BTE Publication Summary

The Transport Sector in the Australian Economy

Information Paper

This Paper presents information about the transport sector in Australia. Included are details of the relative importance of the transport sector in the Australian economy, transport costs in the production and distribution of commodities, the contribution that transport makes to Australia's Balance of Payments and some international comparisons.







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The Transport Sector in the Australian Economy

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FOREWORD

This Paper provides an overview of the transport sector in the Australian economy. Some comparisons with the transport industries of other countries are also included.

The study draws on a range of Australian and international data sources. Extensive use is made of information collected by the Australian Bureau of Statistics for the National Accounts and Balance of Payments.

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Bureau of Transport Economics Canberra July 1987

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SUMMARY

This Paper presents information about the transport sector in Australia. Included are details of the relative importance of the transport sector in the Australian economy, transport costs in the production and distribution of commodities, the contribution that transport makes to Australia's Balance of Payments and some international comparisons.

The supply of transport services in the economy involves the transport operations industries (road, rail, sea and air) and various other transport-related industries concerned with the manufacture and repair of vehicles, the refining of fuel, the wholesaling and retailing of transport equipment, and the construction of roads and terminals.

The value added generated in the broadly-defined transport sector in 1978-79, which was the latest year for which input-output tables were available at the time of the study, accounted for 9.4 per cent of Australia's Gross Domestic Product compared with 4.7 per cent for transport operations industries. Some other measures of the relative size of the broadly-defined transport sector based on the 1978-79 input-output tables are:

- . Total supply of transport was 7.9 per cent of total supply of all Australian industries.
- . Australian resources used in transport were 6.6 per cent of Australian resources used in the production of all commodities.
- . Imports in 1978-79 accounted for almost 16 per cent of all transport services.

This input-output information also shows that transport costs incurred in production and distribution constitute a significant proportion of the value of major minerals and mineral products (23 per cent). For major agricultural commodities this proportion was only 10 per cent.

Transportation credits in the Balance of Payments Accounts include freight revenue in export trades by Australian resident companies,

revenue from the transport of foreign passengers by Australian international airlines and expenditure in Australia by non-resident (foreign) transport operators. Transportation debits include freight revenue from Australian import trades earned by foreign operators, revenue from the transport of Australians by foreign international airlines, and expenditure overseas by Australian transport operators. The overall balance on transportation is normally negative, and in 1985-86 was -\$2182 million. To put the transportation items in perspective, transport credits were equivalent to about 9 per cent of merchandise exports, and transportation debits about 14 per cent of merchandise imports. An examination of the trends in the components reveals a strong increase in the credit from the transport of visitors by Australian international airlines.

Freight revenues make a much bigger contribution to the deficit than passenger revenues. The Current Account debit due to freight earnings by foreign operators exceeds that of passenger earnings (by an average of \$1258 million per year over the three years to 1985-86). For resident operators, the credit from freight earnings (\$381 million average per year for 1983-84 to 1985-86) falls short of the credit from passenger earnings (\$652 million average per year over the same period).

The operations of resident ship and airline operators have both direct and indirect impacts on the Current Account component of the Balance of Payments.

The direct contribution is through actual overseas revenues and expenditures of resident ship and airline operators, while the indirect impacts result from their transport of Australian imports and passengers which without their presence would be tasks performed by foreign operators and the earnings recorded as a debit in the Current Account.

The direct contribution of resident airlines to the transportation component of the Balance of Payments was a credit balance of \$A125 million in 1984-85, while the total impact including the indirect effect was estimated to be a credit balance of \$A674 million. In the case of resident ship operators, the direct contribution was estimated to be only \$A13 million, and the total impact \$A126 million. These figures need to be adjusted further to take into account the debit incurred in the merchandise component of the Balance of Payments when resident companies purchase aircraft, ships and related equipment from overseas sources. With these adjustments, the net impacts on the Balance of Payments of resident airline and shipping companies in

Summary

1984-85 were calculated to be \$606 million and \$103 million respectively.

Passenger travel in cars and station wagons has grown at an average rate of about 3.7 per cent per annum over the past 15 years. Government bus and train travel have declined slightly over this period, while domestic air travel has grown at 4.7 per cent and international air travel at 10.0 per cent per annum.

Turning to freight, the road task has grown at the surprisingly high average rate of 7.5 per cent per annum over the past 15 years, while rail, air, and sea have grown at average rates of 4.6, 3.8 and 1.1 per cent per annum respectively.

The share of household consumption expenditure accounted for by the purchase and operation of private motor vehicles has declined slightly from 11.4 per cent in 1970 to 10.6 per cent in 1985. Car travel over this period had a higher annual rate of growth than total real household consumption (3.7 per cent versus 3.4 per cent). One implication of these trends is that household resources required to provide a given quantity of private transport have declined in relation to the resources required to provide other goods and services (as a whole).

In Australia, the United Kingdom and the United States, about 13 to 15 per cent of household expenditure is directed towards public and private transport. The purchase and operation of motor vehicles dominate household expenditure on transport in each country.

Comparisons of domestic passenger travel among various countries reveal that the average annual levels of private car travel per capita in Australia (about 6800 vehicle-kilometres) is significantly less than in the United States (about 8400 vehicle-kilometres) but much greater than in the major European countries (about 4600 vehiclekilometres). A similar pattern applies to air travel, with average annual domestic passenger-kilometres per capita of about 1500 in the United States, 620 in Australia, 210 in France and 50 in the United Kingdom. Rail and bus travel is, however, more extensive in Europe than in Australia or the United States.

CHAPTER 1 INTRODUCTION

Transport industries perform a vital service function for other sectors of the economy. Freight transport and business passenger travel are essential inputs to the production process and their costs are embodied in the total costs of commodities. The role of transport as a production input is particularly important for Australia's export commodities. Expenditure on passenger transport for non-business purposes is part of the discretionary consumption of households, and is an identifiable component of final expenditure in the National Accounts. The transport industry services international tourism with a consequent impact on Australia's Balance of Payments and the economy as a whole.

The principal purpose of this Paper is to examine these broad aspects of the transport sector, and provide estimates of the impact of transport-related industries on the domestic and external sectors of the Australian economy. Trends in the transport industry over the past 15 years or so were investigated, and comparisons made between Australian transport and transport in other developed economies.

The supply of transport services involves a number of industries in addition to those traditionally included in the Australian Bureau of Statistics' (ABS) classification 'transport and storage'. The latter focuses on the transport operations industries (road, rail, sea and air), but manufacture and repair of vehicles, refining of fuel, parts of the wholesale and retail trade, and construction of roads and terminals all play an essential role in the provision of transport services. For the purposes of this Paper the terms 'transport operations industry' and 'broadly-defined transport sector' will be used to refer to the two concepts of the transport industry.

Transport activity can be measured in monetary terms or in terms of physical units such as passenger numbers or tonnes of freight. The former measures are appropriate for analyses of the share of economic resources absorbed by transport, or of the interaction between transport industries and other sectors of the economy. The physical

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measures, which are more accessible and up-to-date, are useful for observing trends and drawing comparisons with other countries.

The Paper is organised as follows. Chapter 2 classifies the range of activities that contribute to the supply of transport and describes the main sources of data for the measurement of transport.

Chapter 3 draws on the ABS input-output tables to derive estimates of the aggregate supply of transport services and its relationship to Gross Domestic Product (GDP). Chapter 3 also contains a discussion of the interactions between the transport operations industries and other sectors of the economy.

Chapter 4 examines the transportation and travel components of the Balance of Payments and generates estimates which throw some light on the size of the contributions of Australian international shipping and airline operators to the Current Account component of the Balance of Payments.

Chapter 5 presents some trends in household travel expenditure, traffic levels and transport prices for the transport modes, and draws some comparisons between trends in the efficiency of the transport sector and the economy as a whole. Chapter 6 contains international comparisons of expenditure patterns, traffic levels and growth, employment and infrastructure. Where appropriate, these comparisons are made in relation to the population or GDP of the various countries.

CHAPTER 2 OVERVIEW OF TRANSPORT STATISTICS

Sources of data which are useful in examining the role of transport in the economy are presented in this chapter. Emphasis is on regular rather than more specialised collections.

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The units for statistical collections used by the ABS and the Australian Standard Industrial Classification (ASIC) of economic activities are described and the range of transport related activities in the economy identified. Individual data sources are discussed, commencing with measures of expenditure on transport (in a National Accounting context), and followed by measures of transport activity (freight and passenger movements), transport prices, employment, infrastructure and vehicle stock. Reference is made to the recent ABS Transport Industry Survey (TIS) and Business Vehicles Survey (BVS), both of which are expected to be repeated periodically and to provide more complete and accurate information on the operations of the transport modes than that previously available.

ABS DEFINITIONS AND THE ASIC SYSTEM

In order to collect and interpret statistics about economic activities, it is first necessary to define the units from which the statistics can be collected and to which they refer. It is then possible to aggregate the statistics by allocating the units to various industries, including those engaged in transport activities.

The units for statistical collections used by the ABS are the enterprise, the establishment and the ancillary unit.

Enterprises and establishments

An enterprise is defined as a unit covering all the operations in Australia of a single operating legal entity. Examples would be Western Mining Corporation or Ansett Transport Industries.

An establishment is defined in one of three ways depending on the characteristics of the particular industry under consideration. A single location (SL) establishment is a unit covering all the

operations of an enterprise conducted at or from a single physical location. Examples would be a single Coles supermarket or a factory or mine. Establishments are defined in this way unless special considerations apply in a particular industry, and most ABS statistics are collected on an SL establishment basis.

An Enterprise/State/Industry (ESI) establishment is a unit covering all the operations of an enterprise in activities primary to a given industry, conducted at or from all of its locations in a State or Territory. An Enterprise/Industry (EI) establishment is a unit covering all the operations of an enterprise in activities primary to a given industry, conducted at or from all of its locations in Australia.

Establishments in the road freight transport sector are classified on an EI basis, as are most of the establishments of transport enterprises. A significant proportion of total economic activity involves the movement of goods between production locations, warehousing and retailing locations. Consider, for example, the service provided by the transport company in taking a container from a factory to a warehouse in a different city and then delivering it to the final user. In this case the EI classification is adopted because it would be arbitrary to assign the transport service to any one single physical location.

Ancillary unit

An ancillary unit is defined as a unit covering all the operations of an enterprise conducted at or from a single physical location where those operations are mainly the provision of services to other locations of the same enterprise. The output of an ancillary unit is not marketed or sold outside the enterprise, that is, its activities do not form the end product of the enterprise. Enterprises often have ancillary units providing transport services. An example would be a major retailing firm owning a fleet of trucks to supply goods to its If the fleet operated from a single physical location, that stores. location would be designated as an ancillary unit rather than an establishment in its own right, even if the fleet also provided some trucking services on a hire and reward basis for other enterprises. If it provides more than half its services to other locations within its own enterprise it is regarded as an ancillary unit. In most ABS collections the output for an ancillary unit is classified to the ASIC class of the enterprise to which it is attached.

There are special cases within the transport sector where units which

fit the above definition of ancillary units are, in fact, treated as establishments. These special cases are:

- ship repair yards;
- aircraft repair workshops;
- . railway and tramway repair workshops;
- motor vehicle repair workshops if mainly engaged in engine reconditioning;
- railway transport units providing more than 700 million tonnekilometre of freight movement per year; and
- water transport units if using a fleet greater than 50 000 deadweight tonnes.

These units are deemed to be 'captive establishments' and are treated differently from ancillary units because they are liable to have very large outputs.

The Australian Standard Industrial Classification

The ABS devised the ASIC as a means of classifying establishments (or other statistical units) by industry. It is designed as a common classification system for all of the economic censuses and surveys conducted by the ABS. Each establishment is classified to an industry on the basis of its primary activities.

The ASIC is structured into various levels of disaggregation with the most disaggregated level being the four-digit classification followed by the three-digit level of classification. The two-digit classification represents the most aggregated level.

Table 2.1 shows the ASIC Classes which contribute to the provision of transport services. Included are the components of Manufacturing, Construction and Wholesale and Retail Trades. Also shown in Table 2.1 are the establishment definitions (SL, ESI or EI) for the ASIC classes.

The ASIC classes are defined by designating a specified range of activities which are said to be primary to that class. For example, ASIC class 4121 has the activities of road and bridge construction designated to it and thus any establishment which is mainly engaged in the construction of roads and bridges is classified to the ASIC class 4121 even if it also engages in some other activities which are primary to another class. Each activity is designated as primary to only one ASIC class (although there are some exceptions to this rule).

ASIC Class	Title of group or class	Units
2770	Petroleum refining	SL
	Notes ushisles and pasts manufacturing	
2221	Motor vehicles	51
3232	Motor vehicle bodies trailers caravan	s SI
3232	Motor vehicle instruments and electrica	1
0200	equipment nec	SL
3234	Motor vehicle parts nec	SL
0201		
	Other transport equipment manufacturing	
3241	Ships	SL
3242	Boats	SL
3243	Railway rolling stock and locomotives	SL
3244	Aircraft	SL
3245	Transport equipment nec	SL
4121	Road and bridge construction	SL
4732	Motor vehicle parts wholesalers	SL
	Motor vehicle dealers; petrol and tyre	
	retailers	
4861	New motor vehicle dealers	SL
4862	Used motor vehicle dealers	SL
4864	Service stations	SL
4865	Smash repairers	SL
4866	Motor cycle dealers	SL
4867	Boat and caravan dealers	SL
4868	Tyre and battery retailers	SL
	Road freight transport	
5111	Long distance interstate	EI
5112	Long distance intrastate	EI
5113	Short distance (incl. courier services)	EI
5114	Road freight forwarding	EI
	Road passenger transport	
5121	Long distance	EI
5122	Short distance (incl. tramway)	ESI
5123	Taxi and other	SL

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TABLE	2.1	(Cont.)	ASIC	CLASSES	CONTRIBUTING	TO
			TRANS	SPORT OU	ГРИТ	

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ASIC Class	Title of group or class	Units
5200	Rail transport	EI
	Water transport	
5307	International sea transport	EI
5308	Coastal water transport	EI
5309	Inland water transport	ESI
	Air transport	
5405	Scheduled international	EI
5406	Scheduled domestic	EI
5407	Non-Scheduled	EI
5500	Other transport	EI
	Services to road transport	
5711	Motor vehicle hire	EI
5712	Parking services	SL
5713	Services to road transport nec	SL
	Services to water transport	
5721	Stevedoring	SL
5722	Water transport terminals	ESI
5723	Shipping agents	SL
5724	Services to water transport nec	ESI
5730	Services to air transport	EI
	Other services to transport	
5741	Travel agency services	SL
5742	Freight forwarding (except road)	EI
5743	Customs agency services	SL
5744	Other services to transport nec	SL
	Storage	
5801	Grain storage	SL
5802	Cold storage	SL
5803	Storage nec	SL

nec Not elsewhere classified.

Source ABS (1985a).

Normally, when statistics are compiled for a particular industry, only establishments classified to that industry are included in the collection and all of the operations of those establishments are counted as contributing to that industry. For the establishments classified to a particular industry class, the proportion of their output which is primary to that class is called the 'specialisation ratio.' The proportion of the total output of activities primary to a particular class which is produced by establishments classified to that class is called the 'coverage ratio'. The ASIC classes are devised in such a way that the specialisation and coverage ratios are as high as possible.

Where a single establishment engages in substantial activities primary to two or more industries, the establishment may be split into two or more establishments to improve the specialisation and coverage ratios of the ASIC. In the 1978-79 input-output table this only occurred when the establishment's gross receipts from its secondary activities exceeded \$4 million. For example, establishments belonging to Road Freight Transport sector can be split into further classes within this sector if the splitting limit is exceeded. Ancillary units are also affected by splitting rules if they sell more than \$4 million of services outside the enterprise.

The ASIC allocations for ABS data collections can create problems for transport statistics when enterprises have transport operations which are not sold to other enterprises, but rather provide support for the main activity of the enterprise. Take as an example a wholesaling establishment which runs a fleet of trucks for its own operation and also carries some goods on a hire and reward basis. All of the output and value added of the trucking operation is considered to belong to the wholesale trade industry.

The normal application of the rules for classifying establishments to ASIC sectors affects the definition of transport-related industries. Thus where the transport operations of an enterprise provide support for the main activity of the enterprise, these operations would not be allocated to the transport industry. The same applies to ancillary transport units, where all the transport operations of an enterprise are operated from a single location. For example, the ancillary transport operation of a retail enterprise is classified to the retail industry.

However, for some purposes the classification of activities to industries does not adhere strictly to ASIC. In the case of inputoutput tables (to be discussed later), significant secondary or

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subsidiary production of establishments is, where possible, shifted from the industry in which it is produced to the industry where it is primary. This process of 'redefinition' is also applied to ancillary transport activities.

SOURCES OF TRANSPORT STATISTICS

The data sources outlined here are those which are published regularly, on a consistent basis. Transport data collected on an ad hoc basis for specific purposes are excluded.

For many of the variables described below, the BTE's quarterly publication, Transport Indicators, includes indexes which describe the trends and fluctuations observed in recent years. Generally this information is presented in graphical form.

Value added and expenditure

The principal sources of information on the values of aggregate production, expenditure and income in the Australian economy are the Australian National Accounts (ABS 1986a). The National Accounts also provide information on industry groups using ASIC definitions. Values are recorded in current price terms, and in some cases also in constant price terms.

National income and expenditure accounts

The published National Income and Expenditure Accounts provide aggregated information for the transport, storage and communication industry sector (covering ASIC classes 5111-5803). Data may, however, be obtained from the ABS in most cases for the transport and storage sector alone.

On the income side of the Accounts, a measure of the transport and storage component of Gross Domestic Product (GDP) at market prices is available. This is broken down further into wages, salaries and supplements, gross operating surplus and net indirect taxes.

On the expenditure side, measures of private final consumption expenditure on travel (fares, purchase and operation of motor vehicles) and private gross fixed capital expenditure on transport, storage and communication equipment may be obtained directly from published National Accounts. Public final consumption and gross fixed capital expenditure on transport, although not available in published Accounts, can be obtained from the ABS.

Input-output tables More detailed information on the role of transport in the operations

of the Australian economy may be obtained from the input-output tables (ABS 1984a) of the Australian National Accounts. The input-output tables have a far more detailed breakdown of expenditure and income flows by industry than the Income and Expenditure Accounts. Furthermore, they show intermediate transactions between industries as well as final demand expenditure. The latest published tables available at the time this report was prepared are for 1978-79, with tables for 1979-80 and 1980-81 due for release in 1987. Earlier tables were published for 1974-75 and 1977-78. The considerable time lag between the reference period and the publication of input-output tables has reduced their usefulness as a guide to current industrial structure given the structural adjustments currently taking place in the Australian economy.

The key table is the industry by industry flow matrix, for 108 industries.¹ The industry classification is based on the ASIC system, with road transport, railway and other transport, water transport and air transport identified as separate industries.² However, as mentioned previously, the classification of production activities used in the input-output tables does not adhere strictly to ASIC, and the secondary production of some establishments is shifted to industries where it becomes part of the primary production activity. In particular, transport operations carried out by ancillary units or by establishments on own-account are 'redefined' to the transport industry.

The industry by industry flow matrix provides the following information:

- primary inputs (wages, salaries and supplements, gross operating surplus, net indirect taxes);
- . intermediate inputs; and
- the output of each industry purchased as final demand (private and government final consumption expenditure, private and government gross fixed capital expenditure, exports, and increase in stocks).

A number of other tables have been derived from the industry by industry flow matrix:

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There are several versions of this table with the most appropriate to this study being the one in which commodity flows are measured in 'basic values' and imports are 'indirectly allocated'.

Complete definitions of the industries can be obtained by reference to Appendix B of Australian National Accounts, Input-Output Tables 1978-79.

- direct requirements coefficients, in which the inputs used by each industry are expressed as percentages of the output of the industry;
- total requirements coefficients, each of which indicates the output of one industry required directly and indirectly to produce \$100 of output absorbed by final demand (that is, final output) of another industry³; and
- primary input content (wages, salaries and supplements, gross operating surplus, and indirect taxes) required directly and indirectly to produce \$100 of final output of each industry.

Some information from the input-output system is available on a commodity basis rather than an industry basis. About 1500 commodities are identified, and the Australian production, imports and exports are published for each commodity.

A considerable amount of information on the transport of commodities is available on magnetic tape from the so-called 'margin matrices'. Specifically, this information includes the value of freight moved by road, rail, sea and air of 108 commodity groups which are inputs to 28 aggregated industries and 7 components of final demand.

Other sources

Other ABS publications give details of expenditure for individual modes of transport. Rail Transport, Australia (ABS, 1986] and earlier issues) gives annual details of gross earnings and expenses for all government railway systems. The *Year Book Australia* (Australian Bureau of Statistics, 1986o) gives details of gross revenue and working expenses of government and municipal tram and bus services for each State.

Traffic

This section covers data sources for passenger and freight traffic. These measures of physical transport activity contrast with the monetary measures of transport values in the previous section. The basic measures are:

- passenger journeys
- passenger-kilometres performed
- 3. The significance of total input requirements coefficients lies in the fact that an increase in the demand for the output of an industry indirectly generates demands for the outputs of other industries which, in turn, generate further demands for intermediate and primary inputs.

- . freight tonnes carried
- . freight tonne-kilometres performed.

Passenger-kilometres and freight tonne-kilometres performed are measures which include both numbers and distance and each specific measure can be aggregated within and among modes without ambiguity. Aggregation of passenger journeys and aggregation of freight tonnes carried involves treating each unit equally regardless of distance travelled. Furthermore, the definition of a journey may be somewhat arbitrary where stop-overs or transfers are involved.

Although passenger-kilometres is a preferred measure of activity, data for passenger journeys are generally more readily available for most modes. However, the number of passenger journeys in private motor vehicles is not available.

Measures such as train-kilometres, vehicle-kilometres and aircraftkilometres travelled are sometimes used as measures of transport activity. In the case of the public transport modes, these may be more correctly used as indicators of the level of service provided rather than measures of the transport task. In the case of the private car, which is a demand responsive mode, vehicle-kilometres are a good proxy measure of the passenger transport task, although a more precise measure would be occupant-kilometres.

Tables 2.2 and 2.3 summarise data sources which provide information on passenger and freight traffic at the aggregate level for each mode.

There are gaps in the availability of statistics on aggregate traffic in Australia. Road freight statistics are essentially restricted to the triennial ABS Survey of Motor Vehicle Usage. Private motor vehicle passenger statistics are unavailable. There are currently no comprehensive and regular sources of data for:

- private bus passengers
- taxi passengers
- . ferry passengers
- . general aviation passengers and freight.

Prices

Price indexes for components of consumption expenditure on transport are contained in the quarterly ABS publication *Consumer Price Index* (Australian Bureau of Statistics 1986e). The index for transport is a weighted average of indexes for urban transport fares, motor vehicle purchase, automotive fuel, and other motoring costs.

Subject and source	Frequency of publication	Traffic measure
Urban transport <i>Survey of Motor Vehicle Usage</i> (ABS)	Triennial	Vehicle-km (for private motor vehicle travel) Occupant-km
Transport Indicators (BTE)	Quarterly	Rail and bus passengers Tram and ferry passengers for each State ^a (where applicable)
Non-urban transport <i>Survey of Motor Vehicle Usage</i> (ABS)	Triennial	Vehicle-km Occupant-km
Domestic Air Transport (DofA)	Biannual	Passengers Passenger-km
<i>Quarterly Provisional Statistics of Domestic Scheduled Airline Performance</i> (DofA)	Quarterly	Passengers Passenger-km
<i>Commuter Air Transport</i> (DofA)	Biannual	Passengers Passenger-km
<i>Survey of Hours Flown</i> (DofA)	Annua1	Hours flown by general aviation (GA)
<i>Airport Traffic Data</i> (DofA)	Annual	GA movements at major airports
Rail Transport, Australia (ABS)	Annual from 1979-80	Passenger journeys

TABLE 2.2 SOURCES OF AGGREGATE AUSTRALIAN PASSENGER TRAFFIC DATA

DATA DATA			
Subject and source	Frequency of publication	Traffic measure	
Transport Indicators (BTE)	Quarterly	Bus passengers on major routes ^a	
International transport <i>Overseas Arrivals and Departures</i> (ABS)	Annua1	Passengers (sea and air) Passenger-km (air)	
International Air Transport (DofA)	Biannual	Passengers Passenger-km	
Monthly Provisional Statistics of International Scheduled Air Transport (DofA)	Monthly	Passengers	

CONTRACTOR OF ACCRECATE AUCTOAL TAN DACCENCED TRAFFTC

- a. Published in index form. Actual numbers may be available on request.
- Note The BTE has data on the sea passenger traffic between Tasmania and Melbourne. The data are not published but are available on request.

Source Prepared by BTE.

The Shipping Information Digest (Federal Department of Transport 1985c) contains data on freight paid per revenue tonne on exports and imports, and a freight rate index for Australian liner exports.

Specific information on passenger fares and freight rates may be obtained from the published fare and rate schedules of transport operators.

The Prices Surveillance Authority publishes a monthly list of maximum prices for motor vehicle and aviation fuels.

The ABS publication Price Indexes of Articles Produced by Manufacturing Industry (ABS 1986k) contains a price index for transport equipment.

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Subject and source	Frequency of publication	Traffic measure
Urban transport <i>Survey of Motor Vehicle Usage</i> (ABS)	Triennial	Tonne-km Tonnes, for urban plus non-urban
Non-Urban transport <i>Survey of Motor Vehicle Usage</i> (ABS)	Triennial	Tonne-km
<i>Coastal Freight, Australia</i> (DoT)	Annual	Tonnes Tonne-km
Transport Indicators (BTE)	Quarterly	Tonnes loaded for coastal sea freight ^a
<i>Domestic Air Transport</i> (DofA)	Biannual	Tonnes Tonne-km
<i>Quarterly Provisional Statistics of Domestic Scheduled Airline Performance</i> (DofA)	Quarterly	Tonnes
<i>Commuter Air Transport</i> (DofA)	Biannual	Tonnes Tonne-km
Rail, Bus and Air Transport, Australia (ABS)	Annual to 1978-79	Tonnes Tonne-km
Non-Government Railways, Australia (BTE)	Annua!	Tonnes Tonne-km
Interstate Road Freight Movement, Australia (ABS)	Quarterly	Tonnes
International transport Shipping and Air Cargo Commodity Statistics (ABS)	Quarterly	Gross tonnes of inward and outward cargo
<i>Port Authority Cargo Movements</i> (DoT)	Annua]	Tonnes loaded and discharged

TABLE 2.3 SOURCES OF AGGREGATE AUSTRALIAN FREIGHT TRAFFIC DATA

Subject and source	Frequency of publication	Traffic measure
Transport Indicators (BTE)	Quarterly	Tonnes loaded and discharged for international sea freight ^a
<i>International Air Transport</i> (DofA)	Biannual	Tonnes Tonne-km
Monthly Provisional Statistics of International Scheduled Air Transport (DofA)	Monthly	Tonnes

TABLE 2.3 (Cont.) SOURCES OF AGGREGATE AUSTRALIAN FREIGHT TRAFFIC DATA

a. Published in index form. Actual numbers may be available on request.

Source Prepared by BTE.

Employment

Statistics on employment in the Transport and Storage industry are published in *Employed Wage and Salary Earners, Australia* (ABS 1987b) and *Civilian Employees, Australia; June 1966 to June 1979* (ABS 1980). Additional Statistics are also published in *The Labour Force, Australia* (ABS 1985d). As well as total employment there are data on numbers of full-time and part-time workers, and employment by status (employers, self-employed, and wage and salary earners). This publication also provides data on average weekly hours worked.

Data on wage and salary rates and earnings in the Transport and Storage sector are contained in a number of sources. Index numbers of weighted average minimum award rates of pay are presented in Award Rates of Pay Indexes, Australia (ABS 1986b). Weekly Earnings of Employees (Distribution), Australia (ABS 1985f) examines the distribution of weekly earnings in the industry. Earnings and Hours of Employees, Australia (ABS 1985b) presents estimates of average weekly earnings and hours for various categories of employees, and is compiled from a survey in November of each year. Some estimates of average weekly ordinary time and overtime earnings and hours are also presented. Earnings and Hours of Employees, Distribution and Composition, Australia (ABS 1986f) presents similar data resulting from a survey in May of each year.

Industrial Disputes, Australia (ABS 1986g) contains data on working days lost and workers involved in disputes in the Transport and Storage sector.

Vehicle stock and infrastructure

Annual data on new motor vehicle registrations and number of vehicles on register by type of vehicle are published in *Motor Vehicle Registrations*. *Australia* (ABS 1986i).

The Year Book Australia gives numbers of buses and rail rolling stock operated by government and municipal authorities. Airline Aircraft Utilization (Department of Aviation 1985) contains data on numbers and type of aircraft operated by regular public transport operators in Australia. Details of aircraft operated by Qantas internationally may be obtained from its annual reports.

Numbers and tonnages of Australian trading vessels and passenger ferries of 150 gross tonnes or more are contained in *Australian Shipping* (Federal Department of Transport 1985a).

The Year Book Australia provides details of road lengths by class of road and type of surface.

Rail Transport, Australia (ABS 19861) contains data on trackkilometres and route-kilometres of railway line and numbers of rolling stock.

The Transport Industry Survey and the Business Vehicle Survey

The ABS conducts a program of regular economic censuses and surveys designed to elicit economic information on a systematic basis. The collections are based around the ASIC classifications with uniform statistical concepts and data items to permit inter-industry comparisons and to obtain information for the National Accounts. Censuses of the manufacturing and mining industries have been conducted annually since 1968-69. Other industries are included every five years on a rotational basis. The transport industry was included for the first time for the year 1983-84 and preliminary results were released in late 1985. Two surveys were conducted simultaneously:

. the Transport Industry Survey (TIS) collected information from establishments classified to the transport industry by ASIC; and

the Business Vehicle Survey (BVS) collected road freight transport information from establishments classified to other industries. Together these surveys will expand the range of information on transport in the economy and enable more accurate measurement of the ancillary transport sector.

The TIS has been limited to a subset of the industry groups contained in the Transport and Storage sector. These industry groups are listed in Table 2.4. As mentioned earlier, ancillary units engaged in major transport operations, such as the railway operations of mining companies or tanker shipping operation of oil companies, are treated as transport establishments in ASIC and included in the TIS. However, this treatment does not apply to extensive ancillary road freight activities, and the BVS was designed to cover the road freight activity of enterprises whose main activity was not road freight.

Information on road freight operations classified by industry group (including the transport industry as defined above) is derived by combining the results of the BVS and the road freight component of the TIS. However the coverage of road freight operations was not complete. In order to investigate this matter, it is necessary to consider the sampling procedures employed in both surveys.

All large road freight transport establishments were included in the TIS, but all other TIS and all BVS respondents were selected from a list of registered rigid and articulated trucks with a gross vehicle mass of 2.7 tonnes or more. Therefore, enterprises engaged in road freight activities which use small trucks, panel vans and utilities have been excluded. From the 1982 Survey of Motor Vehicle Usage, it

Description	ASIC classes
Road freight transport	5 111-5 114
Road passenger transport	5 121-5 123
Rail transport	5 200
Water transport	5 307-5 309
Air transport	5 405-5 407
Freight forwarding	5 742

TABLE 2.4 ASIC CLASSES INCLUDED IN THE TRANSPORT INDUSTRY SURVEY

Source ABS (1985a).

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is estimated that the excluded vehicles accounted for about 5 per cent of the total annual road freight tonne-kilometres. However, this underestimates the relative importance of the omitted task in cost or value added terms because of the high costs per tonne-kilometre for small vehicles.

For establishments included in the TIS, the full range of items normally collected in the ABS economic censuses and surveys was obtained. These include employment, wages and salaries, turnover, stocks, value added and capital expenditure. Data on fleet details, and tonnes and passengers carried were also collected. Establishments in the BVS provided a subset of this information. Items collected included size, truck numbers, truck running expenses, wages and salaries of truck drivers, capital expenditure and disposals of trucks, employment of truck drivers and tonnes carried.

CHAPTER 3 THE SIZE OF THE TRANSPORT SECTOR

The magnitude of the transport sector and its importance to key industries in the economy can be estimated in a variety of ways. The approach used in this chapter involves examining the direct contribution of transport-related activities to gross domestic product (GDP), to other measures of economic activity or to key industries, in terms of expenditure flows using the input-output framework. The chapter examines the direct interactions between the transport sector and other industries by presenting information on the components of demand for transport services and the supply of inputs to the transport sector. Measures of the aggregate Australian production and supply (including imports) of all transport services are established.

The transport operations industries obviously have a central role in the supply of transport services, and hence the input structure and demand pattern for each of the modes is examined. This analysis is carried further by presenting information on the relationship of transport costs to the value of output for commodity groups in the agricultural and mining sectors, two of the most important sectors of the Australian economy.

THE INPUT-OUTPUT FRAMEWORK

In simplified terms, input-output tables provide information on the transactions between economic sectors which underly the National Income and Expenditure Accounts. The output (sales) of each industry or sector is disaggregated into sales to other industries and final demand, and the industry's expenditure is disaggregated into expenditure on primary inputs (labour and gross operating surplus), net commodity and indirect taxes and intermediate inputs purchased from other industries.

These transactions are represented in the four quadrants of the inputoutput table. These four quadrants, illustrated in Figure 3.1, denote respectively:

. intermediate production and demand (quadrant 1)

Disposition of Final Demand Intermediate Demand Consumption GFCE Industry Change Net Total output Total Total Origin in supply exports stocks of inputs 1 2 3.....Total Pte Govt Pte Govt Industry 1 2 Quadrant 1 Quadrant 2 Total transport transport_ Total **Ouadrant** 4 Primary inputs Quadrant Wages Gross Operating Surplus Net taxes Total Total inputs

Figure 3.1 Structure of a typical input-output table

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- production going to final demand sector. (quadrant 2)
- . primary inputs to production (quadrant 3)
- . primary inputs to final demand (quadrant 4).

Total supply of any industry equals the sum of its sales to all industries (including itself) and to final demand (sales to export, government and private consumption and gross fixed capital expenditure). These sales are recorded in the row corresponding to the particular industry. Total expenditure of an industry equals the sum of its expenditure on intermediate and primary inputs and net commodity and indirect taxes, and is also made equal to the total supply of this industry.

There are several different ways of valuing transactions in the inputoutput framework. Commodity flows are normally measured in 'basic values'. That is, they are valued at the prices received by producers net of commodity taxes. The margins supplied by wholesalers, retailers and transport operators are included with the wholesale, retail and transport industries respectively.

There are also alternative ways of treating imports. 'Direct allocation of imports' involves allocating imports directly to the sectors which use them. 'Indirect allocation of imports' involves first recording all imports as adding to the supply of the sector and, secondly, allocating this supply along the corresponding row to using sectors (ABS 1984a).

The primary input and final demand estimates in the input-output tables and the income and expenditure accounts are capable of broad reconciliation because input-output tables are part of the national accounting system. For instance, GDP, which in the national income account equals the sum of factor incomes generated in the economy in any particular year, has its counterpart in the input-output table in the sum of value added across all sectors plus import tariffs. The addition of import tariffs is necessary for compatibility since GDP, in the national income and expenditure accounts, is defined net of imports measured on a cost, insurance and freight (cif) basis and not in domestic prices. Measures of GDP are also derived from an expenditure perspective in both the national income and expenditure account and the input-output tables. Expenditure on GDP is given by the sum of final consumption, investment, government and export expenditures, plus the increase in stocks, less imports. That is, the sum of final demand in the input-output framework.

The statistics presented in this chapter are based on the 1978-79 Australian input-output table comprising 108 industry sectors and
seven final demand categories. This table was the latest available at the time of this study. The 108 industry sectors were consolidated into a twelve-industry version presented in Table I.1. In all tables the commodity flows were valued at basic values with the transport margins included in the transport industry.

To the extent that the economy has undergone some structural changes since 1978-79, some of the relationships presented in this chapter may have changed. However, structural changes usually occur only gradually so that the relationships can be regarded as indicative of the present situation.

INTER-SECTORAL FLOWS AND THE SUPPLY OF TRANSPORT

Economic sectors contributing directly to the supply of transport

The list of all industries classified as belonging to the transport sector is provided in Table 2.1. For the purpose of this chapter however, the transport sector is divided into two broad groups (taken together these two groups are referred to as the 'broadly-defined transport sector'). These are:

- Transport operations industries: these consist of industries offically identified in the ABS input-output tables as constituting the transport sector. This sector includes the following industry groups:
 - road transport
 - rail and other transport
 - water transport
 - air transport.
- Transport-related industries: these are industry groups which are not classified in the input-output tables as belonging to the transport sector, but whose sole or main purpose is to provide inputs to transport activities. The activities of these industries are therefore greatly affected by activities in the transport operations sector. These industry groups include:
 - transport petroleum
 - motor vehicle and parts manufacture
 - other transport equipment manufacture
 - road and bridge construction
 - vehicle parts wholesalers
 - motor vehicle dealers, petrol retailers.

Total sales of this broadly-defined transport sector amounted to approximately \$25 700 million in 1978-79. Of this, \$11 000 million (42 per cent) represents sales of the transport operations sector. Table 3.1 has a breakdown of supplies from the four modes of the transport operations sector and a similar breakdown of the components of the transport-related industries sector. The statistics reported in Table 3.1 indicate that on average a higher proportion of services from the transport-related sector (60 per cent) was consumed by final demand units than services from the transport operations sector (55 per cent).

The data also indicate differences in the distribution of the services of the four transport modes between intermediate and final demand uses. More than half of the total supply of the road and rail transport industries, 56 per cent and 54 per cent respectively, were used as intermediate inputs by industries. In contrast only a third of sales from air and water transport industries constituted intermediate use.

Sectoral flows between transport and selected sectors of the economy

One important application of the input-output table is in its use in analysing the direct interactions between the sectors of the economy. This can be done in terms of an industry's demand for primary inputs and intermediate inputs from other industries, or its supply to other industries and final demand. For example, Table 3.2, which is a fivesector version of the input-output table for the Australian economy in 1978-79, shows that output from the transport operations sector was disposed of by selling \$197 million as intermediate inputs to the agricultural sector, \$222 million to the mining sector, \$236 million to transport-related industries, \$3678 million to 'other' industries and \$6023 million to final demand users. The transport operations sector consumed \$689 million of its own output in the course of its production. Similar interpretations apply to other industry groups identified in the table.

The input structure of an industry is conveniently analysed in terms of direct requirements coefficients which show the value of output from any sector needed to produce one dollar's worth of supplies from any other sector. These coefficients are useful in providing answers to questions of the type: what is the wage content of one unit of output of the transport sector, or the transport cost per unit of supply of any sector?

The input structures of the transport industries and other selected industries are presented in Table 3.3. The coefficients are based on

		Intermediate sales		Sales to final demand		Total sales (supply)	
Code	Industry	\$ million	per cent	\$ million	per cent	\$ million	per cent
- <u></u>	Transport operations industries						
51.01	Road transport	2 488	56	1 932	44	4 421	100
52.01	Rail and other transport	961	54	826	46	1 787	. 100
53.01	Water transport	735	33	1 498	67	2 234	100
54.01	Air transport	838	32	1 765	68	2 604	100
	Total	5 022	45	6 021	55	11 046	100
	Transport-related industries						
27.08	Transport petroleum	1 710	67	841	33	2 551	100
32.01	Motor vehicles and parts manufacture	2 469	40	3 704	60	6 173	100
32.02	Ships and boats manufacture	201	49	213	51	414	100
32.03	Other transport equipment manufacture	260	62	158	38	418	100
32.04	Aircraft manufacturing	491	60	329	40	820	100
41.21	Road and bridge construction	-	-	2 433	100	2 433	100
49.01	Motor vehicle dealers, repairers	667	36	1 192	64	1 859	100
	Total	5 798	40	8 870	60	14 668	100
Total	for broadly-defined transport sector	10 820	42	14 891	58	25 714	100

TABLE 3.1 OUTPUT OF BROADLY-DEFINED TRANSPORT SECTOR, 1978-79

- Rounded to zero.

Source Appendix I.

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Industry	Transport operations (1)	Transport- related industries (2)	Agricultur e (3)	Mining (4)	Other industries (5)	Total intermediate usage (1)+(2)+(3) +(4)+(5) (6)	Final demand (7)	Tota1 supplies (6)+(7) (8)
Transport								
operations	689.2	236.4	196.9	222.1	3 678.4	5 023.0	6 022.6	11 045.6
Transport-related								
industries	1 832.3	2 336.2	284.9	127.8	1 216.9	5 798.1	8 870.1	14 668.2
Agriculture	1.8	0.3	689.5	0.2	4 994.5	5 686.3	3 856.4	9 542.7
Mining	43.7	1 484.6	4.4	641.3	2 433.7	4 607.7	2 691.9	7 299.6
Other industries	2 436.7	2 696.1	1 832.6	1 425.7	52 130.5	60 521.6	96 549.9	157 071.5
Total intermediate	9							
inputs	5 003.7	6 753.6	3 008.3	2 417.1	64 454.0	81 636.7	117 990.9	199 627.6

TABLE 3.2 A CONSOLIDATED FIVE-SECTOR INDUSTRY BY INDUSTRY INPUT-OUTPUT TABLE (BASIC VALUES, INDIRECT ALLOCATION OF IMPORTS), 1978-79.

(\$ million)

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TABLE 3.2 (Cont.) A CONSOLIDATED FIVE-SECTOR INDUSTRY BY INDUSTRY INPUT-OUTPUT TABLE (BASIC VALUES, INDIRECT ALLOCATION OF IMPORTS), 1978-79.

Industry	Transport operations (1)	Transport- related industries (2)	Agriculture (3)	Mining (4)	Other industries (5)	Total intermediate usage (1)+(2)+(3) +(4)+(5) (6)	Final demand (7)	Total supplies (6)+(7) (8)
Wages,								· · · ·
salaries etc Gross operating	3 521.8	3 015.3	855.8	1 332.7	46 686.1	55 411.7	-	55 411.7
surplus Net commodity	842.6	971.9	5 357.8	2 495.9	28 960.0	38 628.2	· _	38 628.2
taxes ^a	600.4	1 043.1	179.3	126.9	5 002.8	6 952.5	5 179.2	12 131.7
Imports	1 077.0	2 884.3	141.3	926.9	11 969.6	16 999.1	815.9	17 815.0
Total usage	11 045.5	14 668.2	9 542.5	7 299.5	157 072.5	199 628.2	123 986.0	323 614.2

(\$ million)

a. Includes indirect taxes.

- Rounded to zero.

Source ABS (1984a).

Industry	Transport operations	Transport- related industries	Agriculture	Mining	Other industries	Final demand
Transport operations	0.06	0.02	0.02	0.03	0.02	0.05
Transport-related industries	0.17	0.16	0.03	0.02	0.01	0.07
Agriculture	-	· _	0.07	-	0.03	0.03
Mining	-	0.10	-	0.09	0.02	0.02
Other industries	0.22	0.17	0.19	0.20	0.33	0.78
Wages, salaries etc	0.32	0.21	0.09	0.18	0.30	-
Gross operating surplus	0.08	0.07	0.57	0.34	0.18	-
Net commodity taxes ^a	0.05	0.07	0.02	0.02	0.03	0.04
Imports	0.10	0.20	0.01	0.13	0.08	0.01
Total usage	1.0	1.0	1.0	1.0	1.0	1.0

TABLE 3.3 DIRECT REQUIREMENTS COEFFICIENTS, 1978-79

a. Includes indirect taxes.

- Rounded to zero.

Source Based on Table 3.2.

the commodity flows contained in Table 3.2. The interpretation of Table 3.3, using the transport operations sector as an example is as follows. For each dollar of output supplied by this sector, 10 cents represent imports, another 32 cents go into paying wages and salaries, 8 cents constitute gross operating surplus and 5 cents represent expenditure on commodity taxes net of subsidies. Adding (down the column) the direct requirements coefficients indicate that total intermediate inputs constituted about 45 cents of every dollar of output supplied by the transport operations industries.

Measures of transport supply

In order to focus on the direct contribution to the economy of transport operations and transport-related industries, a further consolidation of the input-output flows is presented in Table 3.4. In table, the value added in the total supply column is this approximately equal to the GDP. The total supply of transport services in Australia amounted to \$25 714 million. Of this amount \$20 620 million (\$5727 million + \$14 893 million) is provided to other The broadly-defined transport sector industries and final demand. itself consumed the remaining \$5094 million of its own output as intermediate inputs.

Table 3.5 presents a number of different measures of transport, beginning with the total supply of transport identified above. This latter measure, which shows that total transport supply accounted for 7.9 per cent of total supply in all industries, includes imports of transport equipment and transport services. A measure of the output of transport services actually produced in Australia, which excludes imports of transport purchased by these other sectors, was derived from a slightly different form of the input-output table,¹ and is equivalent to 84.2 per cent of total supply of the broadly-defined transport sector. In other words, imports in 1978-79 accounted for 15.8 per cent of all transport services. In producing transport services, Australian enterprises import other commodities in addition to the imports of transport purchased directly by other sectors of the economy. By excluding these imports, a measure of the Australian resources used directly in the production of transport services was obtained and found to account for 6.6 per cent of Australian resources used in the production of all commodities.

 The form of input-output table used for this estimation involves the direct allocation of competing imports.

TABLE 3.4 TWO-SECTOR INPUT-OUTPUT INDUSTRY BY INDUSTRY FLOW MATRIX (BASIC VALUES, INDIRECT ALLOCATION OF COMPETING IMPORTS) 1978-79

	Broadly- defined transport sector		Other industries		Inter- mediate usage		Final demand		Total supply	
Broadly-defined										
transport sector	5	094	5	727	10	821	14	893	25	714
Other industries	6	663	64	152	70	815	103	099	173	914
Intermediate usage	e 11	757	69	879	81	636	117	992	199	628
Value added	9	996	90	997	100	993	5	178	106	171
Imports	3	961	13	038	16	999		816	17	815
Total usage	25	714	173	914	199	628	123	986	323	614

(\$ million)

Source Based on ABS (1984a).

The \$18 844 million of Australian resources which were applied to the provision of transport services in 1978-79, and which were equivalent to 6.6 per cent of Australian resources used in the production of all commodities, could of course be compared with corresponding measures for other industries.

In some circumstances an expenditure perspective may be of more interest than a production perspective. Pursuing this approach, the total supply of transport (including imports) of \$14 893 million to final demand uses accounted for approximately 12 per cent of aggregate final demand for all Australian output and imports.

Table 3.5 also has measures of the value added by the broadly-defined transport sector, and the transport operations industries. Value added measures include wages, salaries, gross operating surplus and net indirect taxes paid by the industries but exclude the contributions of other sectors of the economy to the supply of transport services. The value added for the broadly-defined transport sector (\$9976 million) accounted for 9.4 per cent of GDP in 1978-79. The value added by the transport operations industries (\$4955 million in 1978-79) is about the same as the sum of the values added by the other components of the broadly-defined transport sector. Data (not

Item	\$m
Total supply of transport	25 714
As a per cent of total	
supply in all industries	(7.9)
Australian resources used in	
the supply of transport	18 844
As a per cent of Australian	
resources used in production	
of all commodities	(6.6)
Value added by the broadly-	
defined transport sector	9 976
As a per cent of GDP	(9.4)
Value added by the transport	
operations sector	4 955
As a per cent of GDP	(4.7)
Transport output actually	
produced in Australia	21 648
As a per cent of total	
supply of transport	(84.2)

TABLE 3.5 RELATIVE SIZE OF THE TRANSPORT SECTOR, 1978-79

Note Figures in parentheses are percentages.

Source Based on ABS (1984a).

shown in Table 3.5) suggests that value added in the transport operations sector, expressed as a proportion of GDP declined from 5.5 per cent in 1971 to 4.6 per cent in 1983 (ABS 1987a and personal communication 1987). During the same period value added in the sector recorded an average annual growth rate of 1.6 per cent in real terms compared with 3.3 per cent for GDP.

The contributions of the component industries of the broadly-defined transport sector are shown in more detail in Table 3.6. Each industry is treated on an individual basis so that its supply to other sectors includes supply to other components of the broadly-defined transport sector, as well as to final demand and to industries outside the transport sector.

CONTRIBUTIONS OF THE TRANSPORT MODES

This section focuses on the transport operations industries, and

	Transport operations	Transport petroleum	<i>Motor</i> <i>vehicles</i> <i>and parts</i> <i>manufacture</i>	Other transport equipment manufacture	Bridge and road construction	Motor vehicle dealers	Total
Total supply	11 045	2 551	6 173	1 652	2 433	1 859	25 714
supply of transport	(43.0)	(9.9)	(24.0)	(6.4)	(9.5)	(7.2)	(100.0)
Output actually produced in Australia As a per cent of total transport produced in Australia	9 968	2 185	4 120	1 082	2 433	1 859	21 648
Australian resources used in production process As a per cent of total	9 134	1 307	3 258	962	2 433	1 749	18 844
Australia resources used in the transport sector Value added As per cent of value	(48.5) 4 955	(6.9) 973	(17.3) 1 208	(5.1) 641	(12.9) 1 008	(9.3) 1 191	(100.0) 9 976
added in transport sector	(49.7)	(9.8)	(12.1)	(6.4)	(10.1)	(11.9)	(100.0)

TABLE 3.6 CONTRIBUTIONS OF THE COMPONENT INDUSTRIES OF THE BROADLY-DEFINED TRANSPORT SECTOR, 1978-79 (\$ million)

Note Figures in parentheses are percentages.

Source Based on ABS (1984a).

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examines the direct interactions between each of the transport modes and other sectors of the economy.

Demand for the services of transport operations

Intermediate usage of transport services by industry groups is primarily freight transport, although business passenger transport probably accounts for most of the intermediate usage of air transport. Table 3.7 illustrates how industries differ in terms of their transport requirements and their preferences for one mode of transport over another. These differences may be due to the size of the industry, the characteristics of input commodities or the geographical locations of production units. It should be recognised that the intermediate usage of transport by an industry relates to the transport of inputs purchased by the industry, and not the shipment of the output of the industry to other industries and final demand (which is examined later for certain commodities).

With the exception of the wholesale and retail sector, all the industry groups depicted in the table used road transport much more extensively than the other modes. Road transport accounted for 54 per cent of total intermediate usage of transport. The very high figures for the demand for rail by the wholesale trade probably result from inclusion of storage with rail.

Table 3.7 also illustrates the pattern of final demands for transport services of the four modes. Most of the final demand for road transport services (bus and taxi) is accounted for by household consumption. The road transport of commodities bound for export is also significant. Final demand for air transport consists mainly of consumption expenditure, which includes non-business passenger travel by Australians on domestic and overseas services. The significant export demand for air transport includes the international transport by Australian carriers of foreign visitors and freight. Consumption expenditure on passenger travel by rail and sea is much less than the other modes. However, expenditure on the transport of international freight using Australian ship operators is very large.

Overall, final demand exceeds intermediate demand for the services of the transport modes. The sea and air modes' shares of final demand are much greater than their shares of intermediate demand.

Inputs used by transport operators

The structure of intermediate and primary inputs used by transport operators is given in Table 3.8 for each of the major modes. The table reveals a relatively low share of fuel and very high share of

labour in the value of production for the rail mode. The rail mode also exhibited a negative gross operating surplus. The Australian airline and shipping industries have relatively large import requirements. However, 'wages and salaries' constituted the single most important cost item in each of the four transport modes.

The use of labour in the transport sector is further highlighted in Table 3.9 which presents data on the number of civilian employees. The two employment series, if examined separately, indicate that employment in the transport operations sector, measured as a proportion of the total number of civilian employees, remained constant (approximately 5 per cent) between 1975-76 and 1985-86. Table 3.10 indicates that the modal shares of employment within the transport operations sector remained largely unchanged over the period.

Transport costs in the production and distribution of commodities

Industries require transport services in the production of commodities and in the distribution of these commodities. The former usage of transport by an industry is given in the first quadrant of the inputoutput table and relates to the transport of inputs used by the industry in the production process. The cost of the latter use of transport services is commonly termed the transport margin. Transport margins are not identified in the input-output tables but are recorded in the margin matrices available on magnetic tape.² Table 3.11 presents data on the cost of road, rail, sea and air transport services used in the production and distribution of selected agricultural and mining commodities.

The cost of overseas freight is not included in the table, which reduces the prominence of air and sea transport costs. Nevertheless, the costs of coastal shipments of ferrous metal ores and the port loading costs for some of the mineral exports (included in the sea transport margins) are considerable. Sea and air services are also an important component of services to mining.

For primary products such as cereal grains, meat cattle and metal ores; transport costs incurred in distributing the output are large, and greatly exceed the transport costs of inputs to the production process. The distribution costs for the primary products in many cases also appear as the costs of transporting inputs for the production of processed commodities such as meat products or metals.

The ABS warns that estimates of the margins are based on limited information and do not conform to the usual standards of ABS publications (ABS 1984a).

TABLE 3.7	DEMAND FOR	TRANSPORT	BY MO	DE IN	PRODUCTION,	SELECTED
	SECTORS, 19	978-79 ^a				

	(\$	mil	lion)	
--	-----	-----	-------	--

		Mode of	Transpor	t	
	Road	Rail ^b	Sea	Air	Total
Intermediate usage	<u>.</u>				
Agriculture	147.5	31.1	7.0	16.3	201.9
	(73.1)	(15.4)	(3.5)	(8.1)	(100.0)
Chemicals, fuels	102.6	24.8	43.1	10.7	181.2
	(56.6)	(13.7)	(23.8)	(5.9)	(100.0)
Manufacturing	1 108.1	421.4	180.1	116.2	1 825.8
	(60.7)	(23.1)	(9.9)	(6.4)	(100.0)
Mining	102.4	54.7	41.6	28.5	227.2
	(45.1)	(24.1)	(18.3)	(12.5)	(100.0)
Wholesale & retail	75.9	205.7	17.9	150.9	450.4
	(16.9)	(45.7)	(4.0)	(33.5)	(100.0)
Other industries ^C	863.0	310.5	65.4	288.2	1 527.1
	(56.5)	(20.3)	(4.3)	(18.9)	(100.0)
Total	2 399.5	1 048.2	355.1	610.8	4 413.6
	(54.4)	(23.7)	(8.0)	(13.8)	(100.0)
Final demand					
Consumption	1 434.2	337.1	149.4	1 199.4	3 120.1
	(46.0)	(10.8)	(4.8)	(38.4)	(100.0)
Gross fixed capital					
expenditure	143.6	51.3	28.6	27.2	250.7
	(57.3)	(20.5)	(11.4)	(10.8)	(100.0)
Changes in stock	47.4	46.9	5.1	-0.6	98.8
Exports	312.2	391.2	1 324.0	530.5	2 557.9
	(12.2)	(15.3)	(51.8)	(20.7)	(100.0)
Total	1 937.4	826.5	1 507.1	1 756.5	6 027.5
9 - C	(32.1)	(13.7)	(25.0)	(29.1)	(100.0)

a. Competing imports are indirectly allocated.

b. Includes other transport, and storage.c. Excludes sales to all transport modes.

Note Figures in parentheses represent the modal shares of total transport demand, by each industry group.

Source Based on Table 2 of ABS (1984a).

	Road	Rail	Sea	Air
Intermediate usage				
Fuel	0.08	0.02	0.05	0.07
Transport equipment Transport	0.04	0.12	0.05	0.09
and storage Wholesale and	0.02	0.01	0.07	0.06
retail trade	0.08	0.07	0.04	0.05
Repairs	0.05	0.02	-	-
Other	0.12	0.31	0.17	0.17
Primary inputs				
wages, salaries Gross operating	0.28	0.65	0.31	0.29
surplus .	0.19	-0.28	0.13	0.12
Net commodity taxes ^b	0.09	0.04	0.02	0.02
Imports used by the transport and				
storage sector	0.05	0.04	0.16	0.13
Total	1.00	1.00	1.00	1.00

TABLE 3.8 DIRECT REQUIREMENTS COEFFICIENTS FOR THE TRANSPORT MODES, 1978-79^a

a. Competing imports are directly allocated.b. Includes indirect taxes.

Rounded to zero. -

Source Based on Table 5 of ABS (1984a).

TABLE 3.9	CIVILIAN	EMPLOYEES	ΒY	INDUSTRY,	AUSTRALIA,	SELECTED	YEARS
			(t/	housands)			

Industry	Earlie	Later	Later series ^b		
	1975-76	1978-79	1984-85	1985-86	
Road transport	110.8	109.6	91.6	96.9	
Rail transport	64.5	63.9	88.0	87.9	
Water transport	36.0	32.6	14.9	10.2	
Air transport	33.9	35.4	27.5	28.1	

	(thous	sands)			
	Earlier	r series ^a	Later series ^b		
Industry	1975-76	1978-79	1984-85	1985-86	
Other transport and storage	30.1 ^c	32.1 ^c	59.5 ^d	66.1 ^d	
Total	275.2 (5.6)	273.5 (5.5)	281.5 (5.3)	289.2 (5.2)	
Petroleum and coal products ^f Motor vehicle and	5.6	6.2	5.0	5.4	
parts manufacture ^f	86.2	85.2	69.9	70.9	
manufacture ^T Motor vehicle dealers, repairers ^f	65.6 174.4	61.4 168.1	48.4 161.7	48.4 168.9	
Total	331.8 (6.7)	320.9 (6.5)	285.0 (5.4)	293.6 (5.3)	
Other industries	4 312.3 (87.7)	4 354.7 (88.0)	4 710.7 (89.3)	4 947.5 (89.5)	
Total	4 919.4 ⁹ (100.0)	4 949.2 ^g (100.0)	5 277.2 ^h (100.0)	5 530.2 ^h (100.0)	
 a. 'Services to each in producing output prim b. 'Services to each ind producing output prim c. Excludes 'services transport', 'services transport'. 	dustry' ar ary to that dustry' are ary to that to road to water	e included i industry gro excluded fro industry gro transport', transport',	n the indust up. om the indust up. 'services and 'services	ry group ry group to rail s to air	

TABLE 3.9 (Cont.) CIVILIAN EMPLOYEES BY INDUSTRY, AUSTRALIA, SELECTED VEADS

f. From 1984-85, services to these industries are included as part of 'other industries'. g. Excludes employees in agriculture and private domestic services.

h. Excludes employees in private domestic service.

Note Figures in parentheses are percentages. Due to a break in the series, figures for 1975-76 and 1978-79 are not directly comparable with those for 1984-85 and 1985-86.

Source ABS (1980, 1987). 38

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Total transport costs expressed as a ratio of the value of output are generally higher for primary commodities than for the higher-valued processed commodities. The transport cost-value ratios also tend to be higher for mineral commodities than agricultural commodities.

(per cent)								
	Earlier	series ^a	Later :	Later series ^b				
Industry	1975-76	1978-79	1984-85	1985-86				
Road transport	40.3	40.1	32.5	33.5				
Rail transport	23.4	23.4	31.3	30.4				
Water transport	13.1	11.9	5.3	3.5				
Air transport	12.3	12.9	9.8	9.7				
Other transport and st	orage 10.9 ^C	11.7 ^C	21.1 ^d	22.9 ^d				
Total	100.0	100.0	100.0	100.0				

TABLE 3.10 DISTRIBUTION OF EMPLOYMENT IN THE TRANSPORT OPERATIONS SECTOR, SELECTED YEARS

a. 'Services to each industry' are included in the industry group producing output primary to that industry group.

b. 'Services to each industry' are excluded from the industry group producing output primary to that industry group.

c. Excludes 'services to road transport', 'services to rail transport', 'services to water transport', and 'services to air transport'.

d. Includes services to road, rail, water and air transport.

Note Due to a break in the series, figures for 1975-76 and 1978-79 are not directly comparable with those for 1984-85 and 1985-86.

Source Table 3.9.

COMMODITIES, 1978-79										
	Transport services used in production (\$m)		Transport services used in production (\$m)		Transport margins in distribution (\$m)		Ratio of total transport costs to value of commodity output ^a (per cent)			
	Sea and		ea and		Sea and		Sea and			
	Road	Rail	air	Road	Rail	air	Road	Rail	air	Total
Agriculture			· · ·							
Sheep	26.6	5.9	3.6	40.8	32.3	1.9	4.0	2.3	0.3	6.6
Cereal grains	22.0	5.6	3.2	93.4	158.4	13.2	4.9	6.9	0.7	12.5
Meat cattle	48.9	7.9	4.1	143.9	26.8	0.7	11.0	2.0	0.3	13.3
Milk cattle										
and pigs	20.7	4.6	2.8	48.3	1.1	~	6.8	0.6	0.3	7.7
Meat products ^D	217.3	42.5	6.8	105.6	1.8	0.8	5.8	0.8	0.1	6.7
Milk products ^D	66.9	10.7	3.5	36.4	6.2	0.2	5.8	0.9	0.2	6.9

TABLE 3.11 DOMESTIC TRANSPORT COSTS IN THE PRODUCTION AND DISTRIBUTION OF SELECTED AGRICULTURAL AND MINERAL COMMODITIES, 1978-79

	Trans used	Transport services used in production (\$m)		Transport margins in distribution (\$m)		Ratio of total transport costs to value of commodity output ^a (per cent)						
		Sea and		Sea and				Sea and		Sea and		
	Road	Rail	air	Road	Rail	air	Road	Rail	air	Total		
Mining and mineral proces	sing											
Ferrous metal ores	25.6	17.5	2.2	-	117.7	160.7	2.6	13.9	16.8	33.3		
Non-ferrous metal ores	22.2	7.3	7.0	16.0	94.7	33.6	2.4	6.3	2.5	11.2		
Coal, oil and gas	18.2	22.1	12.7	103.0	261.6	80.0	4.2	9.9	3.2	17.3		
Other minerals	23.2	5.3	1.2	298.8	11.2	20.9	60.2	3.1	4.1	67.2		
Services to mining	13.2	2.5	47.0	-	-	-	3.4	0.6	12.2	16.2		
Basic iron and steel Basic non-ferrous	61.7	51.0	67.7	75.4	44.1	45.4	3.8	2.7	3.2	9.7		
metals	33.2	73.8	28.6	53.7	13.0	42.5	2.9	2.9	2.4	8.2		

TABLE 3.11 (Cont.) DOMESTIC TRANSPORT COSTS IN THE PRODUCTION AND DISTRIBUTION OF SELECTED AGRICULTURAL AND MINERAL COMMODITIES, 1978-79

a. Commodity output is valued at prices received by producers, that is, wholesale, retail and transport margins are excluded.

b. These commodities are defined under manufacturing in the official input-output table.

- Rounded to zero.

Note Intra-industry transport costs are included as part of production costs and not as distribution costs. Costs of overseas freight for imported inputs used in production and for exported commodities are not included.

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Source BTE tabulations from ABS (1984b) and margin matrices supplied by ABS on computer tape (ABS 1984d).

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CHAPTER 4 TRANSPORT AND THE BALANCE OF PAYMENTS

The provision of airline and shipping services between Australia and other countries involves foreign exchange transactions which enter the Current Account component of the Australian Balance of Payments Accounts. The purpose of this section is to identify and interpret the transport and travel components of the Balance of Payments Accounts, and then to examine the impact of Australian resident transport companies and foreign transport companies on the balance on Current Account. In discussing these effects, no reference is made to the overall economic desirability of Australian participation in this area. Although the operators of Australian carriers are shown to make a positive contribution to the Current Account Balance, it does not necessarily follow that they are profitable overall, or that they provide an efficient source of foreign exchange.

TRANSPORT COMPONENTS OF THE BALANCE OF PAYMENTS

Definitions

The Balance of Payments account records transactions between Australian residents and foreigners. The Current Account component classifies transactions into merchandise trade, services, and income and unrequited transfers. Services are further classified into transportation, travel, and other.

A summary description of the items included in the merchandise trade, transportation and travel categories is given in Table 4.1. A transaction generating a claim on foreign exchange by Australian residents is recorded as a credit, and a transaction generating a claim on Australian currency by non-residents is recorded as a debit. It can be seen from the table that the freight paid on imports carried by an Australian company does not enter the Balance of Payments Accounts because it is treated as a transaction between Australian residents (even if the goods were purchased cif from an exporter who paid the freight). Similarly, freight on Australian exports shipped by a foreign company does not enter the Balance of Payments Accounts, being treated as a transaction between foreigners.

TABLE 4.1 CLASSIFICATION OF MERCHANDISE TRADE, TRANSPORTATION AND TRAVEL ITEMS IN THE BALANCE OF PAYMENTS ACCOUNTS

Credits	
Merchandise trade	Exports FOB
Services	
Transportation	Freight revenue on exports carried in ships and aircraft of Australian resident companies
	Freight earnings of Australian companies from the carriage of goods between overseas ports
	Revenue from the carriage of foreign passengers by Australian resident international airlines
4	Expenditure in Australia by non-resident transport operators (eg fuel, stevedoring, provisions, navigation and port charges).
Travel	Expenditure on goods and services in Australia by foreign visitors.
Other	
Debits	
Merchandise trade	Imports FOB
Services	
Transportation	Freight revenue on imports carried in ships and aircraft of foreign companies
	Freight earnings of foreign companies carrying goods between Australian ports.
	Revenue from the carriage of Australians on foreign international airlines
	Expenditure overseas by Australian companies (fuel, stevedoring, etc)
Travel	Expenditure in other countries by Australian travellers.
Other	

Source Derived from ABS (1986c).

The transportation items which are included in the services component of the Current Account do not cover all the expenditures of transport companies. One particularly important item is capital expenditure by Australian operators on aircraft and ships. This is recorded in the merchandise imports section.

International transport companies which are subsidiaries of Australian companies but incorporated outside Australia are treated as foreign companies. New investment in the subsidiary is recorded in the Capital Account component of the Balance of Payments Accounts and dividends or other income paid to the parent company (called a *resident* company) is recorded in the income component of the Current Account.

Transport items in the Balance of Payments

Table 4.2 shows the balance on Current Account for the period 1983-84 to 1985-86, and the contributions of credits and debits from merchandise trade, and transportation and travel. To put the transportation items in perspective, transportation credits are equivalent to about 9 per cent of merchandise exports, and transportation debits about 16 per cent of merchandise imports. Travel credits and debits are equivalent to a further 5 per cent of merchandise exports and 9 per cent of merchandise imports, respectively.

The sizable transportation deficit is a reflection of the fact that Australian carriers have a smaller share of international traffic to and from Australia than foreign carriers.

The transportation deficit stabilised and the travel deficit declined in 1985-86 in the context of a continuing increase in the overall Current Account deficit. Both the transportation and travel deficits have been affected by an increased number of visitors and a moderation in international travel by Australians. These trends support the supposition that the travel components of the Balance of Payments Accounts are responding more quickly to the decline of the Australian dollar than is merchandise trade.

Table 4.3 supplies more detail on the transportation component of the Current Account. Items related to resident operators are identified separately from those related to foreign (non-resident) operators.

Freight revenues make a much bigger contribution to the deficit than passenger revenues. For foreign operators, the current account debit due to freight earnings exceeds the debit due to passenger earnings.

Item	1983-84	1984-85	1985-86
Merchandise trade			
Exports FOB	23 682	29 216	32 254
Imports FOB	-23 497	-30 104	-35 616
Balance	185	-888	-3 362
Services			
Transportation			
Credits	2 108	2 491	2 859
Debits	-3 725	-4 636	-5 041
Balance	-1 617	-2 145	-2 182
Travel	· · · · · ·		
Credits	1 223	1 359	1 806
Debits	-2 146	-2 618	-2 746
Balance	-923	-1 259	-940
Other			
Balance	-376	-546	-737
Income and unrequited transfers	5		
Balance	-4 507	-5 981	-6 492
Balance on Current Account	-7 238	-10 819	-13 713

TABLE 4.2 BALANCE ON CURRENT ACCOUNT, 1983-84 TO 1985-86 (\$A million)

Source ABS (1986d).

For resident operators, the credit from freight earnings falls short of the credit from passenger earnings.

A further factor affecting the transportation deficit is the relatively high overseas expenditure by resident operators in relation to their overseas earnings.

THE IMPACT OF RESIDENT TRANSPORT OPERATORS

In addition to their direct contributions to the transportation component of the Balance of Payments, resident international ship and

TABLE 4.3	TRANSPORTATION	ITEMS	IN	THE	CURRENT	ACCOUNT,	1983-84	ΤO
	1985-86							

(\$A million) 1983-84 1984-85 1985-86 Item Resident operators Overseas earnings 356 388 399 Freight on exports Passenger services 507 601 847 220^C 115 182 Other earnings 1 466^C Total 978 1 171 -1 110^C Overseas expenditure^a -1 033 -856 356^C 122 138 Balance Foreign operators Earnings in Australia Freight on imports -2 018 -2 523 -2 734 -1 313 -968 -1 220 Passenger services -80^C -38 Other earnings -18 -4 127^C -3 004 -3 781 Total 1 605^C Expenditure in Australia^a 1 291 1 519 -2 522^C -1 713 -2 262 Balance -2 166^C Balance on transportation^D -2 124 -1 591

 Includes fuel, stevedoring, provisions, navigation charges, port charges, agency and advertising expenses, and other expenses.

- b. These balances differ from the transportation balances in Table 4.2 which follow the Balance of Payments convention of putting agency and advertising expenses of transport operators in miscellaneous services.
- c. BTE estimates. (There is a lag between the release by ABS of the quarterly Balance of Payments statements and more disaggregated information for residents and non-resident carriers.)

Sources ABS (1986d, 1986h). BTE estimates.

airline operators also have an indirect impact resulting from their transport of Australian imports and Australian passengers (which is analogous to the production of import-competing commodities by other industries). Without the presence of Australian operators these tasks

would be performed by foreign operators and the earnings would be recorded as debits in the Current Account.

Estimates have been made by BTE of the contributions to the transport component of the Current Account which would occur if all transport services for Australian exports and imports and Australian international passenger travel were provided by foreign operators. This estimated contribution was compared with the algebraic sum of the actual contributions of the current resident and foreign operators in order to derive the net impact of the current level of Australian participation in these international transport services.

Separate estimates for airline and ship operators were generated using the above procedure, and are reported in Table 4.4. The estimates are based on data from the ABS survey of International Shipping and Airline Operations and from Qantas and Australian National Line annual reports, together with various assumptions (especially in relation to the increased expenditure in Australia by foreign operators that would result from expanding their services to include those of the current resident operators).

Table 4.4 indicates that while the direct contribution of resident airlines to the transportation component of the Balance of Payments was a credit balance of \$125m in 1984-85, the net impact including the indirect effect was estimated to be a credit balance of \$674m. In the case of resident ship operators, the direct contribution was estimated to be only \$13m, and the net impact $$126m.^1$

It should be noted that the second-round effects on trade flows of expenditure by transport companies are not included in this analysis. This has consequences for the interpretation of the separate direct impacts of current resident and foreign operators on the balance on Current Account, see Table 4.3 and 4.4. For example, expenditure on fuel in Australia by foreign operators may result in increased Australian imports of fuel (and a debit to the balance of merchandise trade). However, expenditure on fuel in Australia is likely to have a similar impact on imports irrespective of whether the expenditure is by resident or foreign operators, and in general the estimates of the net impact of actual resident operators are not significantly affected by the second-round effects.

1. An important assumption underlying these estimates is that Australian operators have the same level of costs (efficiency) as their foreign counterparts.

TABLE 4.4 IMPACT OF INTERNATIONAL TRANSPORT OPERATORS ON THE TRANSPORTATION COMPONENT OF THE BALANCE ON CURRENT ACCOUNT, 1984-85

Type of impact	Operators	Credit	Debit	Balance
Direct	Airlines			
impact	Resident	728	-603	125
of current operators	Foreign	525	-1 528	-1 003
	All airlines	1 253	-2 131	-878
	Ship operators			
	Resident	443	-430	13
	Foreign	994	-2 253	-1 259
	All ship operators	1 437	-2 683	-1 246
Estimated	Foreign airlines	799	-2 351	-1 552
operators were all foreign	Foreign ship operators	1 193	-2 565	-1 372
Net impact of	Resident airlines	••		674
operators	Resident ship operators	· · ·	••	126
	All resident operators	••	• •	800

(\$A million)

.. Not applicable.

Source BTE estimates.

These estimates do not take account of the debit incurred in the merchandise component of the Balance of Payments when resident companies purchase aircraft, ships and related equipment from overseas sources. Payments for these items fluctuate greatly from year to year as evidenced in the Qantas annual reports which show progress payments for the purchase of overseas equipment of \$12 million in 1981-82, \$4 million in 1982-83, \$120 million in 1983-84 and \$146 million in 1985-86. The depreciation expense (excluding buildings) recorded in a shipping or airline company's profit and loss statement can be used to

represent the cost of consistently acquiring overseas equipment necessary to maintain the asset stock.

Resident transport companies frequently finance their imported equipment purchases by raising overseas loans. The interest payable on the loans (which appears in this income component of the Current Account) is a further adjustment to the figures in Table 4.4 necessary to provide a more accurate assessment of the on Current Account impact.

These adjustments are presented in Table 4.5 which indicates a net impact of \$606 million and \$103 million by airline and shipping resident companies involved in the transport of Australian exports and imports and Australian international travel. It is stressed however that these estimates are indicative only and are the outcome of a methodology which involves many assumptions.

One of the qualifications to be borne in mind when interpreting these estimates is that they do not include the effects on trade flows of the Australian Government offsets program. As a result of this program, Australian expenditure overseas on certain capital items generates further Australian exports or import-replacement manufacturing. The net positive effect of the program on the Current Account component of the Balance of Payments is likely to be greater for the airline industry than for shipping.

There are a number of subsidiary or associated companies of Australian resident companies, which are incorporated overseas and provide important international transport services to and from Australia. Overseas shipping interests of TNT, including the Union Shipping Group and ABC Containerline, fall into this category. These subsidiaries are treated as non-resident (foreign) companies in the Balance of Payments Accounts, with earnings from freight on imports to Australia and from Australian passengers appearing as a debit. New investments by the Australian parent company appear as a debit in the Capital Account, and dividends paid to the parent company as a credit in the income component of the Current Account. The debit balance of the transportation component of the Balance of Payments is therefore larger than would be the case if it reflected all the current account flows due to international transport activities to and from Australia attributable to Australian-owned enterprises. Furthermore, the above estimates of the net impact of Australian operators on the balance on Current Account would be larger under this broader scope of Australian involvement in international transport.

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(+)							
	Airlines	Ship operators					
Net impact on							
transportation component	674	126					
Proxy for purchase							
of equipment overseas							
Depreciation	-45	-19					
Interest	-23	-4					
Net impact on Current							
Account	606	103					

TABLE 4.5 IMPACT OF RESIDENT OPERATORS ON THE BALANCE ON CURRENT ACCOUNT, 1984-85 (\$A million)

Source BTE estimates.

Australian companies such as TNT and Mayne Nickless also have considerable interests in the domestic transport of countries other than Australia and in international transport between other countries. These interests contribute a further net credit to the Current Account. On the other hand, Australian domestic transport operators purchase a large amount of equipment overseas and this results in a significant debit in the merchandise trade component of the Current Account.

CHAPTER 5 TRENDS IN AUSTRALIAN TRANSPORT

The purpose of this chapter is to provide a broad view of trends in Australian transport. Long-term trends in transport expenditure patterns, aggregate traffic flows, and transport prices are presented and the significance of differences in modal trends is highlighted. The trends in expenditure, output (traffic) and prices are interpreted in a way which allows a comparison of the trend in the 'efficiency' with which transport services are provided with an average trend in the 'efficiency' with which other goods and services are produced.

FINAL EXPENDITURE ON TRANSPORT

The Income and Expenditure Tables of the National Accounts can be used to examine trends in the pattern of final expenditure on transport by households, private corporate trading enterprises and all levels of government. Table 5.1 presents the transport shares of various final expenditure aggregates between 1970 and 1985.

Household transport expenditure includes public transport fares and the purchase and operation of motor vehicles. The share of total household consumption expenditure allocated to transport items has remained fairly steady at around 14 per cent.

Government final consumption expenditure on transport includes the operation of air and marine navigation facilities, road traffic control, control of safety standards, and expenditure on planning, regulation and research. Since 1970, these expenditures have accounted for between 1.0 and 1.5 per cent of total government final consumption (on social security, defence, education, economic services and general public service).

Fixed capital (investment) expenditure by government (primarily on roads, but also on airport and port construction, civil aircraft and ships and other transport equipment) accounts for around 30 per cent of total government fixed capital expenditure. There has been no consistent trend in the transport share. On the other hand, private

Year ending 30 June	Expenditure o	Expenditure on transport as a share of total expenditure in each category								
	Household final consumption expenditure	<i>Government</i> <i>final</i> <i>consumption</i> <i>expenditure</i>	Private fixed capital expenditure on equipment	Government fixed capital expenditure						
1970	15.4	1.5	7.9	33.3						
1975	13.7	1.5	7.3	28.4						
1980	14.0	1.2	5.3	30.1						
1985	13.5	1.0	na	29.5						

TABLE 5.1 TRENDS IN THE TRANSPORT SHARE OF COMPONENTS OF FINAL EXPENDITURE, 1970 TO 1985

(per cent)

na Not available.

Sources ABS (1986a, pers. comm. 1986).

capital expenditure on transport equipment as a share of total capital expenditure on equipment by private corporate trading enterprises has shown a tendency to decline from over 7 per cent in the early 1970s to around 5 per cent in the early 1980s.

Household expenditure on transport is examined in more detail in Table $5.2.^1$ During the 1970s, expenditure on rail, tram and bus services declined as a share of the total. The share of other fares (particularly air) increased modestly, and the share of motor vehicle operations increased considerably as private car travel expanded and also as fuel prices increased. The share of household expenditure devoted to motor vehicle purchase declined probably as a result of the decline in the real price of motor vehicles and of a trend towards smaller less expensive vehicles. The changes in shares in the 1980s have so far been slight.

THE PASSENGER TASK

The private car is the most popular mode of passenger transport because of its flexibility. It is used extensively for urban and nonurban trips and for leisure, private business and commercial purposes.

Table 5.3 provides some information on the factors which have

1. Table II.1 gives similar information on an annual basis.

EXPENDITURE ON TRANSPORT, 1970 TO 1985 <i>(per cent)</i>									
Tot househo									
Year ending 30 June	Rail, tram and bus fares	Air, sea and taxi fares	Motor vehicle purchase	Motor vehicle operations	expenditure on transport				
1970	9.0	14.1	36.4	40.5	100				
1975	7.0	13.9	34.4	44.7	100				
1980	5.7	15.2	28.5	50.6	100				
1985	6.6	15.0	27.9	50.5	100				

TABLE 5.2	TRENDS IN THE COMPONENTS OF HOUSHOLD CONSUMPTION
	EXPENDITURE ON TRANSPORT, 1970 TO 1985

Source ABS (1986a).

influenced the growth of passenger travel in cars and station wagons and on measures of the amount of travel undertaken. An indication of the extent of travel undertaken in 1985 is given by the occupantkilometres measure, which is dependent upon the size of the population, the level of per capita car ownership, the average distance travelled per car and the average number of occupants per The table indicates that occupant-kilometres car. arew at approximately 3 per cent per annum between 1970 and 1985. This relatively high rate has been stimulated by population growth, growth in real incomes per capita and, to a lesser extent, by an increase in the proportion of the population in the driving age group. The latter two factors have been associated with an average growth in per capita car ownership levels of 2.4 per cent per annum. There has been virtually no change in the average vehicle-kilometres travelled (VKT) per car and a slight decline in occupants per car.

The public transport modes perform a variety of passenger transport In urban areas bus, tram and rail transport have a very tasks. important role particularly in journeys to work and school. For long distance travel air transport is also very important, particularly for business travel.

Figure 5.1 illustrates trends in patronage levels of the major Rail, urban bus and tram travel declined in the transport modes. seventies. In contrast, both domestic and international air transport have experienced significant increases in total passenger numbers over the past 15 years.



Figure 5.1 Trends in passenger journeys on public transpot modes, 1970 to 1986

Variables	1985 estimates	Average annual growth, 1970-85 (per cent)
Population	15.8m	1.3
Cars per capita	.43	2.4
Cars on register	6.7m	3.8
VKT per car	15 500	-0.2
Total VKT	106 574m	3.7
Occupants per car	1.84	-0.5
Occupant-kilometres	196 585m	3.2

TABLE 5.3 PASSENGER TRAVEL IN CARS AND STATION WAGONS, SOME KEY STATISTICS

Note VKT is vehicle-kilometres travelled.

Sources ABS (1986j, 1986n, pers. comm. 1986).

Table 5.4 summarises the trends in passenger travel by presenting average growth rates for the 15-year period, for both public transport and private car travel. Many factors underline these trends including growth in income levels, changes in relative costs and prices, and demographic developments. In addition to generating more travel in total, income growth may have encouraged consumers to switch from rail and bus to air and car travel as a result of placing increasingly high value on the flexibility of private cars and the speed of air travel.

Air travel appears to be particularly sensitive to economic conditions. Table 5.5 suggests that both domestic and international aviation responded to the rapid economic growth of the early 1970s and the sluggish economic performance of the past decade. An analysis of recent years reveals that air travel declined in the 1983 recession and grew strongly in the subsequent recovery.

THE FREIGHT TASK

Table 5.6 provides an indication of both the quantity of material moved around Australia and the average distance over which it is transported by the various modes. The following features are evident from Table 5.6:

 Road transport carries most of the tonnes consigned; however, the average length of haul is much shorter than that for the other modes.

				Pas	senger numbe (millions)	rs	
	VKT by cars and station wagons ('000)			Government	Non-	Domestic	International
Year	Urban	Non-urban	Rail ^b	bus and tram ^C	urban bus	air ^d	air ^f
1970	40 860	22 940	426	532	na	6	0.5
1985	73 506	33 067	325	447	17	12	2.1
Average annual growth (per cent)	(4.0)	(2.5)	(-1.8)	(-1.2)	na	(4.7)	(10.0)

TABLE 5.4 PASSENGER TRAVEL BY MODE, 1970 AND 1985^a

a. Figures may apply to slightly different periods.b. Excluding South Australia and Western Australia.

c. Excluding South Australia.

d. Scheduled services only.

f. QANTAS scheduled operations into and out of Australia.

Not available. na

Sources ABS (1985c, 1986n, 1986o). Central Bureau of Census and Statistics (1972a). Department of Aviation (1971, 1986a, 1986b).

TABLE 5.5	AVERAGE	GROWTH	IN	REAL	GDP	AND	AIR	PASSENGER	NUMBERS,
	1970 TO	1985							

Period		Real GL	1P	Domestic air passenger numbers			International air passenger numbers		
1970-74 5.2		2	10.6				20.6		
1974-85 2.7				2.	3		7.3		
Sources	ABS	(19860).	Central	Bureau	of	Census	and	Statistics	

(per cent per annum)

Sources ABS (1986o). Central Bureau of Census and Statistic (1972b). Department of Aviation (1974, 1986a).

TABLE 3.0 THE DOMESTIC TREIDIN TRANSFORT TASK, DE MODE, 130.	TABLE	5.6	THE	DOMESTIC	FREIGHT	TRANSPORT	TASK	, BY	MODE,	1985
--	-------	-----	-----	----------	---------	-----------	------	------	-------	------

Mode	Tonne-km (millions)	Tonnes consigned (millions)	Average length of haul (kilometres)
Rail ^a	62 800	253.0	248
Air ^b	162	0.2	932
Sea	96 300	42.7	2 260
Road	74 300	1 031.8	72

a. Government and non-government railways, 1983-84.

b. Provisional figures for scheduled domestic air services.

Sources ABS (1986n, 1986o). Department of Aviation (pers. comm. 1986). Federal Department of Transport (1986).

. The tonnes carried by air are insignificant.

. Although less freight is carried by sea than by road or rail, sea freight has a much longer average length of haul and performs a greater task in terms of tonne-kilometres than any other mode.

Table 5.7 provides further details on the major commodities carried by the modes. Sea and private rail freight transport specialise in a few key mineral commodities. In contrast, food and live animals and machinery and manufactured goods account for a high percentage of road freight.

Figure 5.2 illustrates trends in freight tonne-kilometres performed by the major transport modes over the period 1970-85. Data were available for every third year for road and annually for the other modes. The figure does not therefore reveal the same degree of fluctuation over time for road as for the other modes. Average growth rates over the period are summarised in Table 5.8.

MAJOR COMMODITY TYPE: (per cent)	S AND MODES
Commodity	Share of freight task
Government rail tra	ansport ^a
Agricultural products	19.0
Crude materials	9.0
Minerals, fuels and	
lubricants (mainly coal)	46.0
Manufactured goods	9.0
All other	17.0
Total	100.0
Private rail trar	nsport ^b
Iron ore	98.0
Sugar	1.0
All other	1.0
Total	100.0
Sea transport ^b	
Iron ore	37.0
Crude oil and	
petroleum products	29.0
Bauxite	17.0
All other	17.0
Total	100.0

TABLE 5.7 THE DOMESTIC EDETCHT TRANSPORT TASK BY

TABLE 5.7 (Cont.) THE DOMESTIC FREIGHT TRANSPORT TASK BY MAJOR COMMODITY TYPES AND MODES

(per cent)

Road transport ^b	
Food and live animals	28.0
Inedible crude materials ^C	18.0
Mineral fuels	7.0
Chemicals	3.0
Machinery and	
manufactured goods	25.0
All other	18.0
Total	100.0
 a. Expressed as a share of the fre handled by all systems excludin 1983-84. b. Figures are for 1985. c. Excludes fuels. 	ight traffic ng ANR, for
 Notes 1. The task was measured in ter kilometres. 2. Percentages may not add to trounding. 	ms of tonne- cotals due to
Sources ABS (1983b, 19861). BTE (1986	d). Federal

Department of Transport (1986).

Growth in road transport in terms of tonne-kilometres over the period has been significantly higher than for the other modes, and more than twice as high as growth in general economic activity. The commodity composition of road transport has not changed greatly. Coastal sea transport experienced increases in tonne-kilometres until 1981, due mainly to an expansion in the cartage of iron ore and, to a lesser extent, of bauxite and petroleum products. The severe contraction in the period 1981-83 appears to be related to a reduction in demand for iron ore by the domestic steel industry.

Government rail has enjoyed relatively consistent growth; the upturn in 1983 is associated with an expansion of coal cartage by the Queensland Railways system in response to expanding export markets. Finally, non-government rail traffic levels, which are closely associated with export markets for iron ore, grew rapidly from 1970 to 1975, and fluctuated around a relatively constant trend after 1975.


a. Data available only for every third year.

Sources ABS (1983b, 1986n, 1986a), BTE (1986a), DoT (1986).

Figure 5.2 Trends in domestic freight tonne-kilometres performed by mode, 1970 to 1985

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Mode	Tonne-km	Tonnes consigned
Rail ^b	4.6	3.8
Air ^C	3.8	3.5
Sea	1.1	-0.3
Road ^d	7.5	2.9

TABLE 5.8 AVERAGE GROWTH IN THE FREIGHT TASK, BY MODE, 1970 TO 1985^a (per cent per annum)

a. Figures may apply to slightly different years.

b. Government and non-government systems.

c. Domestic scheduled freight services only.

d. Offical and ancillary road freight.

Sources ABS (1986n, 1986o). Central Bureau of Census and Statistics (1972a). Department of Aviation (1986a). Department of Civil Aviation (1971). Federal Department of Transport (1986).

TRANSPORT PRICES

Passenger travel prices

Trends in motoring costs and public transport fares over the period 1977 to 1985 are illustrated graphically in Figures 5.3 and 5.4 with average growth rates summarised in Table 5.9.

Real total motoring costs have remained relatively stable over the period from 1977 to 1985 despite the large increase in the price of automotive fuel (Figure 5.3). The fuel price increase during the period 1979 to 1981 reflects both the rise in the world price and the implementation of import parity pricing for Australian fuel. The impact of the increase was offset to a large degree by a decrease (in real terms) in motor vehicle purchase prices.

A feature of Figure 5.4 is that passenger fares for domestic air travel have increased at a faster rate than other public transport fares. In comparision, international air fares have fallen, reflecting a period of considerable competition among the international carriers with access to Australian routes.

Freight transport prices

Figure 5.5 and Table 5.10 show the changes in real freight rates between 1977 and 1985. The notable features are that road and rail freight rates declined over the period, while aviation freight rates increased, with domestic air having the highest increase.



Figure 5.3 Trends in real motoring costs, 1977 to 1985



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Source BTE (1986d).

Figure 5.5 Trends in real freight rates, 1977 to 1985

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TABLE 5.9 AVERAGE ANNUAL GROWTH IN REAL TRANSPORT PRICES, 1977 TO 198 <i>(per cent)</i>	PASSENGER 5			
Total motoring costs	0.9			
Motor vehicle purchase price	-1.1			
Fuel	6.3			
Other	-1.9			
Air transport costs				
Domestic	3.7			
International				
Inbound -1				
Outbound	-1.4			
Interstate rail transport costs	3.2			
Urban public transport costs	2.2			

Source Based on various ABS publications.

TABLE 5.10	AVERAGE ANNUAL	GROWTH	ΙN	REAL	FREIGHT
	RATES, 1977 TO	1985			
	(per	cent)			

Domestic air	4.4
International air	
Imports	3.6
Exports	-0.1
Rail (non-bulk)	-0.8
Road ^a	-1.7
Road ^a	-1.7

a. 1979-85.

Source Based on various ABS publications.

In regard to bulk shipping and liner shipping exports, Table 5.11 contains some information on trends in freight rates for several key commodities in important trades. This limited evidence indicates that rates have fallen substantially in recent years in response to improvements in productivity and, more especially, world-wide over-capacity in the shipping industry.

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(Index 1981 = 100)							
Year	Coal to Europe	Wool on all trades	Beef to East Coast of North America	Hides to Japan			
1981	100	100	100	100			
1982	56.5	81.5	94	95.5			
1983	33.9	75.2	101	90.3			
1984	36.7	61.6	93	84.8			
1985	37.7	46.5	93	79.9			
1986	22.3	na	93.6	90.8			

TABLE 5.11 TRENDS IN REAL FREIGHT RATES FOR SELECTED EXPORT COMMODITIES AND TRADES, 1981 TO 1986 (Index 1981 = 100)

na Not available.

Sources ABS (1986e). Australian Wool Corporation (1986). BTE (1986a). Federal Department of Transport (pers. comm. 1986).

IMPLICATIONS OF TRENDS IN THE TRANSPORT TASK, EXPENDITURE AND PRICES

Over the past 15 years the share of GDP accounted for by the value added in the transport operations industry, excluding passenger travel in cars, has gradually declined, from 5.5 per cent to 4.6 per cent. Real GDP has grown at an average rate of about 3.3 per cent per annum over this period. Value added by the transport operations industry has grown at a lower rate of about 1.6 per cent per annum. There are two possible explanations of the differences in these trends. The first is that the transport task performed by the transport operations industry, measured in physical terms, has grown at a slower rate than other activities (taken as a whole and measured in physical terms). However, the foregoing data do not lend support to this explanation. The second is that the cost of producing each unit of the transport task, in terms of the primary inputs (wages and gross operating surplus) employed by the transport operations industry, has declined relative to the costs of producing the output of other sectors of the economy. This could be the result of an increase in efficiency, a fall in profits or a rise in losses. It is not possible, from available statistics, to be definite about which of these factors is responsible.

The share of household consumption expenditure accounted for by the purchase and operation of private motor vehicles has declined

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slightly, from 11.4 per cent in 1970 to 10.6 per cent in 1985. Car travel has grown at 3.7 per cent per annum over this period which is slightly higher than the growth in total real household consumption (3.4 per cent). The implication of these trends is that the rate of improvement in the efficiency with which private transport has been provided to households has been greater than the improvement for other areas of household expenditure on average. In other words, household resources required to provide a given quantity of private transport have declined in relation to the resources required to provide other goods and services (as a whole).

In light of the above conclusion it would be expected that the real price of passenger car travel would have fallen over the last 15 years even though the fuel component of this has increased. The trend from large cars to smaller less expensive and more fuel efficient vehicles has allowed households, despite stable or slightly increasing prices, to spend less on motoring in comparision with other activities, and at the same time increase the amount of their travel.

CHAPTER 6 INTERNATIONAL COMPARISONS

This chapter provides some information on the comparative scale of transport in Australia and in selected developed countries. The role which transport plays in these economies is highlighted by examining the following areas:

- patterns of household expenditure on travel
- . passenger and freight traffic in relation to population and GDP
- . the transport operations industry's share of GDP
- . the transport operations industry's share of the total labour force
- . provision of transport infrastructure.

In addition to presenting estimates of the transport task, the chapter also contains comparisons among countries of growth in various transport markets, and offers some comments on factors which distinguish the Australian experience from that of other countries.

It is difficult to draw firm conclusions from international comparisons because countries do not adopt the same statistical definitions and methodology. Although the data are presented on the most consistent basis possible, caution should be exercised when interpreting the figures for different countries.

PATTERNS OF HOUSEHOLD EXPENDITURE ON TRAVEL

As indicated in Chapter 5, expenditure on public and private transport accounts for around 14 per cent of the total expenditure by Australian households. Similar percentages apply in the United States (US) and United Kingdom (UK) (Table 6.1). The percentages have not altered greatly over the period since 1970. Table 6.1 also shows total household expenditure on transport and per capita expenditure, expressed in Australian dollars. Per capita expenditure in the US is higher than in Australia or in the UK, reflecting possibly the higher per capita income level in the US.

			Travel as a
			share of total
	Total travel	Per capita	household
	expenditure	travel	expenditure
Country	(\$A million)	(\$A expenditure)	(per cent)
Australia ^a	15 100	983	13.4
United Kingdom	47 500	843	15.5
United States ^b	323 500	1 379	13.5

TABLE 6.1	HOUSEHOLD	CONSUMPTION	EXPENDITURE	ON	TRANSPORT	FOR	SELECTED
	COUNTRIES	. 1983					

a. Figures apply to 1983-84 financial year.

b. Excludes expenditures on international air travel.

Sources ABS (1987a, 1986n). International Monetary Fund (1985). United Nations (1985). United States Department of Commerce (1985).

Table 6.2 provides a breakdown of the components of private final consumption expenditure on travel for Australia, the UK and the US. The purchase and operation of a motor vehicle represent the most important component of total transport expenditure in all three countries, particularly in the US. The US has correspondingly low percentages for the public transport modes, although expenditure on international airfares is excluded from the US 'other fares' component and included in the Australian and UK 'other fares' components. The relatively high share of rail and bus transport in the UK is noteworthy.

Although the share of travel expenditure allocated to the car has remained relatively constant since 1970, there has been a reduction in the share accounted for by the purchase of motor vehicles and an increase in the share of motor vehicle operation costs (see Table 6.2, and Tables II.1, II.2 and II.3 in Appendix II). This re-allocation of expenditure reflects, among other things, the impact of the increased price of fuel over the period.

In addition to consumption expenditure by households on transport discussed above, investment expenditure on transport equipment and infrastructure is the other major component of final demand expenditure on transport. However, comparisons of Australian investment expenditure on transport with that in other countries are not provided because of problems and uncertainties surrounding the definitions of expenditure figures.

(per cent)								
Country	Rail and bus transport	Other fares ^a	Purchase of a motor vehicle ^b	Operation of a motor vehicle ^C	Total transport expenditure			
Australia	7	15	27	51	100			
United Kingdom	n 11	11	32	46	100			
United States	2	5 ^d	37	56	100			

TABLE 6.2 COMPONENTS OF HOUSEHOLD EXPENDITURE ON TRAVEL FOR SELECTED COUNTRIES. 1983

 Includes domestic and international air fares taxi and ferry fares.

b. Includes both new and second hand vehicles bought for personal use.

c. Includes all costs associated with running a vehicle (eg. petrol, insurance, maintenance).

d. Expenditure on domestic inter-city air transport and taxi fares only.

PASSENGER AND FREIGHT TRAFFIC

Domestic passenger traffic

The amounts of domestic passenger travel per capita by rail, air, car and bus in a number of countries are given in Table 6.3. The private motor vehicle is the most extensively used mode of transport in every country considered. Per capita car travel and air travel are much greater in the US than in the other countries. Australia ranks ahead of most of the other countries for these modes. Australia and the US are both well below Europe and Japan in regard to per capita rail travel.

Table 6.4 presents information on trends in domestic passenger travel. In all countries shown except New Zealand, air has been the fastest growing mode, followed by car. Rail and bus travel have either grown very slowly or declined (although only limited information was available on bus travel).

To examine the motor vehicle travel in more detail, Table 6.5 includes comparisons of car ownership levels in 1985 and trends in car ownership. Growth in car ownership has been relatively low in Australia although not as low as in the United States, where the car

Sources ABS (1986a). Central Statistical Office, Great Britain (1985). United States Department of Commerce (1985).

Country	R (passen -	ail ^a ger km)	(passer, -	Air ^b nger -km)	Passe (nger car ^C VKT)
Australia		27 ^d		623	6	250 ^f
Canada		118		708		na
Federal Republic						
of Germany		647		34	4	950
France	. 1	096		207	4	660
Japan	2	690		247	2	170
New Zealand		na		428	5	450
United Kingdom		526		49	4	210 ^g
United States		76 ^T	1	510	8	380

TABLE 6.3 DOMESTIC TRAVEL PER CAPITA IN SELECTED COUNTRIES, BY MODE, 1983

a. Includes both public and privately owned systems.

b. Scheduled services of a country's airlines.

c. Excludes motor cycles, panel vans, utilities and trucks.

- d. Figure applies to 1984.
- f. Figure applies to 1982.
- g. Great Britain only.
- na Not available.
- *Note* The figures include domestic travel undertaken by foreign visitors.
- Sources ABS (1983b, 1986j, 1986n). Department of Transport, Great Britain (1985). International Civil Aviation Organisation (1984). International Road Federation (1985). Ministry of Transport, Japan (1985). New Zealand Department of Statistics (1986). New Zealand Ministry of Transport (1984). Statistics Canada (1985). United Nations (1985). United States Department of Commerce (1985).

ownership level has been relatively high for many years. In Japan, car ownership has grown rapidly from very low levels.

International passenger traffic

Virtually all international passenger travel to and from Australia is by air. Table 6.6 indicates that the total number of international arrivals and departures at Australian airports is modest compared with other countries. For these other countries most international travel involves fairly short trips to neighbouring countries or trips of moderate length across the Atlantic. In contrast, a large proportion of international air travel to or from Australia is oriented towards

TABLE 6.4	AVERAGE GROWT	IN DOMESTIC	TRAVEL	IN SELECTED	COUNTRIES,	ΒY
	MODE, 1970 TO	1983				

	(pe	er ce	nt j	oer	annum,
--	-----	-------	------	-----	--------

		Passenger ti	ransport modes	
Country	Rail ^a	Air ^b	Passenger car ^C	Bus ^d
Australia	na	5.3	3.7	na
Canada	na	4.6	na	na
Federal Republic				
of Germany	0.3	5.3	1.9	na
France	2.8	10.3	2.0	na
Japan	0.8	9.6	2.5	-1.9
New Zealand	-2.9	1.5	2.1	na
United Kingdom	-	3.2	3.0	-2.8
United States	na	5.7	3.2	1.1

a. Passenger-kilometres.

b. Passenger-kilometres for domestic scheduled services only.

c. Vehicle-kilometres for passenger cars and station wagons only. The figures apply to the period 1980 to 1983 except for Australia where the rate of growth applies to 1971-82.

 Passenger numbers for commercial services excluding contract hire and tourist buses.

na Not available.

Zero or rounded to zero.

Sources ABS (1972, 1983b, 1984b, 1986n). Department of Transport, Great Britain (1985). International Civil Aviation Organisation (1985). International Road Federation (1972, 1985). Ministry of Transport, Japan (1982, 1985). New Zealand Department of Statistics (1986). Statistics Canada (1985). United Nations (1985). United States Department of Commerce (1985).

the distant countries of Europe and North America. As a result of the very long average length of haul, the volume of international travel to or from Australia, measured in terms of passenger-kilometres, is quite large compared with international travel to or from Canada, France or the Federal Republic of Germany at least so far as national flag carriers are concerned. This is supported by the traffic figures in Table 6.6. However, this conclusion may not follow if all international carriers to these countries are included.

Country	Cars per 100 persons in 1984 ^a	Growth in cars per capita 1970-84 (per cent per annum)		
Australia	43	2.4		
Canada	43 ^b	3.2 ^c		
Federal Republic				
of Germany	42	4.2		
France	38	3.2		
Japan	23	7.3		
New Zealand	45	2.6		
United Kingdom ^d	29	2.3		
United States	54 [†]	1.7 ^g		

TABLE 6.5 CAR OWNERSHIP LEVELS AND TRENDS IN SELECTED COUNTRIES

a. Cars and station wagons only.b. 1982 figure. c. 1970-82.d. Great Britain only.

- f. 1983 figure. q. 1970-83 figure.

Source International Road Federation (1972, 1985).

Country	National flag carrrier passenger- kilometres, 1985 (million)	Passenger at majo airports, 198 (million		
Australia	17 305	3.2		
Canada	16 900	11.4 ^b		
Federal Republic				
of Germany	22 058	24.9		
France	28 260	22.4		
United Kingdom	59 800	34.8		
United States	112 040	44.3		

TABLE 6.6 INTERNATIONAL AIR PASSENGER TRAFFIC FOR SELECTED COUNTRIES

a. Arrivals and departures.

b. 1982 figure.

Sources British Airports Authority (1985). International Civil Aviation Organisation (1985).

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Domestic freight traffic

The relative size of the Australian domestic freight task in comparison with other countries is illustrated in Tables 6.7 and 6.8. The number of tonnes consigned by road and rail, per million dollars of GDP, is greater in Australia than in each of the countries reported. A similar pattern applies in terms of tonne-kilometres, although the rail measure in the US is greater than in Australia, indicating a greater average length of haul in the US. The average length of haul for Australian domestic sea freight is very large with the result that the Australian sea freight task measured in tonnekilometres is much larger than that of the other countries for which data were available.

The large size of the Australian freight task in relation to GDP is a

Country	Raí I ^b	Air ^C	Sea ^d	Road ^f			
Australia	1 360	1.0	230	5 500			
Canada	610	na	180	na			
Federal Republic							
of Germany	440	na	170 ^g	3 270			
France	310	na	90 ^g	2 110			
Japan	100	0.4	370	4 300			
New Zealand	400	1.6	230	na			
United Kingdom	290	0.1	150	2 830			
United States	490	na	na	na			

TABLE 6.7 DOMESTIC FREIGHT TONNES CONSIGNED PER \$A1m OF GDP IN SELECTED COUNTRIES, BY MODE, 1983^a

(tonnes per \$A1m of GDP)

 Where 1983 figures were not available, 1984 or 1985 prices were used.

b. Both public and private systems.

c. Domestic scheduled services only.

d. Goods consigned on coastal sea freight services.

f. Includes own account road haulage.

g. Goods consigned on inland waterways only.

na Not available.

Sources ABS (1984b, 1986e, 1986n). Department of Aviation (pers. comm. 1986). Department of Transport, Great Britain (1985). Federal Department of Transport (1986). Ministry of Transport, Japan (1985). New Zealand Department of Statistics (1986). Statistics Canada (1985). United Nations (1985). World Bank (1985).

Country	Rail ^b	Air ^C	Sea ^d	Road ^f
Australia	336	1.0	514	397
Canada	na	1.0	na	na
Federal Republic				
of Germany	84	0.0	71 ^g	142
France	105	0.3	15 ^g	152
Japan	23	0.4	169	162
New Zealand	119	1.0	na	na
United Kingdom	31	0.0	114	203
United States	369	1.5	na	na

TABLE 6.8 DOMESTIC FREIGHT TONNE-KILOMETRES PER \$A1000 OF GDP IN SELECTED COUNTRIES, BY MODE, 1983^a (tonne-kilometres per \$A1000 of GDP)

a. Where 1983 figures were not available 1984 or 1985 figures were used.

b. Public and private railway systems.

c. Domestic scheduled services only.

d. Goods consigned on coastal sea freight services.

f. Includes own account road haulage.

g. Goods consigned on inland waterways only.

na Not available.

Sources ABS (1983b, 1986h, 1986n). Department of Aviation (pers. comm. 1986). Department of Transport, Great Britain (1985). Federal Department of Transport (1986). International Civil Aviation Organisation (1985). Ministry of Transport, Japan (1985). New Zealand Department of Statistics (1985). United Nations (1985). World Bank (1985).

reflection of the extensive movement of bulk unprocessed mineral and agricultural commodities within Australia and their relative importance in the Australian economy.

Road and air freight have generally grown faster than freight carried by the other modes over the 1970s and early 1980s (Table 6.9), with growth in road freight particularly high in Australia. Growth in rail freight in Australia has also been substantial, in contrast to the declines in rail tonne-kilometres elsewhere. The increase in demand for Australian bulk commodities has been an important factor in the growth of Australian rail and road freight tonnages.

International freight traffic

Export and import tonnages by air and sea are given in Table 6.10 for

	(per ce	nt per annum)		
Country	Rail	Air	Sea	Road
Australia Federal Republic	4.6	4.9	2.1	7.5
of Germany	-1.3	2.0	0.5	4.9
France	-1.1	11.4	-3.3	2.0
Japan	-6.2	14.3	2.2	2.8
New Zealand	-1.8	3.5	na	na
United Kingdom	-2.6	-4.4	na	1.8
United States	-0.6	3.1	na	na

TABLE 6.9 AVERAGE GROWTH IN DOMESTIC FREIGHT TONNE-KILOMETRES IN SELECTED COUNTRIES, BY MODE, 1970 TO 1983

na Not available.

Sources ABS (1983b, 1986n). Department of Aviation (1986a). Federal Department of Transport (1983, 1985). International Civil Aviation Organisation (1985). Ministry of Transport, Japan (1982, 1985). New Zealand Department of Statistics (1985). United Nations (1972, 1985).

TABLE 6.10 EXPORT AND IMPORT TONNAGES BY SEA AND AIR FOR SELECTED COUNTRIES, 1983

	Ex	Exports			Imports		
Country	Air ^a		Sea	Air ^a		Sea	
Australia ^b	117	224	100	125	23	500	
Federal Republic							
of Germany ^C	312	97	400 ^d	209	184	900 ^d	
France	276	66	300 ^d	217	162	800 ^d	
Japan	410	83	200	325	547	400	
United Kingdom	256	121	500	227	117	600	

('000 tonnes)

a. Scheduled services only.

b. Figures apply to 1985.

c. Figures apply to 1984.

d. Includes inland waterway services.

Sources ABS (1986d). Department of Aviation (pers. comm. 1986). Ministry of Transport, Japan (1985). United Nations (1985).

Australia and four other developed countries. Not shown in the table are the significant international trade flows by road and rail for France and Germany.

Australian export tonnages by sea are very large in comparison with the other countries; conversely, Australian import tonnages are relatively low. The imbalance between export and import tonnages is much more significant for Australia than for the other countries examined. These patterns are a result of the orientation of Australian industry and trade towards the export of bulk commodities and the import of manufactured goods.

Average growth rates in export and import tonnes by air and sea over the period 1970-83 are shown in Table 6.11 for the same countries. International air freight, where high-valued commodities are important, has generally increased rapidly. Exports by sea increased moderately, and imports by sea did not change greatly.

Crude oil and petroleum products represent a large proportion of inwards sea freight for the countries considered, and the downward

	Expo	orts	Imports		
Country	Air ^a	Sea	Air ^a	Sea	
Australia ^b	16.9	6.5	13.8	0.5 ^a	
Federal Republic					
of Germany ^C	7.2	3.0 ^d	5.4	0.5 ^d	
France	9.2	3.0 ^d	9.1	0.2 ^d	
Japan	na	2.6	na	0.8	
United Kingdom	-1.7	7.0	-2.4	-3.9	

TABLE 6.11 AVERAGE GROWTH OF EXPORT AND IMPORT TONNAGES FOR SELECTED COUNTRIES, 1970 TO 1983

(per cent per annum)

a. Scheduled operations only.

b. Figures apply to 1970-85.

c. Figures apply to 1970-1984.

d. Includes inland water transport.

na Not available.

Sources ABS (1977, 1986d). Department of Aviation (1986b, pers. comm. 1986). Ministry of Transport, Japan (1982, 1985). United Nations (1972, 1985). trend in oil tonnages imported by sea has offset growth in import tonnages of other commodities. Oil price rises and conservation measures, competition from pipeline transport (to Germany), and the development of the North Sea oil fields have all played a role in limiting sea freight oil imports.

THE TRANSPORT INDUSTRY'S SHARE OF GDP

Table 6.12 shows the shares of GDP accounted for by the 'transport and storage' sector for a number of countries over a 13-year period. These figures relate to the value-added by the transport operations and storage industries. The table suggests that there has been a tendency for the transport and storage industry's share of GDP to decline over the period, with the decline being more significant in Norway and Australia than in the other countries.

It should be noted that this definition and treatment of 'ancillary' transport operations may vary among the countries, which would adversely affect the legitimacy of cross-country comparison.

EMPLOYMENT IN TRANSPORT OPERATIONS

Table 6.13 suggests that the transport operations industry's share of the total labour force is higher in Australia than in Great Britain or the United States, although these comparisons should be treated with caution because of possible definitional differences. The table also implies that the transport share of the labour force has increased slightly for Australia, but decreased for Great Britain and the United States.

TRANSPORT INFRASTRUCTURE

Table 6.14 illustrates the extent of the road system of Australia and a number of other countries. The proportion of the Australian system which is paved is much lower than for the European and US systems but comparable to other countries (Japan, NZ). The Australian road system is much more thinly spread than other countries according to measures of kilometres of total roads per square kilometre of land mass. The length of road per car is relatively large in Australia.

Table 6.15 compares the Australian rail network with those of other countries in terms of total route-kilometres (and track-kilometres) and in relation to area and population. A relatively high proportion of the Australian network is single track and a relatively low proportion is electrified (at least in comparison with Europe). As with the road system, the rail network in Australia is thinly spread

Country	1971	1975	1980	1 9 83
Australia	5.5	4.9	4.8	4.6
Denmark	6.0	6.1	5.7	5.5
Federal Republic	т.	.1		
of Germany	3.8	3.5	3.5	3.5 ^a
Finland	5.7	4.9	5.3	5.1
Norway	12.8	9.6	8.2	6.8
Sweden	4.4	4.3	4.2	4.0
United States	3.9	3.6	3.8	3.5

TABLE 6.12 THE TRANSPORT OPERATIONS AND STORAGE INDUSTRY'S SHARE OF GDP FOR SELECTED COUNTRIES, 1971 TO 1983 (per cent)

a. 1982 figure.

Sources ABS (1987a, pers. comm. 1987). Organization for Economic Co-operation and Development (1985).

TABLE 6.13 TRANSPORT OPERATIONS INDUSTRY'S SHARE OF THE TOTAL WORKFORCE FOR SELECTED COUNTRIES, 1971 AND 1984 (per cent)

Country	1971	1984
Australia	5.3	5.5
Great Britain	4.6	4.2
United States	3.5 ^a	3.0 ^b

a. 1970 figure.

b. 1983 figure.

Sources ABS (1985a, pers. comm. 1986). Department of Transport, Great Britain (1985). United States Department of Commerce (1985).

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				For the	tota1	road system	
r Country	Total length of oad system ^a ('000 km)		Proportion of the total system paved ^b (per cent)	Kilometres of road per 1000 square km of land		Kilometres of road per 1000 passenger cars	
Australia ^d Federal		805	58		105	104	
of Germany ^f		487	99	1	960	19	
Great Britai	n	347	100	1	511	22	
Japan	1	125	56	2	980	41	
New Zealand		93	53		344	63	
United State	s 6	242	85		667	49	

TABLE 6.14 PUBLIC ROAD NETWORKS IN SELECTED COUNTRIES, 1984

a. All roads open to the public irrespective of surface type.

b. Bitumen, concrete, gravel, crushed stone or other improved surface.

c. Including station wagons.

d. Excludes forest commission roads in Western Australia and Victoria and roads in towns and local government areas in the Northern Territory.

f. 1983 figure.

Sources ABS (19860). Department of Transport, Great Britain (1985). International Road Federation (1985).

across the country but extensive in terms of route-kilometres per capita.

IMPLICATIONS OF INTERNATIONAL COMPARISONS

Australian travel patterns vis-a-vis those of other countries are obviously influenced by the dispersion of Australia's population over a large area and the resultant low population densities, together with the remoteness of Australia from regions with which it has close cultural and economic ties.

An examination of per capita passenger travel on various modes suggests that Australians may have a greater level of mobility than Japanese, New Zealanders or Europeans but lower mobility than Americans. Australians make relatively extensive use of the private car and air transport, which are generally more convenient and flexible or faster than other modes of transport.

Country	Tota] route- km ('000)	Total track- km ('000)	Proportion of the route-km electrified (per cent)	Route-km per 1000 square km of land	Route-km per 10 000 head of population
Australia	44 ^a	51 ^b	2 ^C	6	29
Canada	73	100	na	7	29
Federal					
Republic ,					
of Germany ^d	31	68	38	124	5
France ^d	35	72	33	63	6
Japan [†]	16	21	na	41	1
United Kingdom ¹	17	40	22	70	3
United States	251	416	na	27	11

TADLE 0.13 KAILWAT NLIMUKNJ IN JELEUTED COUNTRIEJ. 13	TABLE	6.15	RAILWAY	NETWORKS	IN	SELECTED	COUNTRIES.	1983
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a. The government system alone covers 40 000 kilometres.

b. Government system only.

c. Expressed as a share of government operated systems only.

d. 1984 figures.

f. Government system only.

na Not available.

Sources ABS (1984b). Department of Transport, Great Britain (1985). Federal Department of Transport (1985a). Ministry of Transport, Japan (1985). United Nations (1985).

Despite this large amount of travel by Australians, the share of total consumption expenditure by Australian households is quite moderate compared with, for example, the United Kingdom. Put another way, a high level of mobility for Australians has been achieved without travel expenditures absorbing a large share of household budgets.

The structure of the Australian economy is biased towards the production and export of minerals and agricultural commodities which are bulky and transport intensive. This is reflected in the quantity of Australian domestic and overseas freight which is very large compared with most other countries when expressed as a ratio of total production (GDP). This raises the interesting question of whether the relatively large Australian freight task translates into a demand for resources to provide transport services which is large in comparison with other countries.

However, it is relevant to note that the share of GDP accounted for by

the value added in the transport operations industry in Australia is close to the average of the share for a number of other countries. Despite the qualifications that apply to these comparisons and in so far as intermediate inputs are also relevant and not measured by value added, there remains the possibility that the amount of resources required to operate Australia's extensive transport services may not be too different, in relation to GDP, from those required for other countries.

Also of significance are the comparisons of trends in traffic and trends in the share of GDP accounted for by the transport industry. On the available evidence, traffic appears to have generally grown more rapidly in Australia than in other developed countries. This is particularly true for road and rail freight services, which are major consumers of economic resources. At the same time, the transport industry share of GDP has declined more in Australia than in most other countries.¹

Of the many factors which potentially contribute to these trends, two are of particular interest. One hypothesis is that the share of traffic accounted for by the transport of bulk commodities may have increased in Australia vis-a-vis other countries over the past 15 Since bulk commodities are generally transported at low costs vears. per tonne-kilometre this would be consistent with a greater reduction in Australia than in other countries of the amount of resources required to perform the total task. To the extent that these resource savings occurred in primary inputs, this would explain the relatively faster decline in the share of transport industry value added to GDP in Australia. Another hypothesis is that the costs of performing a given total transport task have declined in Australia compared with other countries. However, definitive conclusions from trends in various countries in transport tasks and resources consumed in the provision of transport services cannot be made without further detailed analysis.

It does not appear that the same conclusion can be reached in regard to the transport share of the labour force (where data problems may be more serious).

APPENDIX I CONSOLIDATED INPUT-OUTPUT TABLE OF AUSTRALIA, 1978-79

Table I.1 is an abbreviated version of the most detailed industry by industry Input-Output Table published by the ABS. The table uses indirect allocation of competing imports, and reports flows in terms of basic values. Each component of the broadly-defined transport sector is separately identified. All other industries are aggregated into a single 'other industries' sector. The table is used to support the analysis contained in Chapter 3.

		Intermediate demand												
lndustry code	Industry	51.01	52.01	53.01	54.01	27.08	32.01	32.02	32.03					
51.01	Road transport	66.7	10.8	9.1	13.8	8.9	54.7	2.6	2.1					
52.01	Rail transport	13.7	7.3	14.1	17.2	2.8	13.7	1.1	1.3					
53.01	Water transport	5.0	1.7	329.4	2.2	19.2	8.4	0.5	0.7					
54.01	Air transport	8.3	9.1	3.4	177.4	0.3	8.4	0.8	0.2					
27.08	Transport petroleum	389.9	45.9	139.5	239.0	139.3	5.1	0.5	1.0					
32.01	Motor vehicle and													
	parts manufacture	256.3	0.1	4.1	0.2	· _	1 677.1	0.4	3.7					
32.02	Ships and boats manufacture	-	0.1	96.8	0.1	0.2	1.1	2.2	0.4					
32.03	Other transport													
	equipment manufacture	0.6	218.8	-	-	-	2.5	0.1	24.4					
32.04	Aircraft manufacture	-	-	-	186.5	-	0.6	-	_					
41.21	Bridge and road construction	-	-	-	-	-	-	-	-					
49.01	Motor vehicle dealers	218.0	30.4	2.1	3.9	0.1	1.5	0.1	_					
	Other industries	966.7	703.1	399.0	413.4	1 144.9	1 131.7	154.3	140.7					
	Intermediate usage	1 925.2	1 027.3	997.5	1 053.7	1 315.7	2 904.8	162.6	174.5					

		Intermediate demand												
Industry code	Industry	51.01	52.01	53.01	54.01	27.08	32.01	32.02	32.03					
	Wages, salaries etc	1 230.0	1 156.1	585.1	550.6	68.7	933.8	150.7	240.8					
	Gross operating surplus	846.4	-492.2	246.4	242.0	64.7	214.4	35.2	-4.5					
	Net commodity taxes	251.3	11.1	0.9	46.6	827.3	7.1	0.9	0.4					
	Net indirect taxes	158.8	59.6	30.9	31.7	6.6	49.4	3.5	1.4					
	Sales by final buyers	-	-	_	-	_	3.1	-	0.8					
	Complementary imports	7.4	2.1	-	-	5.9	7.6	0.8	0.1					
	Duty on complementary import	:s –	-	_	-	-	-	-	-					
	Domestic production	4 419.0	1 764.1	1 860.8	1 924.6	2 288.9	4 120.3	353.7	413.5					
	Competing imports	1.5	23.3	372.9	679.3	261.6	1 729.6	59.3	3.4					
	Duty on competing imports	-	-	-	-	0.3	323.1	0.9	1.3					
<u> </u>	Total usage	4 420.5	1 787.4	2 233.7	2 603.9	2 550.8	6 173.0	413.9	418.2					

×				Intermed	iate demand	
Industry code	Industry	32.04	41.21	49.01	Other industries	Total intermediate inputs
51.01	Road transport	0.6	74.9	10.8	2 233.4	2 488.4
52.01	Rail transport	0.3	13.8	2.7	873.1	961.2
53.01	Water transport	0.1	4.6	1.2	362.3	735.3
54.01	Air transport	0.6	. –	1.0	628.6	838.1
27.08	Transport petroleum	0.6	81.3	4.2	664.0	1 710.3
32.01	Motor vehicle and					
	parts manufacture	0.1		323.3	203.5	2 468.8
32.02	Ships and boats manufacture	0.4	-	-	100.0	201.3
32.03	Other transport					
	equipment manufacture	-	-	0.3	13.4	260.1
32.04	Aircraft manufacture	59.1	-	0.2	244.2	490.6
41.21	Bridge and road construction	-	-	-	. –	-
49.01	Motor vehicle dealers	-	6.4	-	404.5	667.0
	Other industries	42.6	1 244.6	322.2	64 152.5	70 815.7
	Intermediate usage	104.4	1 425.6	665.9	69 879.5	81 636.8

(\$ million)

T		Intermediate demand													
lndustry code	Industry	51.01	52.01	53	3.01	54.01	27.08	32.01	32.02	32.03					
·	Wages, salaries	166.2	749.7	70	5.4		48	874.6	55	411.7					
	Gross operating surplus	41.4	218.6	40	2.1		36	813.7	38	623.2					
	Net commodity taxes	0.8	5.8	5	2.3			945.7	2	150.2					
	Net indirect taxes	1.7	33.5	3	1.2		3	417.4	3	825.7					
	Sales by final buyers	-	-		-			241.4		245.3					
	Complementary imports	0.6	-		2.3			704.5		731.3					
	Duty on complementary imports	-	-		-			-		-					
	Domestic production	315.1	2 433.2	1 85	9.2		160	876.6	182	629.0					
	Competing imports	504.7	-		-		12	229.8	15	865.4					
	Duty on competing imports	0.1	-		-			808.0	1	133.7					
·	Total usage	819.9	2 433.2	1 85	9.2		173	914.4	199	628.1					

										Fin	nalden	nand						
							capit	Gross tal ex	fi pen	xea dit	l ture							
_ 1 .		Final consumption		_		Pub	Public		Cananal	Change	9			Total		T - 4 - T		
code	ry Industry	Pr	ivate		Govt	P	rivate	ente pri	se	GE	govt	stocks	E	xports		tinai demand	į	supply
51.01	Road transport	1 2	286.6		142.6		122.1	13	.5		7.7	47.4		312.3	1	932.2	4	420.5
52.01	Rail transport	3	313.1		24.1		45.2	4	.2		1.2	46.9		391.4		826.1	1	787.3
53.01	Water transport	1	48.8		3.3		25.6	2	.2		0.8	5.1	1	312.6	1	498.4	2	233.7
54.01	Air transport	1 1	21.4		87.1		21.7	3	.9		1.6	-0.6		530.7	1	765.9	2	603.9
27.08 32.01	Transport petroleum Motor vehicle and	e	65.5		-		0.6	(.8		0.1	42.4		131.1		840.5	2	550.8
32.02	parts manufacture Ships and boats	18	356.2		0.1	1	491.6	103	.8		53.3	68.6		130.7	3	704.3	6	173.1
32.02 32.03	manufacture Other transport		54.8		· _		55.5	66	.7		5.6	-6.3		36.3		212.6		413.8
	equipment manufacture	3	2.4		-		27.3	113	.2		0.4	6.7		8.1		158.1		418.2
32.04	Aircraft manufacture		14.6		-		142.0	116	.6		10.6	0.5		44.9		329.2		819.8
	construction				-		-		-	2	433.2	-		-	2	433.2	2	433.2
49.01	Motor vehicle dealers	1 1	147.4		-		44.8		-		-	_		_	1	192.2	1	859.2
	Other industries	52 4	414.5	17	112.3	14	732.8	3 977	.7	1	349.3	783.0	12	728.6	103	098.2	173	913.8
	Intermediate usage	59 (025.3	17	369.5	16	709.2	4 402	.6	3	863.8	993.7	15	626.7	117	990.9	199	627.3

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		Intermediate demand																
Indust	ry																	
coae	Industry				51.01		52.0	1	53.0	1	54.	.01	2/.(. 80	32.0	1 32.	.02	32.03
	Wages, salaries etc		_				_				_	_				_	55	411.7
	Gross operating																	
	surplus		-		_		-		-		-	-		_		· _	38	628.2
	Net commodity taxes	4	150.6		-		149.4		-7.7		-0.9	-31.7		241.4	4	501.1	6	651.1
	Net indirect taxes		-		-		336.7		-		-	-		-		336.7	4	162.4
	Sales by final buyer:	s :	343.9		-4.6	-	391.8	_	197.7		-37.1	10.1		32.0		-245.3		-
	Complementary import	s !	567.5		-		-		-		-	19.0		0.1		586.7	1	317.9
	Duty on complementary	у																
	imports		-		-		-		-		-	-		-		-		-
	Domestic production	64 (087.3	17	364.9	16	803.5	4	197.1	3	825.9	991.1	15	900.2	123	170.1	305	799.0
	Competing imports		-		-		-		-		-	-		815.9		815.9	16	681.4
	Duty on competing																	
	imports		-		-		-		-		-	-		-		-	1	133.7
	Total usage	64 (087.3	17	364.9	16	803.5	4	197.1	3	825.9	991.1	16	716.1	123	986.0	323	614.1

- Rounded to zero.

Source ABS (1984a).

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APPENDIX II THE TRANSPORT SHARE OF CONSUMPTION EXPENDITURE IN SELECTED COUNTRIES

Tables II.1, II.2 and II.3 show trends since 1971 in the pattern of household expenditure on various items of transport for Australia, the United Kingdom and the United States. This provides detailed background information for the discussions on household consumption expenditure on travel in Chapters 5 and 6.

		Travel expenditure				
Year endin June	Rail, tram g and bus 30 fares	Air, sea and taxi fares	Motor vehicle purchase	Motor vehicle operation	Total	of total household expenditure
1971	8	14	. 35	43	100	14.4
1972	. 8	13	35	44	100	14.3
1973	. 8	14	35	43	100	13.9
1974	8	14	35	43	100	13.5
1975	7	. 14	34	45	100	13.5
1976	. 7	15	31	47	100	13.3
1977	6	15	32	· 47	100	13.3
1978	6	16	31	47	100	12.9
1979	6	16	30	48	100	13.1
1980	6	15	30	49	100	13.8
1981	6	15	27	52	100	13.5
1982	7	15	27	51	100	13.2
1983	7	14	27	52	100	13.4
1984	7	14	27	52	100	13.2
1985	7	14	28	51	100	13.5

TABLE II.1 HOUSEHOLD CONSUMPTION EXPENDITURE ON TRAVEL, AUSTRALIA, 1971 TO 1985

Source ABS (1986a).

(per cent)

		Traval				
		expenditure				
Year	Rail,					component
ending	tram	Air, sea	Motor	Motor		of total
December	and bus	and taxi	vehicle	vehicle		household
31	fares	fares	purchase	operation	Total	expenditure
1971	17.3	8.8	32.3	41.6	100	12.6
1972	15.9	9.0	34.4	40.6	100	13.1
1973	15.1	9.9	31.9	43.1	100	12.8
1974	15.1	10.1	25.7	49.1	100	12.2
1975	14.9	9.6	26.8	48.6	100	12.9
1976	15.0	9.6	27.8	47.6	100	13.2
1977	15.0	9.6	27.2	48.2	100	13.2
1978	14.2	9.6	33.2	43.0	100	13.8
1979	12.6	9.8	33.5	42.1	100	14.7
1980	12.8	11.0	31.2	45.0	100	14.8
1981	12.2	11.2	29.1	47.5	100	14.7
1982	11.4	11.3	29.0	48.3	100	14.6
1983	11.2	10.8	32.3	45.6	100	15.5

TABLE II.2 HOUSEHOLD CONSUMPTION EXPENDITURE ON TRAVEL, UNITED KINGDOM, 1971 TO 1983

(per cent)

Source Central Statistical Office, Great Britain (1979, 1985).

:		Trave]				
Year	Rail,					component
ending	tram	Air, sea	Motor	Motor		of total
December	and bus	and taxi	vehicle	vehicle		household
31	farés	fares	purchase	operation	Total	expenditure
1971	3.0	4.3	40.6	52.1	100	14.0
1972	2.8	4.4	42.2	50.6	100	14.3
1973	2.7	4.4	42.0	50.9	100	14.1
1974	2.9	4.9	34.6	57.7	100	13.3
1975	2.6	4.9	35.0	57.5	100	13.3
1976	2.3	4.8	39,2	53.7	100	14.3
1977	2.1	4.6	39.8	53.4	100	14.9
1978	2.0	4.7	40.9	52.3	100	14.7
1979	2.1	4.9	36.3	56.7	100	14.6
1980	2.1	5.5	30.4	62.0	100	14.2
1981	2.1	5.4	31.0	61.4	100	14.1
1982	2.2	5.3	32.8	59.6	100	13.5
1983	2.2	5.2	36.5	55.9	100	13.5

TABLE II.3 HOUSEHOLD CONSUMPTION EXPENDITURE ON TRAVEL, UNITED STATES OF AMERICA, 1971 TO 1983

(per cent)

Source United States Department of Commerce (1981, 1985).

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ABBREVIATIONS

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