Australian Beef Exports: Dead or Alive?

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Northern Australia's live cattle exports to Southeast Asia have increased dramatically in recent years. In Australia's current political environment calling for greater domestic value-adding, the issue of potential trade-offs between Australia's *live cattle* and *slaughtered beef* exports are examined. From an investigation into the origins of Australia's live cattle export industry and the production and marketing of beef in Australia's major live cattle importing countries, it is concluded that the two industries supply separate segments of the market. Trade-offs between imported Australian beef and beef derived from imported Australian cattle are not significant issues at present.

1. Introduction

Australia's live cattle export industry is expanding rapidly. The majority of the cattle exported are sourced from northern Australia and destined for Southeast Asia. However, in Australia's current political environment there are calls for greater domestic value-adding to our agricultural exports. Therefore, the potential trade-offs between Australia's exports of live cattle and slaughtered beef are examined.

In order to examine this issue, northern Australia's live cattle industry is first put into perspective with regard to Australia's slaughtered beef industry. Then, the reasons for the growth in the trade of live cattle rather than beef to Southeast Asia and Japan are discussed. Finally, the potential trade-offs between Australia's exports of live cattle and beef to Southeast Asia are conferred.

2. Live Cattle Trade in Perspective

Australia is the world's largest net exporter of beef and veal-exporting over 1.2 million tonnes of beef and veal annually at an estimated value of nearly $3,000m (Figure 1).

These exports represented over sixty percent of domestic beef and veal production in 1993 when thirty percent of our 24 million head national cattle herd was

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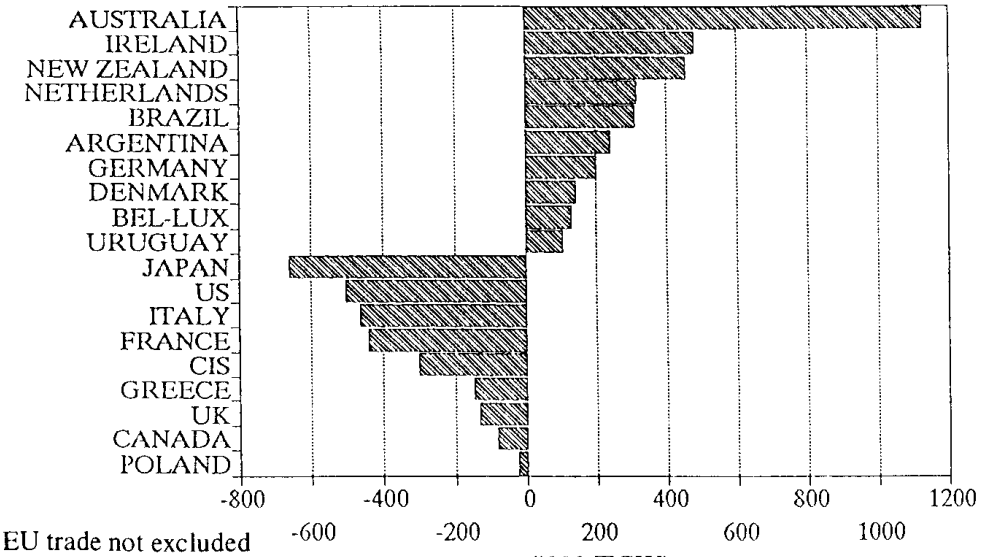
Figure 1: Net Beef and Veal Exports for Major Trading Countries, 1993



Note: Intra-EU trade not excluded
Source: Australian Meat and Livestock Corporation 1993b

Table 1: Cattle Numbers, Slaughterings and Production of Beef and Veal in Australia, 1993

State	Cattle numbers as at 31 March, 1993 (million hd)	Cattle and calf slaughterings year ended June 1993 ('000 hd)	Beef and veal production year ended December 1993 ('000 TCW)[a]
Northern Territory	1.4	85	9
Western Australia	1.5	439	100
Queensland	9.6	3 036	760
New South Wales	5.7	2 312	500
Victoria	3.7	2 007	310
South Australia	1.1	417	97
Tasmania	0.6	224	49
TOTAL	23.6	8 517	1 820

[a] tonnes carcase weight, including buffalo

Source: Australian Meat and Livestock Corporation 1993b

slaughtered to produce 1.8 million tonnes (carcase weight) of beef and veal (Australian Meat and Livestock Corporation 1993b)(Table 1). Beef and veal exports supply the US and Japanese markets - accounting for 70 per cent of Australia's total beef and veal exports in 1993. The Canadian and South Korean markets accounted for a further 20 percent of total Australian beef and veal exports in 1993 (Australian Meat and Livestock Corporation 1993b).

Given the relatively small domestic beef market in comparison to beef and veal production - particularly in the Northern Territory - a large percentage of the total volume of beef and veal produced in each state annually is exported (Table 2).

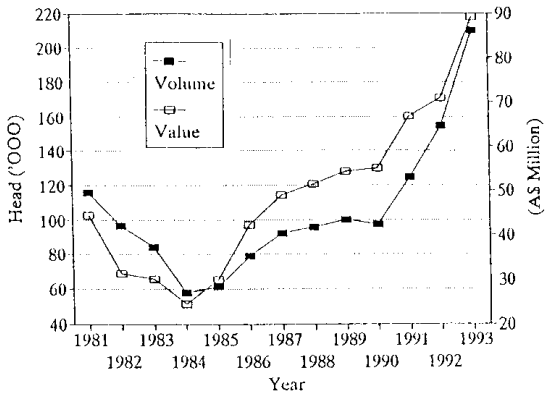
Table 2: Australia's Beef and Veal Exports as a Percentage of Beef and Veal Production by State, 1993

State	Beef and Veal Production Exported (%)
Northern Territory	85
Queensland	80
South Australia	60
New South Wales	58
Tasmania	55
Western Australia	42
Victoria	45
TOTAL	64

Source: Australian Meat and Livestock

The volume and value of Australia's live cattle exports have been expanding since 1984 (Figure 2). In 1993, Australia exported 210,000 head of live cattle worth approximately $90m. This is equivalent to 34,000 tonne of beef[1] and compares with Australia's other major livestock export industry, namely live sheep with exports equal to approximately 5.2m head in 1993 - valued at approximately $125m (Australian Meat and Livestock Corporation 1994c). If Australian's live cattle exports were considered in terms of the equivalent volume of beef exported to a particular 'market', it would represent Australia's sixth largest beef export market after Taiwan.

Figure 2: Australian Live Cattle Exports by Volume & Value, 1981-93



Source: Australian Meat and Livestock Corporation 1994c

[1] This calculation was made assuming an average live weight of 300 kilograms and a dressed carcase weight equal to 54 per cent of the live weight.

Australia's three leading exporting states, supplying 99 percent of live cattle exports in 1993 were the Northern Territory, Western Australia and Queensland (Table 3).

Table 3: Live Cattle Exports by State, 1993

State	Live Cattle Exports (head)
Northern Territory	129,600
Western Australia	59,600
Queensland	18,400
New South Wales	1,600
Victoria	900
South Australia	60
Tasmania	0
TOTAL	210,000

Source: Australian Meat and Livestock Corporation 1994c

In 1993, 13 Australian ports were utilised for exporting live cattle. However, the majority of live cattle were exported from the port of Darwin (Table 4).

Table 4: Australian Exports of Live Cattle by Port in 1993

Port	State/Territory	Volume of Exports (% of Australian total exports)
Darwin	Northern Territory	62
Wyndham	Western Australia	15
Geraldton	"	5
Broome	"	4
Perth	"	5
Fremantle	"	1
Brisbane	Queensland	7
Karumba	"	ns
Townsville	"	ns
Cairns	"	ns
Sydney	New South Wales	ns
Melbourne	Victoria	ns
Portland	"	ns
Adelaide	South Australia	ns

ns -individual port exports equivalent to less than 1% of Australian total exports

Source: Australian Meat and Livestock Corporation 1994c

Live cattle exports represent a significant proportion of total industry turn-off[2] in Australia's three major live cattle exporting regions (Table 5). The significance of live cattle exports to the more northern regions of these states and the Northern Territory is particularly evident when live cattle exports as a percentage of cattle turn-off is estimated for the narrower northern beef cattle regions such as the Kimberley and Victoria River District.

Table 5: Live Cattle Exports by Region as a Percentage of Cattle Turn-off by Region in Northern Australia, 1993

	Total Cattle Turn-off as Live Cattle Exports for Region (%)
Northern Territory	19
Western Australia	12
Queensland	0.6

Source: Australian Bureau of Statistics 1993a, Australian Bureau of Statistics 1993b and Australian Bureau of Statistics 1993c

Live cattle exports predominately come from the breeding grounds of northern Australia, and have become dominated by exports of feeder cattle since 1986. In 1993, Australia's total live cattle exports consisted of feeder cattle (82 per cent), slaughter cattle (11 per cent) and breeder cattle (7 per cent)[3] (Australian Meat and Livestock Corporation 1993b).

[2] Turn-off is the sum of live cattle exports and slaughterings in Queensland and Western Australia and the sum of live cattle exports, slaughterings and interstate flows in the Northern Territory. Total cattle disposals by region for Western Australia were assumed to be the same as the Northern Territory's total disposals as a percentage of total cattle numbers (i.e. 27 per cent) as this information was unavailable.

[3] - **feeders**: cattle, usually Brahman cross feeder steers, requiring additional feeding to reach a weight suitable for slaughter;

- **slaughter cattle**: cattle purchased for immediate slaughter that require little or no additional feeding before slaughter; and

- **breeders**: calves, cows and bulls primarily for beef and dairy breeding purposes and usually of higher value than feeder and slaughter cattle.

3. The Origins of Australia's Live Cattle Trade

In the past, the limited local beef market and the significant internal distances from major domestic beef markets limited the marketing options of early northern cattle producers. Cattle were largely isolated from the markets and fattening grounds of the rest of Australia by large areas of dry country. Historically, northern Australia was considered to be "Australia's remotest beef cattle region" (Kelly, Kimberley Pastoral Industry Inquiry Committee).

Australia's live cattle trade with Asia is based on Australia's comparatively lower costs of producing and supplying Asia with feeder cattle adapted to tropical conditions. This is primarily due to the rangeland production of tropical breeds of major disease-free feeder cattle (capable of rapid-weight gain) and the close proximity to Asia.

Improvements in land and sea transportation, infrastructure, cattle breeding, feeding and veterinary care have facilitated the export of live cattle. Also, by maintaining a supply of cattle of improving quality, many beef cattle producers now have the option of supplying beef or cattle for either the domestic or overseas markets. The Northern Territory's dominance in live cattle exporting has been facilitated by two factors - namely the use of "depots" and the relatively low cost of road transport compared to sea transport. Ship loads of cattle are gathered together from surrounding properties and agisted at depots close to ports. At the depots the quarantine requirements can be fulfilled at less cost than an equivalent period of time spent in port yards. Depots also reduce the risks facing the exporter (i.e. uncertainty of supply due to wet season road conditions) and improve loading efficiency. For example, with the 8 metre tides experienced at Darwin it is essential that the loading procedure be as fast and efficient as possible. Depending on export prices, feeder steers can, and have been, profitably trucked by road train from western Queensland to Darwin for export. Shipments through more northern ports can be more economical than trucking cattle to the existing ports in Queensland and paying for the additional sea freight costs associated with a greater time at sea from port to destination. The drought induced turn-off of cattle from western Queensland has bolstered this interstate flow of cattle. Not surprisingly, research is underway into the economic viability of opening up ports such as Karumba in northern Queensland for live cattle exporting. This would involve dredging the port to increase more regular and larger vessel access. Currently, exports are restricted to spring when favourable tides permit the current transporting vessels access. The logistics of unloading larger ships in Southeast Asian ports with limited facilities also needs to be considered. The economic viability of large capital investments in the industry depends upon the continued overseas demand for live cattle and the ability of the surrounding region to supply suitable export cattle. Further development of mining in the region would also necessitate port development which live cattle exporters could benefit from.

Of the cattle in the northern region, a high proportion are *bos indicus* type cattle. These cattle are preferred in tropical and sub-tropical environments and are better adapted to live shipment through equatorial conditions. The breed composition of northern Australia's cattle herd has changed considerably as producers consciously bred cattle better suited for beef production in the tropical conditions. This is best reflected in the trends in the composition of Queensland's cattle herd. The most notable trend has been the increase in the proportion of tropical breeds - particularly the Brahman. Conversely, the proportion of british and european breeds has fallen considerably - particularly the Shorthorn and Hereford. The greater infusion of tropical bloodlines into Queensland cattle is also reflected in the rising number of tropical/tropical cross bred cattle and the decreasing number of tropical/british cross bred cattle (Table 6).

Apart from breed improvements in Australia's beef industry, improvements in the quality of cattle were due initially to improvements in herd management and husbandry stemming in part from the Federal Government's Brucellosis and Tuberculosis Eradication Campaign (BTEC). Australia's lower cattle disease status, including being free of foot-and-mouth disease (FMD), affords Australian live cattle producers live cattle markets in Asia denied to other potential live cattle suppliers also in relatively close proximity (such as China and South American countries including Argentina) on the basis of their cattle industry disease status.

The prices offered overseas for consistently high quality cattle is making limited herd improvement possible utilising tropical breeds with greater temperature and internal parasite tolerance and tick resistance. Property improvement via better water supplies and fencing and even pasture improvement (using low-phosphate demanding legumes) is also profitable in a previously low input industry in the Northern Territory and Western Australia. This translates into higher branding rates, stocking rates, total numbers of stock and stock turn-off (Michell). Improvements of

Table 6: The Breed Composition of Queensland's Beef Cattle Herd, at 31 March 1977-1987

	1977 ('000 hd)	1982 ('000 hd)	1987 ('000 hd)
Straight Tropical breeds (meat)	1,693	1,907	2,298
Brahman	422	613	1 011
Cross Tropical breeds	5,258	4,870	4,964
Brahman/British cross	3,018	2,791	2,291
Other Tropical/British cross	1,199	1,043	682
Tropical/Tropical cross	33	167	275
Straight British & European breeds (meat)	4 065	2 635	1,455
Hereford (incl. polled)	2,705	1,770	1,113
Shorthorn (incl. polled)	1,248	760	246
Dairy breeds	na	276	269
TOTAL	11,036[a]	9,758	8,997

a including meat cattle only, milk cattle breeds not collected
na not available

Source: Australian Bureau of Statistics 1992

this nature are helping northern Australia to achieve stock levels that are both economically and environmentally sustainable in some areas. The provision of extra water on most classes of country increases the land's carrying capacity by allowing cattle to graze all the area in the dry season. This in turn reduces the pressure on frontage country and thus its potential for erosion (Boorman and Arthur).

In the Ord River Irrigation Area (ORIA), the live feeder trade is encouraging the establishment of flood irrigated leucaena (*Leucaena leucocephala*) - a fodder tree used for rotational grazing of Kimberley cattle (Peggs 1994). This production strategy is presently economically feasible, even with maize supplementation, due to the resulting increased growth rates (of up to 0.25 kilograms a day) and earlier finishing times (7 months instead of 12 months). Leucaena-based cattle production also competes successfully with other possible methods of cattle production, such as lot feeding, and other irrigated land uses such as maize, cucurbit and sugar-cane production, in the ORIA (Petty). This leucaena-based production system permits the processing of feeder cattle closer to the original point of production as it negates the need to transport cattle further south for pasture finishing. Transporting cattle short distances to ports allows cattle supplies to be maintained during the wet season - December to March as the wet season restricts the long distance transportation of cattle to port. It also allows opportunistic "topping up" of live cattle shipments in the dry season.

In providing the northern cattle producers with another marketing option, live cattle exports are underpinning cattle prices in northern Australia. The flow-on effects of the increased demand for live export cattle are felt in the northern Western Australian weaner, finished trade and export steer markets (Peggs 1994). The strong demand, and hence the prices offered for export cattle, has led to a reduction in the number of export accredited abattoirs in the northern regions of Australia as slaughter cattle are diverted from the beef trade to the live cattle trade. The only remaining abattoirs north of Innisfail are export accredited abattoirs at Katherine and Batchelor in the Northern Territory. This follows the closure of the export accredited abattoirs at Cairns and Mareeba in Queensland and at Broome (in 1993) and Wyndham (in 1985) in Western Australia.

4. Australia's Live Cattle Markets

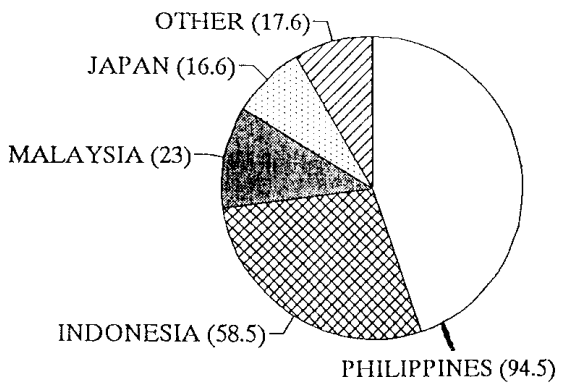
Beef production in many of Australia's live cattle trading partner countries has generally been unable to keep up with their expanding demand for beef. This is largely the result of beef production and marketing constraints such as the availability of land for cattle raising and livestock feed production, the continuation of traditional meat production systems, the supply of skilled labour in animal husbandry, and capital and infrastructure at all meat marketing stages.

Imported live cattle or beef could be utilised to overcome shortfalls in domestic beef supplies. The existing demand for live cattle imports in Asia is largely the result of the importing country's comparative advantage in the latter stages of beef production. This attribute is often combined with policies that effectively restrict beef imports in order to promote beef self-sufficiency, domestic value-adding and rural development. Importing live cattle also overcomes problems such as the lack of refrigeration facilities and satisfying religious preferences for *halal* beef (i.e. beef slaughtered according to Islamic custom).

The possession of a comparative advantage in the latter stages of beef production is related to the availability of low cost agricultural industry by-products used for cattle feed, low cost labour and associated meat processing charges, government underwriting and lower health and hygiene requirements. For example, cattle feeding enterprises often develop around a food processing plant or oil mill to take advantage of available, often low cost, by-products. Locally available agro-industrial by-products (such as molasses, copra meal and bran, starch processing waste and brewers' dried grains) are available directly from mills in the Philippines. Feedlots in Malaysia also rely on palm kernel cake - a more expensive, higher protein by-product of the palm oil industry - and pineapple waste from pineapple plantations. The suitability of by-products as a livestock feed source is often limited by insufficient availability in the beef producing areas. This is due to the seasonality of the crop and its high moisture content - limiting the distance the by-product can be transported to the beef producing areas without further processing. Whilst their low cost is considered to be a major advantage in beef production, the cost of utilising these feed inputs is usually understated in terms of foregone export opportunities for feed and/or reduced soil fertility and structure. For example, copra meal and palm kernel cake can also exported as livestock feed to Europe. Competition has increased between the users of palm kernel cake in Malaysia, namely domestic feedlots, and overseas intensive feed importers. As a consequence, feedlot input costs have risen and the viability of feedlotting based on palm kernel cake has declined.

Australia has supplied over 20 different countries with live cattle in the past decade. The majority of cattle exported have supplied five major Asian Markets - namely Japan, Philippines, Indonesia, Malaysia and Thailand (Figure 3). Singapore and Brunei are also markets for slaughter and breeder cattle.

Figure 3: Australian Exports of Live Cattle by Volume, 1993 ('000 herd)



Source: Australian Meat and Livestock Corporation 1993b

The destinations for Australia's live cattle exports have changed from being dominated by Korea in 1983/84 (accounting for 51.3 per cent of live cattle exports compared to the Philippines at 4.5 per cent) to being dominated by Japan (*Bos taurus* breeds) from 1986 to 1991. However, in the twelve months to December 1993, the Philippines (importing 94.5 thousand head valued at $34.4 million), Indonesia (importing 58.5 thousand head) and Malaysia (importing 23 thousand head) surpassed Japan (importing 16.6 thousand head) as the largest importers of live cattle (mostly *Bos indicus* breeds) from Australia on a volume basis (Australian Meat and Livestock Corporation 1994c).

These changes reflect the fact that Australia's live cattle trade has undergone two major expansion phases since the mid-1980's. The first was associated with beef supply problems in Japan - aggravated by Japanese beef import quotas. The second major expansion phase which began in 1990 was due to the growth in feeder cattle exports to Southeast Asia.

Live cattle imports increased rapidly as a means of overcoming beef import supply problems in Japan. This led to Japan's traditional dominance as the largest importer of Australian live cattle - almost all imports from Australia being feeder cattle sourced from Queensland. Japanese imports of Australian live cattle have been declining. The depressed import market for live cattle is the result of a number of factors - most importantly the liberalisation of Japan's

beef import industry and events in the closely related domestic dairy industry. The liberalisation of Japan's beef market led to increased protection of the local calf industry via the abolition of the non-tariff quota on live steer imports on April 1, 1991. As a result, all cattle imported into Japan were subject to an import duty. For cattle weighing less than 300 kilograms, the duty was equivalent to about A$640 per head whilst the duty for cattle weighing over 300 kilograms was approximately A$1060 per head - greatly reducing the cost competitiveness of Australia's feeder and slaughter cattle in Japan. Dairy beef production makes up 60 percent of total Japanese beef production. A significant downturn in local diary steer prices since 1989 has further reduced the cost competitiveness of Australian live cattle in the Japanese market (Australian Meat and Livestock Corporation 1993a).

Indonesian imports of feeder cattle have grown rapidly since 1990 as the emphasis has shifted away from importing breeder cattle towards importing feeder cattle for further fattening in local feedlots - reflecting an expansion and improvement of techniques and efficiency in the lot feeding industries and the increased number of private companies becoming importers. In 1993/94, the value of feeder imports from Australia was A$38.8 million (FOB or $463/head) (Australian Meat and Livestock Corporation 1994b). The growth in feeder imports also reflects the Indonesian Government's liberalisation of feeder import policies via the exemption of import licence holders from import duties on feeder imports in 1989. As Indonesia is deemed to be free of foot-and-mouth disease, it must source imported cattle from FMD-free areas[4]. Whilst these areas include Australia, New Zealand, the United States and Canada, Australia's close proximity to Indonesia and our supply of cattle fulfilling the market specifications has encouraged this live cattle trade (Peggs 1992).

Indonesia had earlier been the largest importer of Australian breeder cattle. From 1980 to 1990, large numbers of breeders were imported as part of large-scale transmigration programs - particularly to Sulawesi and Kalimantan - in order to discourage population drift to congested areas. These cattle were distributed to smallholder farm families on the basis of one or two per family. The smallholder is first trained in livestock husbandry and, as a pre-requisite, must construct handling facilities and demonstrate a capability to feed and care for the animal. The animals are broken in to provide draft power and animal breeding is encouraged as calves are used for loan repayment (Dunn). However, imports fell following the completion of the Asian Development Bank's loan for the scheme in 1990.

Since Filipino feeder trade with Australia commenced in 1987, Filipino imports of feeder cattle have trended upwards. Despite the drop in feeder imports in 1990/91 due to a downturn in domestic economic conditions, the demand for imported feeder cattle recovered dramatically in 1993. This follows recent expansions in the feedlot industry's capacity and growth in and consumer demand that continues to outstrip the supply capacity of the local cattle industry. The total value of feeder imports from Australia in 1993/94 was A$38.7 million (FOB or $373/head) (Australian Meat and Livestock Corporation 1994b).

In the early 1980's, Filipino live cattle imports consisted of breeder cattle only. This was followed by a period of inactivity from 1984 until 1987 when no live cattle were imported from Australia. The number of breeder cattle imported into the Philippines (mostly Brahman-cross cattle), has dramatically increased since 1991 as a result of the introduction of the Land Bank of the Philippines' Cattle Financing for Cooperatives Program. Under the program, imported breeder cattle are sold to cooperatives (at low interest credit) and distributed to smallholders in the Philippines under the provision of low interest loans from the cooperatives to its smallholder members. Producers could repay the loan from the sale of calves, milk and eventually spayed heifers for fattening. The total value of breeder imports from Australia in 1993/94 was A$4.4 million (FOB or $434/head) (Australian Meat and Livestock Corporation 1994b).

5. Policy Implications from the Live Cattle Export Industry

In order to understand the potential trade-offs between Australia's exports of *live cattle* and *slaughtered beef*, further detail is necessary regarding the markets for beef in Asia. These markets can generally be divided into the following market segments based on price as an indicator of quality:

(a) the higher price market segment serviced by international class hotels, restaurants and upper class supermarkets;

[4] The last outbreak occurred in Central Java in 1983. After three years of vaccination campaigns followed by an intensive surveillance program, Indonesia declared its foot and mouth disease free zone status in September 1990 to OIE and FAO/APHCA (Directorate General of Livestock Services 1992).

(b) the medium price market segment serviced by middle class supermarkets, restaurants and US style hamburger chains; and

(c) the lower price market segment serviced by lower class supermarkets and "wet" markets.

Wet market selling of beef is the traditional meat marketing system in much of Asia. It is characterised by selling meat in open air stalls with little or no refrigeration. There are usually no standard cuts and little or no premium for quality (Australian Meat and Livestock Corporation 1991). While this form of selling continues in much of Asia, following increasing incomes and improvements in meat processing, and refrigerated transportation and storage, the growth areas have been the higher and medium priced market segments - particularly evidenced by the rapid growth in the upper class supermarkets. In these two market segments, the consumers are increasingly more sophisticated in their beef tastes and cooking habits and consequently more discerning in their beef demands (Australian Meat and Livestock Corporation, 1994b).

The higher priced beef markets have been supplied with imported chilled and frozen beef from the US, Australia and New Zealand. The middle priced beef markets have been supplied with imported chilled and frozen beef (mainly tenderloin and striploin) from the US, Australia and New Zealand. The lower priced markets have traditionally been supplied with imported manufacturing beef and beef from domestic cattle, culled cows and aged ex-draft bullocks. In recent years, Australia has not been a major exporter of manufacturing beef for the lower priced market segment due to severe competition from subsidised beef from Europe and low cost beef from South America, India and China. Due to historical ties, the dominant market preference in the Philippines' higher priced market segments is meat from the US.

Northern Australian live cattle exports to Asia are evidence that under the existing marketing conditions (i.e. relative transport, processing costs and prices) Australia is a viable supplier and a successful competitor in the international live cattle market. Currently, the ultimate destination of Australia's *feeder* and *slaughter cattle* exports are the lower priced markets in Asian importing countries. Conversely, Australia's *beef* exports to Asia generally supply the higher priced beef markets as Australia cannot competitively supply the lower priced Asian markets with beef due to the availability of subsidised European and low cost South American, Indian and Chinese beef. Therefore, at present it is argued that there is very little direct competition between these two trades in Asian importing countries due to market segmentation.

In the future, some countries such as Indonesia do hold aspirations of achieving self-sufficiency in the beef for the higher priced markets and entering the high quality beef trade - supplying high quality markets in other Southeast Asian countries. Following a strong demand for beef in the middle and higher priced segments of the market, producers in countries such as Indonesia and the Philippines are aiming to infiltrate these segments and, in the case of Indonesia, eventually develop an export-orientated beef industry. Being able to penetrate the upper price markets, where premiums can be obtained for quality, would dramatically improve the viability of the feedlotting industries in these countries. Established feeder steer importers in Indonesia have lobbied the government to impose restrictions on imported beef (in the form of either total bans or linking beef imports to domestic beef usage) in order to force the food service sector to use beef from their cattle. However, this is unlikely to eventuate on a significant scale as the feeder cattle finishing industry is economically viable as a result of the availability of relatively low-cost inputs such as feed supplies and feeder cattle. To produce beef of a standard demanded by the higher quality domestic and export trade requires cattle to be fed on a higher cost, higher protein feed and slaughtered at higher cost, higher health and hygiene processing facilities. These resources are currently unavailable in a number of Southeast Asian countries. With economic development and an increasing pressure on land there is likely to be a growing shortage of suitable feed and a reduction in their low-cost based agricultural production advantage. In addition, increases in the demand for live cattle imports from Australia are likely to result in increasing costs and therefore prices as cattle are sourced from increasingly southern regions.

The fact that most of the major importers of feeder steers in Southeast Asia are not free of foot-and-mouth disease also precludes the possibility of their becoming beef exporters in competition to Australia in the major beef markets of Japan, the United States, Canada and South Korea.

Therefore, if Australia was to adopt a policy of restricting live cattle exports, it would be at the expense of the northern Australian cattle industry. This follows as producers would be forced to return to the less profitable marketing options of supplying the domestic store markets with feeder cattle or abattoirs with slaughter cattle - most likely for the American manufacturing meat trade. Importing countries would also

be forced to source either live cattle or beef for their lower priced markets elsewhere. In this case, encouraging more value-adding in terms of processing feeder and slaughter cattle to beef in Australia and exporting the beef may discourage Australia's economic development - especially in northern Australia. It may also discourage the economic development of our trading partner countries as well given that achieving greater self-sufficiency, domestic value-adding and rural development are also behind Asia's demand for live cattle imports as opposed to beef.

Australia also provides assistance to Asian countries aimed at improving the performance of Asian beef industries via the provision of breeder cattle, technical support and training in many areas of beef marketing (such as cattle breeding, cattle raising, beef processing and retail presentation). This too is also unlikely to be detrimental to Australia's beef or live cattle trade as the increases in beef supplies resulting from productivity improvements are unlikely to match the growth in domestic demand. Therefore, with the unlikely achievement of beef self-sufficiency in importing Asian countries, investments of this nature are investments in the future of Australia's live cattle and beef industry as they improve the reputation and performance of Australian live cattle imports and promote the utilisation of Australian expertise and technology. In addition, the increased availability of beef derived from Australian live cattle is helping to introduce more Asians to beef which, due to limited growth in local beef production and possible reductions in the barriers to beef trade, could lead to a greater demand for both Australian beef and live cattle.

6. Conclusions

This paper has considered a rapidly expanding sector of Australia's beef industry - the live cattle exporting sector. The origins of this growth are due to a complex array of factors including Australia's capacity to supply tropical breeds of cattle of improving quality off native rangelands at relatively low cost and the aspirations of the importing countries to utilise their comparative advantage in feeding and processing cattle.

The growth of this industry has broadened the marketing options available to northern Australian cattle producers and assisted in the achievement of the cattle import related development objectives in Australia's trading partner countries. In the current political environments of calls for greater domestic value-adding, the potential trade-offs between Australia's *beef* and *live cattle* exports were examined. It was concluded that there were limited opportunities for trade-offs between Australia's exports of beef and live cattle due to market segmentation. Rather, with carefully designed and implemented marketing strategies, Australia's live cattle trade could serve to strengthen our beef trade with Southeast Asia in the future. One clear implication from this study is the need to re-examine the complex issues surrounding increased value-adding of Australia's agricultural commodity exports in general.

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