THE FIRST ABS TRANSPORT INDUSTRY SURVEY 1983-84: AN OVERVIEW

Russell Rogers
Australian Bureau of Statistics

ABSTRACT:

Following strong demand from a wide range of users, the ABS is conducting the first comprehensive economic survey of transport industries, for the reference year 1983-84. The survey will cover all types of transport including road freight, bus and taxi operation, railways, water and air operation and freight forwarding. The data collected will include the main items of business income and expenses, fuel stocks, employment and measures of activity relevant to the mode of transport surveyed. At the same time a collection will be conducted covering road freight activity of businesses whose main activity is not road freight (eg, retailers, builders, farmers, manufacturers). The paper outlines the strategy adopted by the ABS for collection of this information, and illustrates the major problem areas and solutions chosen. It also summarises the data to be collected and the types of results which will be available.

BACKGROUND

It has long been recognised that transport costs absorb a significant proportion of national (and personal) income, yet very limited statistical material is available in Australia about the cost, efficiency, structure and performance of transport industries, or of the nature and extent of the various transportation functions performed throughout the nation. One measure of significance is contained in the Australian National Accounts where estimates for 1980/81 indicate that the Transport, Storage and Communication sectors account for some 7.5% of GDP at factor cost (ABS, 1984). However, this measure does not encompass transport activity carried out by other industries, or the significant expenditures involved in the development and maintenance of transport infrastructure. Some experts in the transport field have estimated that all transport related activity taken together may represent some 20% of GDP.

Characteristically, the transport sector is very capital intensive, and relies upon massive public infrastructure which requires long lead times for development and substantial resources to maintain. During the last few years there have been very significant increases in the capital and current costs of transport operations, and in the cost of infrastructure development and maintenance. This has been reflected in the increasing concern expressed by government and private organisations about the paucity of transport statistics in Australia.

Existing ABS transport collections have concentrated on measures of transport activity such as the triennial Survey of Motor Vehicle Usage, quarterly Interstate Freight Movements surveys and motor vehicle registration statistics. Until recently, little attention has been given to measuring transport as an industry.

In the 1960's the ABS began integrating its various economic statistical collections using standardized concepts and definitions to enable, for the first time, the aggregation and comparison of data across industry boundaries. This process has required four major steps to be achieved.

Firstly, business units have been defined at standard levels corresponding to the strata in the business structure for which various types of economic statistics are required. The basic unit used is the "establishment" which corresponds to the unit of production, such as a mine, factory or shop. Another unit, "the enterprise" corresponds to the legal entity that operates such establishments.

Secondly, a register of business units has been established. This records standard collection units on a central register which is used to provide name and address and other classificatory data about units in all economic censuses and surveys.

Thirdly, the classification of units by industry has been standardised. The Australian Standard Industrial Classification (ABS, 1978) is an hierarchical system which classifies units to particular industry groupings on the basis of their predominant activity. One consequence of this treatment is that any secondary activity of a

particular establishment (eg transport activity conducted by a predominantly retail establishment) is recorded against the industry to which the establishment is classified (its predominant industry) rather than against the industry to which that activity is primary. In this way for example, much transport activity would be recorded against industries other than transport because it is only a secondary part of the relevant businesses total activities.

Finally, data concepts have been standardised. Basic items of data for which statistics are required across all industries have been defined in common terms to permit comparison and aggregation.

At the outset of the integration project, it had been intended that the transport sector should be included in the first round of integrated economic censuses conducted in respect of 1968/69. However, a decision was taken early in the integration project that the transport component of the first round of censuses could not proceed because of the conceptual complexities associated with the statistical units and data in the transport sector, and the difficulties that would be encountered in building up adequate coverage of transport units on the central register of businesses maintained by the ABS.

Competing demands on ABS resources prevented a start on development of the transport sector collection until the late 1970s. Since that time, detailed work has proceeded on development of the Transport Industry Survey (TIS), culminating in its inclusion in the rotating program of economic censuses and surveys in respect of 1983/84.

The collections which have been conducted since 1968/69 have been manufacturing and mining (both annually) and retail trade, wholesale trade and construction, on a 5 yearly rotating basis.

As an activity, transport penetrates virtually every sector of the economy, with freight transport providing an integral link between different establishments and industries. Although this facilitates specialisation and economies of scale at particular locations, such specialisation also has disadvantages which can adversely affect the whole performance of the economy whenever the normal activity of key interdependent components (particularly transport) is disrupted through industrial disputes or some other cause. Identification of the significance, in each sector of the economy, of road freight transport in particular is a very strong requirement of major users of transport statistics. Accordingly, the ABS is conducting a survey of businesses mainly engaged in non-transport industries, to measure the significance of road transport undertaken on their own account. This collection which will be run concurrently with the collection of transport industry data, is called the Out Of Industry Survey (OOI).

The requirement to provide these data has extended the TIS project more widely than the integrated economic data collections of other industry sectors. In those sectors, the relative insignificance of "out of industry" activity has not warranted major efforts to measure it.

Both of these collections, the TIS and the OOI, are discussed in this paper.

USERS AND THEIR REQUIREMENTS

Transport Industry Data

The demand for transport industry data was confirmed by the very strong interest shown in draft TIS questionnaires and by requests for additional data items made by Commonwealth and State Government departments and by a variety of industry organisations, as questionnaire testing proceeded. Similarly, major private sector informants interviewed regarding data availability took the opportunity to discuss their interests as users (as well as suppliers) of data.

Close and continuous contact was maintained with major users during the development phases of the project. The requirements of the Commonwealth Department of Transport (DOT) had a significant bearing on the data content of the collection. Questions were also included to meet data needs of the Department of Resources and Energy. State authorities and industry organisations, which expressed strong support for transport industry statistics, were kept informed as the project progressed.

Users' requirements for statistics in respect of the transport sector included data about the structure and performance of transport industries (measured in terms of items such as turnover, purchases, other expenses, stocks, value added, employment, wages and salaries and capital expenditure) but also other data such as energy usage, passenger and vehicle movements, loads carried etc, commonly referred to as "activity" measures.

For reasons explained later in this paper, it has not been possible to meet all user requests for data at State and below State levels.

The fact that many transport industry classes are either monopolised or dominated by the public sector, while other classes are characterised by strong competition between public trading enterprises and private sector enterprises, has led to a request for establishment and enterprise statistics from the TIS to be classified by public/private sector.

'Out of Industry' Road Freight Activity Data

As mentioned above, the majority of users approached in respect of the TIS expressed a strong interest in concurrent collection of data on road freight transport activities undertaken by businesses classified to industries other than the road freight transport industry. Such road freight transport activity may occur either as own account activity or, to a much lesser degree, as hire and reward activity secondary to the main activity of the business.

In discussing user interest in data on 'out of industry' road freight transport activity, two broad areas of user interest were identified.

a measurement of relative efficiency when compared with hire and reward; and

b measurement of relative contribution to the total freight transport task.

SCOPE OF THE COLLECTIONS

Transport Industry Survey (TIS)

Division G of the 1983 revision of the Australian Standard Industrial Classification (ASIC) includes 30 distinct transport and storage industry classes ranging from the separate freight and passenger movement classes for each transport mode (road, rail, sea and air) and other transport classes such as cablecar and pipeline operations, to various services to transport such as parking stations, stevedoring, travel agencies and storage industries. While users have shown interest in most classes in the Division, by far the most important area of demand for information has been for the modal transport classes. In recognition of this major user interest and to keep the costs of coverage of the sector to a minimum, the scope for the TIS has been restricted to a sub-set of the classes in ASIC Division G and does not include Other Transport, Services to Transport (except class 5742) or Storage classes. The classes included are:

Sub-division	Group	Class	Title
51			ROAD TRANSPORT
	511		Road freight transport
		5111	Long distance interstate road freight
		5112	Long distance intrastate road freight
		5113	Short distance road freight
		5114	Road freight forwarding
	512		Road passenger transport
		5121	Long distance bus
		5122	Short distance bus (including tramway)
		5123	Taxi and other road passenger
52	520	5200	RAIL TRANSPORT
Sub-division	Group	Class	Title
53	530		WATER TRANSPORT
		5307	International Sea
		5308	Coastal water
		5309	Inland water
54	540		AIR TRANSPORT
		5405	Scheduled International Air
		5406	Scheduled Domestic Air
		5407	Non-scheduled Air
57			SERVICES TO TRANSPORT
		5742	Freight Forwarding (except road)

Out Of Industry Survey (OOI)

All industries except the Road Freight industry (ASIC group 511) and Public Administration and Defence (ASIC Division J) are included in the scope of the OOI survey.

Road freight activity information (such as number of trucks and truck drivers, and quantity of freight moved) is being collected from the Road Freight industry as part of the TIS. For all other industries in scope of the OOI this information is collected through a separate survey.

Government sector enterprises have been excluded because of difficulties with coverage, data availability, and the relative insignificance of their freight activity.

Road freight activity information from the two components of the collection, namely the TIS (ASIC group 511) and the OOI (other industries), will be brought together for output tables in a consistent way.

COVERAGE FOR TIS AND OOI

For economic censuses and surveys such as the TIS and OOI, the population information (covering units, names and addresses, industry, etc) needed for the collections is stored on the ABS's register of business units. Both collections are sample surveys, which reduce respondent burden and resource costs.

Prior to running the two collections it was necessary to update the list of transport businesses on the ABS's register by obtaining information from various sources about owners/operators/licensees etc. of transport equipment. The main coverage sources used are discussed below.

Road Freight Industry (ASIC Group 511), and Industries included in OOI

It proved difficult to obtain adequate coverage of businesses engaged in road freight transport activities. There are a large number of vehicles in Australia which potentially could be used for road freight purposes. These include about half a million trucks, 1.5 million utilities and panel vans, and an unknown number of cars, motor cycles and even some bicycles. To attempt to approach each vehicle's owner to determine whether it was used for business purposes and to gather the relevant register information was clearly impractical.

Users of road freight information indicated that their highest priority for data would be for road freight activities undertaken using larger vehicle types. Their interest was, in the main, for information on the operations of businesses, including owner-drivers, with trucks and truck fleets, rather than small scale freight operations such as couriers, parcel delivery etc.

Coverage for the road freight industry and the OOI collection was therefore based on records only of truck registrations, stored on the various State and Territory motor vehicle registration (MVR) systems.

The approach adopted by the ABS was to select a sample of truck registrations from the State and Territory MVR files, identify the registered owners as possible road freight operators, and record appropriate information about them in the ABS register of businesses to enable them to be approached in the TIS and OOI. Set out below are the steps involved in this process.

"Trucks" are defined on the various MVR files in different ways, but for the TIS and OOI only those vehicles registered as rigid or articulated trucks with a gross vehicle mass of 2.7 tonnes or more were considered as "trucks". Each MVR authority provided the ABS with a magnetic tape which contained a list of the trucks registered by that authority which satisfied as closely as practicable the above definition.

There are about 420,000 registered "trucks" meeting this definition in Australia. In selecting the sample for the road freight industry and the OOI, it was necessary to include only those vehicles likely to be used for road freight.

The sample of "trucks" was obtained by randomly selecting 1 in 20 of the vehicles on these registered truck lists. The sample of about 20,000 trucks was determined as the smallest sample which would provide estimates of acceptable quality.

Because of this method of determining coverage for the road freight component of the TIS and the OOI, some businesses engaged only in road freight activities but which do not require a truck (chiefly parcel or mail delivery using motor cycles, utilities or cars) have been excluded. However, it is estimated that such businesses account for only about 2% of total gross receipts for the road freight classes.

Other TIS In-scope Industries

For other transport industries in scope of the TIS it was necessary to find other sources to update the coverage on the business units register. For these industries an attempt was made to develop full coverage, in contrast to the sampling technique used for coverage of road freight operators. However sampling was then used to select the units in these industries actually included in the TIS.

Briefly, Commonwealth and State transport licensing authorities provided lists of

- bus operators
- taxi operators and taxi radio bases (including hire cars)
- water transport operators
- air transport operators

Lists of freight forwarders (other than road) were obtained from telephone book yellow pages.

ENUMERATION METHODS

Pilot tests (by mail enumeration, followed by some interviews) conducted during the development of the TIS indicated that the response and the quality of data reported by small road freight and taxi/hire car enterprises was poor. It was concluded that to continue with a mail method of enumeration for these enterprises would lead to an unacceptably high level of follow-up and querying.

As an alternative to mail enumeration it was decided that the 4500 small road freight and taxi/hire car enterprises selected in the TIS would be enumerated using field interview. All other enterprises in the TIS and OOI were enumerated by mail questionnaire. Mail pilot testing for these other industries indicated that the management and record keeping practices were of sufficient standard to enable information of acceptable accuracy to be collected by mail.

The mail phase comprised about 12000 enterprises, made up of about 3000 transport industry enterprises and about 9000 enterprises in other industries.

STATISTICAL UNITS

Transport Industry Survey

As mentioned above, for all ABS integrated economic censuses and surveys the establishment is the statistical unit which encompasses the production processes carried out within an industry. For most economic collections other than the TIS, the establishment is defined as the unit covering all the operations carried out under one ownership at a single physical location, eg at a factory, mine or shop.

However this establishment concept is inappropriate in a number of transport industries because of the combination of mobile and fixed base operations which characterises these industries.

In the transport sector a significant proportion of total activity relates to production processes that occur largely between physically separate locations, and in many instances more than one location of an enterprise will be involved in a given production process (ie. fulfillment of a contract). In practical terms these various locations together constitute the producing unit, and it has been found that, in general, the costs and revenues associated with the production process can only be allocated to individual locations by the adoption of a variety of conventions (eg. allocate costs of mobile equipment to the base of operations of the equipment, allocate revenue to the location initiating the contract, etc).

After extensive investigations, there was found to be no practical alternative to an establishment definition which combines all of the locations of the enterprise concerned in movement activity primary to the modal transport industry concerned; ie to adopt an Enterprise/Industry concept of the establishment, defined as all the operations of an enterprise conducted from all of its locations in Australia predominantly engaged in activities primary to the same transport industry. This means that value added can only be attributed to the geographical area covered by all the locations, which in most cases will be a whole State, or in some industry classes the whole nation.

As a consequence of the adoption of this definition, almost all establishments included in the TIS have multiple locations. The exception is the Taxi and Hire Car industry, which retains the definition of an establishment as a single physical location.

Divisionalised Enterprises

During the development of the TIS, it was found that some large private and public sector enterprises engaged in transport activities have their operations organised on a "divisional" basis. Because divisions are the main or only organisational and accounting units within these enterprises, special establishment formation rules were developed which, as a starting point, treat the enterprises' divisions as establishments.

Seven large private and public sector enterprises are treated on a divisionalised basis in the TIS.

Captive Transport Establishments

In some large enterprises, significant intra-enterprise transport operations are carried out by their own or leased equipment to carry goods or people as part of some other operation of the business (eg mining). Where this ancillary transport activity is significant for a particular enterprise and the full range of establishment data can be collected the ABS has defined separate and distinct transport establishments, called captive transport establishments, for the separate transport operations of the enterprise.

Those cases where captive transport establishments have been defined include all own account railway operations of greater than 700 million tonne-kilometres per year and all own account shipping operations involving a fleet of greater than 50,000 deadweight tonnes.

'Out Of Industry' Collection

The statistical unit adopted for the OOI collection is the enterprise. This is defined as a unit comprising all operations in Australia of a single operating legal entity, eg a sole proprietorship, partnership or incorporated company. All road freight activity, using trucks above 2.7 tonnes GVM, of enterprises whose main activity is not road freight will therefore be measured in the OOI collection.

SURVEY DATA CONTENT AND OUTPUT CLASSIFICATIONS

TIS Data Items

The following items have been collected in the TIS.

A. Structural Data (all Modes)

- number of establishments and enterprises operating during the reference year
- income from transport by all modes, by source of income
- other selected income, by type
- turnover

- opening and closing stocks of fuel by fuel type and fuel storage capacity
- opening and closing stocks of other goods
- selected expenses, by type of expense
- value added
- employment, total and monthly, by sex
- wages and salaries paid
- capital expenditure and disposals, by type of asset
- usage of electricity and other fuels

B. Activity Data

Road Freight Transport

- tonnes carried, by prime and subcontract
- vehicle fleet details (ie number of trucks, by size)

Bus Transport

- vehicle fleet details
- passengers carried and kilometres travelled, by type of service

Air Transport

- hours flown (all aviation industries)
- passengers carried
- passenger kilometres
- freight carried
- tonne-kilometres

The last 4 items to be collected from airlines and commuter operators only.

Rail Transport

- locomotives and rolling stock
- passenger kilometres and journeys
- freight carried, by nature of consignment and commodity

Water Transport

- vessel details
- overseas and coastal cargo moved, by type

TIS Data Collected on a State Basis

The adoption of the Enterprise/Industry concept for the establishment unit, for all industry classes in-scope of the TIS except taxi and hire car transport, does not fully satisfy those users requiring State data. Therefore, the following restricted range of data is being collected at the State level for these establishments: number of employees; fuel stocks; rent, leasing and hiring expenses; wages and salaries; capital expenditure and disposals of fixed tangible assets. These items are generally available from business records and can be attributed accurately to an individual State. Details of revenue on a State basis could not be collected because of the difficulty of formulating definitions that were both unambiguous and capable of being supplied by respondents.

OOI Data Content

The following items are included in the OOI Survey:

- fleet details (number of trucks)
- opening and closing stocks of fuels and fuel storage capacity
- running expenses of registered trucks and trailers
- wages and salaries of truck drivers
- truck rent, leasing and hiring expenses
- depreciation provided on trucks and trailers
- capital expenditure and disposals of trucks and trailers
- employment of truck drivers
- tonnes carried

As with the TIS, only a restricted range of State data could be collected, comprising employment of truck drivers, stocks of fuel, wages and salaries of truck drivers and capital expenditure.

Classifications Available in Output

The following classifications of data items will be produced from the survey:

Geographic area:

Each State, "Multi-State" and Australia. (The category "Multi-State" will comprise units with activities in more than one State which cannot be attributed to a single State.)

Industry:

- For the TIS, those ASIC classes in scope of the collection (see section on scope above), and the related ASIC groups and sub-divisions.

- For the OOI, industry detail will relate to ASIC sub-division (eg 01 Agriculture, 47 Wholesale Trade, 48 Retail Trade).

Size of Establishment:

Separate classifications of turnover size, value added size and employment size, will be provided for all industries, but classifications by truck, bus, taxi, ship and aircraft fleet size will be available only for the relevant industries.

PRESENTATION OF RESULTS

Preliminary results (based on a proportion of receivals) are expected to be published before June 1985 and final results will be released progressively from about September 1985.

Following the release of these publications, more detailed output covering areas in which users have a specific interest may be available from the ABS on request.

TIMING OF MAJOR EVENTS - TIS AND OOI

August 1984 - forms dispatched (mail phase)
September, October 1984 - reminders mailed out
October 1984 - field phase commenced in New South Wales
November 1984 - follow up of outstanding returns (mail phase)
February 1985 - field phase commenced in all other States
May 1985 - field phase completed
- publication of preliminary results
September 1985 - publication of final results commences.

REFERENCES

1 Australian Bureau of Statistics, "Australian Standard Industrial Classification", 1978 Edition, ABS Catalogue No. 1201.0.

2 Australian Bureau of Statistics, "Australian National Accounts, National Income and Expenditure 1982-83", ABS Catalogue No. 5204.0.