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Rail Freight Transportation Services

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1.0 Introduction

This paper summarizes international progress and challenges in the measurement of turnover, price change, as well as classification issues for the rail freight transportation services industry. The main objective is to recommend best practices so that countries developing or revising their own programs will have a benchmark or point of reference.

The main sources of information used in this paper are presentations and summary notes from previous Voorburg Group (VG) meetings, along with the results of a survey of country progress and a specific survey on rail freight transportation services (see Tables A.0 and A.1 in the Appendix).

The paper is organized as follows: Section (2.0) covers some of the primary issues related to classification; Section (3.0) describes turnover measurement issues and addresses the turnover collection practices of several countries; Section (4.0) presents the methodological price collection options chosen by several countries and concludes with a general discussion of price measurement issues and challenges.

2.0 Classification

The classification of freight rail transport services is fairly standard internationally, by industry and by commodity.

2.1 Industry Classification

The main industrial classifications used by Voorburg Group participants are relatively comparable in the freight rail transport service. Four common industry classifications are considered here: the *Australian and New Zealand Standard Industrial Classification* (ANZSIC 2006, Revision 1.0), the *International Standard Industrial Classification* (ISIC, Revision 4.0) the *Statistical Classification of Economic Activities in the European Community, Rev. 2* (NACE Rev. 2) and the *North American Industrial Classification System* (NAICS 2007). When comparing the four industry classifications the conclusion is that they broadly cover and define the same activities within freight rail transport services. Table A.2 in the Appendix provides a general overview along with industry classification details.

One minor difference can be found in NAICS 2007, where the distinction is made at the 6-digit level between *482112 Short-Haul Freight Rail Transportation* and *482113 Mainline Freight Rail Transportation.* Short haul freight rail transportation is concerned with establishments primarily engaged in operating railways for the transport of goods on a rail line that does not comprise a rail network, while mainline freight transportation covers establishments primarily engaged in operating railways for the transport of goods over a mainline rail network. The other three classifications combine the short-haul and mainline freight activities into one classification group.

As well, the JSIC (Japanese Standard Industrial Classification) classification structure for railway transport differs from ISIC rev.4 classification structure in that there are

more sub-classes of rail transport. However, the JSIC does not provide a separate classification for freight versus passenger transport.[1]

Common exclusions to all the classifications systems are: establishments or units that are mainly engaged in: repairing railway stock or locomotives, storage and warehousing, freight terminal activities, cargo handling, operating switching and terminal railways, or operation of railroad infrastructure.

2.2 Product Classification

The main product classifications presented are the *Central Product Classification Version 2* (CPC Ver.2), *Classification of Products by Activity*, (CPA 2008), and the *North American Product Classification System* (NAPCS Ver.1). Similar to the industry classification, there is much overlap between the three product classification systems and they all focus mainly on the type of container used to transport by rail (examples include: refrigerated car, tanker car and intermodal containers).

However, NAPCS does go into more detail and approximates closer the type of commodity being transported. For example products such as *482002.8 Transportation of automobiles and light-duty trucks by rail*, *482002.9 Transportation of livestock by rail* and *482002.10 Transportation of waste by rail*, are separately classified.

2.3 Issues in Classification

As it stands, there are no major or noticeable issues related to the classification of freight rail transport internationally. With the exception of Japan, the several classifications presented overlap seemingly well, the only minor difference being the level of detail available. However, whether these classifications are usable for price statistics is a question to be discussed in section 4.

3.0 Turnover Statistics – Recommended Development Options

Of the countries responding to the survey and providing country progress reports, virtually all collect turnover data for freight rail transport. Table 3.0 provides an overview of best, good and minimum development options recommended for countries either designing new or re-developing existing turnover programs. Almost all countries use survey/census as their main source of survey data and the majority of countries produce structural turnover statistics (i.e. statistics for describing the structure of the sector, figures of high quality but published with some time delay, frequency yearly or less). Fewer countries produce short term statistics, (i.e. statistics for describing the economic trend the sector is following, figures published close to survey date, high frequency such as monthly or quarterly).

[1] See mini-presentation *"Turnover for Railway Transport In Japan"* by Hiroaki NAGAFUJI, Economic Statistics Division, Statistics Bureau of Japan presented at Voorburg 24th Session, Oslo, Norway 2009.

The most common level of detail collected is the minimum required to produce industry turnover figures, and there is very little commodity level detail.

Table 3.0: Options for Developing Turnover Statistics

Category	Data Source	Level of Detail Collected	Frequency	Cost
Best	Survey/Census	Industry turnover and product turnover detail;	Sub-annual collection (monthly or quarterly)	- Most expensive - Largest response burden
Good	Survey/Census and Administrative (tax data, industry association data etc.,)	Industry detail only	Sub-annual	- Expensive - High response burden - Reconciling administrative data variables with survey variables
Minimum	Administrative (tax data, industry association data etc.,)	Industry detail only	Annual	- Least expensive - Little or no respondent burden

Overall, the majority of countries appear to have programs falling into the *good* category, with largely survey-driven programs that collect industry level data at a sub-annual frequency, but that also rely on administrative data to supplement their survey programs.

3.1 Other Considerations

The main challenges for turnover programs stem from issues of confidentiality and data collection. Canada and Finland each have highly concentrated rail transport industries, consequently data publication can be limited. Mexico has an additional challenge in that some of the companies are state-run governmental organizations, and the absence or lack of records makes accurate data collection difficult. Japan and the Netherlands have combined data for passenger and freight transport, although Japan is able to produce separate turnover figures.

4.0 SPPI Recommended Development Options

Countries producing an SPPI for the freight rail transport services industry use a variety of pricing methodologies. Germany has a hybrid approach, employing three pricing methods: contract pricing for main haulage services (the predominant activity), pricing of repeated services for construction train and shunting services, and unit value pricing for track construction service. The main benefits of contracting pricing are that real (actual) prices paid are collected, and if sufficient contract detail is available then appropriate quality changes can be carried out when a contract is replaced or comes due. In the German case, a variety of price-determining characteristics are surveyed, such as: wagonload/block train traffic, market segment, goods transported, wagon type and ownership of the wagons (private/leased or rented/own), starting and destination stations,

intermodal transport/traction for block trains or wagonload traffic/servicing of junctions, stations/junctions serviced, etc.,.[2]

However, confidentiality and response burden are two main challenges for the contract price method, since respondents may not want to divulge their client's contract information or they may find tracking and re-pricing these contracts too burdensome.

Canada has developed its SPPI based on the direct use of prices of repeated services, collected by internet pricing. Using the turnover data for the two dominant companies (together accounting for about 94% of the rail freight activity) in the industry, a representative list of commodities transported along with main routes are established and then priced from the websites of the two main freight rail transport companies. The specifications and terms of are held constant when the list or tariff prices are collected. The companies (respondents) have pointed out that while these price were not actual contract prices, they did represent a good proxy for their company's price change regime, reflecting the impact of underlying elements of supply/demand, fuel charges, etc.,. As a second-best option to directly collect prices via surveys, this price collection method provides for respondent-friendly data collection that minimized unnecessary response burden. [3]

Finland produces its quarterly SPPI using the unit value pricing method. It too has a dominant player in the freight rail transport industry. The respondent is able to provide revenues and tonne-kilometres by carriage group. Based on this information, the data supplier calculates the average price in cents per tonne-kilometre, forming the basis for the SPPI. Statistics Finland is currently evaluating the adequateness of the unit value prices in freight rail transportation for future use as a deflator. The unit value method can be used in cases where transactions in a group are sufficiently homogeneous and a detailed breakdown is available and controlled for. However, when the data detail is too general or broad, it is often difficult to determine what the source of 'price change' is. It could be that revenues are changing, or the tonne-kilometres are changing, or both. Without controlling for shifts in the mix of items, changes within a group would be erroneously recorded as price changes.

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[2] According to the *Voorburg Group Thesaurus of Producer Price Indices for Services (SPPI's) Draft 07.07.2008*, contract pricing is defined as:

> "a pricing method which uses real transaction prices of a special kind as the data type in the survey. They are special because the prices are charged for the same (or very similar) service that is repeated each survey period by the same producer for the same client. Prices of contracts are agreed for more than one period when the contract is signed or renewed. Prices may be the same for a certain period or change according to an agreed pattern. This pricing method may work if the pricing mechanism entails these contracts, for instance in cleaning, security services and freight transport."

[3] According to the *Voorburg Group Thesaurus of Producer Price Indices for Services (SPPI's) Draft 07.07.2008*, the direct use of prices of repeated services is defined as:

> "a straightforward pricing method which surveys a real transaction price or (although not preferably) a list price, thereby acquiring directly the price of a service or package of services that occurs every survey period (a real transaction).

Table 4.0: Options for Developing SPPI Statistics

Category	Pricing method	Data type in the survey	Quality and Accuracy	Cost
Best	Contract Pricing	Data is based on real transaction prices	Detailed service specifications allow time- consistent comparisons.	Most expensive, with highest response burden.
Good	Direct use of prices of repeated services	Data is based on list and tariff prices offered, collected by survey or by internet.	Very good representation of pricing offered by freight rail companies. Movements in price reflect those in the industry fairly accurately.	If surveyed on-line, cost is very low.
Minimum	Average unit price	Total revenue, tonnes, and kilometres travelled from respondents are used to estimate revenuer per tonne-kilometre as a proxy for price.	Transactions in a group must be sufficiently homogeneous (i.e. quality of individual services is unchanged and their quantities in the transactions do not vary). Otherwise, changes can be highly volatile and non-comparable. Revenues have to be well-defined for consistency in comparison.	Less expensive, and least response burden.

4.1 Other Considerations

The main issues with regards to SPPI development for the freight rail industry are; quality adjustment; the appropriateness of the existing classifications for the SPPI; and confidentiality and ability to publish

4.1.1 Quality Adjustment

For Germany, with contract pricing quality adjustment will be a problem when contracts expire. New contracts always have different conditions, for example the number of train-km may have changed as well as the requirements for the rolling stock. In this situation, quality adjustment will require close collaboration with railway companies and public authorities.

In Canada, as much detailed information as possible is collected for all transactions (i.e. shipments) that are priced in an effort to maintain constant quality. This includes information about the type of shipments (intermodal, commodity), the origin/destination of the shipment, the terms of the shipment and the type of price (contract, list/tariff, private quote, public/open quote, or other). All efforts are made to keep these price-determining characteristics constant through time, thereby ensuring comparability of re-pricing. When necessary, changes to the service quality or terms are evaluated and treated

appropriately (e.g. adjustment for service quality if possible, linking to show no change when a non-comparable substitution arises).

For Finland, measuring price change through the unit value approach poses some difficulties, mainly due to structural or mix changes that occur during a quarter (haulage distance, volume of freight, etc.) which also affect prices. Since the unit values are not provided on a customer by customer basis, little is known about what is driving the change in unit values. As a result, changes due to quality are hard to identify and separate out. Identifying direct price changes in an SPPI is difficult when calculating an index based on unit value. Since the main respondent reports yearly on the distribution of turnover between carriage groups, the structural changes between groups can be monitored and applied to the price index when needed. However, within the sub index it is difficult to monitor structural changes and quality between quarters. One requirement stemming from the use of unit values for the calculation of an SPPI for freight rail transportation is the creation of homogeneous subgroups of services at a very detailed level.

4.1.2 Appropriate Classifications for the Rail Freight SPPI

Section 2 of the paper described the common international classifications used for the rail freight sector. It is questionable whether they fit for the purpose of price statistics. In order to be appropriate for determining the structure of the SPPI, the classification has to fulfill at least the following two requirements:

- it distinguishes between service product categories with different price determining characteristics, i.e. different price mechanisms
- price developments within one service product category are homogenous.

This is not always given for the standard classifications, as an example from Germany shows. In Germany, contacts with the industry and desk research showed that the most important factor for determining sub-markets in the rail freight market is the production system: the market is divided in sub-markets for wagonload traffic, block train traffic, traction services, and provision services. Each of these service product categories differs in responsibilities for the rail freight company and the way the service is produced; hence, they differ in price development and pricing mechanism. Below this major break-down by production system, the service product categories can be further divided, e.g. by the industry being served (e.g. wagonload traffic and block train traffic: services for coal/iron/steel industry, automotive industry, chemical industry). By comparing the structure employed for the SPPI with a product-based classification, e.g. the CPC, the differences become obvious. In conclusion, it is the task for the price statistician to identify himself an appropriate classification instead of sticking to classifications already in place that do not reflect the national market situation.

4.1.3 Confidentiality

In countries such as Canada and Finland where the industry is heavily concentrated, publishing an SPPI requires the consent of the respondents; otherwise confidentiality rules would be broken. While this may not be an important issue in the case of turnover data, pricing strategies are often more closely guarded against by what little competition does exist. Large price increases can also be viewed unfavorably by service users, government regulatory agencies, etc. Without respondent consent to publish, these series can only be used internally.[4]

5.0 Summary and Further Suggestions

Freight rail transport is an essential and longstanding service. As services go, it is not overly complicated or complex in the areas of service and price definition. Much like the other transport modes (road, water and air), the service terms are easily identified and repeatable in nature, making quality change a minor issue. It would appear that the main issue to be considered when developing turnover and SPPI programs centre on collection, that is getting the cooperation of respondents in obtaining accurate and very detailed data to provide consistency at the micro-level and allow for comparability of prices and turnover figures. Additionally, for the SPPI, a major challenge is to determine an appropriate classification that reflects the national market habits; sticking to international comparable classifications may not always be the right decision.

[4] For example, Canada will have to approach the two main respondents to its SPPI for approval to publish.

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APPENDIX

A.0 Overview of International Progress

For the 24th Voorburg Group meeting in Oslo, Norway, countries were asked to provide a progress report for a selected group of industries to be revisited. The survey asks for progress on collecting turnover and prices. Table A.0 provides a summary of the information received to date, which is based on 20 countries responding.

Table A.0: Summary of Progress Reports

ISIC 4912: Freight Rail Transport	**Out of 20 Countries**
Total:	
Number of countries producing an SPPI	11
Number of countries producing turnover data	14
Ratings:	
1. Detailed turnover and prices well aligned	1
2. Detailed turnover and prices well aligned soon	0
3. Industry-level turnover and prices aligned	4
4. Industry-level turnover and prices aligned soon	2
5. Other-no industry coverage for prices and/or turnover	13

Table A.1: Comparison of Industry Classifications

Level	ANZSIC	ISIC 4.0	NACE Rev.2	NAICS 2007
General	Division I: Transport, Postal and Warehousing Subdivision 47: Rail Transport	Section: H - Transportation and storage Division: 49 - Land transport and transport via pipelines		48-49 Transportation and Warehousing 482 Rail Transportation
First main level of detail	Group 471: Rail Freight Transport Class 4710 Rail Freight Transport This class consists of units mainly engaged in operating railways for the transportation of freight by rail. Primary activities: • Rail freight transport service • Suburban rail freight service Exclusions/References; • Units mainly engaged in repairing railway stock or locomotives; • Units mainly involved in constructing or general repair of railway permanent way, harbour or other transport infrastructure; • Units providing rail freight forwarding services; and • Units operating rail freight terminals	Group: 491 - Transport via railways Class: 4912 - Freight rail transport This class includes: • freight transport on mainline rail networks as well as short-line freight railroads This class excludes: • storage and warehousing, • freight terminal activities, • cargo handling,	Class 49.20 - Freight rail transport This class includes: • freight transport on mainline rail networks as well as short line freight railroads This class excludes: • warehousing and storage; • freight terminal activities; • operation of railroad infrastructure; • related activities such as switching and shunting, cargo handling.	4821: Rail Transportation • 48211: Rail Transportation • 482112: Short-Haul Freight Rail Transportation US • 482113: Mainline Freight Rail Transportation CAN Exclusion(s): • Establishments primarily engaged in operating switching and terminal railways

Table A.2: Comparison of Product Classifications

Level	CPC -Ver.2	CPA 2008	NAPCS – Ver 0.1
General	Section: 6 - Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services Division: 65 - Freight transport services Group: 651 - Land transport services of freight	49 : Land transport services and transport services via pipelines	482002 Rail freight transportation services
Main sub-groups	Class: 6512 - Railway transport services of freight • 65121 - Railway transport services of freight by refrigerator cars • 65122 - Railway transport services of freight by tanker cars • 65123 - Railway transport services of intermodal containers • 65124 - Railway transport services of letters and parcels • 65125 - Railway transport services of dry bulk goods • 65126 - Railway transport services of live animals • 65129 - Other railway transport services of freight	49.20 Freight rail transport services • 49.20.1 Freight rail transport services • 49.20.11 Railway transport services of freight by refrigerator cars • 49.20.12 Railway transport services of freight by tanker cars, petroleum products • 49.20.13 Railway transport services of freight by tanker cars, bulk liquids and gases • 49.20.14 Railway transport services of intermodal containers • 49.20.15 Railway transport services of letters and parcels • 49.20.16 Railway transport services of dry bulk goods • 49.20.19 Other railway transport services of freight	482002 Rail freight transportation services • 482002.1 Transportation of bulk liquids and bulk gases in intermodal tank containers by rail • 482002.2 Transportation of bulk liquids and bulk gases, except in intermodal tank containers, by rail • 482002.3 Transportation of dry bulk, except in intermodal containers, by rail • 482002.4 Transportation of climate-controlled boxed, palletized and other packed goods, except in intermodal containers, by rail • 482002.5 Transportation of boxed, palletized and other packed goods, not climate-controlled, not in intermodal containers, by rail • 482002.6 Transportation of climate-controlled intermodal containers, n.e.c., by rail • 482002.7 Transportation of intermodal containers, not climate-controlled, n.e.c., by rail • 482002.8 Transportation of automobiles and light-duty trucks by rail • 482002.9 Transportation of livestock by rail • 482002.10 Transportation of waste by rail • 482002.11 Transportation of other goods by rail • 482002.11.1 Transportation of truck trailers by rail • 482002.11.2 Transportation of all other goods by rail