

LIVESTOCK INDUSTRIES OF NORTHERN AUSTRALIA: STRUCTURE AND ECONOMIC CHARACTERISTICS

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ABSTRACT

Following a period of expansion, stimulated by growing export demand for beef, the cattle industry recently experienced a slackening in demand associated with a downturn in economic activity and increased beef production in importing countries. In common with the rest of Australia the cattle industry of the north has a slaughter potential which has grown well beyond the current volume requirement of markets. Meanwhile, producers must face a period of depressed cash flow and eroded asset backing until markets improve again. It would appear that the industry will remain vulnerable to changing export markets in the future and will cope best by not only concentrating on the development of production systems which are efficient in terms of use of scarce resources but which remain flexible to respond to changed market requirements and demand.

INTRODUCTION

Most northern livestock producers probably harbour doubts at present as to whether continuation of their established forms of production gives them any assurance of long-term viability. Exceptional economic forces—a combination of sharply rising costs and fluctuating prices recently received for produce—may have already initiated changes in the structure of the northern beef cattle and associated industries as producers respond to reduce their vulnerability to the adverse effects of such forces in the future (Anon 1974a). However, the nature and extent of these changes are largely conjectural at this stage, so that a discussion of the already-established long-term structure of the major livestock industry of northern Australia must suffice for the present.

THE BEEF CATTLE INDUSTRY IN NORTHERN AUSTRALIA

The Australian Beef Cattle Industry Survey has to date been carried out twice by the BAE on a nationwide scale and provides data on the underlying long-term economic structure of the industry. The most recent series of published results relate to the three years to 1970-71†, a period when cattle numbers were expanding, in the south often at the expense of sheep numbers. For survey purposes, the beef cattle producing areas of Australia were split into 26 regions, each one relatively homogeneous with respect to climate, pasture types and methods of production. In addition to publishing survey results for the three years to 1970-71, a further survey was conducted for 1971-72 and results for this re-survey are held in the BAE data bank.

In some of the tabulated estimates presented later relating to northern Australia, these 1971-72 results have been incorporated with the previously-published three-year averages to give averages for the four years up to and including 1971-72. Sale-yard prices over this period remained close to the steadily-rising trend which originated about two decades previously. It was not until the following year that prices deviated well above trend, peaking early in the subsequent 1973-74 financial year to fall late in that year to the lowest levels experienced for over ten years.

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†"The New South Wales Beef Cattle Industry" *Quart. Rev. Agric. Econ.*, Vol. XXVI, No. 2, April 1973, BAE Canberra. Results for Tasmania, South Australia, south-west Western Australia, Northern Territory and Kimberleys, Queensland, and Victoria are to be found in *Beef Research Reports Nos. 10 to 15* respectively, BAE, Canberra, 1974.

In view of the considerable overlap between the sheep and beef cattle industries and the need to be aware as soon as possible of the effects on the grazing industries of increasingly common volatile price movements, the BAE has from 1973-74 amalgamated its Sheep Industry and Beef Cattle Industry Survey operations so that an annual review of their economic status will become available.*

The survey regions of direct relevance to this conference are referred to in the published reports as the Kimberleys (WA); Alice Springs, Barkly Tableland, Victoria River and Darwin/Gulf (NT); the seven regions of Queensland; and the northern region of South Australia; some thirteen regions in all of the total of 26. In assessing the economic status of the industry through sample survey procedures, the Bureau concentrated its attention upon those producers running in excess of 50 meat cattle at March 1971, but excluded from the survey a small proportion estimated to be run mainly as studs or as dealing operations.

As shown in Table 1, the total population of producers of beef cattle in northern Australia for survey purposes was 15,900, of which 14,700 were estimated to be commercial operations not dependent for a large proportion of their income on dealing or stud activities. In total, the number of cattle run on northern survey properties in 1970-71 was estimated to be about 9 million head. The Australia-wide survey covered a gross population of 68,400 properties, 61,500 of which were eligible for the survey, the latter running 17.8 million head or almost 90% of the 20.3 million beef cattle which comprised the national herd in March 1971.

TABLE 1
Statistics for beef cattle properties in northern Australia (from the Australian Beef Cattle Industry Survey)

State, Territory or Region	Gross Population (a)	Eligible for Survey (b)	Estimate of Meat Cattle on Survey Properties (c)		Sample
	properties	properties	'000 head aggregate	av/property head	properties
W.A.—Kimberleys	98	83	714	8,584	18
N.T.—Alice Springs	89	84	355	4,221	16
—Barkly Tableland	22	20	336	16,473	12
—Victoria River	25	23	378	16,393	12
—Darwin/Gulf	48	47	207	4,401	14
S.A.—Northern	164	131	130	994	22
Qld.—Peninsula/Gulf	125	125	606	4,848	31
—Inland North	804	780	1,034	1,325	38
—Coastal North	1,035	961	383	399	15
—Western	590	581	673	1,158	27
—Inland South	1,830	1,679	683	407	36
—Coastal Central	3,280	3,086	1,913	620	37
—South Eastern	7,774	7,052	1,594	226	46
Total	15,884	14,652	9,006	614	324

(a) From ABS—as at March 1971—properties with more than 50 meat cattle.

(b) properties with more than 50 meat cattle; not studs; not dealing operations or holding properties.

(c) raised survey aggregates; average of opening/closing numbers 1970-71; subject to sampling error (standard error) of about 5-10% at regional level.

PURCHASES AND SALES OF CATTLE

Regional production methods are to a large extent reflected in regional patterns of cattle sales and purchases. Table 2 presents average rates of turnon and turnover,

*The preliminary results for the combined survey relating to 1973-74 are expected to be published in the July 1975 issue of the Quarterly Review of Agricultural Economics. This will take the place of annual reviews of the Australian Sheep Industry which have featured for a number of years in July issues of the Q.R.A.E.

TABLE 2
Regional rates of livestock transaction for northern Australia in 1970-71

Region	Turnon Rates		Aggregate Herd No. '000 head	Breeder's		Turnoff Rates Stores	Slaughter	Net Rate Turnoff %	Ratio Turnon to Turnoff
	Breeders %	Stores %		Breeders %	Stores %				
W.A.—Kimberleys	1	0	714	2	2	9	12	0.1	
N.T.—Alice Springs	1	3	355	5	7	12	21	0.3	
—Barkly Tableland	1	4	336	1	9	8	13	0.3	
—Victoria River	2	0	378	5	6	12	20	0.1	
—Darwin/Gulf	3	2	207	1	4	10	10	0.3	
S.A.—Northern	2	6	130	7	12	16	27	0.2	
Qld.—Peninsula/Gulf	1	1	606	1	6	7	12	0.2	
—Inland North	1	4	1034	1	9	9	15	0.3	
—Coastal North	1	10	383	2	2	24	16	0.4	
—Western	5	6	673	3	7	17	16	0.4	
—Inland South	5	14	683	7	11	27	26	0.4	
—Coastal Central	2	11	1913	3	6	19	16	0.5	
—South East	3	19	1594	4	5	37	25	0.5	

net turnoff rates, and the ratio of turnon to turnoff for the northern regions for the 1970-71 year. The percentage estimates relate purchases/transfers in, or sales/transfers out, to the average herd carried in 1970-71, while the ratio of turnon to turnoff provides a measure of the importance of cattle purchases as an input in any regional production system. The general pattern which emerges is that slaughter beasts generally form the most important component of turnoff. In those regions featuring a high slaughter turnoff (around or in excess of 20%), purchase rates of stores are also regionally running at 10% or more.

SPATIAL MOVEMENT OF CATTLE

Details of marketing flow characteristics of cattle originating on survey properties in 1970-71 have been published in report form (Anon 1974b). In aggregate, almost 100,000 more slaughter cattle were produced in the 13 northern regions than were slaughtered at facilities located within those regions. With respect to store and breeder cattle, most regions were suppliers and a net total of some 58,000 stores and 34,000 breeders moved southwards out of the northern regions.

THE COMPLEXITY OF MARKETING MOVEMENTS

Taking the flow of cattle to the meatworks of the Coastal North of Queensland as an example, Table 3 depicts the magnitude of each of the flows of cattle from the eight regions which supplied slaughter cattle to that region in 1970-71. In addition, to disclose some of the complexity of the movements of store cattle which take place as part of the process of production of finished beasts, the ultimate movement of cattle in store condition into the eight regions which finally supplied slaughter cattle to Coastal meatworks are shown. The eight streams of slaughter cattle can be seen to be related to no less than 26 streams of store cattle, originating as far away as the Kimberleys of Western Australia.

TABLE 3
Regions of origin and destinations of store and slaughter cattle for the meatworks of the Coastal North of Queensland

Region of Origin of Store Cattle		Destination of Store Cattle and Region of Origin of Slaughter Cattle		Destination of Slaughter Cattle		
	'000 head		'000 head	'000 head		
Peninsula/Gulf	9.9	Peninsula, Gulf	35.7	Coastal North 295.5		
Peninsula/Gulf	1.4	Inland North	80.0			
Inland North	62.6	Coastal North	92.0			
Peninsula/Gulf	14.5					
Inland North	11.4					
Coastal North	6.0					
Western	8.3					
Peninsula/Gulf	4.4					
Western	32.4					
Coastal Central	0.8				Western	29.3
Kimberleys	4.7					
Barkly Tableland	14.0				Coastal Central	28.7
Victoria River	12.3					
Darwin/Gulf	7.3					
Peninsula/Gulf	6.0					
Inland North	20.0					
Coastal Central	112.0					
South East	1.5	Alice Springs	12.2			
Kimberley	0.7					
Alice Springs	1.6	Barkly Tableland	16.0			
Barkly Tableland	4.0					
Coastal Central	0.2					
Northern S.A.	1.0					
Barkly Tableland	5.4				Darwin/Gulf	1.6
Victoria River	4.1					
Darwin/Gulf	1.7					

SELECTED CHARACTERISTICS OF BEEF CATTLE PROPERTIES

In order to provide a broad view of the established physical and economic characteristics of properties in the thirteen northern regions, selected survey estimates are presented in the following two tables.

Table 4 presents selected physical characteristics. The large size of each region and the variation of properties within dictate that the estimates be regarded as averages of sometimes quite widely dispersed observations. Nevertheless, with the regions generally arranged as they are in the tables from the remote northern regions through to the coastal southern regions close to market outlets, the averages presented demonstrate trends in property sizes ranging from several thousand hectares in the South East region of Queensland to hundreds of thousands of hectares in northern S.A. and the remote northern regions. A similar picture emerges with respect to herd size. The herd characteristics show herds to contain a higher percentage of breeders in the more remote or northern regions, around 60%, with a trend in femineity to around 50% or even below displayed in regions located towards the eastern seaboard or the south. Branding rates display a converse trend.

Cattle husbandry tasks absorbed around 60% of the labour force in remote or northern regions. However, where sheep, sugar or other crops are encountered, the percentage drops markedly.

Table 5 presents financial data corresponding to the physical estimates shown previously. At the time, cattle prices were relatively attractive and rising, and cattle inventories were in most cases building up. Wool prices over the four year period fell to their lowest levels for some years and sheep inventories were tending to fall. Nevertheless, a picture emerges of the various degrees of dependence on beef cattle, sheep and cropping within the thirteen regions.

The estimates of average returns to capital and management indicate a transition from large returns amounting to tens of thousands of dollars in the remote and northern regions to some thousands in the closer settled regions. The transition is less smooth than the equivalent physical data. This is due to a number of factors which influence economic performance. For example, although no region could be said to have experienced a series of markedly adverse seasons in the four-year period, drier than normal conditions might have affected production or inventories in the northern region of South Australia with consequent effects on income levels. The negative returns associated with the Darwin/Gulf region properties were mainly due to some operators in that region awaiting the fruits of recent investment actions in the form of increases in turnoff, yet being at the same time faced with an enlarged operating cost structure associated with recent development action. This factor of course is to be found to different extents in all beef cattle industry regions. However in the Darwin/Gulf and Kimberleys there were marked effects of recent investment on cost structure.

The ratio of capital employed to returns received indicates that around \$7-\$15 of capital is employed in the remote and northern regions to produce \$1 of gross returns, while in the more diversified southern regions, the values range from about \$5 to \$8. However, the proportion of property capital value made up by value of cattle was 60% to 70% in the northern regions, falling to a quarter or below in the more intensive southern regions. With an asset structure so closely associated to the fortunes of a single industry, the borrowing ability of specialised cattle producers tends to be closely associated with the market price of cattle.

THE 1974 TURN-AROUND IN THE MARKET SITUATION

Although beef is produced in almost every country in the world, less than 10% of world output is traded internationally. Australia, Argentina and New Zealand are the main exporting countries, together accounting for about half of world exports. The main importing regions are the EEC, U.S.A., Japan and Canada; the first two of these usually taking about 80% of beef traded internationally.

TABLE 4
Selected physical characteristics of beef properties for the northern regions of Australia averaged for the period 1968-69 to 1971-72 (from the Australian Beef Cattle Industry Survey)

Region	Average per beef cattle property							% Total Labour Used in Beef Husbandry
	Farm Area '000 ha	% Farm Area Impr. Pasture	Meat Cattle head	Sheep head	% Breeders in Herd	Branding Rate (a) %	%	
W.A.—Kimberleys	254.7	—	8,966	—	52	47	53	
N.T.—Alice Springs	381.9	—	4,237	—	61	44	59	
—Barkly Tableland	637.6	—	16,894	—	65	43	54	
—Victoria River	546.4	<1	16,396	—	53	51	53	
—Darwin/Gulf	237.8	<1	4,443	—	62	48	56	
S.A.—Northern	300.7	—	995	4,293	59	57	35	
Qld.—Peninsula, Gulf	126.2	<1	4,938	—	58	53	63	
—Inland North	19.8	5	1,386	1,497	54	60	36	
—Coastal North	2.8	9	408	—	52	62	37	
—Western	77.2	—	1,183	5,136	52	53	31	
—Inland South	6.3	14	423	1,549	58	72	33	
—Coastal Central	5.8	18	636	10	50	69	41	
—South East	1.1	18	233	199	47	82	28	

(a) Calves branded over estimated matings as a percentage.

TABLE 5
Selected financial characteristics of beef enterprises in the northern regions of Australia averaged for the period 1968-69 to 1971-72 (from the Australian Beef Cattle Industry Survey)

Region	Average per beef cattle property					Return to Capital and Management \$'000	Returns/Cost Ratio	Capital/ Returns Ratio
	Beef Enterprise %	Sheep Enterprise %	% Gross Return from:		Crops/Other %			
W.A.—Kimberleys	99	—	—	1	30.8	1.7	10.1	
N.T.—Alice Springs	95	—	5	5	39.1	2.0	7.0	
—Barkly Tableland	98	—	2	2	91.3	1.6	9.8	
—Victoria River	99	—	1	1	42.1	1.3	11.7	
—Darwin/Gulf	94	—	6	6	—16.3	0.8	15.4	
S.A.—Northern	50	41	9	9	16.6	1.5	5.6	
Qld.—Peninsula/Gulf	98	—	2	2	42.4	2.2	6.9	
—Inland North	79	5	16	16	13.5	1.7	6.1	
—Coastal North	39	—	61	61	9.4	1.8	5.0	
—Western	47	51	2	2	13.6	1.4	5.6	
—Inland South	52	29	19	19	6.5	1.4	5.6	
—Coastal Central	77	1	22	22	7.1	1.7	7.8	
—South East	46	5	49	49	3.3	1.4	7.1	

Beef import requirements are usually to fill in shortfalls in domestic production in the main importing countries. In contrast, the cattle industries in the major exporting countries are heavily reliant on overseas markets. In such a situation, small supply/demand changes can have large effects on the prosperity of beef industries, such as the one in Australia, and well beyond the capacity of the domestic market to have any compensatory stabilizing influence.

The recent downturn in economic activity in major importing countries, associated with high rates of inflation, balance of payments problems and the oil crisis has caused just the slackening in demand for beef to which the Australian cattle industry is so vulnerable. The effect on the cattle industry of slackening demand has been aggravated because it has coincided with large increases in production in major importing countries following marked expansion in many national herds in the early 1970s in response to favourable trends in beef prices.

In Australia, after rising to record levels in late 1973, saleyard prices for beef cattle have fallen to their lowest levels for over ten years. Consequently, the Australian beef cattle industry, which expanded since the mid 1960s in the north mainly in response to steadily increasing prices and in the south more rapidly as much in reaction to declining prospects for sheep as in response to the then favourable prospects for beef, is now in a position where it has the capacity to supply far beyond export and domestic requirements through 1975 and possibly beyond.

IMPACT IN AUSTRALIA

The slackening in demand has had effects which may be classified broadly under three main headings:

- (a) *Build up in numbers*: Cattle that would normally be sold are accumulating on properties. Continuation of depressed market opportunities into 1975 could result in the national herd growing from 30.9 million (March 1974) to 39 million by March 1976.

The capacity of the resource base to cope with the large increase in numbers and turnoff is questionable.

In view of the inability of producers in northern beef specialist areas to control herd size other than by slaughter, and their greater vulnerability to the occurrence of adverse seasonal conditions the situation could become particularly critical in the north.

- (b) *Producers' income-liquidity situation*: Depressed saleyard prices, reduced turn-off and increases in costs have had important but varying effects on producers' income situations. Two factors affect the levels of gross revenue of producers in the current situation. One is the effect of the reduced volume of cattle sold, the other is the effect of the fall in prices received. In this respect northern producers catering mainly for export markets are more disadvantaged than those southern producers who are adjacent to large domestic markets. In Table 6 estimates from beef cattle industry survey data of average net cash incomes are presented for 1971-72 for selected regions in northern Australia together with estimates of the effects of subsequent movements in prices for inputs and products on these income levels.

The estimates for 1973-74 were derived by indexing forward survey values for 1971-72 by using the BAE prices paid and prices received series. The projections of net cash incomes for 1974-75 were derived by making further allowances for price increases on the costs side, while prices received were based on September/October 1974 values for cattle and wool and July 1974 prices for other produce. The estimates indicate that, in regions where producers have additional sources of income from enterprises such as sugar (Coastal North, Qld) and cash cropping (South East, Qld), cash incomes in 1974-75 will be maintained at about 50% to 60% of the levels which applied in 1971-72. In the beef dependent regions which are shown as examples in

TABLE 6

Estimated property net cash income of selected regions in northern Australia for 1971-72, indexed forward to 1973-74 and projected to 1974-75 (from the Australian Beef Cattle Industry Survey)

Year	N.T.	Kimberley W.A.	Peninsula/ Gulf Qld.	Inland South Qld.	Coastal North	South East Qld.
Estimated net cash income per property						
	\$	\$	\$	\$	\$	\$
1971-72	35,235	14,818	47,658	4,004	14,606	7,100
Index of net cash income						
1971-72	100	100	100	100	100	100
1973-74	139	160	135	325	124	220
1974-75	neg.	neg.	neg.	25	55	58

the remainder of the table, the effect of depressed cattle revenues with no countering effect of revenue derived from other farm produce is estimated to result in 1974-75 incomes falling to very low or negative levels.

Some of the larger, well-established producers in the north, for whom seasonal fluctuations and risks are a normal part of their operations, could be in a situation where they can draw on previously accumulated cash reserves. However, a large proportion of cattle properties are run, often as family concerns, on a smaller scale.

It is on these smaller properties where cash reserves have been depleted or reduced to a low level, where carry-on finance has been borrowed against anticipated turnoff at prices which have not eventuated, and where a high proportion of assets is represented by cattle, that most of the serious liquidity problems are being felt.

(c) *Credit availability*: It is likely that many producers in northern Australia, especially those completely dependent on beef cattle, have recognised for some time their vulnerability to declines in export markets. Survey evidence indicates that in the period prior to mid-1974 northern beef producers were generally more free of debt than their southern counterparts, especially with respect to debt incurred for cattle purchase. Prior to the sharp fall in cattle prices producers on average were improving their debt position but since mid-1974 the position appears to have changed as producers have attempted to boost depressed cash flows through short-term credit sources.

There is, however, likely to be an important gap in the availability of further credit to those producers who have suffered a sudden reversal of their liquidity situation, whose asset backing has been seriously eroded, and who lack alternative sources of income to finance repayments. In recognition of the inability of such producers to satisfy commercial lending conditions during the current situation of depressed beef prices and tight liquidity, measures are being taken by governments to allow viable producers access to carry-on finance.

PROSPECTS

It is most important that producers realise that their returns are likely to fluctuate more in the next decade than in the ten years prior to 1973.

There are a number of implications for the industry if returns over the next few years are likely to fluctuate. Hitherto, with relatively steadily increasing prices paid for beef cattle in the face of increasing costs, producers of beef cattle have offset any declines in income by increasing production. The adoption of improved techniques of pasture utilisation and animal husbandry, the control of disease, the provision of improved transport facilities, the aggregation of holdings in the drier areas and the subdivision, clearing and improvement of others in the more favoured areas were all techniques which played a part in increasing production.

It is unlikely that continuation of expansionary strategies will assist producers to survive a forthcoming period of sharply rising costs accompanied by the possibility of market outlets remaining restricted at uncertain intervals. If producers can develop systems of production which have the flexibility to accommodate demands which fluctuate both with respect to quantity and quality of product, while at the same time holding costs down, they will enhance their chances of survival.

In this respect, it is likely that further development of diversified crop/livestock systems will take place where physical resources permit such development. The flexibility and improved revenue-stability of such systems have merit, and with two or more enterprises, scope often exists to deploy labour and other resources more efficiently. However, as livestock industries become more intensively managed, problems of animal health become more important. The advances which are currently apparent in the field of economic assessment of animal health measures and the potential of introducing new breeds to meet particular market requirements indicate the way in which research organisations are combining to meet industry challenges through interdisciplinary research.

However, in those areas where beef cattle provide the major or only scope for economic land use, the development of production flexibility and improved resilience to the effects of market fluctuations on producers' income is much more difficult. Increased specialisation in the beef activity most suited to the resources available could provide production economies. However, it would also put producers in a position where their role as specialised producers within a carefully intergrated production system would need to be spelt out better than current marketing systems and facilities permit. A need exists for research to be carried out to obtain a better knowledge of the mechanisms which are involved in fitting beef production activities efficiently into the resource-scene of the pastoral sector, yet at the same time retaining production flexibility so that the commodity produced is always marketable, despite changing levels of demand and market requirements.

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