the live export industry:

- *productivity improvements* – where access to the live export industry has supported a range of changes resulting in strong productivity growth across the broader northern beef industry.
- *increases in land values in both northern and southern beef properties* – where the live export industry has bolstered expected future returns, it is likely to have been a contributing factor to significant investments in land acquisition.
- *a range of other regional economic benefits* – where a net increase across the value of livestock has supported an increase in net farm returns, and broadened the economic base of farms.
 - This includes the emerging importance of indigenous cattle production in regional and remote areas of Northern Australia.

Regional impacts of the live trade

The live export trade is credited with substantially improving the regional economies in Western Australia, Western Queensland and the Northern Territory. These improvements are reflected in a number of observable outcomes.

- Higher on-farm net returns, with consequential flow on effects to local communities through increased producer spending and consequential local employment.
- A broader economic base to farm incomes, resulting in more stable incomes for producers and to the local community more generally.
 - Significantly, the live trade both lifts and smoothes prices through bolstering the demand for sheep when the seasonal supply is greatest.
- In the northern cattle industry the live trade has fundamentally changed the nature of production from one of extensive grazing to fatten bullocks for export meat processing, to that of turning off younger cattle for live export:
 - as a result producers are better able to match annual turnoff to available feed supply and avoid forced sales of unfinished bullocks, at distressed prices, when the feed runs out.

The 2007 AgEconPlus study quantified the contribution of the live export industry to the regional economies of Western Australia, the Northern Territory, Queensland and Victoria in 2005-06.

- Using economic value measured in terms of the value of output, gross regional product (GRP or value added or returns to capital and labour) and employment.
- Given that these estimates primarily reflect the *value* of live exports (ex port) the regional contribution, region by region, over the period 2003 to 2009 can be estimated pro rata adjustment based on state level values, relative to 2006. However, in the absence of value data, volume data has been used (table 7.1).

7.1 Livestock export industry value to regional Australia: 2003-2009

	2003	2004	2005	2006	2007	2008	2009	Change 2003-2009
	\$m	%						
<i>Cattle output</i>								
Northern WA cattle	130	119	116	136	114	131	156	20
NT cattle	218	175	194	218	282	344	290	33
Qld cattle	468	222	90	107	275	370	651	39
Southern WA cattle	110	101	98	115	96	111	132	20
<i>Sheep output</i>								
Southern WA sheep	547	191	299	331	364	451	540	-1
<i>Dairy cattle</i>								
Victorian dairy cattle	197	397	214	117	177	356	339	72
All industries output	1 669	1 204	1 011	1 024	1 308	1 762	2 108	26%
<i>Cattle GRP</i>								
Northern WA cattle	83	76	74	87	73	84	100	20
NT cattle	157	126	140	157	203	248	209	33
Qld cattle	420	199	81	96	247	332	584	39
Southern WA cattle	106	97	94	111	93	107	128	20
<i>Sheep</i>								
Southern WA sheep	451	157	246	273	301	372	445	-1
<i>Dairy cattle</i>								
Victorian dairy cattle	181	363	196	107	162	326	310	72%
All industries GP	1 397	1 019	832	831	1 078	1 467	1 775	27%

Note: Cattle and sheep: Estimated using indexes of the change in volume of exports sourced from respective states, base 2006. Dairy cattle, index of the value of change in exports, Victoria.

Source: CIE estimates based on AgeconPlus, et al, 2007.

The analysis points to several important regional impacts associated with the live export market:

- greater output and GRP in total across the regions – increasing by around 18 per cent between 2003 and 2006;

- access to a higher value and more resilient market – where cattle values have increased substantially, by between 20 and 40 per cent, depending upon the region;
 - but corresponding sheep values have remained virtually static.
 - dairy cattle values have fallen by some 40 per cent.
- there have been substantial variations year to year – where the presence of the live export industry provides a degree of flexibility for producers to take advantage of market conditions across both live export and meat processing markets.

The contribution to regional producers

Table 7.2 breaks down the impact of the closure of the live trade, as it was summarised at a national level in table 5.4, into its broad regional components. In this analysis two broad regions are identified:

- live export regions where producers may or may require additional transport costs to access processing markets; and
- all other regions without direct access to live export markets.

This report has identified that the live exporting regions are those in Northern Australia for cattle and Western Australia for sheep including adjacent regions that have strong transport linkages. It should be noted that these definitions are very broad and within them would encompass a range of producers who would have a range of exposure to live export markets.

Table 7.2 shows the impact of additional transport costs on the farm level equivalent price for livestock that would have been otherwise exported. As a weighted average of prices of livestock from regions that are directly involved in supplying animals for live export – this includes animals that do and do not required additional transport as detailed in appendix A – these directly affected regions would suffer falls of:

7.2 Contribution to of the live trade regional farm gate prices

<i>Region</i>		<i>Grass fed</i>	<i>Grain fed</i>	<i>Lamb</i>	<i>Mutton</i>
<i>Percentage change</i>	%				
Live export regions ^a		-23.7	na	-11.0	-41.8
Other regions		-3.4	-1.3	-7.6	-7.6
National average		-4.0	-1.3	-7.6	-17.6
<i>Liveweight prices</i>	Ac/kg lw				
Live export regions ^a		36.7	na	12.2	46.3
Other regions		6.7	3.2	12.2	6.3
National average		7.8	3.2	12.2	14.6

^a A weighted average of regions where transport is required and those where no additional transport is required.

Source: GMI model and CIE calculations.

- nearly 24 per cent for cattle and 42 per cent for older sheep; or
- a reduction in farm gate prices of 37 and 46 cents per kilogram for cattle and older sheep respectively.

Table 7.3 shows the contribution of the trade to GVP in the broad regions identified and the flow-on to the wider Australian red meat industry. Overall, value of production would be impacted in line with changes in prices identified above. In line with the arguments put forward, we would expect these producers to have limited capacity to switch enterprises away from livestock.

7.3 Contribution of the live trade to regional farm level GVP

<i>Region</i>	<i>Beef</i>	<i>Sheep</i>	<i>Total</i>	<i>Beef</i>	<i>Sheep</i>	<i>Total</i>
	\$m	\$m	\$m	%	%	%
Live export regions ^a	79	91	169	21.0	41.6	28.6
Other regions	49	29	78	0.6	1.6	0.8
National	128	119	247	1.5	6.0	2.3

^a A weighted average of regions where transport is required and those where no additional transport is required.

Source: GMI model and CIE calculations.

For live export regions, the GVP of beef producers could fall on average by 21 per cent while sheepmeat producers value of production could fall by 42 per cent.

- It should be noted again that these average encompass a spectrum of impacts at an individual level from mild reduction in incomes for those whose region has relatively small exposure to the trade through to loss of business for producers who have specialised and invested heavily in supplying the live trade.

Table 7.4 translates the contribution to GVP to those for farm level value added or farm incomes. Of the total contribution of \$110 million to farm incomes of the red meat industry, \$77 million can be attributed to those regions that are exposed to the live trade.

- The trade therefore contributes over \$30 million to the remainder of the red meat industry which is a significant flow-on impacts.

7.4 Contribution of the live trade to regional farm level value added

<i>Region</i>	<i>Beef</i>	<i>Sheep</i>	<i>Total</i>
	\$m	\$m	\$m
Live export regions ^a	29	48	77
Other regions	18	15	33
National	47	64	110

^a A weighted average of regions where transport is required and those where no additional transport is required.

Source: GMI model and CIE calculations.

Many of the benefits outlined in table 7.4 accrue to indigenous people (see box 7.5).

7.5 Potential for Indigenous production is significant

The recent Northern Australia Land and Water Taskforce Report (2009) highlighted the importance of the live export trade to indigenous people now:

- the northern cattle industry involves around 60 per cent of the land area of northern Australia. Then including Indigenous pastoral land, this contribution increases to 90 per cent.
- a number of Land Corporations are already heavily involved in the export trade.

In terms of looking forward, the Taskforce reported that:

- positive opportunities existed to expand production from the northern beef industry, including among Indigenous-owned properties, through changing enterprise structure and increasing intensification;
- leading producers in the Northern Territory, Queensland and northern Western Australia advised the Taskforce there was scope to more than double production from Australia's northern beef cattle herd, and possibly lift output as much as fourfold in value in some areas.

The Taskforce concluded:

The northern beef industry also provides potential for sustainable wealth creation for Indigenous communities through direct employment and business ventures. Improving the longer term economic and environmental sustainability of Indigenous-owned pastoral properties across northern Australia is of critical importance and an opportunity that governments are encouraged to examine.

Productivity Improvements

One of the key indications of regional contribution resulting from the live export industry is the improvement in the productivity experienced over the past 20 years. The benchmark indicator of productivity, which refers to the ability to produce goods and services (outputs) given the available resources (inputs), is total factor productivity (TFP).

An important observation is that the northern beef industry has experienced strong productivity growth equivalent to that of broadacre cropping but also higher than that observed in southern beef. ABARE (2008) estimated that trend TFP growth in the beef industry has been:

- 2.1 per cent per year for northern beef between 1985-86 and 2007-08; and
- 1.3 per cent per year for southern beef between 1977-78 and 2007-08.

The higher productivity growth rate in the north reflects the expansion in output occurring in recent years, resulting from the corporatisation of the northern beef industry by companies operating in the live export market, which has underpinned the greater use of the *bos indicus* breeds, higher fertility rates and increased turn-off weights (ABARE, 2009b). These gains are likely to reflect, at least in part, access to the live export market and considerable industry investment by individual properties and industry organisations – instigated by the higher returns offered in the live export market relative to alternatives.

- There has also been a parallel experience through the expansion of indigenous beef production. Investment in fencing and cattle handling facilities have enabled increased production targeted at the export trade, which in turn has provided a range of employment and income opportunities that would have otherwise been limited.

Land Values

According to ABARE, there has been a steady increase in land values in both southern and northern beef properties over the past decade, which coincides with a period of considerable investment in the live export industry. The increase in the acquisition of land, driving the increase in land values, may in part be a result of the increase in productivity and expected returns in the live export industry.

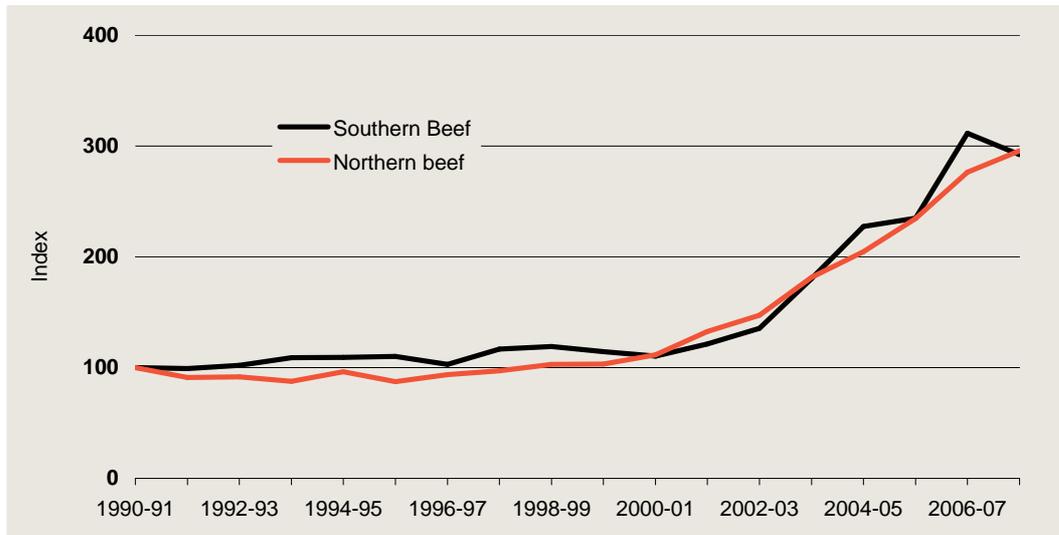
There has been an increasing trend in the beef industry towards corporatisation, particularly in the northern beef industry – where properties are increasingly owned and managed by larger companies. Whilst corporatisation may have contributed to the increase in land values, the extent to which this is driven by the live export industry is difficult to ascertain.

The demand and supply of land, which determine land values, are impacted by a range of factors, including the expected income generation potential, exchange rates and interest rates, the irrigation water supply and recent weather conditions – such as drought. The existence of the live trade realistically could only affect one of these factors – the expected future returns.

Recently there has been significant interest in cattle properties from investors throughout the Asia Pacific region. Where there is a demonstrated link between the live export trade prices and meat processing sector prices, and expected future returns are an important precursor for investment, the presence of the live trade would be one contributing factor to the increase and perpetuation of these increased land values.

Chart 7.5 shows the consistent increase in the average land values for beef industry farms over the last decade.

7.6 Increase in average land values for beef industry farms



Data source: ABARE 2009, Financial Performance of Beef Farms 2006-07 to 2008-09, Canberra.

The slight reduction in land values since 2007-08 may reflect global uncertainty in economic conditions and the continuation of dry seasonal conditions in some regions, thereby weakening land value growth in some regions.

In summary

As described in this chapter, a range of additional benefits above those included in the estimates of the industry contribution have been experienced as a result of the live export trade. Access to live export markets has improved the ability of farmers to manage cash flow and improved farm resilience – where the live export trade is cited as a contributing factor to higher property values and in some regions productivity growth. The wider regional benefits from the live export of animals have been most prominent to northern Australian.

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A Key calculations underlying additional transport costs

The appendix sets the key calculations underlying the approach and assumptions used to value the trade using the GMI model. This analysis encompasses the period 2006 to 2008 – over which the total contribution of the live export industry has been assessed.

Cattle

Table A.1 shows the calculation of the initial impact of the ‘without live export case’ as those cattle are diverted through the processing sector – predominantly in Queensland. This scenario has been used to make the analysis tractable, in practice there would be scope to transport cattle from northern Australia to other states other than Queensland.

A.1 Impact of diversion of cattle from live exports to the processing sector^a

		2005-06	2006-07	2007-08	2008-09	Average
<i>Cattle</i>						
Cattle to be transported to QLD	000 head	612.0	671.5	816.7	803.3	725.8
Manufacturing types		122.4	134.3	163.3	160.7	145.2
Jap ox market types		489.6	537.2	653.3	642.6	580.7
<i>Average weights</i>						
	kg per head lw					
Manufacturing types		328	344	328	342	336
Jap ox market types		521	518	510	526	519
<i>Additional beef production</i>						
Manufacturing types		22.1	25.4	29.5	30.3	26.8
Jap ox market types	kt cwe	137.4	155.5	183.5	185.5	165.5
Total additional beef production	kt cwe	159.5	180.9	213.0	215.8	192.3
<i>Increase in beef production</i>						
Total beef production	kt cwe	2188.4	2180.3	2161.1	2056.7	2146.6
Increase in beef production	%	7.3	8.3	9.9	10.5	9.0
Increase in beef production	%	7.3	8.3	9.9	10.5	9.0

^a Assuming 20% are manufacturing types and the remainder are Japox types.

Source: LiveCorp and CIE calculations.

- But with flexibility within the east coast market, and the capacity for cattle to be transported between major markets on the basis of relative prices, the impact on aggregate should be similar.

The assumed composition of these cattle are 20 per cent manufacturing types (cows and bulls) and 80 per cent younger types (suitable for feeding for the Jap ox market), which is similar to the composition of the trade to Indonesia.

- These younger animals would be 'staged' across to the eastern states and fed both on pasture and in feed lots to a live weight of 300 kilograms carcass weight.
- The '*without live export case*' would therefore result in an increase in beef production of 9 per cent on average without any adjustments on the supply side.

As identified in chapter 4, the total increase in numbers for slaughter in Queensland would be accommodated not only in that state but in flow-on increases in numbers available for processing in New South Wales.

Table A.2 calculates the number of cattle exported live that would require additional transport for slaughter. In total, an average 520 000 cattle would need to be transported over the 4 year period.

- Cattle from the Northern Territory and north west Western Australia would be transported to Roma and Perth respectively for sale or processing.

A.2 Total requirement of live cattle export for transport

<i>Export port</i>	<i>Requires transport?</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>Average</i>
		000's	000's	000's	000's	000's
Darwin	Yes	239 948	288 787	359 307	353 278	310 330
Townsville	No	12 739	51 202	75 953	124 365	66 065
Wyndham	Yes	48 669	41 544	50 969	75 474	54 164
Brisbane	No	20 966	20 091	19 198	15 279	18 884
Innisfail	No	970	1 504	6 905	7 840	4 305
Karumba	Yes	2 500	14 713	10 538	18 007	11 440
Mackay	No	0	0	0	2 907	2 907
Cairns	No	0	980	0	0	980
Weipa	Yes	0	0	0	1 701	1 701
Total exported		325 792	418 821	522 870	598 851	470 775
<i>Transport to Queensland</i>		291 117	345 044	420 814	448 460	377 635
Fremantle	No	141 926	115 941	147 709	138 501	136 019
Broome	Yes	85 386	92 679	81 324	96 629	89 005
Geraldton	Yes	24 621	19 482	35 463	48 288	31 964
Port Hedland	Yes	17 126	22 187	19 968	22 895	20 544
Total exported		269 059	250 289	284 464	306 313	277 531
<i>Transport to Perth</i>		127 133	134 348	136 755	167 812	141 512
<i>Total requiring transport</i>		418 250	479 392	557 569	616 272	519 147

Source: LiveCorp and CIE calculations.

Table A.3 calculates the additional costs of transporting these cattle – the rationale for the indicative transport charge is provided in chapter 4.

- On average, the industry could experience additional transport costs of around \$100 million if production remained on its current regional basis and no new processing facilities were opened in those regions.

A.3 Total additional cost of transporting cattle for processing^a

		2005-06	2006-07	2007-08	2008-09	Average
<i>Total cattle transported</i>						
Cattle to be transported	000 head	418.3	479.4	557.6	616.3	517.9
To Queensland		291.1	345.0	420.8	448.5	376
To Perth		127.1	134.3	136.8	167.8	142
<i>Total live weight^a</i>						
	kt lw					
To Queensland		102	121	147	157	132
To Perth		44	47	48	59	50
<i>Additional transport cost</i>						
Cost per kilogram live weight	Ac'kg lw	45	45	45	45	45
To Queensland		40	40	40	40	40
To Perth						
<i>Total additional transport cost</i>						
	\$m	63.6	73.2	85.4	94.1	79.1
To Queensland		45.9	54.3	66.3	70.6	59.3
To Perth		17.8	18.8	19.1	23.5	19.8
<i>Impact on farm costs</i>						
Grass fed GDP	\$m	5448	5298	5425	5301	5368.0
Increase in on-farm costs	%	1.2	1.4	1.6	1.8	1.5

^a Assuming a.

Source: LiveCorp and CIE calculations.

Sheep

Table A.4 shows the likely impact of the diversion of sheep back into the processing sector as a result of the closure of live exports.

On average, without any response by producers, an additional 4.3 million sheep would have to be diverted back through processing potentially yielding an additional 103 kt cwe of sheepmeat.

- It has been assessed that up to 30 per cent of animals exported during the period can be classified as lambs while being of sufficient weight to be transported under the Australian Standards for Export of Livestock (ASEL).
- On average 80 per cent of sheep exported live are sourced from Western Australia while the remainder come from Victoria and South Australia.

No allowance has been made for supplementary feeding beyond the weights at which they were already being transported.

A.4 Impact of diversion of all sheep from live exports to the processing sector^a

		2006	2007	2008	2009	Average
<i>Additional sheep from live trade to be slaughtered</i>						
Lambs ^a	000's	1 356	1 237	1 402	1 175	1 292
Mutton	000's	2 868	2 626	2 973	2 493	2 740
Total	000's	4 225	3 863	4 375	3 668	4 033
<i>Average live weights</i>						
Lamb	kg	42	42	42	42	42
Mutton	kg	52	52	52	52	52
Australia	kg	47	49	49	49	48
<i>Production equivalent</i>						
Lamb	kt cwe	28.5	26.0	29.4	24.7	27
Mutton	kt cwe	74.6	68.3	77.3	64.8	71
Australia	kt cwe	103.1	94.3	106.7	89.5	98
<i>Increase in production</i>						
Lamb	%	7.1	5.9	7.1	5.7	6.5
Mutton	%	25.6	25.4	28.3	30.3	27.4
Total	%	14.9	13.3	15.5	13.8	14.4

^a Assuming that one third of live exports can be classified as lambs but over 28kg live weight.

Source: LiveCorp and CIE calculations.

As an average for the period 2005-06 to 2008-09, without any response by producers, total production of sheepmeat would need to increase by 14.4 per cent without live exports (table A.3).

- Production of mutton from older sheep could potentially increase by 30 per cent relative to those levels that were observed and make up 70 per cent of the total increase in sheepmeat production.

Another important component of the scenario is the likely diversion of sheep from Western Australia to eastern states as a result of processing capacity in that state (see table A5). Key additional assumptions required are as follows, as outlined in chapter 4:

- a total processing capacity ceiling of 6 million sheep has been assumed based on consultation with industry;
- only older sheep are transported east for processing while all lambs exported from Western Australia are slaughtered within the state;
 - An average (conservative) transport charge of \$25 per head has been used.
- an average of 1.9 million sheep would need to be transported east with additional transport costs of \$48 million would be required if there were no change in production in Western Australia.

A.5 Total additional cost of transporting WA sheep east for processing^a

		2006	2007	2008	2009	Average
<i>Additional sheep from live trade to be slaughtered in WA</i>						
Lambs ^a	000's	1 088	886	1 019	827	955
Mutton	000's	2 284	1 860	2 139	1 736	2 005
Total	000's	3 371	2 746	3 157	2 563	2 959
<i>Average weights</i>						
Lamb	kg lw	42	42	42	42	42
Mutton	kg lw	52	52	52	52	52
Total	kg lw	49	49	49	49	49
<i>Production equivalent</i>						
Lamb	cwe	22.8	18.6	21.4	17.4	16.3
Mutton	cwe	59.4	48.4	55.6	45.1	42.4
Total	cwe	82.2	67.0	77.0	62.5	58.6
<i>Total sheep for disposal in WA</i>						
Lambs	000's	3 593	3 533	3 600	3 139	3 466
Sheep	000's	4 752	4 398	5 003	3 650	4 451
Total	000's	8 344	7 932	8 604	6 789	7 917
<i>Total slaughter capacity in WA</i>						
		6 000	6 000	6 000	6 000	6 000
<i>Total sheep to be slaughtered in WA</i>						
Lambs	000s	3 593	3 533	3 600	3 139	3 466
Sheep	000s	2 407	2 467	2 400	2 861	2 534
Total	000s	6 000	6 000	6 000	6 000	6 000
<i>Total sheep to exported east</i>						
Lambs	000s	0	0	0	0	0
Sheep	000s	2 344	1 932	2 604	789	1 917
Total	000s	2 344	1 932	2 604	789	1 917
<i>Total transport costs</i>						
Transport cost	\$ per head	25	25	25	25	25
	\$m	59	48	65	20	48
Sheepmeat GVP	\$m	491	425	481	332	432
	%	11.9	11.4	13.5	5.9	11.1

^a Assuming that one third of live exports can be classified as lambs but over 28kg live weight.

Source: LiveCorp and CIE calculations.