The Road Freight Transport Industry

Information Paper

Data and information on the road freight transport industry is in limited supply. In order to reduce this problem, the Bureau of Transport and Communications Economics undertook this overview of the road freight transport industry. The industry is shown to be carrying an increasing proportion of total freight movements in Australia, with strong competition evident throughout all sectors of the industry.

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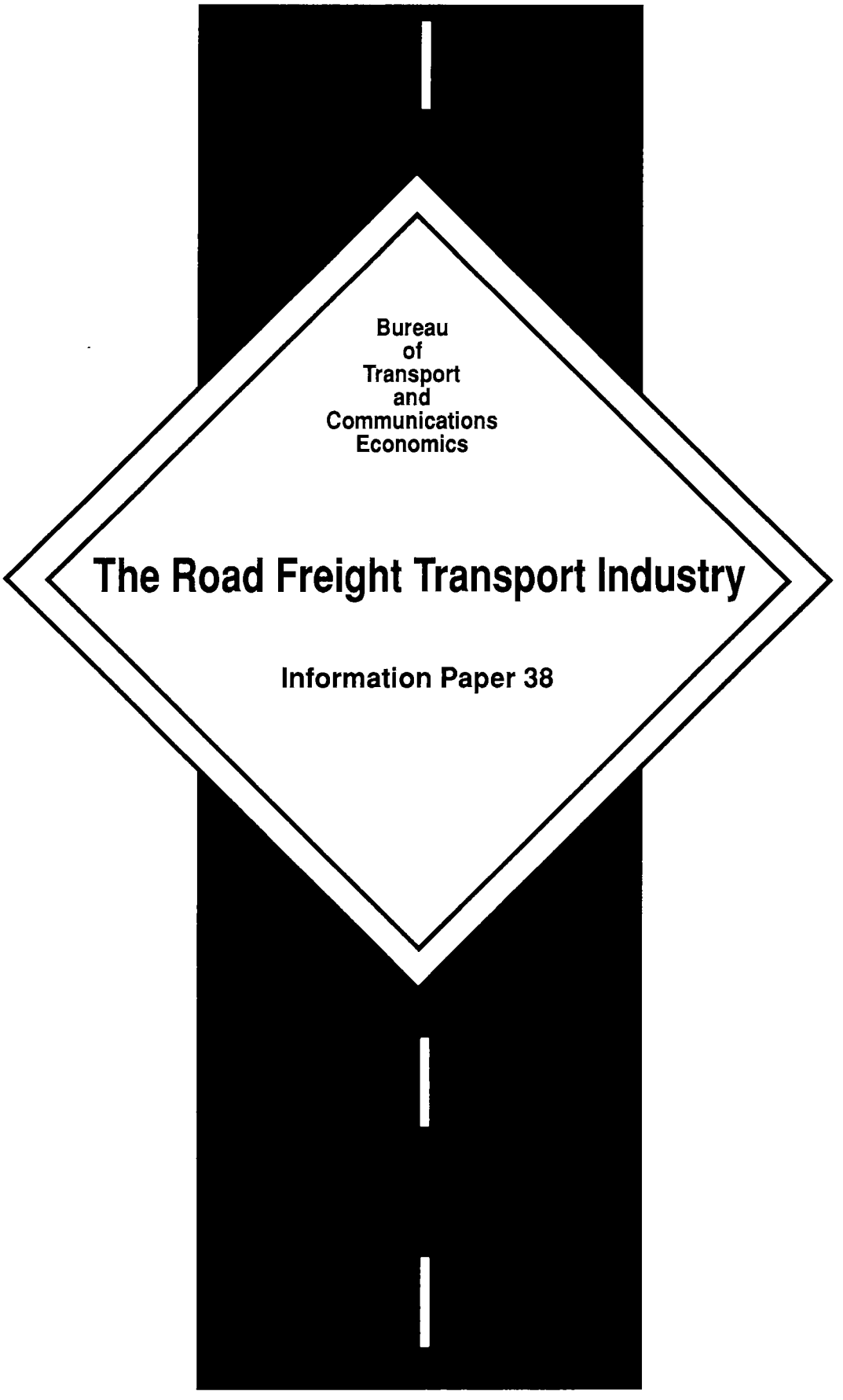
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FOREWORD

The lack of reliable information on the road freight transport industry has in the past hampered efforts by the Department of Transport and Communications to advise Ministers. This Information Paper was prepared as a result of research undertaken in response to this lack of information, and provides an overview of the industry, as well as examining the performance of the industry. The paper also forms a part of the continuing work of the Bureau of Transport and Communications Economics on road transport.

The Information Paper was prepared by Mr J. Asman, with contributions at various times from Ms O. Vaisvila, and Messrs J. Amoako, A. Chippindale, T. Mikosza and K.L. Sharma.

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ABSTRACT

Data and information on the road freight transport industry is in limited supply. In order to reduce this problem, the Bureau of Transport and Communications Economics undertook this overview of the road freight transport industry. The industry is shown to be carrying an increasing proportion of total freight movements in Australia, with strong competition evident throughout all sectors of the industry.

SUMMARY

This paper analyses the available official statistics, as at December 1992, relating to the road freight transport industry in Australia. The purpose of this paper is to examine the performance, over the 16 year period from 1975–76 to 1990–91, of the road freight industry using available data, sourced mainly from the Australian Bureau of Statistics (ABS). The paper aims to provide an overview of the road freight industry, and to assess trends within it. It also summarises some of the issues and some of the more important prior studies concerning this industry.

The road freight transport industry represents about 2 per cent of Australian gross product and employment.

Comparisons between the different modes of freight transport show that, in terms of tonnes carried, road freight represents about 70 per cent of all freight, and in terms of tonne-kilometres, about 31 per cent of total freight. In terms of tonne-kilometres, road freight has been carrying an increasing proportion of total freight. The sixteen year time series of ABS Surveys of Motor Vehicle Use (1975–76 to 1990–91) demonstrates substantial productivity gains in the road freight transport industry. With each passing year, the road freight transport industry carried heavier loads over longer distances and with less empty running.

The 1983–84 ABS Transport Industry Survey was still the most recent publication providing data of an economic character relating to structure, conduct and performance at the time of preparation of this paper. It suggests that competition was strong throughout all sectors of the industry and also that at that time there were no financial incentives to own and operate large fleet as the price–cost margin showed decreases with fleet size. These became apparent at fleet sizes of approximately 50 vehicles or more. The data do not tend to support perceptions of successful exploitative behaviour being exercised by the operators of the largest fleets.

Studies on the road freight transport industry reviewed in this paper made a substantial contribution to understanding the industry. Most of the key issues relate to the line haul sector, notably the level of competitiveness and the cost–price squeeze, especially among owner drivers. Other issues of note

include cost recovery for both road and rail, prevailing economic conditions and road safety.

CHAPTER 1 INTRODUCTION

INTRODUCTION

Road freight transport is a major industry. The gross product of the road freight industry amounted to just over 2 per cent of gross domestic product in 1986–87. The road freight industry employed over 138 000 people directly in 1990–91. Many other people were employed in the manufacture or assembly of trucks and parts; in their repair, maintenance and insurance; in the extraction, refining and distribution of fuel and lubricants; in the regulation and policing of trucks and in a host of other transport related activities. It is an indication of the importance of the road freight industry in the economy that virtually every facet of industry has an element of road freight transport.

The principal source of data on the road freight industry in Australia is the Australian Bureau of Statistics (ABS). Regular data on the physical performance of the road freight industry are perhaps best provided by the ABS *Survey of Motor Vehicle Use*, which has been undertaken at three yearly intervals commencing with 1975–76. Regular data on the economic performance of the road freight industry are not currently produced, so that reliance must be placed on one-off surveys such as the 1983–84 ABS Transport Industry Survey.

In the late 1970s and early 1980s, the road freight industry was the subject of a number of inquiries. These inquiries were generally instigated as a result of allegations of financial difficulties faced by road transport operators, particularly owner drivers in long distance road transport. These inquiries remain the major sources of background information on the road freight industry.

PURPOSE OF THE PAPER

The purpose of this paper is to put together various operational statistics on the road freight industry over the 16 year period from 1975–76 to 1990–91, using available data, sourced mainly from the ABS. The paper aims to provide an overview of the road freight industry, and to assess trends within it.

OUTLINE OF THE REPORT

Chapter 2 provides an overview of the road freight industry. Chapter 3 discusses the physical performance of the road freight industry, and Chapter 4 discusses the operational performance of the road freight industry. Appendix I presents a review of the existing literature on the road freight industry, particularly of the reports of the various inquiries into the industry. Appendix II presents statistical tables providing additional details relating to operating characteristics of road freight establishments at the Australian Standard Industrial Classification (ASIC) class level, classified by fleet size.

CHAPTER 2 GENERAL OVERVIEW

This chapter presents an overview of the road freight transport industry in Australia. The road freight transport market and its major segments are briefly described, followed by reference to some of the more important issues facing the road freight transport industry.

THE MARKET PLACE

An appreciation of the role and market power of the major operators in the road transport industry is important to any broad understanding of the structure of this industry. The largest firms have traditionally been TNT, Mayne Nickless, Linfox and Brambles, more recently joined by Finemores. The industry has seen a large number of takeovers and mergers over the years. For example, between 1965 and 1983 Brambles absorbed 76 transport firms, TNT 72 firms and Mayne Nickless 88 firms. These figures exclude 8 takeovers by F H Stephens before it became part of Mayne Nickless in 1972, 6 takeovers by Altrans Pty Ltd before it became part of TNT in 1967, and 9 takeovers by Ansett Freight Industries before it became part of TNT in 1979. It also possibly excludes TNT takeovers in 1976 (NRFII 1984). Brambles made 2 additional acquisitions in 1989 and 1991. Between 1986 and 1990, Finemores made 11 acquisitions (Riddell 1992).

The transport activities undertaken by these major companies cover all the segments of the freight market. They include fleet management, warehousing and distribution, intercapital and urban freight, waterfront container cartage, express and taxi truck services and freight forwarding. Although the major companies are often regarded as dominating the freight market, there are no up-to-date market share figures. The four largest companies operate less than 10 per cent of registered articulated trucks.

In broad terms, the road freight transport industry is divided into hire and reward and own-account (ancillary transport). The hire and reward sector comprises freight forwarding and line haul. The major studies of the past (BTE 1986 and NRFII 1984) found that the majority of truck operators in the hire and reward sector are owner drivers who usually own just one truck. The following is a brief description of the major segments of the hire and reward sector.

Freight forwarding

A freight forwarder contracts with a consignor to move goods from point A to point B through the most efficient mode, and accepts responsibility for the total movement of goods.

Most freight forwarders in Australia make at least some use of the rail system, pack and consolidate at origin, and deconsolidate and distribute at destination. Overall there are only about 20 recognised freight forwarders in Australia, including Brambles, Mayne Nickless, TNT, K&S Freighters, FCL Transport, Specialised Container Transport, Railor, Toll Express, Finemores, Simons and Cubico.

Freight forwarding organisations play an important role in the industry through their ability to coordinate the transport and distribution task. It has been said that, as a consequence of their dominant position, some large freight forwarders have 'controlled' the prices for freight haulage in the industry,[1] so that the returns to owner drivers were lower than was thought desirable (NRFII 1984). The twin issues of the use of alleged monopolistic powers to set freight rates, and the financial plight of owner drivers still attract debate from time to time in the media.

Express freight

Express freight services have developed over the last 10 to 15 years. TNT and Mayne Nickless set the pace for express service in the UK by reducing parcel delivery time from two or more days to a few hours. The main operators in this segment are Toll Express, K&S Freighters, Finemores, TNT's Comet and McPhee and Mayne Nickless. The express services link with air transport, and because of this linkage most industry experts believe the pilots' dispute in 1989 may have caused some users to find or develop alternative ways of moving goods. This and the recession are cited as the main causes of the recent downturn in the express freight business.

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1. These allegations were made, for example, during the 1979 truck blockade.

General freight

General freight operations usually do not require specialised vehicles, and the segment is dominated by small operators and owner drivers. General freight is characterised by overcapacity. It is the most highly competitive segment of the road freight market. Most general freight is moved by regional and smaller carriers, and consists of local products from the regions destined for capital cities or processing plants. Growers tend to identify with local carriers and contract them to carry their produce. These carriers are often flexible, have lower overheads, and often move into interstate trade. Usually, however, they do not have guaranteed load contracts and may not be able to obtain the discounts associated with bulk purchase of fuel.

Fleet management

Fleet management is a specialised segment of the transport industry, involving the management of fleets for a company with distribution needs. The smaller carriers cannot compete with the larger carriers in this market due to insufficient capital, expertise, and research capacity. The winning of contracts is far from being straightforward and may take several years. Linfox is the largest operator in this market.

Taxi trucks

This was a big growth industry until 1990. Since then, like the express freight market it has contracted. Taxi trucks handle such items as parcels, small loads of chemicals, fridges, televisions and books. National operators have lost market share to smaller operators because the smaller operators have lower costs (due largely to lower overheads), operate in niche markets, and provide excellent service. Marketing of this transport service tends to focus on new industrial estates.

Couriers

Couriers move single items using cars or small vans. This segment of the market has become increasingly capital intensive, with computers being used to track the progress of cars, resulting in an efficient allocation of jobs. Mayne Nickless is regarded as being a leader in this field.

Warehousing and distribution

The emphasis is on the warehouse, with transport as an adjunct. Cigarettes are an important commodity in this line of business. Warehousing and distribution tend to be undertaken by specialist companies, with sophisticated warehouse equipment and computerised stock control systems. The service requires a high level of commitment from client to transporter, and from transporter to client.

Other markets

Other market segments include wastes, furniture removal, bulk tippers, cement cartage, hazardous goods and bulk timber.

COST ISSUES

Operating cost issues in the industry were cited as the major cause of the road freight blockades in 1979 (see BTE 1979). Other concerns with cost recovery matters and the implementation of user pays principles have been the subject of recent studies (see BTCE 1988; ISC 1986, 1987, 1990).

In the highly competitive environment applying to much of the road freight transport industry, costs will inevitably remain an important issue, especially to owner drivers. Competitive conditions in the line haul sector, which consists mainly of owner drivers, have been such that freight forwarders could, at least from time to time, secure a price that was below the long term economic cost of providing these line haul services (BTE 1979).

Increasing attention is now being paid to externalities associated with the road freight transport industry. Issues of road damage cost recovery from heavy vehicles, and questions of congestion, pollution and safety costs, are likely to assume greater importance in the future. A thorough understanding of the cost structures of the various road freight transport industry sectors assists making informed judgements about the industry and the Federal Government's policy formulation processes.

ROAD SAFETY PRACTICES

The question of heavy vehicle road safety practices will continue to be an important issue in the 1990s. In 1989–90, some major fatal accidents involving heavy vehicles rekindled debate in the news media about the financial viability of owner drivers as a factor in truck safety practices. One study has found that the underlying economic conditions in the industry are a major contributor to the on-road behaviour of drivers (Hensher et al. 1991).

COMPETITION FROM RAILWAYS

Over the last few years there has been an increasing emphasis on microeconomic reform across a broad range of sectors, including government business enterprises. Commonwealth and State government railways are beginning to conduct their affairs in an increasingly commercial manner, with the result that railways will compete more effectively with road for some kinds of freight. Over the past decade, the freight market share of rail (in tonne-kilometres) has declined to such an extent that road freight transport is of similar magnitude to that undertaken by rail (see table 3.3). There are many factors that may help to explain this trend. Road transport has made major incursions into traditional rail markets such as coal and coke. For instance, in the Hunter Valley during the 1985 rail strike, road transport of coal was used and thereafter the road transport industry sought and received a guaranteed share of coal transport for road as a permanent buffer against any future difficulties in the rail system. This transfer from rail to road has also been due in part to the highly competitive nature of the road freight industry, which has resulted in competitive road freight rates relative to rail freight rates. Another factor has been that road transport has largely met new needs and demands for growing industries which have located away from railheads.

COMPETITION AND SUPPLY 'OVERHANG'

The most recent major studies of the road freight transport industry, conducted in the late 1970s and early 1980s, all identified competition within the line haul trucking sector as an important issue.

The National Road Freight Industry Inquiry report published in 1984 suggested that a supply 'overhang' in the line haul trucking sector was the main cause of extensive price cutting within the industry. This study found that a disequilibrium between the demand for and the supply of line haul services existed, and termed it a supply overhang. At the time it was argued that any disequilibrium should be of a short-term nature only, as a competitive industry should return to a situation of equilibrium.

BARRIERS TO ENTRY AND EXIT

Related to the issue of competition in the line haul sector is the question of ease of entry and difficulty of exit in this sector. The line haul trucking sector consists mainly of owner drivers, who form independent small business units, operated mainly as sole proprietorships or close family partnerships.

Studies of the industry (BTE 1986; NRFII 1984) had found that it was relatively easy to enter the line haul trucking business as an owner driver, as long as the necessary collateral could be provided. Often, the collateral provided consisted of the owner driver's home. In this situation, an economic downturn would make it difficult for some owner drivers to leave the industry, as this action could result in the loss of the family home. Such a sequence of events presented the owner driver with few options, except to stay in the industry, even for very low returns. In such circumstances, a situation where the supply of line haul services outstripped demand could easily develop.

TECHNOLOGICAL DEVELOPMENTS

During the last decade, the trend toward larger rigs with a greater payload and greater gross vehicle mass continued. Additional impetus was provided with the July 1991 Special Premiers' Conference agreement that B-Doubles and road trains should be allowed to operate more widely and under nationally uniform conditions. This measure is expected to lead to significant increases in productivity for some freight operations.

Road freight transport industry representatives have argued for the easing of restrictions on the use of B-Doubles and road trains, observing that in addition to anticipated productivity benefits, the carriage of the same amount of freight in fewer vehicles should result in a reduced likelihood of road accidents and fatalities.

SUMMARY

Company names such as TNT, Mayne Nickless and Finemores are synonymous with the road freight industry, in terms of their market share and the diversity of transport activities they undertake. However, actual truck numbers operated by these majors are in the minority.

A central issue concerns freight industry costs, particularly as they apply to small owner operators, principally with one and two-truck fleets, in the hire and reward sector of the industry. Many of these operators are particularly vulnerable in economic downturns as they rely on carrying freight overflow in a highly competitive market, compared to larger operators, who often have a relatively secure volume of base business.

The following chapters examine road freight transport, drawing on available data series, inquiries and investigations. While the data are limited in some respects, they are adequate for a broad description of the road freight transport task (chapter 3) and some assessment of economic performance (chapter 4).

CHAPTER 3 THE ROAD FREIGHT TRANSPORT TASK

This chapter addresses the road freight transport task in Australia and does so in three sections. The first section outlines the contribution of the road freight transport industry to the national aggregates of GDP and total employment. The second section compares the task undertaken by the road freight transport industry with the other freight transport modes: rail, sea and air. The final section examines the productivity of the road freight transport industry. Amongst other changes, substantial increases in productivity in this industry are apparent.

The second and third sections of this chapter draw upon the ABS *Survey of Motor Vehicle Use* (SMVU) series of publications. This survey has been undertaken every three years from 1975–76 to 1990–91. It should be noted that while the data from 1975–76 to 1987–88 are generally comparable, the 1990–91 data are not strictly comparable for two reasons. First, the 1990–91 statistics are based on new processing procedures which allow more accurate classification of vehicles. Second, and perhaps more importantly, changes were made in the 1990–91 survey to the vehicle-type classification, which impacted particularly on statistics relating to light commercial vehicles and rigid trucks. Vehicles of less than 3.5 tonnes Gross Vehicle Mass (GVM) are now excluded from the rigid truck category, and are classified to the light commercial vehicle category.

For the sake of brevity, this paper assumes that readers have a working knowledge of the sources of data used, principally statistics published by the ABS. Unless particularly important, this paper does not repeat the explanatory notes, definitions and other comments that are contained in the source documents.

ROAD FREIGHT TRANSPORT AND THE AUSTRALIAN ECONOMY

Gross product

Reliable statistics on the contribution of road freight transport to gross domestic product are very limited. Table 3.1 shows, where the data are available, gross product for Road Freight Transport (ASIC Group 511) as a proportion of that for Transport, Storage and Communications (ASIC Divisions G and H) and for all industries. The ABS has produced for benchmark purposes estimates for only two years, in current prices, of gross product attributable to Road Freight Transport alone. While estimates for other years can be made, the ABS has advised that they are considered too unreliable for publication purposes.

Given that road freight transport is experiencing strong growth and the recent strong growth in the telecommunications sector, it seems reasonable to conclude that Road Freight Transport share remains under 30 per cent of the gross product attributable to the Transport, Storage and Communications Sectors and about 2 per cent of the gross product attributable to all industries.

Employment

Data on road freight transport employment have been produced continuously since 1985. Additionally, unlike gross product estimates, the ABS separates employment in Transport and Storage (ASIC Division G) from that in Transport, Storage and Communications (ASIC Divisions G and H). These data are shown in table 3.2.

TABLE 3.1 GROSS PRODUCT COMPARISONS (CURRENT PRICES) 1984–85 TO 1988–89

				Share of road freight	
Year	*Road freight transport ($m)*	*Transport storage and communications ($m)*	*All industries ($m)*	*Transport storage and communications (%)*	*All industries (%)*
1984–85	4 283	15 698	214 665	27.3	2.0
1985–86	na	17 320	239 817	na	na
1986–87	5 493	19 223	262 791	28.6	2.1
1987–88	na	22 081	297 534	na	na
1988–89	na	24 214	337 918	na	na

na Not available

Source ABS (1990a).

TABLE 3.2 EMPLOYMENT IN ROAD FREIGHT AND TRANSPORT AND STORAGE

Year	Road freight ('000 persons)	Transport and storage ('000 persons)	Total ('000 persons)	Share of road freight: Transport and storage (%)	Share of road freight: Total (%)
1985	108.5	369.2	6 707.6	29.4	1.6
1986	122.0	383.7	6 926.8	31.8	1.8
1987	121.4	380.5	7 078.8	31.9	1.7
1988	127.0	385.5	7 341.0	32.9	1.7
1989	137.1	399.5	7 724.3	34.3	1.8
1990	137.3	393.8	7 850.0	34.9	1.8
1991	138.1	399.0	7 705.4	34.6	1.8

Source ABS (1992b).

In the seven years from 1985 to 1991 employment in the road freight transport industry grew from an average of 108 500 persons to 138 100 persons, an increase of 27.3 per cent over the base year and a compound rate averaging 4.1 per cent per annum. Over a similar period GDP grew by approximately 17 per cent in real terms, or under 2.7 per cent per annum. Road freight transport employment also increased its share of total transport and storage employment from 29 per cent to 35 per cent and of total employment in Australia from 1.6 per cent to 1.8 per cent. These figures indicate that compared to other transport (and storage) activities and to the economy in total, road freight transport has performed relatively strongly in terms of employment opportunities.

COMPARISON WITH OTHER MODES OF FREIGHT TRANSPORT

Statistics on road freight transport in this and the succeeding section of this chapter have been drawn from the series of ABS *Survey of Motor Vehicle Use* publications, and various Department of Transport and Communications reports. This paper examines the data for the six triennial surveys undertaken between 1975–76 and 1990–91 inclusive, the years for which comprehensive data are available. The ABS has also published some data for 1963 and 1970–71.

For the purposes of this comparison, and for all other detailed comparisons that follow, the road freight transport task is defined to comprise that performed by rigid and articulated trucks only. Excluded from the statistics are non freight carrying trucks such as cranes and cherry pickers. Also excluded are light commercial vehicles such as utilities and panel vans, in the interests of concentrating analysis on that component of the road freight transport industry of greatest policy interest. Separate figures on the task performed by light commercial vehicles are provided in the ABS *Survey of Motor Vehicle Use*.

'Tonne-kilometres' is the preferred unit of measurement for many purposes. Differences in the average length of haul between modes are strongly reflected in comparisons employing this measure. For the road freight transport industry, total tonne-kilometres is the product of reported average load and total laden business kilometres for each vehicle.

There have been notable trends over time in the carriage of freight by road, rail, sea and air. Description of these changes is dependent on the measure of freight transport used. Table 3.3 presents a modal comparison of the freight task in Australia, in terms of tonne-kilometres, over the 16 years from 1975–76 to 1990–91, and figure 3.1 highlights the modal share in.

Between 1975–76 and 1987–88 the total freight task grew by 29 per cent from 197 billion tonne-kilometres (btkm) to 255 btkm while the amount moved by road increased by 131 per cent from 35 btkm to 81 btkm. In doing so the share of road freight transport increased from 18 per cent of the total to 32 per cent of total freight carried in tonne-kilometre terms. Rail slightly increased its share of the transport task (29 per cent to 31 per cent) while the share of the transport task undertaken by sea fell from 53 per cent to 37 per cent and decreased in absolute terms over the period. Air freight transport was almost insignificant, amounting to approximately 0.05 per cent of the total. An air freight figure calculated on the basis of value would, of course, be higher.

A modal comparison based on tonnes carried (table 3.4) differs significantly from one based on tonne-kilometres. For example, tables 3.3 and 3.4 show that sea transport has a much lower modal share in terms of tonnes carried than in terms of tonne-kilometres performed, reflecting the fact that sea transport is predominantly used for long hauls.

TABLE 3.3 MODAL SHARES OF AUSTRALIAN DOMESTIC TONNE-KILOMETRE FREIGHT TASK

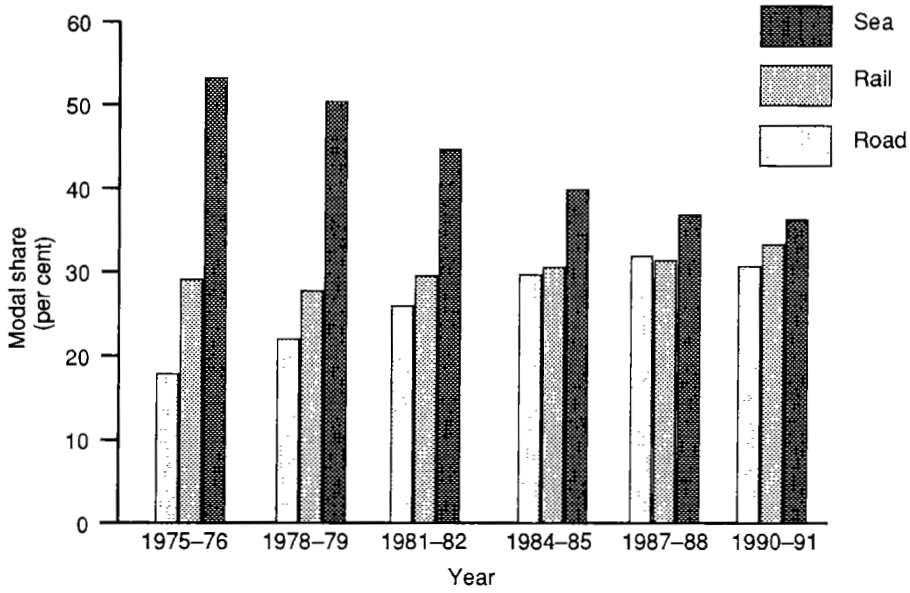
Year	Road[a] (btkm)	Rail (btkm)	Sea (btkm)	Air (btkm)	Total (btkm)	Road[a] (%)	Rail (%)	Sea (%)	Air (%)
1975–76	35.1	57.1	104.6	0.1	196.9	17.8	29.0	53.1	0.0
1978–79	45.9	57.7	104.7	0.1	208.4	22.0	27.7	50.3	0.0
1981–82	56.9	64.7	97.8	0.1	219.5	25.9	29.5	44.6	0.0
1984–85	71.2	73.4	95.7	0.1	240.4	29.6	30.5	39.8	0.0
1987–88	81.2	80.0	94.1	0.1	255.4	31.8	31.3	36.8	0.0
1990–91	81.9[b]	89.0	97.0	0.2	268.1	30.6[b]	33.2	36.2	0.0

btkm thousand million tonne-kilometres

a. The road freight transport task comprises freight carried by rigid and articulated trucks only, and excludes that performed by light commercial vehicles.

b. 1990–91 data are not strictly comparable with previous data due to changes in rigid truck classification and improved processing procedures which have caused a break in the data series.

Sources ABS (1993), BTCE (1991b).



Sources ABS (1993), BTCE (1991b)

Figure 3.1 Modal shares of Australian domestic tonne-kilometre freight task

TABLE 3.4 MODAL SHARES OF AUSTRALIAN DOMESTIC FREIGHT TASK (TONNES)

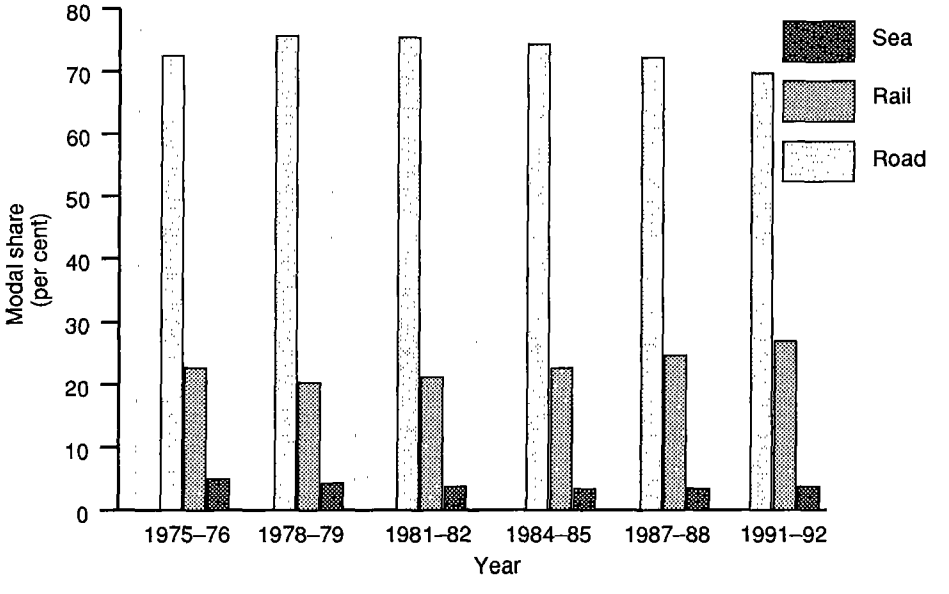
Year	Road[a] (Mt)	Rail (Mt)	Sea (Mt)	Air (Mt)	Total (Mt)	Road[a] (%)	Rail (%)	Sea (%)	Air (%)
1975–76	708.7	221.1	47.5	0.1	977.4	72.5	22.6	4.9	0.0
1978–79	846.1	225.2	47.4	0.1	1 118.8	75.6	20.2	4.2	0.0
1981–82	885.8	248.7	42.6	0.1	1 177.2	75.3	21.1	3.6	0.0
1984–85	952.9	289.3	42.7	0.1	1 285.0	74.2	22.5	3.3	0.0
1987–88	904.4	306.8	43.3	0.1	1 254.6	72.1	24.5	3.4	0.0
1990–91	890.9[b]	343.0	46.0	0.1	1 280.0	69.6[b]	26.8	3.6	0.0

Mt million tonnes

a. The road freight transport task comprises that freight carried by rigid and articulated trucks only, and excludes that performed by light commercial vehicles.

b. 1990–91 data are not strictly comparable with previous data due to changes in rigid truck classification and improved processing procedures which have caused a break in the data series.

Sources ABS (1993), BTCE (1989), DTC (1989a, 1989b).



Sources ABS (1993), BTCE (1989), DTC (1989a, 1989b)

Figure 3.2 Modal shares of Australian domestic freight task (tonnes)

The ABS cautions that statistics on road freight, in terms of tonnes carried, are subject to significant non sampling errors, due to difficulties survey respondents have had in interpreting and answering relevant questions. Comparisons between all the survey years must be made with caution. For example, the ABS advises that the apparent decrease in tonnes carried by road between 1984–85 and 1987–88 is open to doubt. Noting these qualifications, it can be seen that the total domestic freight tonnes carried rose over the period from 1975–76 to 1987–88 from 977 million tonnes to 1255 million tonnes. This represents the same percentage increase (29 per cent) as applied in the tonne-kilometres comparison.

Figure 3.2 shows the modal shares, in terms of tonnes carried, expressed in percentage terms. The proportion of freight moved by road over the period from 1975–76 to 1990–91 was between 70 per cent and 76 per cent of the total. Given the qualifications attaching to the use of the road data, it is more appropriate to remark on the relative constancy of this figure rather than to attempt to discern any slight movement in it. The proportion moved by rail over the period varies between 20 per cent and 27 per cent, and that moved by sea, between 5 per cent and 3 per cent. Examination of the absolute tonnes carried figures for rail and sea, however, does suggest that some small changes (an increase and decrease respectively) in the proportions carried by these modes have occurred over the period. Air freight transport remains insignificant at less than 0.01 per cent of tonnes carried.

TABLE 3.5 AVERAGE DISTANCE CARRIED, ALL MODES

(kilometres)

Year	*Road*[a]	*Rail*	*Sea*	*Air*
1975–76	49.5	258.3	2 202	na
1978–79	54.2	256.2	2 209	na
1981–82	64.2	260.2	2 296	na
1984–85	74.7	253.7	2 241	na
1987–88	89.8	260.8	2 173	na
1990–91	91.9	259.5	2 109	na

na Not available.

a. 1990–91 data are not strictly comparable with previous data due to changes in rigid truck classification and improved processing procedures which have caused a break in the data series.

Sources Derived from ABS (1993), BTCE (1989), DTC (1989a, 1989b).

Table 3.5 presents average 'distance carried' derived by dividing the tonne kilometre figures in table 3.3 by the corresponding tonnes carried figures in table 3.4. The resulting indices should be used with caution but they do demonstrate consistent behaviour. First, road freight transport is the only mode to show a sustained three yearly increase in 'distance travelled' throughout the 13 year period from 1975–76 to 1987–88, totalling some 81 per cent in all. All the other freight sectors show a static pattern of 'distance travelled'. Second, the expected differences in length of haul between modes are reflected by this measure. Road freight has the shortest average length of haul, gradually increasing from 50 km to 90 km. Sea freight has the longest average length of haul at about 2200 km, with rail freight in the middle at 260 km.

PRODUCTIVITY IN THE ROAD FREIGHT TRANSPORT INDUSTRY

Very substantial increases in productivity in the road freight transport industry are demonstrated by the 13 year time series of ABS *Survey of Motor Vehicle Use* statistics from 1975–76 to 1987–88. The following tables show that these increases are associated with the use of larger trucks of all kinds, especially articulated vehicles and increases in the proportions of business and of laden travel undertaken. Increases in the use of larger vehicles are in part attributable to changes in regulations permitting higher gross vehicle mass (GVM) limits.

Table 3.6 shows that the number of rigid trucks has fluctuated somewhat with a small increase in numbers (5.6 per cent) evident from 1975–76 to 1987–88. By comparison the number of articulated trucks increased by 23 per cent over the same period. Whereas articulated vehicles numbered about one in every eleven trucks in 1975–76, they increased to one in every nine trucks in 1987–88. In 1990–91, articulated vehicles numbered about one in every seven trucks, with vehicles of less than 3.5 tonnes GVM excluded.

Table 3.7 shows that accompanying these increases was a general shift to larger vehicles, both rigid and articulated. The proportion of rigid trucks of tare weight 4 tonnes and over rose from 26 per cent in 1975–76 to 33 per cent in 1984–85. The proportion of articulated vehicles of tare weight 11 tonnes and over rose from 40 per cent to 75 per cent over the same period. A corresponding substantial decrease in the use of articulated vehicles under 9 tonnes tare weight is evident.

Table 3.8 shows that average load carried by rigid trucks increased by 13 per cent from 3.0 tonnes to 3.4 tonnes between 1975–76 and 1987–88, concurrently with an increase of 5.6 per cent in rigid truck numbers, as shown in table 3.6. Over the same period, average load carried by articulated trucks increased by 31 per cent from 13.9 tonnes to 18.2 tonnes, while articulated truck numbers increased by 23 per cent.

TABLE 3.6 NUMBER OF FREIGHT TRUCKS
('000 vehicles)

Year	*Rigid*	*Articulated*	*Total*
1975–76	383.2	39.7	422.9
1978–79	350.6	44.0	394.6
1981–82	442.8	46.6	489.4
1984–85	426.3	49.6	475.9
1987–88	404.7	48.7	453.4
1990–91[a]	334.9	52.4	387.3

a. 1990–91 data are not strictly comparable with previous data due to changes in rigid truck classification and improved processing procedures which have caused a break in the data series.

Source ABS 1993.

TABLE 3.7 TRUCK NUMBERS BY TRUCK TYPE AND TARE WEIGHT

Tare weight	*1975–76*	*1978–79*	*1981–82*	*1984–85*	*1987–88*	*1990–91[a]*
Rigid						
Less than 3 tonnes	206 086	158 773	24 2291	217 890	na	na
3 and less than 4 tonnes	75 934	71 178	67 498	66 211	na	na
4 tonnes and over	101 206	120 611	133 034	142 171	na	na
Total rigid	383 227	350 563	442 823	426 272	404 658	334 941
Articulated						
Less than 9 tonnes	13 632	14 379	6 789	4 823	na	na
9 and less than 11 tonnes	10 224	7 795	7 431	7 689	na	na
11 tonnes and over	15 878	21 775	32 354	37 130	na	na
Total articulated	39 735	43 949	46 575	49 641	48 722	52 334

na not available

a. 1990–91 data are not strictly comparable with previous data due to changes in rigid truck classification and improved processing procedures which have caused a break in the data series.

Source ABS 1993.

TABLE 3.8 AVERAGE LOAD CARRIED
(tonnes)

Year	*Rigid*	*Articulated*
1975–76	2.99	13.94
1978–79	3.42	15.06
1981–82	2.99	16.63
1984–85	3.30	17.50
1987–88	3.43	18.19
1990–91[a]	4.07	19.21

a. 1990–91 data are not strictly comparable with previous data due to changes in rigid truck classification and improved procedures which have caused a break in the data series.

Source ABS 1993.

It should be noted that average tonne-kilometres are calculated by dividing total tonne-kilometres by the number of vehicles contributing to the total. In this case the correct denominator is the number of vehicles reporting laden business kilometres. The number of such vehicles is slightly less than the total number of vehicles shown in table 3.6.

Increases in average tonne-kilometres performed by rigid and articulated vehicles are substantial. Table 3.9 shows that rigid vehicles increased their performance from an average per truck of 33 500 tonne-kilometres in 1975–76 to 57 300 tonne-kilometres in 1987–88 (71 per cent). Articulated vehicles moved from an average per truck of 583 200 tonne-kilometres to 1 231 400 tonne-kilometres (111 per cent). On this measure of productivity it could be said that the road freight transport industry virtually doubled its output in real terms over the period.

Tables 3.9 and 3.10 show that there have been substantial increases in average distances travelled by freight carrying trucks. Table 3.10 shows that average distance travelled over the period 1975–76 to 1987–88 rose from 15 700 kilometres per year to 19 400 kilometres per year for rigid trucks (a 24 per cent increase) and from 50 500 kilometres per annum to 78 700 kilometres per annum for articulated trucks (a 56 per cent increase).

Note that the product of corresponding cells of average distance travelled (table 3.10), and average load carried (table 3.8) does not yield average tonne-kilometres. This is so for two reasons: first, the relevant measure of distance is laden business kilometres not total kilometres; and second, tonne-kilometre statistics are calculated from the product of load and distance for each vehicle, the result for which differs from that obtained by multiplying averages for groups of vehicles.

TABLE 3.9 ANNUAL TONNE-KILOMETRES BY TYPE OF TRUCK

Year	Rigid		Articulated		
	Total (Mtkm)	*Average ('000 tkm)*	*Total (Mtkm)*	*Average ('000 tkm)*	*Total (Mtkm)*
1975–76	12 085.0	33.5	23 040.7	583.2	35 125.8
1978–79	14 012.0	41.8	31 888.2	730.1	45 900.2
1981–82	16 700.7	39.9	40 248.1	871.4	56 948.8
1984–85	18 569.9	46.6	52 664.4	1 065.5	71 234.4
1987–88	21 521.5	57.3	59 721.3	1 231.4	81 242.8
1990–91[a]	20 544.0	68.3	61 387.8	1 226.9	81 931.8

Mtkm million tonne-kilometres
'000 tkm thousand tonne-kilometres

a. 1990–91 data are not strictly comparable with previous data due to changes in rigid truck classification and improved processing procedures which have caused a break in the data series.

Source ABS 1993.

TABLE 3.10 ANNUAL KILOMETRES BY TYPE OF TRUCK

Year	Rigid		Articulated		
	Total (Mkm)	*Average ('000 km)*	*Total (Mkm)*	*Average ('000 km)*	*Total (Mkm)*
1975–76	6 031.8	15.7	2 005.0	50.5	8 036.8
1978–79	5 837.2	16.7	2 607.4	59.3	8 444.6
1981–82	8 417.2	19.0	2 999.5	64.4	11 416.7
1984–85	7 627.0	17.9	3 587.7	72.3	11 214.7
1987–88	7 839.9	19.4	3 835.7	78.7	11 675.6
1990–91[a]	6 183.2	18.5	3 952.4	75.5	10 135.6

Mkm million kilometres
'000 km thousand kilometres

a. 1990–91 data are not strictly comparable with previous data due to changes in rigid truck classification and improved processing procedures which have caused a break in the data series.

Source ABS 1993.

Total kilometres travelled comprise business travel and non-business travel. Business travel, in turn, comprises laden and unladen travel. The proportions of business travel to total travel, and laden to business travel, provide partial measures of productive utilisation of trucks.

From table 3.11 it can be seen that for rigid trucks the proportion of business travel to total travel has increased from 91 per cent to 93 per cent from 1975–76 to 1987–88. For articulated vehicles the corresponding figures were 98.4 per cent and 99.7 per cent respectively. The proportion of laden to business travel for both rigid and articulated trucks rose from about 69 per cent in 1975 to about 75 per cent in 1991, showing an appreciable decline in the incidence of empty running.

The above measures of increased productivity are independent of vehicle size in the sense that they do not depend on the employment of larger vehicles for their attainment. As noted previously, however, much of the road freight transport industry's gains have been associated with a move towards the use of larger vehicles, especially larger articulated vehicles.

Intrastate versus interstate operation

The majority of the road freight transport task (measured in tonne-kilometres) is performed intrastate. This is particularly true of rigid vehicles but applies also to articulated vehicles. Table 3.12 shows that the proportion of the task performed intrastate has increased over the 13 years from 1975–76 to 1987–88, from 96 per cent to 97 per cent for rigid vehicles and from 67 per cent to 72 per cent for articulated vehicles.

From table 3.13 it is evident that there are wide fluctuations (measured by tonnes carried) across the various industries served by road transport. Between 1975–76 and 1987–88, the only industries seemingly less affected by seasonal factors, world prices and cyclic domestic economic activity were wholesale and retail trade and road transport itself. These were the only sectors to record triennial increases in tonnes carried that were both continuous and relatively large.

SUMMARY

Road freight transport and the Australian economy

In broad terms the road freight transport industry represents about 2 per cent of Australian gross product and employment.

TABLE 3.11 ANNUAL TOTAL, BUSINESS AND LADEN KILOMETRES

(million kilometres)

Year	Rigid			Articulated			Total		
	Total	*Business*[b]	*Laden*	*Total*	*Business*[b]	*Laden*	*Total*	*Business*[b]	*Laden*
1975–76	6 031.8	5 505.6	3 769.2	2 005.0	1 974.7	1 395.6	8 036.8	7 480.3	5 164.8
1978–79	5 837.2	5 460.1	3 801.8	2 607.4	2 580.4	1 806.1	8 444.7	8 040.5	5 607.9
1981–82	8 417.2	7 656.5	5 291.5	2 999.5	2 970.1	2 142.7	11 416.7	10 626.6	7 434.2
1984–85	7 627.0	7 015.7	4 986.0	3 587.7	3 555.9	2 638.6	11 214.7	10 571.6	7 624.6
1987–88	7 839.9	7 299.1	5 441.5	3 835.7	3 824.6	2 892.4	11 675.6	11 123.7	8 333.9
1990–91[a]	6 183.2	5 786.4	4 322.1	3 952.4	3 925.3	2 925.7	10 135.6	9 711.7	7 247.8

a. 1990–91 data are not strictly comparable with previous data due to changes in rigid truck classification and improved processing procedures which have caused a break in the data series.

b. Comprises laden and unladen.

Source ABS 1993.

TABLE 3.12 TOTAL ANNUAL TONNE-KILOMETRES BY TYPE OF TRUCK AND AREA OF OPERATION

(million tonne-kilometres)

	1975–76	*1978–79*	*1981–82*	*1984–85*	*1987–88*	*1990–91*[a]
Rigid						
Intrastate	11 607.7	13 517.8	16 112.3	17 887.2	20 904.9	na
Interstate	477.1	494.2	588.4	682.7	616.6	na
Total rigid	12 084.8	14 012.0	16 700.7	18 569.9	21 521.5	20 544.0
Articulated						
Intrastate	15 394.3	23 039.3	28 674.3	37 802.7	42 944.6	na
Interstate	7 645.5	8 848.7	11 573.7	14 861.7	16 776.7	na
Total articulated	23 039.8	31 888.0	40 248.0	52 664.4	59 721.3	61 387.8
Total trucks						
Intrastate	27 002.0	36 557.1	44 786.6	55 689.9	63 849.5	na
Interstate	8 122.6	9 342.9	12 162.1	15 544.4	17 393.3	na
Total	35 124.6	45 900.0	56 948.7	71 234.3	81 242.8	81 931.8

na not available

a. 1990–91 data are not strictly comparable with previous data due to changes in rigid truck classification and improved processing procedures which have caused a break in the data series.

Source ABS (1993)

TABLE 3.13 TOTAL ANNUAL TONNES CARRIED BY INDUSTRY SERVED

(million tonnes)

	1975–76	*1978–79*	*1981–82*	*1984–85*	*1987–88*	*1990–91*[a]
Agriculture	98.3	126.5	162.9	143.7	119.5	143.4
Mining	75.7	88.9	89.6	126.1	91.7	82.8
Manufacturing	62.6	57.1	66.6	84.3	80.8	80.1
Building and construction	132.2	181.5	165.4	177.3	185.6	236.8
Wholesale and retail trade	66.7	85.9	99.0	106.4	112.6	126.2
Road transport	166.0	196.7	215.7	223.4	256.4	205.4[a]
Commonwealth, State and local government	121.4	133.2	100.1	145.7	121.1	124.4
Others	33.7	43.0	50.7	24.9	22.4	24.8
Total	756.6	912.6	950.1	1 031.8	990.2	1 023.9

a. 1990–91 data are not strictly comparable with previous data due to changes in rigid truck classification and improved processing procedures which have caused a break in the data series.

Source ABS (1993).

Comparison with other modes of freight transport

From a review of the share of freight transport undertaken by road between 1975–76 and 1990–91, it can be concluded that:

- in terms of tonnes carried, road freight has represented a nearly constant proportion of all freight carried, amounting to about 70–75 per cent;
- in terms of tonne-kilometres, road freight has grown from 18 per cent to about 31 per cent of all freight carried; and
- a significant amount of this increase can be attributed to an increase in longer distance road freight transport, reflected by a marked increase in average distance travelled.

Productivity in the road freight transport industry

- In 1990–91 there were about 335 000 rigid trucks with GVM over 3.5 tonnes and 52 400 articulated trucks involved in the road freight transport industry in Australia;
- the number of rigid trucks, including those with GVM less than 3.5 tonnes, increased by 6 per cent from 1975–76 to 1987–88, and articulated truck numbers by 23 per cent;
- average load carried increased: for rigid trucks by 13 per cent to 3.4 tonnes in 1987–88 and for articulated trucks by 31 per cent to 18.2 tonnes in 1987–88;
- the average tare weight of all trucks, and particularly articulated trucks, increased;
- the proportion of articulated trucks to total trucks increased from about one in every eleven trucks in 1975–76 to one in every nine trucks in 1987–88;
- average annual tonne-kilometres performed by rigid trucks increased by 71 per cent from 33 500 tonne-kilometres in 1975–76 to 57 300 tonne-kilometres in 1987–88;
- average annual tonne-kilometres performed by articulated trucks increased by 111 per cent from 583 200 tonne-kilometres in 1975–76 to 1 231 400 tonne-kilometres in 1987-88;
- average annual distance travelled increased from 1975–76 to 1987–88, rigid trucks up 24 per cent to 19 400 kilometres and articulated trucks up 56 per cent to 78 700 kilometres;
- the proportion of business travel to total travel increased from 1975–76 to 1987–88 from 91 per cent to 93 per cent for rigid trucks, and from 98.4 per cent to 99.3 per cent for articulated trucks; and

- the proportion of laden to business travel increased from 69 per cent to 75 per cent for both categories of trucks.

The productivity gains demonstrated by the *Survey of Motor Vehicle Use* statistics, especially for the task undertaken by the heavier articulated vehicles are substantial. The thirteen year time series from 1975–76 to 1987–88 indicates that with each passing year the road freight transport industry carried heavier loads over longer distances and with less empty running.

CHAPTER 4 OPERATIONAL PERFORMANCE OF THE ROAD FREIGHT TRANSPORT INDUSTRY

It has been noted elsewhere in this paper that reliable economic information on the road freight transport industry is very limited. The most recent official information available was published in 1986 by the ABS and relates to the year 1983–84. For reasons apparently connected with the absence of general industry studies in this area over the latter half of the 1980s, it seems that no particular analysis of the ABS data was ever undertaken. Partly for this reason, and also because the 1983–84 ABS Transport Industry Survey (TIS) continues to represent the most comprehensive available data on this industry, it was decided that this paper should present an analysis of those data. Although these statistics are several years old, some interesting conclusions emerge.

This chapter examines the available information in three sections. The first looks at economic characteristics of the industry in terms of the relevant classes defined by the Australian Standard Industrial Classification (ASIC). The second section addresses the cost structure of the industry classes and the final section discusses industry operations in terms of vehicle fleet size groupings.

DETAILS OF OPERATIONS BY INDUSTRY CLASS

Tables 4.1 and 4.2 present the standard details of operations for the four ASIC Classes comprising the ASIC Group 511, Total Road Freight Transport. A key feature of table 4.2 is the value of turnover, representing the amount of money spent on freight transport by users. This is an important indicator of freight transport in the economy. In total it represents about 2 per cent of GDP.

TABLE 4.1 ROAD FREIGHT TRANSPORT: ESTABLISHMENTS AND EMPLOYMENT BY INDUSTRY CLASS, 1983–84

(number)

	Establishments		
ASIC class	*As at June 1984*	*Average operating during the year*	*Employment over the whole year*[a]
5111 Long Distance Interstate	3 189	3 378	13 097
5112 Long Distance Intrastate	4 739	5 021	16 678
5113 Short Distance	24 440	25 993	57 867
5114 Road Freight Forwarding	575	584	11 963
511 Total Road Freight Transport	32 943	34 975	99 606

a. Includes working proprietors and partners.

Source ABS 1986a.

TABLE 4.2 ROAD FREIGHT TRANSPORT: SELECTED FINANCIAL DATA BY INDUSTRY CLASS, 1983–84

(million dollars)

ASIC class	*Wages and salaries*[a]	*Turnover*[b]	*Change in stock*	*Total purchases and selected expenses*[c]	*Value added*[d]	*Fixed capital expenditure less disposals*
5111 Long Distance Interstate	151.1	854.2	0.3	498.5	355.9	46.1
5112 Long Distance Intrastate	162.5	926.3	0.4	502.0	424.7	58.5
5113 Short Distance	381.9	1 974.2	1.5	900.5	1 075.2	111.0
5114 Road Freight Forwarding	207.1	1 432.6	0.2	1 020.7	412.1	22.1
511 Total Road Freight Transport	902.5	5 187.3	2.4	2 921.8	2 267.8	237.6

a. Gross earnings of all employees of an establishment before taxation and other deductions. Drawings of working proprietors and partners are excluded.

b. Revenue from transport services; sales of fuel and other goods, rent, leasing and hiring revenue where appropriate, royalties; transfers out of transport services to other establishments of the same enterprise, capital work done for own use, rental or lease and all other operating revenue including government subsidies except receipts from interest, dividends and the role of fixed tangible assets.

c. Purchases of electricity, fuels, plus transfers in of transport services from other establishments of the enterprise; plus sub-contract and commission work expenses; repair and maintenance expenses; running expenses for motor vehicles, sales commission expenses and rent, leasing and hiring expenses.

d. Turnover plus increase (or less decrease) in the value of stocks, less purchases, transfers in and selected expenses.

Source ABS 1986a.

In terms of the basic data, it is worthwhile noting the order of magnitude, in terms of numbers of establishments, of each of the ASIC Classes comprising Group 511. In 1983–84, Short Distance Road Freight Transport (Class 5113) had the highest number of establishments, followed by Long Distance Intrastate Road Freight Transport (Class 5112); Long Distance Interstate Road Freight Transport (Class 5111) and Road Freight Forwarding (Class 5114). This particular ordering of the ASIC Classes shows up persistently in the subsequent analysis of economic performance.

The ASIC Class with the greatest number of establishments, Short Distance Road Freight Transport, has the lowest average number of employees per establishment, a reflection of the fact that this ASIC class is dominated by regional carriers, comprising mainly small carriers and owner drivers. It also has the lowest average wages, lowest contribution to total production (measured as value added per person employed), and the highest failure rate of establishments (table 4.3). These characteristics reflect ease of entry to this particular class. Ease of entry arises from the relatively small amount of capital needed to start a haulage business (the smallest unit of production is a single truck, which can be leased, hired, or purchased second hand), and the relatively small amount of working capital required. In a survey of owner drivers' previous occupations, it was found that 70 per cent had previous experience as trades persons, 19 per cent as professional drivers, and 14 per cent as unskilled or general labourers (Hensher et al. 1991). The high casualty rate appears not to be a deterrent, and none of the established firms has the monopolistic power to discourage newcomers.

From table 4.3 it can be clearly seen that the highest value added per person employed is recorded by the Road Freight Forwarding ASIC class. Freight forwarding is dominated by big companies which are usually well organised and managed eg TNT, Brambles and Mayne Nickless.

Tables 4.1 and 4.3 show, amongst other things, that the average operational performance of an ASIC transport class varies inversely with the number of establishments in that class. It might be inferred that both of these factors (performance and number) are associated with apparent ease of entry. It also appears that short distance operators experience the strongest competitive pressures, even though public focus has tended to be on the economic circumstances of long distance owner drivers and allegations of their exploitation by freight forwarders.

The value added per person employed is a reflection of the operational practices employed by each ASIC class, for example, freight consolidation. Note that value added less salaries and wages does not equate to profit, since the derivation of value added in this instance does not take into account miscellaneous expenses such as depreciation, workers compensation insurance, other insurance, payroll tax, rates, advertising, interest on borrowed funds, bad debts, etc.

TABLE 4.3 ROAD FREIGHT TRANSPORT — ESTABLISHMENT CHARACTERISTICS BY INDUSTRY CLASS, 1983–84

ASIC class	Average employment (number)	Average wage & salary[a] (dollars)	Value added per person employed[b] (dollars)	Failure rate[c] (per cent)	Value added to turnover (per cent)	Wages & salaries to value added (per cent)	Price-cost margin to turnover[d] (per cent)
5111 Long Distance Interstate	3.9	17 666	27 174	5.6	41.7	42.5	24.0
5112 Long Distance Intrastate	3.3	17 161	25 465	5.6	45.8	38.3	28.3
5113 Short Distance	2.2	15 998	18 580	6.0	54.5	35.5	35.1
5114 Road Freight Forwarding	20.5	17 887	34 448	1.5	28.8	50.3	14.3
511 Total Road Freight Transport	2.8	16 878	22 768	5.8	43.7	39.8	26.3

a. Average gross earnings of employees excluding drawing of proprietors and partners.

b. Value added per person employed (including working proprietors).

c. The difference between number of establishments operating during the year 1983–84 and number of establishments at 30 June 1984 as a percentage of number of establishments operating during the year.

d. The ratio of value added minus wages and salaries to turnover.

Source Derived from ABS 1986a.

The last three columns of table 4.3 also reflect differences in the nature of the operations conducted by each industry class, more so than differences in economic performance. A steady gradation is apparent between each of the road freight transport classes, short distance through to long distance interstate, followed by a greater movement to freight forwarding. Tables 4.4 and 4.5, and figure 4.1 present more information on these operating expenses, which are discussed in the next section.

COST STRUCTURE BY INDUSTRY CLASS

Figure 4.1 presents the components of total costs. The disaggregated costs by ASIC class are provided in absolute terms in table 4.4, and as a percentage of total costs in table 4.5. Running expenses, subcontracting costs and wages and salaries generally constitute the three largest cost components.

TABLE 4.4 COST STRUCTURE OF ROAD FREIGHT TRANSPORT BY INDUSTRY CLASS, 1983–84

(million dollars)

	ASIC class				
	5111	*5112*	*5113*	*5114*	*511*
Revenue					
Turnover	854.2	926.3	1 974.2	1 432.6	5 187.3
Increase in stocks	0.3	0.4	1.5	0.2	2.4
Costs					
Running expenses	331.4	331.5	618.5	86.9	1 368.3
Repairs and maintenance	2.8	4.1	11.6	6.8	25.3
Subcontracting and commission work	77.2	62.9	106.4	840.1	1 086.5
Rent, leasing and hiring	73.0	84.2	132.7	49.7	339.7
Electricity, fuels, packing and other materials, transfers	14.1	19.4	31.4	37.2	102.0
Wages and salaries	151.1	162.5	381.9	207.1	902.5
Return to capital[a]	204.9	262.1	693.2	205.0	1 365.4

a. Also includes returns to labour of working proprietors, depreciation, taxation and some other miscellaneous expenses.

Source Derived from ABS 1986a.

TABLE 4.5 SHARES OF DIFFERENT COST COMPONENTS AS A PERCENTAGE OF TOTAL COSTS

(per cent)

	ASIC class				
Cost components	*5111*	*5112*	*5113*	*5114*	*511*
Running expenses	38.8	35.8	31.3	6.1	26.4
Repairs and maintenance	0.3	0.4	0.6	0.5	0.5
Subcontracting and commission work	9.0	6.8	5.4	58.6	20.9
Rent, leasing and hiring	8.5	9.1	6.7	3.5	6.5
Electricity, fuels, packing and other materials, transfers	1.6	2.1	1.6	2.6	2.0
Wages and salaries	17.7	17.5	19.3	14.4	17.4
Return to capital[a]	24.0	28.3	35.1	14.3	26.3

a. Also includes return to labour of working proprietors, depreciation, taxation and some other miscellaneous expenses.

Source ABS 1986a.

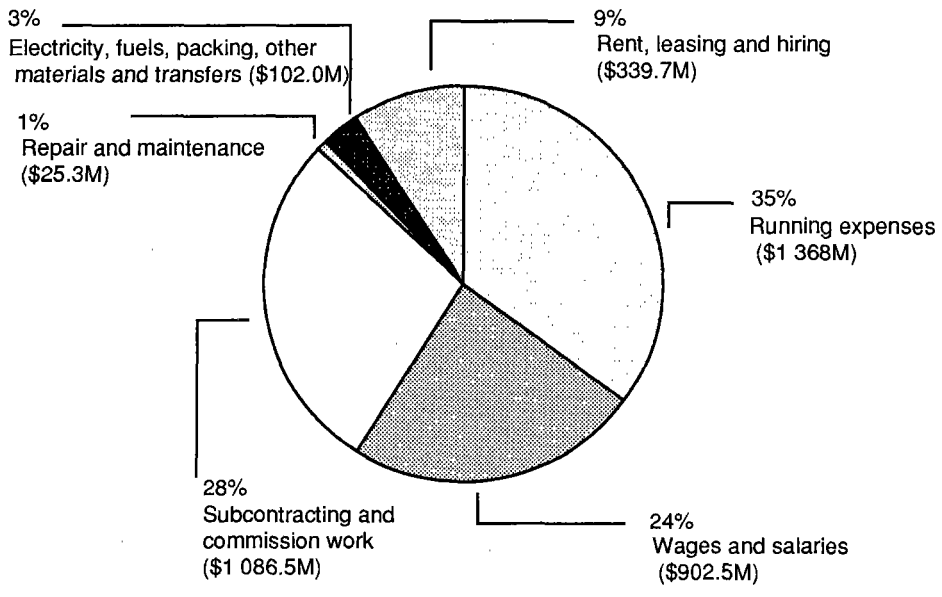


Figure 4.1 Components of total road freight transport costs

The figures provide a basis for estimating the impact on total costs of a given percentage rise or fall in a specific category of costs. For example, given that running expenses and salaries and wages, as a proportion of total costs, are approximately 26 per cent and 17 per cent respectively, across all road freight transport operators, a 5 per cent increase in running expenses would produce a greater effect on total costs than a 5 per cent increase in wages. In this example, the effects on total costs would be estimated to be about 1.3 per cent and 0.9 per cent, other factors remaining equal.

The figures also provide a basis for quantifying the differences between the operations of the ASIC freight forwarding class and the other ASIC road freight transport classes. For example, directly incurred vehicle running expenses, as a proportion of total costs, are some six times higher for road freight transport operators than for freight forwarders. However, the forwarders costs for subcontracting are much higher, as would be expected. The lower rate of return to capital attained by the road freight forwarding class tends to discount the widely held view that freight forwarders have exploited subcontractors. Additional and more current data would be needed to clarify the issue.

ROAD FREIGHT TRANSPORT BY FLEET SIZE

Tables 4.6, 4.7 and 4.8, and figure 4.2, provide details of operations and derived performance data for road freight transport (ASIC group 511), classified by fleet size (number of trucks). Similar tables for each of the four ASIC Classes comprising Group 511 have been reproduced in appendix II. Data classified by size may differ slightly from those provided elsewhere due to small differences in coverage adopted by the ABS. All establishments classified to the largest size groupings were surveyed, rather than relying upon the use of sampling techniques. For reasons of confidentiality, data for establishments operating 100 or more trucks are not always separately available for each ASIC Class. The comments that follow relate to the size group tables employed, in this chapter and in appendix II.

TABLE 4.6 ROAD FREIGHT TRANSPORT BY FLEET SIZE, 1983–84

(number)

Fleet size	*Establishments 30 June 1984*	*Average employment over whole year*[a]
0–1 truck	25 958	48 591
2–5 trucks	5 770	18 735
6–9 trucks	657	5 998
10–19 trucks	346	6 772
20–49 trucks	147	7 308
50–99 trucks	50	7 192
100 or more trucks	15	4 253
Total	32 943	98 849

a. Includes working proprietors and partners.

Source ABS 1986a.

TABLE 4.7 ROAD FREIGHT TRANSPORT (ASIC CLASS 511): SELECTED FINANCIAL DATA BY FLEET SIZE, 1983–84
(million dollars)

Fleet size	Wages and salaries	Turnover	Total purchases, transfers in and selected expenses	Value added	Fixed capital expenses less disposals
0–1 truck	152.6	1873.1	1 073.9	800.8	76.8
2–5 trucks	141.4	907.5	542.8	365.3	65.8
6–9 trucks	88.7	429.2	246.0	183.0	23.9
10–19 trucks	119.9	536.0	311.2	225.4	29.1
20–49 trucks	140.8	601.7	354.1	247.8	25.9
50–99 trucks	153.1	492.9	226.6	266.4	24.7
100 or more trucks	95.4	248.4	106.2	142.7	9.2
Total	891.9	5 088.8	2 860.8	2 231.4	255.4

Source ABS 1986a.

TABLE 4.8 ROAD FREIGHT TRANSPORT (ASIC CLASS 511) BY FLEET SIZE, 1983–84

	Per establishment		*Per person employed*[a]				
Fleet size	*Average employment*[a] *(number)*	*Average price-cost margin*[b] *(dollars)*	*Turnover (dollars)*	*Value added (dollars)*	*Average price-cost margin (dollars)*	*Value added to turnover (per cent)*	*Price-cost margin to turnover (per cent)*
0–1 truck	1.9	24 971	38 548.2	16 480.4	13 340	42.7	34.6
2–5 trucks	3.2	38 804	48 438.7	9 498.2	11 951	40.2	24.7
6–9 trucks	9.1	143 531	71 557.1	30 510.1	15 722	42.6	22.0
10–19 trucks	19.6	304 913	79 149.4	33 284.1	15 579	42.0	19.7
20–49 trucks	49.7	727 891	82 334.4	33 908.0	14 641	41.2	17.8
50–99 trucks	143.8	2 266 000	68 534.4	37 041.1	15 754	54.0	23.0
100 or more trucks	283.5	3 153 333	58 405.8	33 552.7	11 121	57.4	19.0
Total	3.0	40 661	51 480.5	22 573.8	13 551	43.8	26.3

a. Includes working proprietors and partners.

b. Turnover plus increase (or minus decrease) in the value of stocks, minus purchases, transfers in and selected expenses, minus wages and salaries. By definition, this is the same as value added minus wages and salaries.

Source Derived from ABS 1986b.

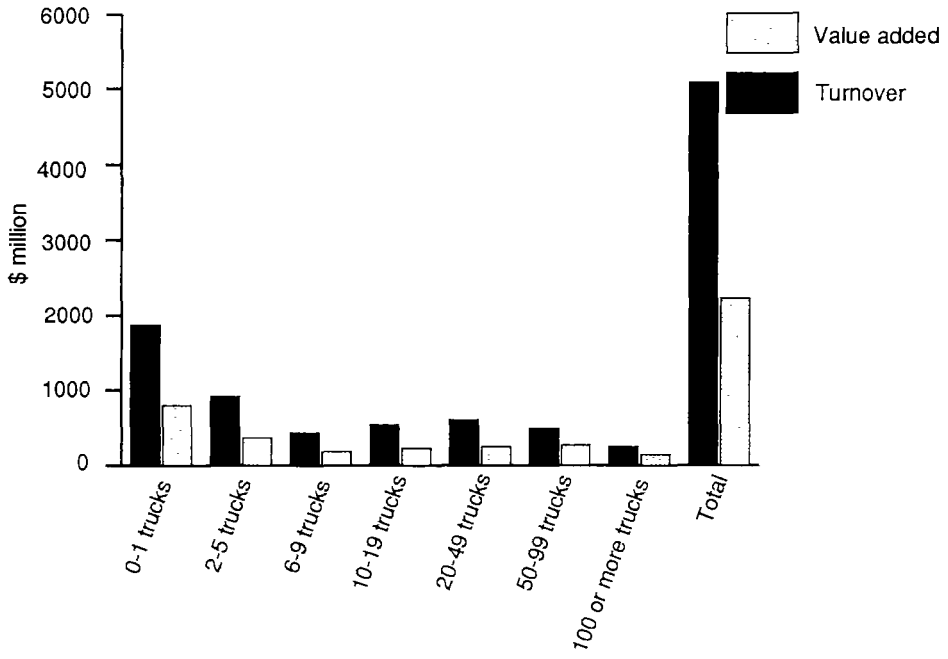


Figure 4.2 Road freight transport by fleet size, 1983–84

Apparent from examination of table 4.8, and from each of the corresponding ASIC Class tables in appendix II, is an indication of financial disincentives for owning and operating large fleet as the price–cost margin decreases with size. Although there are some perturbations or discontinuities, in every case the largest fleet size groupings show a decrease in turnover per employee and a decrease in value added per employee. Price–cost margin is defined as turnover plus increase (or less decrease) in the value of stocks, minus purchases, transfers and selected expenses, minus wages and salaries. By definition, this is the same as value added minus wages and salaries. While price–cost margin is a proxy for profit, it is not the same because, as noted previously, there are some miscellaneous expenses which are not taken into account in arriving at value added. In all cases but one (for which detailed data are not available) the average price–cost margin per employee is relatively low for the largest fleet sizes. Accounting practices aside, these indications help to explain the practice of major operators sub-contracting out to owner drivers and smaller operators. In the case of road freight transport, there does seem to be a significant increase in value added as a percentage of turnover for the largest operators. This result seems to be more a reflection of a different service provided by the largest road freight transport operators than any indication of 'monopoly' returns. It is not supported by any corresponding increase in price–cost margin per employee, in fact there is usually a decrease. The result appears only weakly in the case of freight forwarders.

Not inconsistent with the data is the BTE finding from its 1982–83 survey that road freight transport operators with two or three trucks averaged less income per kilometre than one truck operators. The 1983–84 ABS data show that in all ASIC Classes, establishments with two to five trucks have a relatively low average price–cost margin per employee; comparable, in most cases, with the low figure obtained by the very largest operators. In making these rough comparisons, it is important to note that the price–cost margin per employee calculated for small fleet size groups, contains a significant proportion of income relating to labour contributed by working proprietors. The extent of upwards bias in the estimates of price–cost margin per employee decreases continuously as establishment size increases, to approach negligible levels where working proprietors comprise a very small proportion of total employees.

SUMMARY

Details of operations by industry class

The 1983–84 ABS Transport Industry Survey statistics suggest operational performance varies inversely with the number of establishments classified to an ASIC Class:

- the class having the largest number of establishments (Short Distance Road Freight Transport) has the smallest average size of establishments, the highest failure rate of establishments, the lowest average wages and the lowest value added per employee; and
- in contrast, the class having the smallest number of establishments (Road Freight Forwarding) has the largest average size of establishments, the lowest failure rate of establishments, the highest average wages and the highest value added per employee.

Competitive forces appear to be strong throughout all classes comprising the industry.

Cost structure by industry class

Cost data extracted from the ABS Transport Industry Survey provide some measure of the differences in the nature of the operations of each industry class. For example, directly incurred vehicle running costs, as a proportion of total costs, are some six times higher for road freight transport operators than for freight forwarders. The cost data, however, provide no insight into detailed vehicle operating costs.

Road freight transport group and fleet size

The 1983–84 ABS Transport Industry Survey data suggest the existence of appreciable diseconomies of scale in all ASIC road freight transport classes.

Accounting practices aside, the data do not tend to support perceptions of successful exploitative behaviour being exercised by the operators of the largest fleets.

In almost all cases, the lowest average levels of price–cost margin per employee (a proxy for profitability per employee) were obtained by establishments with 2–5 trucks and those with more than 100 trucks.

APPENDIX I REVIEW OF LITERATURE

This chapter reviews the major studies of the road freight transport industry in the 1970s, 1980s and 1990s. The studies reviewed here do not constitute an exhaustive list of all the road transport industry studies completed in that period, but they do provide a comprehensive overview of this important industry.

THE LONG DISTANCE ROAD HAULAGE INDUSTRY

In 1979, the Bureau of Transport Economics (BTE) published its report *The Long Distance Road Haulage industry*. This study reported on the structure, market conduct and performance of the long distance freight industry, with particular emphasis on the long distance road transport sector. During 1979, a nationwide blockade of major highways occurred, during which truck drivers presented several demands. It was by this means that truck drivers made known the difficulties (mainly financial difficulties) facing the industry, especially the owner driver sector of the road freight transport industry.

The report produced some important findings, the main one being that there were no substantial barriers to entry in the freight forwarding sector of the road freight transport industry so that competitive conditions in that industry should apply. A number of allegations raised during the dispute were also examined. No evidence was found to support the contention that freight forwarders earned 'monopoly' rents. Not only was entry unhindered by regulation but in addition, the threat of competition from companies setting up their own ancillary transport operations was always present. It was concluded that existing competition, together with the threat of further competition, prevented any substantial market manipulation by the freight forwarding sector.

The report found that the road freight transport industry was a very competitive one in which the financial plight of owner drivers could be severe as the rates paid for their services had not generally kept pace with the rising costs of operating their trucks. This situation was described as a short term disequilibrium problem which should correct itself in the longer term.

Given the then existing oversupply of subcontractors (owner drivers)[1], freight forwarders could secure a price which was below the long term economic cost of providing sub-contractor services.

The BTE report viewed the situation of almost daily price changes (freight rate changes) as evidence of the operation of a highly competitive market. That is, the road freight transport industry was merely responding to the supply and demand conditions operating in that market. Therefore, it was argued, any oversupply of some particular service should correct itself; hence the short term nature of the disequilibrium.

Participants in the 1979 blockade had suggested their own solutions to the then existing situation. The proposed solutions were industry regulation, mainly in the form of minimum freight rate legislation and the establishment of a licensing system to regulate entry to the sub-contracting sector of the industry. It was envisaged that the proposed licensing system would operate along the lines of the taxi car plate system.

Overall the BTE report argued against any additional regulation of the road freight transport industry, noting the efficiency losses associated with proposed forms of regulatory intervention. In particular, the report commented on the severe practical problems associated with minimum price regulation due to the diverse nature of the industry. It was difficult to operate a system of set prices because load imbalances in terms of the volume and weight of the goods vary frequently and some routes have their own particular back-loading problems. All quoted prices for individual freight loads must consider these variables each time.

In addition, the report noted that regulation in the trucking industry had a history of resulting in higher prices. The earnings of owner drivers were some 50 per cent higher in countries which had a regulated system. This increase in operators' (owner drivers') earnings in regulated systems, represented a transfer of income to owner operators from the freight forwarders and the community.

Given the extent of competition existing in the industry, it was likely that some subcontractors would apply discounting and so defeat the purpose of such regulation. It was noted that bankruptcies in the industry appeared to relate more to general economic conditions than to any peculiarities within the industry itself.

1. By definition an industry with free exit and entry and less than normal returns indicates an oversupply in the industry (BTE 1979).

The report also considered that any regulations which aimed to restrict entry to the industry would also result in higher prices, and therefore a loss of freight to rail could occur. Legislative difficulties would also need to be considered in relation to possible entry restrictions.

SOME CHARACTERISTICS OF TRUCK OWNERSHIP IN AUSTRALIA

The 1981 BTE study, *Some Characteristics of Truck Ownership in Australia*, was a sample survey of all registered trucks in Australia whether or not they were part of the road freight transport industry. The survey included all commercial vehicles of one tonne and over.

Nationally, 55 per cent of all freight vehicles (as defined) were operated as part of a one or two truck fleet. Although this survey was conducted in all States, using the States' own motor vehicle registry data as a population, a more extensive survey was undertaken in Tasmania. In Tasmania, a more detailed outline of the patterns of freight vehicle ownership and utilisation was produced.

The Tasmanian data showed that 25 per cent of all trucks were part of the transport and storage industry, 25 per cent were part of the agricultural industry, 14 per cent were part of the wholesale and retail trades industry and 13 per cent were part of the construction industry. Together, these four industries accounted for 77 per cent of the truck population. The survey produced some useful findings, as it demonstrated the importance of ancillary transport services to Australian industry.

OVERVIEW OF AUSTRALIAN ROAD FREIGHT INDUSTRY

In 1984 BTE published *Overview of Australian Road Freight Industry: Submission to National Inquiry 1983*. Although this paper provided a broad overview of the road freight industry, its findings can not always be reconciled with those of the previous study (BTE 1981). The paper found that 35 per cent of the road freight task related to urban travel, another 45 per cent related to intrastate travel and the other 20 per cent related to interstate travel. Some 85 per cent of all truck fleets[2] consisted of only one truck and these one truck fleets accounted for about 60 per cent of all rigid trucks and about 40 per cent of all registered articulated trucks.

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2. Comprising rigid trucks exceeding 2 tonnes tare weight and all articulated trucks.

In terms of tonne-kilometres, articulated trucks performed about 70 per cent of the road freight task, which had grown at more than double the rate of real GDP during the 1970s[3]. This was due in part to the many, mainly State moves, during the 1970s to ease the regulations imposed on the road freight transport industry.

The BTE submission raised the issue of externalities and the question of cost recovery in both the road and rail freight modes. The submission referred to various studies which had found that both modes were paying less than the costs attributed to them.

The BTE submission (1984, p.74) stated:

> If heavy vehicles are to cover the avoidable pavement cost attributable to them, let alone make any contribution to common costs, then it is necessary to supplement the various fuel taxes with large fixed charges and/or some charge proportional to tonne-kilometres.

Other externalities arising from the road freight industry were also discussed in the submission, including safety factors. At the time, the safety record of trucks, particularly articulated trucks, was an important issue, because the McDonell Report (1980) had found that, based on 1977 data, articulated trucks had contributed disproportionately to the number of fatal accidents in New South Wales.

This submission also presented a comprehensive economic analysis of the road freight industry. It addressed the issue of whether the industry's problems were fundamentally due to general cyclical factors, or whether particular structural problems existed in the industry. It was stated that the problems in the industry were the result of both cyclical and structural factors. However, the available evidence as to whether the economic problems facing the road freight industry were more or less severe than the economic problems of other industries was inconclusive.

The submission stated that the large number of operators should ensure extensive competition in all but the very remote or specialised sections of the industry. This meant that strong downward pressure on road haulage rates existed.

It was stated that very little was known about the economic and financial status of truck operators, and that owner drivers were not a fixed population. It was known, however, that some owner drivers were working very long hours of up to eighty hours per week. There was also a significant level of indebtedness and a low level of profitability among owner drivers.

3. Real GDP growth was between 2.8 and 3.5 per cent and road freight task growth was between 6.1 and 9.4 per cent.

It was stated that entry to the industry as an owner driver was too easy in the 1970s, leading to the emergence of marginal operators. Many people, both within and outside the industry, thought that marginal operators were the ones who were likely to compromise safety, by participating in greater risk taking behaviour in order to make ends meet. The McDonnell Report (1980) had already made a recommendation that consideration be given to regulating entry to the industry by requiring a demonstration of sufficient financial means to carry on business as a haulier. Constitutional difficulties, however, were likely to be encountered in any attempt to implement such a recommendation.

The submission concluded that a long term solution to the problem of the highly susceptible marginal operator may be for greater vertical and horizontal integration in the industry. Governments too, however, had a fundamental role to play, especially in their capacity as owners of the State railway networks, as railways were operating in competition with road freight. Regulation/deregulation of the road freight industry was a major issue. Other areas for greater government involvement were in driver training and small business management training. The submission also stated that it was the role of governments to enforce safety rules and to protect the public from the other externalities associated with the road freight transport industry.

THE NATIONAL ROAD FREIGHT INDUSTRY INQUIRY

Terms of reference

The National Road Freight Industry Inquiry was announced in early 1983, by the then Federal Minister for Transport, having received the unanimous support of the State and Territory Ministers responsible for transport. The Inquiry was directed to inquire into, to report upon, and to make recommendations relating to, Australia's road freight transport industry. The Inquiry's terms of reference covered a broad range of issues, including the following:

- the industry's ability to meet the needs of users economically, efficiently and effectively;
- the impact of regulation on the industry;
- heavy vehicles and road crashes, together with an examination of any relationship between prevailing economic conditions in the industry and road crashes;
- the impact of existing truck financing practices;
- the effect of competition from rail and cost recovery levels in both modes; and

- the need for a national research program on the road freight transport sector and how it could be most usefully undertaken.

Issues and findings

After extensive examination of the structure, conduct and performance of the road freight transport industry, the Inquiry concluded that, generally, the industry delivered a high quality of service to users and that it was an efficient industry. The Inquiry stated that freight forwarders had achieved a high standard of performance in responding to users' needs. However, this high standard of performance was often achieved at the expense of contributing to instability among small fleet operators, especially the long distance owner drivers, as freight forwarders could exercise strong bargaining power in the purchase of line haul services.

The Inquiry found that, on the whole, the road freight industry was more competitive than much of Australian industry. Line haul trucking was the sector of the industry with the keenest competition. Several submissions received by the Inquiry had argued that a solution to the financial hardship being experienced by some owner drivers was to regulate this sector by capacity licensing and by the control of freight rates paid to subcontractors.

Extensive consideration of the likely effects of the proposed regulations led to the rejection of any suggested regulation of rates and capacity, on the grounds of economic efficiency and impracticability. The Inquiry noted that such regulations, even if they could be rendered workable, may have led to a small improvement in road safety, but at the expense of damaging the economic performance of the industry. There was no guarantee that such measures would result in any significant financial benefits to subcontractors.

On the issue of road accidents involving heavy vehicles, the Inquiry found that the connection between prevailing commercial conditions in the industry and these accidents was, at best, a tenuous one. However, several recommendations for the improvement of vehicle safety, driver behaviour, speed limits, road design and road user behaviour were made. There was an emphasis on the importance of education and training in the Inquiry's deliberations on safety matters involving heavy vehicles. Enforcement measures were also considered.

In examining the issue of existing truck financing practices, the Inquiry was of the opinion that it was not the task of credit suppliers to become de facto capacity controllers. Credit suppliers could not be held responsible for any financial difficulties affecting single truck owner drivers and other small fleet operators in the road freight industry. However, the Inquiry did recommend that consumer protection legislation should be extended to all truck owner operators, regardless of whether their businesses were incorporated or unincorporated. The Inquiry also emphasised the importance of education on sound business and financing practices.

The issues of cost recovery levels and road damage under recovery were examined. The Inquiry stated that on economic efficiency grounds there was a very strong case for the introduction of vehicle-kilometre charges. The Inquiry recommended that all governments should carry out a thorough study of the allocation to different vehicle classes of attributable and joint costs. The Inquiry emphasised the principle that it was only through objective economic analysis that a fair and economically efficient road damage charge could be applied. A comprehensive program for the phased introduction of vehicle-kilometre charges was outlined.

The Inquiry was required to examine the effect of competition from rail on the road freight industry and the extent to which this reflected differing levels of cost recovery from both modes. The Inquiry concluded that for the sake of equitable treatment of road and rail, it was necessary for governments to set a timetable for the transition of rail to full cost recovery. Such a transition should also be encouraged in order to maximise the economic welfare of the community at large, and to promote equity.

On the question of the need for future industry consultation and a national research program relating to the road freight transport sector, the Inquiry proposed the formation of an Australian Road Transport Advisory Committee (ARTAC). Three primary roles were envisaged for the Committee:

- to be a voice to governments on matters relating to the industry;
- to assist in the development and coordination of a national research program to be conducted through existing agencies; and
- to comment on and propose road expenditure priorities.

The significance of the Inquiry

The National Road Freight Industry Inquiry was a major undertaking, covering all the major issues in the industry. Such an inquiry has not been undertaken since. Many recommendations were made by the Inquiry, with a number subsequently being implemented. In 1992, the *National Road Freight Industry Inquiry* (1984) is still the major source of general information on the road freight transport industry.

SURVEY OF TRUCKING OPERATIONS 1982–83

The BTE carried out a survey of trucking operations early in 1984, primarily to assist the National Road Freight Industry Inquiry with its data collection activities. Although the Inquiry was able to make use of the results of this survey during its deliberations, the BTE did not publish the results until 1986. The BTE *Survey of Trucking Operations 1982–83*, unlike its predecessor, defined the truck population as a freight vehicle of tare weight of two or more tonnes.

The survey found that ancillary operators outnumbered road transport operators by four to one. The agriculture and forestry industries accounted for the majority of ancillary fleet operators. This survey found that most fleets were small, consisting of one truck (72 per cent). Another 17 per cent of fleets or business units operated two trucks. Eleven per cent of all truck fleets consisted of three or more trucks, with fleets of ten or more trucks accounting for only I per cent of all fleets.

This survey showed that 20 per cent of all fleets were part of the road freight industry, or hire and reward operations. Owner drivers made up almost half of all road freight transport operators (49 per cent). In terms of the truck population, 26 per cent of all trucks belonged to the road freight industry.

The survey produced much useful data on trucking operations in Australia. This survey was a more comprehensive study than its predecessor as it also attempted to examine the financial status of fleet operators, as well as other previously unexamined areas.

AN INVESTIGATION OF COST RECOVERY ARRANGEMENTS FOR INTERSTATE LAND TRANSPORT

As part of its consideration of the National Road Freight Industry Inquiry, which had recommended that a program of road cost recovery should be pursued, the Federal Minister for Transport directed, on 18 June 1985, the Inter-State Commission (ISC) to investigate matters relating to cost recovery arrangements for interstate land transport. Specifically, the Commission was directed to recommend the appropriate levels of charges which should be fixed for different classes of road freight and road passenger vehicles engaged in interstate trade and commerce. In 1986 the ISC published *An Investigation of Cost Recovery Arrangements for Interstate Land Transport.*

For the purposes of this investigation, the Commission accepted previous research findings that the amount of pavement damage per kilometre caused by trucks depended on the weight, the axle configuration, the quality of the road surface, truck speeds and other technical factors. The exact calculation of attributable pavement wear by various vehicle types was not an easy task. It was again confirmed, however, that avoidable pavement damage costs resulted from the use of roads by heavy rigid vehicles and heavy articulated vehicles.

The Commission presented extensive comparisons of estimates of costs (avoidable, common, joint) and revenues. Corresponding estimates of cost recovery ratios for different vehicle categories varied considerably, principally because of differences in definitions of road user revenues.

In conclusion, the Commission stated that before further steps were taken towards full cost recovery, it was essential to obtain better estimates of actual road costs attributable to particular vehicle classes. As part of its terms of reference, the Commission recommended various levels of charges for vehicles involved in interstate trade and commerce. An 'actual distance' option was offered for vehicles wishing to fit an approved charge monitoring device, rather than be charged under the recommended imputed distance interstate registration scheme.

A REVIEW OF FEDERAL REGISTRATION CHARGES FOR INTERSTATE VEHICLES

Review of Federal Registration Charges for Interstate Vehicles was published by the ISC in 1987. The terms of reference for this review were essentially the same as those for the ISC's report *An Investigation of Cost Recovery Arrangements for Interstate Land Transport.* The Commission was directed to recommend appropriate levels of charges for 1988, for vehicles registered under the Federal Interstate Registration Scheme, which was introduced on 1 January 1987, as a cooperative venture between the States, the Territories and the Federal Government.

In this review, the Commission used a disaggregated approach to estimate costs and revenues for typical road vehicles, having classified the vehicle population into several categories, based mainly on vehicle type and axle configuration. For this review, the Commission focused on cost allocation procedures developed for established charging schemes overseas, as these schemes were found to be reasonable and effective.

Again, the Commission stated that there were disparities between vehicle classes in the levels of recovery of short-run marginal economic road track costs. It was noted that the six-axle articulated truck which is the predominate class of vehicle operating interstate, had an average financial cost recovery rate of 92 per cent.

The ISC review (1987, p.11) stated:

> The levels of taxation imposed on heavy interstate vehicles are almost four times the average for all industries, but road user charges are low; when added together these taxes and charges do not cover fully distributed financial costs.

The Commission stated that there was substantial room for increases in cost recovery levels for both road and rail interstate transport, so as to ensure the equal treatment of both modes. Again, the Commission recommended a gradual, step-by-step approach to the restructuring of road user charges. The issue of distance-based charges was raised as, without distance-based charging, it would be difficult to achieve any reasonable degree of equity within each industry.

REVIEW OF ROAD COST RECOVERY

In 1988 the BTCE published *Review of Road Cost Recovery*, which investigated three main areas. First, it outlined the theory of pricing, applying it to roads and road cost recovery. Second, it reviewed some recent studies on road cost recovery, paying particular attention to the pricing principles used in these studies. Third, estimates of the level of road cost recovery on Australian roads for the 1986–87 financial year were provided for several different vehicle types.

The principle that pricing has efficiency implications was used, both for usage of the existing road system and additional investment in roads. The basic pricing principle for road usage was that users should be required to pay at least the costs they cause. The costs caused by users are the marginal, or avoidable costs. In theory users could be charged for all short run marginal economic costs including congestion and noise and air pollution, as well as the costs of traffic administration. However, most of these costs were not investigated in this paper, mainly because of the difficulties involved in their estimation.

It was noted that the results of this study may be at variance with those of other studies as actual pavement damage levels vary with the type of pavement. This study included the costs of pavement damage on local roads whereas most of the other studies were confined to a consideration of arterial roads only.

Based on these pricing principles, the paper stated that of the $2000 million of pavement damage cost, nearly $1100 million were attributable to the 28 400 heaviest trucks (six or more axles) and about $900 million were attributable to the other 475 000 trucks and buses. The 8.7 million cars using the roads caused negligible pavement damage. It was further stated that smaller trucks were just meeting their pavement damage costs, whereas pavement damage costs for the operators of larger rigid trucks were under recovered by up to $4500 per vehicle. For heavy freight vehicles, the level of under recovery of avoidable pavement damage cost was estimated to be about $18 000 for an average six-axle articulated truck and almost $50 000 for the heaviest articulated vehicles.

It was emphasised that road pricing has important implications for efficient resource use. The problem of under recovery of damage costs by freight vehicles was a significant one for the Australian economy as the distribution of the freight task between road and rail was distorted by inefficient pricing arrangements. The paper stated that, in the long run, both modes should be concerned with the achievement of full cost recovery, as only then would an efficient allocation of the freight task between the two modes be possible. An additional benefit of charging for pavement damage would be encouragement of behaviour which reduced road damage.

ROAD USE CHARGES AND VEHICLE REGISTRATION: A NATIONAL SCHEME

On 5 January 1989, the Minister for Land Transport and Shipping Support directed the Inter-State Commission 'to review the current levels of charges for the different classes of vehicles registered under the Federal Interstate Registration Scheme ... and to recommend appropriate charges to operate after January 1990'.

In 1990 the ISC published *Road Use Charges and Vehicle Registration: A National Scheme*. The Commission concluded that, in view of the manifest inefficiency of having nine disparate charging regimes, the existing scheme could not simply be updated in a manner that promoted economic efficiency and equity. The Commission recommended the introduction of a national scheme for road user charges, and for vehicle registration, including associated regulatory and operational requirements. Reform of road pricing and funding was seen as being crucial to any attempt at micro-economic reform of transport and industry generally.

The Commission recommended that the Federal Interstate Registration Scheme (FIRS) be replaced by a national scheme for all road vehicles with the following features:

- a road use charge with a fuel component and a mass-distance component, the mass-distance charges being based on gross vehicle mass (GVM);
- the amount of the charge to be determined by the federal Minister acting on the advice of an independent body, a function later fulfilled by the National Road Transport Commission (NRTC); and
- the establishment of a single, national vehicle register.

The Commission considered that the charge should be related to distance travelled and mass of the different classes of vehicles. Environmental and other external costs would be covered by the charge.

The benefits of the national scheme were seen to include improved pricing, leading to better allocation of resources, simplified administration, and avoidance of the situation in which revenues are affected by vehicles in one jurisdiction doing most of their travel in another jurisdiction.

LONG DISTANCE TRUCK DRIVERS ON-ROAD PERFORMANCE AND ECONOMIC REWARD

The study *Long Distance Truck Drivers On-Road Performance and Economic Reward* (Hensher et al. 1991) sought to explore the linkages, if any, between economic reward and the on-road behaviour of long distance truck drivers. The study was based upon a survey of long distance drivers. The major finding was that the economic rewards to both owner drivers and employers of drivers were found to have a major influence on the propensity to speed. More specifically, the uncertainty of regular earnings tends to encourage practices designed to increase economic reward which are not commensurate with reducing exposure to risk.

HEAVY VEHICLE CHARGES DETERMINATION

In 1992 the NRTC published *Heavy Vehicle Charges Determination* which examined charges for vehicles with a GVM greater than 4.5 tonnes. The paper describes the work undertaken by the Commission in the lead-up to its first determination on heavy vehicle charges.

The Schedule to the *National Road Transport Commission Act 1991* contains the brief to the Commission for its deliberations on heavy vehicle charges. The Schedule:

- defines charging principles to be used by the Commission in setting heavy vehicle charges;
- specifies the types of charges that may be imposed;

- requires the Commission to identify that part of diesel fuel excise which is to be regarded as a road use charge; and
- specifies two zones for charging purposes.

The charges recommended for heavy vehicles are intended to achieve full cost recovery, achieve a reasonable balance between administrative simplicity, efficiency and equity, and minimise the incentive to 'shop around' for lower charges. The charges will apply to all relevant vehicles from 1 July 1995. Charges will consist of an access charge and a mass-distance charge, combined to a single fixed annual charge, and a road use charge (diesel fuel excise). In determining charge levels, the Commission sought to identify and take into account the impacts, particularly potentially adverse impacts, of changes to charges. Seasonal registration alternatives will be determined after further investigation of the effects on administration and enforcement costs.

ROAD TRANSPORT REFORMS — IMPLICATIONS FOR RURAL AND REMOTE AREAS

A joint BTCE/Australian Bureau of Agricultural and Resource Economics project, *Road Transport Reforms — Implications for Rural and Remote Areas* published in 1992, estimated the impacts of changes to road user charges on vehicle operating costs and on selected industries in rural and remote Australia. The study was undertaken at the direction of Commonwealth Government Ministers following consideration of the 1990 ISC report, *Road Use Charges and Vehicle Registration: A National Scheme*. With the establishment of the NRTC, efforts were made to relate the study to the NRTC's objectives and time frame.

It was concluded that there is a diversity of impacts to be expected from any given change to current road user charges and concessions. These reflect principally the large differences between current State and Territory charges and large differences between vehicle operations, particularly annual distance travelled. The implications of almost any altered scheme were considered likely to be appreciable to at least some discrete categories of rural and remote area vehicle users.

INTERNATIONAL PERFORMANCE INDICATORS — ROAD FREIGHT

International Performance Indicators — Road Freight (BIE 1992) was part of a series of benchmarking studies undertaken by the BIE on Australia's major non-traded service industries. Performance indicators were developed for the road freight transport industry in Australia and in several overseas countries.

The international comparisons developed focused on the United States, Canada and the United Kingdom. These countries were chosen because they were seen to present broadly similar operating environments to Australia, and/or to present examples of world 'best practices'.

Two types of indicators were developed: customer oriented indicators, and operating efficiency/productivity indicators, including vehicle operating cost indicators. While the comparisons presented in the report were seen as providing a useful indication of the relative performance of the road freight transport industry in Australia, it was noted by the BIE that available industry data precluded the making of systemic adjustments for differences in the underlying nature of the road transport task between countries. These adjustments were viewed as being essential to the making of international comparisons.

Customer oriented indicators developed included road freight rates, percentage of on-time delivery and loss and damage rates. Operating efficiency indicators suggested that the performance of the Australian road freight transport industry was broadly comparable with the rest of the world.

Vehicle operating cost indicators were developed for 2-axle rigid trucks operating over short hauls, and for 6-axle articulated trucks operating over long hauls. For both types of vehicles, the operating cost in Australia was in the middle of the range of operating costs. For the short haul vehicle, the operating cost in Australia was greater than in the UK, approximately equal to the USA, and below the cost in Canada. For the long haul vehicle, the operating cost in Australia was approximately equal to the cost in Canada, greater than the USA, but less than in the UK.

The paper concluded that, overall, the road freight transport industry in Australia was an internationally competitive industry.

SUMMARY

The studies on the road freight transport industry reviewed here made a substantial contribution to understanding this industry. The key issues coming out of these reports were:

- the level of competitiveness in the line haul sector and the freight forwarding sector;
- the disequilibrium problem between supply and demand in the line haul services sector;
- the cost–price squeeze in the line haul sector, especially among owner drivers;
- capacity and price regulation in the line haul sector;

- inefficient allocation of the freight task between road and rail due to cost under recovery in both road and rail;
- road cost under recovery by heavy freight vehicles and the restructuring of road user charges to recover the avoidable costs imposed by all classes of vehicles; and
- prevailing economic conditions and road safety.

APPENDIX II ADDITIONAL STATISTICAL TABLES

Tables II.1 to II.12 reproduce for each of the four ASIC Classes, 5111, 5112, 5113 and 5114, the three types of table provided for ASIC Class 511 in chapter 4.

TABLE II.1 LONG DISTANCE INTERSTATE ROAD FREIGHT TRANSPORT (ASIC CLASS 5111) BY FLEET SIZE, 1983–84

Fleet size	*Establishments 30 June 1984*	*Average employment over whole year*
0–1 truck	2 294	4 063
2–5 trucks	657	2 480
6–9 trucks	122	1 235
10–19 trucks	76	1 656
20–49 trucks	27	1 069
50–99 trucks	10	1 848
100 or more trucks	3	655
Total	3 189	13 005

Source ABS (1986b).

TABLE II.2 LONG DISTANCE INTERSTATE ROAD FREIGHT TRANSPORT (ASIC CLASS 5111) BY FLEET SIZE, 1983–84

(million dollars)

Fleet size	*Wages & salaries*	*Turnover*	*Total purchases, transfers in & selected expenses*	*Value added*	*Fixed capital expenses less disposals*
0–1 truck	5.6	200.6	129.3	71.2	13.0
2–5 trucks	21.2	151.8	100.0	52.0	11.5
6–9 trucks	18.8	94.5	57.0	37.4	3.3
10–19 trucks	31.2	146.1	85.7	60.7	7.6
20–49 trucks	19.6	92.4	58.3	34.2	7.4
50–99 trucks	38.2	122.6	45.1	77.4	2.7
100 or more trucks	15.1	34.2	14.5	19.8	1.7
Total	149.9	842.2	489.9	352.7	47.3

Source ABS (1986b).

TABLE II.3 LONG DISTANCE INTERSTATE ROAD FREIGHT (ASIC CLASS 5111), BY FLEET SIZE, 1983–84

	Per establishment			*Per person employed*			
Fleet size	*Average employment*	*Average price–cost margin (dollars)*	*Turnover (dollars)*	*Value added (dollars)*	*Average price–cost margin (per cent)*	*Value added to turnover (per cent)*	*Price–cost margin to turnover (per cent)*
0–1 truck	1.8	28 584	49 372.3	17 523.9	16 146	35.5	32.7
2–5 trucks	3.8	46 880	61 209.6	20 967.7	12 419	34.3	20.3
6–9 trucks	10.1	152 459	76 518.2	30 283.4	15 061	39.6	19.7
10–19 trucks	21.8	388 158	88 224.6	36 654.5	17 814	41.5	20.2
20–49 trucks	39.6	540 741	86 435.9	31 992.5	13 658	37.0	15.8
50–99 trucks	184.8	3 920 000	66 341.9	41 883.1	21 212	63.1	32.0
100 or more trucks	218.3	1 566 667	55 213.7	30 229.0	7 175	57.9	13.7
Total	4.07	63 594	64 759.7	27 120.3	15 594	41.9	24.1

Source Derived from ABS (1986b).

TABLE II.4 LONG DISTANCE INTRASTATE ROAD FREIGHT (ASIC CLASS 5112), BY FLEET SIZE, 1983–84

Fleet size	*Establishments at 30 June 1984*	*Average employment over whole year*
0–1 truck	2 843	5 044
2–5 trucks	1 536	4 937
6–9 trucks	223	1 925
10–19 trucks	94	1 606
20–49 trucks	36	1 728
50–99 trucks	6	1 294
Total	4 739	16 534

Source ABS (1986b).

TABLE II.5 LONG DISTANCE INTRASTATE ROAD FREIGHT (ASIC CLASS 5112), BY FLEET SIZE, 1983–84
(million dollars)

Fleet size	*Wages & salaries*	*Turnover*	*Total purchases, transfers in & selected expenses*	*Value added*	*Fixed capital capital expenses less disposals*
0–1 truck	7.7	200.6	117.6	83.4	14.5
2–5 trucks	36.4	249.1	146.9	102.4	20.2
6–9 trucks	28.7	141.8	74.8	67.1	13.3
10–19 trucks	27.7	110.0	58.0	52.1	7.8
20–49 trucks	34.5	132.9	67.8	65.1	7.8
50–99 trucks	25.6	73.7	24.5	49.2	0.5
Total	160.6	908.1	489.6	419.3	64.1

Source ABS (1986b).

TABLE II.6 LONG DISTANCE INTRASTATE ROAD FREIGHT (ASIC CLASS 5112) BY FLEET SIZE, 1983–84

	Per establishment			*Per person employed*			
Fleet size	*Average employment*	*Average price–cost margin (dollars)*	*Turnover (dollars)*	*Value added (dollars)*	*Average price–cost margin (per cent)*	*Value added to turnover (per cent)*	*Price–cost margin to turnover (per cent)*
0–1 truck	1.8	26 627	39 770.0	16 534.4	15 008	41.6	37.7
2–5 trucks	3.2	42 969	50 455.7	20 741.3	13 368	41.1	26.5
6–9 trucks	8.6	172 197	73 662.3	34 857.1	19 948	47.3	27.1
10–19 trucks	17.1	259 574	68 493.1	32 440.8	15 193	47.4	22.2
20–49 trucks	48.0	850 000	76 909.7	37 673.6	17 708	49.0	23.0
50–99 trucks	215.7	3 933 333	56 955.1	38 021.6	18 238	66.8	32.0
Total	3.5	54 589	54 923.1	25 359.8	15 646	46.2	28.5

Source Derived from ABS (1986b).

TABLE II.7 SHORT DISTANCE ROAD FREIGHT TRANSPORT (ASIC CLASS 5113) BY FLEET SIZE, 1983–84

Fleet size	*Establishments at 30 June 1984*	*Average employment over whole year*
0–1 truck	20 548	34 290
2–5 trucks	3 386	9 980
6–9 trucks	263	2 300
10–19 trucks	148	2 573
20–49 trucks	59	2 500
50–99 trucks	26	3 050
100 or more trucks	9	2 837
Total	24 440	57 530

Source ABS (1986b).

TABLE II.8 SHORT DISTANCE ROAD FREIGHT TRANSPORT (ASIC CLASS 5113) BY FLEET SIZE, 1983–84

(million dollars)

Fleet size	*Wages & salaries*	*Turnover*	*Total purchases transfers in & selected expenses*	*Value added*	*Fixed capital expenses less disposals*
0–1 truck	53.3	816.2	362.8	454.3	46.7
2–5 trucks	68.5	365.9	188.6	177.7	30.4
6–9 trucks	32.8	110.8	50.6	60.1	5.8
10–19 trucks	43.8	153.2	72.1	81.4	9.9
20–49 trucks	48.8	147.2	70.4	77.0	3.2
50–99 trucks	70.1	193.2	82.9	110.4	16.4
100 or more trucks	61.8	146.5	53.1	93.4	6.6
Total	379.1	1 933.0	880.5	1 054.3	119.0

Source ABS (1986b).

TABLE II.9 SHORT DISTANCE ROAD FREIGHT TRANSPORT (ASIC CLASS 5113) BY FLEET SIZE, 1983–84

	Per establishment		*Per person employed*				
Fleet size	*Average employment*	*Average price–cost margin (dollars)*	*Turnover (dollars)*	*Value added (dollars)*	*Average price–cost margin (per cent)*	*Value added to turnover (per cent)*	*Price–cost margin to turnover (per cent)*
0–1 truck	1.7	19 515	23 802.8	13 248.7	11 694	55.7	49.1
2–5 trucks	2.9	32 250	36 663.3	17 805.6	10 942	48.6	29.8
6–9 trucks	8.7	103 802	48 173.9	26 130.4	11 869	54.2	24.6
10–19 trucks	17.4	254 054	59 541.3	31 636.2	14 613	53.1	24.5
20–49 trucks	42.4	477 966	58 880.0	30 800.0	11 280	52.3	19.2
50–99 trucks	117.3	1 550 000	63 344.2	36 196.7	13 213	57.1	20.9
100 or more trucks	315.2	3 511 111	51 639.0	32 922.1	11 138	63.7	21.6
Total	2.3	27 627	3 359.9	18 326.0	11 736	54.5	34.9

Source Derived from ABS (1986b).

TABLE II.10 ROAD FREIGHT FORWARDING (ASIC CLASS 5114) BY FLEET SIZE, 1983–84

Fleet size	Establishments at 30 June 1984	Over whole year
0–1 truck	273	5 194
2–5 trucks	192	1 338
6–9 trucks	48	539
10–19 trucks	28	937
20–49 trucks	25	2 011
50–99 trucks	10	1 760
Total	575	11 779

Source ABS (1986b).

TABLE II.11 ROAD FREIGHT FORWARDING (ASIC CLASS 5114) BY FLEET SIZE, 1983–84

(million dollars)

Fleet size	Wages & salaries	Turnover	Total purchases, transfers in & selected expenses	Value added	Fixed capital expenses less disposals
0–1 truck	85.9	655.8	464.2	191.9	3.5
2–5 trucks	15.1	140.7	107.4	33.2	3.5
6–9 trucks	8.4	82.1	63.6	18.3	1.6
10–19 trucks	17.2	126.7	95.5	31.3	3.7
20–49 trucks	37.9	229.2	157.7	71.5	7.5
50–99 trucks	37.8	170.9	112.3	58.8	5.1
Total	202.3	1 405.4	1 000.7	405.0	24.9

Source ABS (1986b).

TABLE II.12 ROAD FREIGHT FORWARDING (ASIC CLASS 5114) BY FLEET SIZE, 1983–84

	Per establishment		*Per person employed*				
Fleet size	*Average employment*	*Average price–cost margin (dollars)*	*Turnover (dollars)*	*Value added (dollars)*	*Average price–cost margin (dollars)*	*Value added to turnover (per cent)*	*Price–cost margin to turnover (per cent)*
0–1 truck	19.0	388 278	126 261.0	36 946.4	20 408	29.3	16.2
2–5 trucks	7.0	94 271	105 156.9	24 813.1	13 528	23.6	12.9
6–9 trucks	11.3	206 250	152 319.1	33 951.7	18 367	22.3	12.1
10–19 trucks	33.5	503 571	135 218.7	33 404.4	15 048	24.7	11.1
20–49 trucks	80.4	1 344 000	113 973.1	35 554.4	16 708	31.2	14.7
50–99 trucks	176.0	2 100 000	97 102.2	33 409.0	11 932	34.4	12.3
Total	20.5	352 522	11 931.4	343 832.0	17 208	28.8	14.4

Source Derived from ABS (1986b).

REFERENCES

ABBREVIATIONS

ABS	Australian Bureau of Statistics
BTE	Bureau of Transport Economics
BTCE	Bureau of Transport and Communications Economics
DTC	Department of Transport and Communications
ISC	Inter-State Commission
NFRII	National Road Freight Industry Inquiry
NRTC	National Road Transport Commission

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ABBREVIATIONS

ABS	Australian Bureau of Statistics
ADP	Automatic data processing
ARTAC	Australian Road Transport Advisory Committee
ASIC	Australian Standard Industrial Classification
billion	Thousand million
BTCE	Bureau of Transport and Communications Economics
BTE	Bureau of Transport Economics
btkm	Billion tonne-kilometres
FIRS	Federal Interstate Registration Scheme
FORS	Federal Office of Road Safety
GDP	Gross domestic product
GVM	Gross vehicle mass
ISC	Inter-State Commission
km	Kilometre
Mt	Million tonnes
NFRII	National Road Freight Industry Inquiry
NRTC	National Road Transport Commission
TIS	Transport Industry Survey
tkm	Tonne-kilometre