

**The Rail Transport Industry  
in the New Zealand Producers Price Index**

**Tuesday Morning PPI Mini-Presentations (BB)**

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## **Introduction**

Rail transport is a component of New Zealand's Rail, Other Transport and Storage Services Producer Price Index (PPI), which was included in the first publication of the PPI (under the name of the General Price Index) in July 1978. In 1982, the first year of the PPI progressive redevelopment cycle, the Transport and Storage index was revised and the expression base updated from the December 1977 quarter to the December 1982 quarter. The Transport and Storage index was redeveloped in 1992 and again in 1996. In 1998 the PPI was rebased to the December 1997 quarter.

In 1996 the Australian and New Zealand Standard Industrial Classification 1996 (ANZSIC96) was introduced to the PPI. Railway Transport changed from class 71110 - of the New Zealand Standard Industrial Classification 1975 (NZSIC75) to ANZSIC96 class I6200 – Rail Transport.

This series of indexes are currently under review as part of a comprehensive PPI redevelopment project. The redevelopment includes the collection of new commodity proportions by industry, redevelopment of the commodity indices and items-to-price within these commodities, a re-weight and rebase of the industry-level index, and the implementation of a new industrial and commodity classification systems (ANZSPC and ANZSIC06, respectively). In the interests of international statistical comparability, ANZSIC06 will, as far as practicable, align at the two digit sub-division level with the International Standard Industrial Classification of All Economic Activities (ISIC) and the North American Industry Classification System (NAICS). The ANZSIC96 group I620 Rail Transport will be separated into two ANZSIC06 groups: I471 Rail Freight Transport and I472 Rail Passenger Transport.

This paper describes New Zealand's experiences compiling rail transport price indices, in particular the more highly weighted rail freight transport index, as part of the PPI.

## **Industry Output**

The ANZSIC definition of the Rail Transport industry consists of units mainly engaged in operating railways (except tramways) for the transportation of freight or passengers, in operating railway terminal or depot facilities for receiving, dispatching or transferring rail freight or cargo, or in providing services allied to railway transport nec. Excluded are units mainly engaged in repairing railway rolling stock or locomotives, constructing or repairing railway permanent way, providing catering services, operating tramways for the transport of passengers, rail freight forwarding and operating railways as a tourist attraction.

ISIC Rev 3 definitions for this sub industry differ in that ISIC Rev 3 separates the following activities from rail transport:

- Suburban railways transport is classified in class 6021 - Other scheduled passenger land transport.
- Passenger and freight terminal activities, cargo handling, storage and other auxiliary activities are classified in the appropriate class of group 630 - Supporting and auxiliary transport activities; activities of travel agencies
- The operation of sleeping cars is classified in class 5510 - Hotels; camping sites and other provision of short-stay accommodation

## The New Zealand Railways System

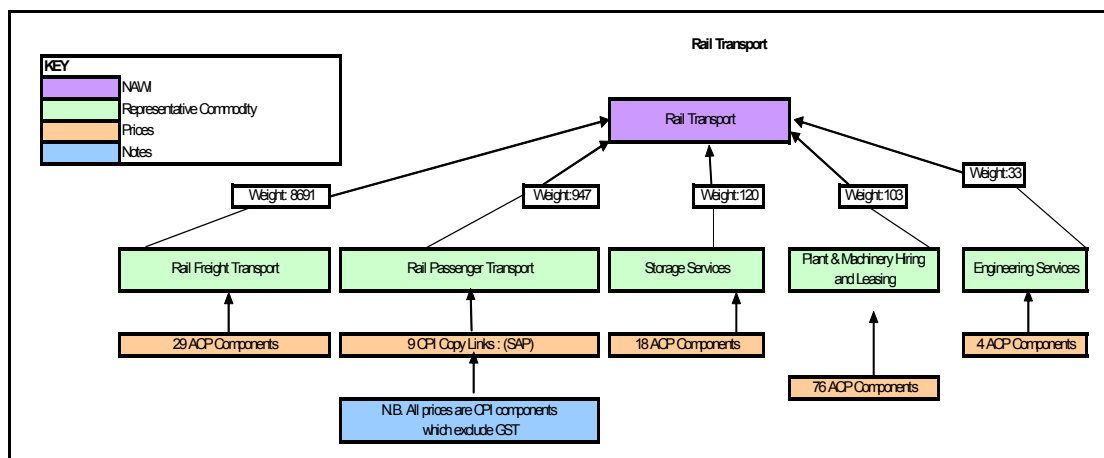
The New Zealand railways system has been through a period of transition from a government-owned and operated organisation to a commercially responsible, privately-owned business. There is currently only one major participant in this industry, which manages its core business operations through stand-alone business units including an urban commuter rail service, urban passenger rail services and long distance rail passenger operation. The business is also the sole freight operator of the national rail network, transporting freight on container trains (containerised freight), pack trains (consolidated general freight), bulk trains (coal, logs, milk), and block trains (steel, aggregates, fertiliser).

## Index Model

Rail Transport is split into five representative commodities; Rail Freight Transport; Rail Passenger Transport; Storage Services; Plant and Machinery Hiring and Leasing and Engineering Services.

The details of these representative commodities can be seen in the figure below, which provides a top-down view of the index structures (industry to sub-industry to commodities) in the Generalised Index Facility Toolbox (GIFT). The purpose of GIFT is to capture prices, specifications and reasons for change, edit prices, adjust for quality change, calculate average prices and indexes, and produce reports.

**Figure 1 Current Top - Down View of Rail Transport in GIFT**



Note: NAWI refers to the National Accounts Working Industry level.

The representative commodity 'Rail Freight Transport' contains 29 As Collected Price (ACP) components and are all obtained from an internal questionnaire. The major participant in this industry provides an excel spreadsheet in the middle of the month after the end of the quarter (January, April, July and October), which shows revenue, tonne kilometres, and tonnes carried. Prices from this spreadsheet are then entered into GIFT.

The representative commodity 'Rail Passenger Transport' consists of prices obtained solely from Consumer Price Index (CPI) items. They contain nine CPI items which include Long Distance Rail Fares and Suburban Rail Fares.

While Rail Freight and Passenger Transport are dominated by one major participant in the industry, data for Storage Services; Plant and Machinery Hiring and Leasing and Engineering Services are provided by a variety of firms. Prices for these three representative commodities are obtained by quarterly postal survey with the pricing date being the 15th of the middle month of the calendar quarter. The Commodity Price Survey (CPS) questionnaire is customised for each respondent and pre-printed with the most recent price history. At the present time, the representative commodity 'Storage Services' contains 18 ACP components collected from 12 businesses; 'Plant and Machinery Hiring and Leasing' contains 76 ACP components collected from 36 businesses, while 'Engineering services contains 4 ACP components.

The PPI is a Laspeyre's index, calculated by dividing the price in the survey period by the price in the base period, currently 1997, and multiplying the product by 1000.

New Zealand PPIs use a hierarchical "building block" structure where prices feed into commodity indices, which then feed into industry indices and finally into the All Industries index. Indices are calculated at the 6-digit commodity level, and then grossed to the 4-digit working industry and above. Appendix B shows the Rail Freight and Passenger Transport price to index model.

### **Sampling and Weights**

The previous redevelopment of the Rail Transport Industry encountered problems collecting data from the major industry participant, which was reluctant to release any breakdown of its outputs. While Rail Passenger Transport consists of prices obtained solely from CPI items, the Rail Freight Index was developed using the CPS, which included information on revenue (\$), tonnes carried (T) and number of tonne kilometres (NTK). The weights within the index were based on the major industry participant's 1995 revenue. In September 1998, the company restructured and the top 30 commodities, which made up 97% of the company's revenue, were used as the representative commodities.

Domination of the Rail Transport Industry by one major firm presents collection difficulties that are discussed further under 'Issues'. However, the size of New Zealand's economy limits the sampling options for all indices. The entire business population contains only 400,000 enterprises with (a) 2 or more employees and/or (b) sales of \$30,000 or more. Therefore, Statistics NZ price indices are based on "purposive" or judgement samples, where the sample is selected on the basis of the knowledge and judgement of staff compiling the index.

The main data source used in weighting the aggregated industry indices is the 1996 Annual Enterprise Survey (AES) conducted by Statistics NZ. The 1995 Census of Manufacturing was also used. While AES data forms the basis for the weighting of the PPI, the detailed commodity weighting information has to be gathered separately. This was primarily achieved through the Producers Commodity Survey (PCS), run separately for each industry group. Respondents to AES were stratified, and a sample selected from which to gather the lower level weighting information. AES variables

for the components of Gross Output and Intermediate Consumption were used as control totals, and the information gathered was weighted to derive industry totals for the commodity breakdowns. A current list for the Rail, Other Transport, and Storage Services subdivision can be found in Appendix C.

A new redevelopment and concurrent collection of commodity proportions by industry for all PPIs was begun in 2004. The Transport and Storage industry is currently under development and scheduled for completion in early 2006. The team are currently awaiting the provision of data from businesses to produce the table of commodity proportions for inputs and outputs of the Transport and Storage Industry.

The entire PPI redevelopment, to be completed in three phases over the course of 9 years, will consist of: a collection of commodity proportions by industry and redevelopment of the commodity indices and items-to-price within these commodities; a reweight and rebase of all the industry level indices; implementation of a new industrial classification system (ANZSIC06); and the establishment and implementation of a “rolling review” programme for the commodity proportions by industry and indices within each industry to ensure the commodity proportions and indices stay abreast of real world developments. The implementation of an alternative inflation framework for the PPIs is also under consideration.

## **Issues**

There are a number of potential weaknesses within the indexes produced for the Transport and Storage Division, most of which stem from the pricing methodologies employed. Many of the services provided within this industry are subject to considerable quality variation over time, and it is extremely difficult to monitor these changes effectively so that only pure price change is recorded within the indexes. Quality variations are accounted for where possible. However, in many instances they are extremely difficult to identify and quantify.

The Rail Passenger Transport Index will continue to use prices obtained from the CPI. However the redevelopment of the Rail Freight Transport Index has presented some challenges.

- The current method of collecting business price by container and weight, and recording price change as revenue divided by number of tonne kilometres (NTK) is more representative of volume change than price change. It would be better to price on a ‘revenue by container’ and ‘distance travelled’ basis. To eliminate some of the variation due to pricing by weight it was decided to price based on cars/containers. This has the benefit of eliminating the tendency for volume change to show as a price movement, however does exclude some information that affects price, such as speed required, and bulk discounts.
- Due to internal accounting practices the major industry participant is unable to separate expenditure into individual business units. This was solved by asking for the provision of overall expenses, plus expenditure that relates directly to the business type (eg traction electricity for rail) weighted according to income breakdown. The AES information collected from the major industry participant was also useful for weighting purposes as it separates each business unit.

- Since the major industry participant is horizontally integrated it is hard to separate which earnings belong to which business, therefore the output index in rail transport will likely exclude some of the ‘other income’.
- Freight forwarding is recorded as an internal transfer, which makes it difficult to establish what is actually charged for the rail element of freight movement. However, it is believed that price change will be shown adequately at an aggregate level.
- The majority of freight clients are large, purchase freight on a regular basis and receive discount. Therefore the inclusion of prices from small irregular clients should be restricted to limit price volatility.

The main price determining factors for Rail Freight are

- weight
- volume
- length of haul
- customer type
- urgency
- opportunity (eg available space on train)
- commodity (to a lesser extent)

Note: whether the job is regular or one-off is not deemed a price determining factor.

## **Commodity Proportions**

The following commodities were collected in the Freight Questionnaire. The items to price were selected from these based on information gathered by visiting the major industry participant, from the last redevelopment and from the internet.

- Coal
- Liquid dairy produce
- Forestry
- Freight forwarding (excluding internal)
- Iron and steel
- Vehicles
- Other bulk solids
- Other bulk liquids
- Internal freight forwarding
- Miscellaneous freight

The team are currently awaiting the provision of data from the major industry participant to produce commodity proportions for inputs and outputs of the Transport and Storage Industry.

## **Appendix A: Australian and New Zealand Standardised Industrial Classification of Rail Transport - 1996**

### **Division I – Transport and Storage**

#### **Subdivision I62 – Rail Transport**

Group I620 Rail Transport

Class I6200 – Rail Transport

Sub-class I620000 – Rail Transport

This sub-class consists of units mainly engaged in operating railways (except tramways) for the transportation of freight or passengers, in operating railway terminal or depot facilities for receiving, despatching or transferring rail freight or cargo, or in providing services allied to railway transport nec.

#### *Exclusions / references*

Units mainly engaged in

(a) repairing railway rolling stock or locomotives are included in sub-class C282300

Railway Equipment Mfg;

(b) constructing or repairing railway permanent way are included in sub-class

E412200 Non-Building Construction nec

(c) providing catering services are included in sub-class H573000 Cafes and

Restaurants

(d) operating tramways for the transport of passengers are included in sub-class

I664300 Freight Forwarding (Except Road); and

(e) operating railways as a tourist attraction are included in sub-class P933000 Other Recreation Services.

#### *Primary Activities*

Container terminal operation (railway)

Freight transport service (railway)

Passenger transport service (railway)

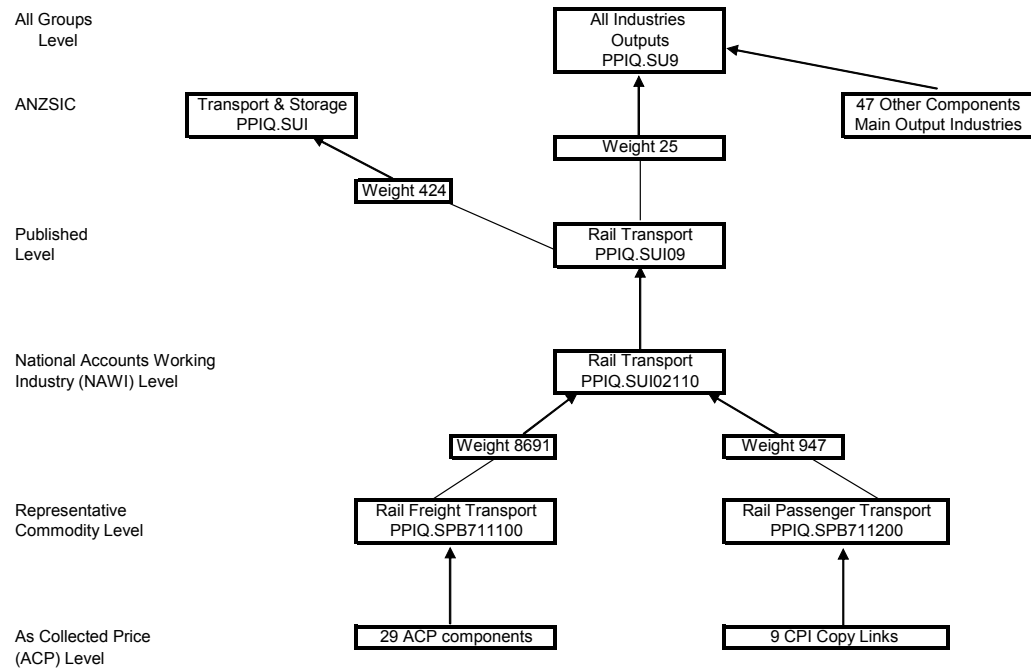
Railway station operation

Suburban railway transport service (except tramway transport)

Terminal operation (railway)

Tourism development consultancy service

## Appendix B: Price to Index Model





## Appendix C: Rail, Other Transport, and Storage Services

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### RAIL, OTHER TRANSPORT, AND STORAGE SERVICES

ANZSIC Division I, Subdivision 62 & 6

Weighting Base: 1995

INPUTS		OUTPUTS	
Percentage of Total Inputs in Industry		Percentage of Total Outputs in Industry	
<b>Fuel and Power</b>	<b>6.0</b>	<b>Rail Transport</b>	<b>14.5</b>
Non-domestic NZ Electricity	2.3		
Diesel and Fuel Oil	3.0	<b>Other Transport and Storage</b>	<b>85.5</b>
LPG	0.6	Travel Agency Services (Package Tours)	15.9
CPI Petrol 91	0.1	Storage Services	12.8
<b>Transport and Storage</b>	<b>25.6</b>	Stevedoring Services	7.8
Air Passenger Transport	8.3	Air Passenger Transport (International)	7.4
Road Freight Transport	5.5	Wharfage Charges	5.4
Air Freight Transport	6.0	Other	5.4
Transport Equipment Hiring and Leasing	2.9	Pilotage Services	3.8
Sea Freight (International)	2.5	Airways Corporation Charges	3.2
Port Charges	0.4	Air Freight Transport (International)	3.1
<b>Communication</b>	<b>2.6</b>	Airport Landing Charges	3.0
<b>Finance and Insurance</b>	<b>0.2</b>	Road Freight Transport	2.9
<b>Business Services</b>	<b>18.7</b>	Commercial Rent - Factory and Industrial	2.7
Commercial Rent - Factory and Industrial	7.1	Sea Freight (International)	2.5
Management Fees	3.2	Air Freight Transport (Domestic)	2.0
Computer Services	1.9	Airport Concession Rentals	1.6
Pest Control and Cleaning Services	1.6	Engineering Services	1.5
Plant and Machinery Hiring and Leasing	1.4	Management Fees	1.4
Legal Services - Corporate	1.3	Parking Services	1.1
Commercial Rent - Office and Admin	0.9	Airport Departure Charges	1.1
Stevedoring Services	0.7	Document Handling Services	0.9
Other Consultant Services	0.3		
Accounting Services	0.2		
Advertising	0.1		
<b>Other Expenses</b>	<b>46.9</b>		
Other	31.5		
CPI - Hotel/Motel	13.7		
Stationery	1.7		
<b>Total</b>	<b>100</b>	<b>Total</b>	<b>100</b>