# 27th Voorburg Group Meeting

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## Updated Sector Paper on:

## ISIC 51

## Air transport

Statistics Austria

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# 1. Introduction

Contributions concerning Air transport services, have already been agenda items of the Voorburg Group meetings in 2003 (Tokyo), 2004 (Ottawa), 2009 (Oslo), 2010 (Vienna) and 2011 (Newport).

- 2003 Mini presentations about the SPPI development
- 2004 Mini presentations and Principal Paper on Producers Price Indexes
- 2009 Revisited Sector Paper on Air Transport
- 2010 Adjusting for Quality Change
- 2011 Revisited paper - Adjusting for Quality Change

Besides the VBG meetings SPPIs for air transport services have been discussed several times during Eurostat task forces in the last years in order to develop best practices and to implement SPPIs for the service branches listed in the European amendment regulation CE 1158/2005 to CE 1165/98.

In regard to the country practice, according to the results of a survey amongst 28 countries undertaken in the context of an Eurostat article series called "PEEIs in Focus"[1] dealing with Services Producer Price Indexes in the year 2010 showed that in Europe 23 countries are already producing SPPIs for Air transport of which 17 countries disseminate the results too. 6 countries produce SPPIs but do not yet disseminate them.

Currently the "Methodological Guide for developing Producer Price Indices for Services" is under revision and in this context the description of the air transport branch will also be revised.

The information and details of this new format of an updated sector paper are based on the revisited sector paper of the year 2009, an Eurostat survey and article about national practices in the production of SPPIs, the results of a small survey done by the author on behalf of the VBG, on already existing papers of former years and on enquiries on own account undertaken by the author.

The paper starts with a description of the air transport sector and its developments in the last years. Subsequent to the comparison of the most common industry classification ISIC, NAICS, ANZSIC and NACE and the respective product classification CPC, CPA, NAPCS the turnover- and price statistical relevant findings will be highlighted. All these chapters will be updated if any new information on development and country practice is available since the last revisited sector paper in 2009. The paper will end with a short summary about the actual state of affairs of the development work of the branch in the various countries and a detailed comparison of the mentioned industry and product classifications.

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[1] Simon Allen, Andrew Redpath and Eurostat coordinators of NSIs, 2010. PEEIs in focus - A summary for the services producer price index, plublicated on CIRCA

# 2. Industry Overview

In general the Air Transport Service industry may be of different sizes across countries, but in the majority of countries the industry is quite similar in nature. That is, the number of large enterprises is rather small for passenger air transport, whereas small providers are prevailing for other kinds of air transport, also including air taxis and air sightseeing. According to an Eurostat survey it looks like that the markets seem to be very concentrated across countries because the sample size of respondents up to 3 respondents result in a turnover coverage of the air transport branche of about 70-100 percent in the most cases.

## 2.1 Industry and market trends

Till the time the first deregulation trends started in the year 1978 (US) in America the specifications of the Civil Aeronautics Act of the year 1938 strongly regulated the Service Sector in regard to e.g. market access as well as exit and the price competition amongst competitors. This situation ends with the coming into affect of the Deregulation Act in 1978 and the accompanying tendences in regard to opening the markets by international aggreements, the end of route limitations and the possibility of price competition.

Compared to America in Europa these deregulation trends started a decade later in 1987. Two liberalization packages have been enacted by EU regulation in 1987 and 1990 which e.g. included the following decisions:

- More than one national airline company can act on the market
- The restrictions of the approval procedure for air fares have been eased
- As a result the prices could be fixed by the airlines
- Nonetheless competition is controlled to some extend and action will be set against to high as well as against dumping prices

As a result of these liberalisation efforts the following structutal developments could be observed.

### 2.1.1 Airline Alliances

These Airline Alliances are cooparations amongst two ore more Airlines in order to exhibit synergism and to generate advantages out of that alliance. Wherever airliners have faced troubles by accessing the market due to disadvantages of the structure of competition the formation of alliances could be observed. Currently the most well known existing alliances are:

Table 2.0: Air Alliances

|  | Star Alliance | Sky Team | Oneworld |
|---|---|---|---|
| Founded | 1997 | 2000 | 1999 |
| Members | 28 | 17 | 12 |
| Passengers per year | 649 | 506 | 303 |
| Countries | 190 | 178 | 147 |
| Destinations | 1293 | 983 | 766 |
| Revenue Billion US $ | 160,9 | 97,9 | 89,9 |

**Benefits of these alliances**

For the airline:

- The extension of the network
- Cost reduction (sharing maintenance – and operational facilities and staff)

For the traveller:

- Lower prices due to lowered operational costs for a given route.
- More departure times to choose from on a given route.
- More destinations within easy reach.
- Shorter travel times as a result of optimised transfers.
- Faster mileage rewards by earning miles for a single account on several different carriers.

A specific characteristic of such alliances is the so called code sharing, with which two or more airlines can share the same flight. Share in this context means that travelers have the possibility to book a seat on a specific flight (e.g. Vienna – Brussels) via different alliance airlines (e.g. Austrian Airlines – Lufthansa). Even if the airlines use different flight numbers the booked seat is identical. Resulting advantages for the airliner are the enhancement of its operating distance and the possibility to offer flights on routes where no own plane is on duty.

**Benefits of code sharing**

Advantages for airlines:

- Enhancement of the coverage in the case a carriers does not operate their own aircraft on a given route through display of their flight numbers.
- If a carrier already operates on this route codesharing results in an increase in the frequency of flights

Advantages for travellers:

- Simplification in regard to the booking procedure due to the possibility to book a travel from point A to C through point B under one carrier's code.

- Even if in the above mentioned case the flight from B to C is operated by a different carrier by both carriers share the liability for the provision of the service

A further stage of development of code sharing has evolved between airlines and railways (Rail and Fly) by building up so called Air – Rail alliances. These alliances aim to provide the quickest connection between two destinations by using two different means of transport. Examples for air rail alliances are:

Table 2.1: Air – Rail Alliances

| Rail | Air | Origin | Destination |
|---|---|---|---|
| Deutsche Bahn | Lufthansa American Airlines Emirates | Frankfurt Airport | Stuttgart Cologne Siegburg/Bonn |
| SNCF | Air France | Paris-Charles de Gaulle Airport | Brussels-Midi |
| Thalys | KLM | Amsterdam-Schiphol Airport | Antwerp Brussels |

## 2.1.2 Mergers and acquisitions

Contrary to the above described alliances which represent a strategic partnership in the case of mergers and acquisitions two ore more airlines fuse to one single enterprise. In the field of Air transport in former times this happend predominantely on national level when financially suffering single airlines have been absorbed by a competitor. Cross border mergers and acquisitions (e.g. Air France – KLM, Lufthansa - Swiss) have increased in the last years due to the highly complexity of mergers in former times when the air transport industry was highly regulated.

## 2.1.3 Low Cost Carriers (LCC)

In the course of this liberalisation tendences and the appearance of those strategic alliances a completely new type of airliner has emerged in the air transport service sector. The so called Low Cost Carriers. The label results out of the lower operating cost structure compared to other "regular" airlines. The first Low Cost Airline was Southwest Airlines which have been founded in 1967 in America. In Europe the development of LCCS began with the appeerence of Ryan Air (Irland) which operated solely in the United Kingdom. Low Cost Carriers have become serious

competitors due to an aggressive ticket fare policy which results out of the following characteristics of the business model:

- Only one aircraft model (less training- and service/maintenance costs)
- Even this aircraft model has the minimum equipment (technical for the pilots as well as e.g. entertainment for the passenger to keep the weight of the aircraft low)
- Only one booking class with no pre-reservation
- Point to point flights to attractive destinations
- Second best airports in urban centers
- The area of activity of the employees comprise several duties (flight attendent, gate personal, cleaner)

These carriers compete on the one hand with the already existing airlines and on the other with transportation systems in general as well in the way that they transport consumers that would not have taken a plane in former times for that trip. It's quite remarkable that this economically successful business concept had an impact on regular airlines in the way that they established airlines within an airline to compete with those LCCs in their business segment.

## 2.1.4 Product distribution

To travel from point A – B in the Air transport service branch a valid ticket is required. To automate reservations on a plane Computer Reservations Systems have been developed which per definition are "computerized systems used to store and retrieve information and conduct transactions related to air travel". Those CRSs which have been introduced by airlines and expended for the use of travel agencies nowadays can not only be used for ticket booking but for car and hotel room reservation too and are therefor called global distribution systems (GDS). Well known GDS are:

**Amadeus**

- 440 bookable airlines (including over 60 Low Cost Carriers)
- Over 100,000 unique hotel properties
- 30 Car rental companies representing over 36,000 car rental locations
- 21 Cruise Lines
- 203 Tour Operators
- 103 Rail Operators
- 23 Travel Insurance Companies

**Sabre**

- Schedules for 400 airlines
- 380 airline industry customers, including 44 airlines representing all major alliances

- 88,000 hotels
- 50 rail carriers
- 180 tour operators
- 13 cruise lines
- 24 car rental brands serving 30,000 locations
- 9 limousine vendors providing access to more than 33,500 ground service providers
- 55,000 travel agencies in over 100 countries

Reservations via these reservation systems can be made by traditional travel agencies, the airline itself or by the passenger as well. In recent times due to the fact that for the usage of such GDSs fees have to be paid a U-turn could be observed in the way that, besides LCCs which have rarelyused the services of GDSs, even "regular" airlines are trying to reduce their costs by avoiding those extra fees and to sell their tickets by themselves.

An additional cost reducing approach in conjunction with the product distribution in passenger air transport was the introduction of electronic tickets which were first introduced in 1993 for domestic travel in the US. Till now due to the fact that e.g. e-tickets became mandatory for IATA members in 2008, the former paper tickets have almost completely been replaced by e-tickets.

Additional price determining circumstances in regard to the availability of seats in an aircraft and the resulting pricing mechanism of carriers can be found under the paragraph dealing with yield management systems in the next chapter.

## 2.2 Market changes, new products or servcices , or methods of provision

In principle no elementary changes have taken place in the composition of this service branche since the last revisited sector paper in 2009. Concordant to the various existing industry classifications the following main subgroups could be identified:

- Passenger Air transport (Scheduled as well as non sheduled)

- Freight Air transport (Scheduled as well as non sheduled)

- Space Transport

Detailed information as well as differences between several national classification systems could be found in the next chapter and in Annex 2 and Annex 3 which act as a comparison of the industry- and product classifications.

Due to the fact that passenger air transport is covered by the the vast majority of responding countries the paper rather concetrates on passenger air transport issues.

In regard to the coverage of Service Producer Price indices in the field of passenger air transport in the first step primarily business travellers are of particular interest. For deflation purposes and according to the needs of National Account the coverage could/should be extended and the following destinctions could be drawn:

- business 2 business (b2b)
- business 2 government (b2g)
- business 2 households (b2h aka. b2c)

Which could result in an aggregated index that reflects a business 2 all index.

Taking for example the b2b part representative ticket types and representative destinations for business travellers have to be selected in order to survey the price development of these combinations.

## 2.2.1 Ticket types

For the above mentioned b2b index due to the business passenger approach in principle the national statistical institute could limit the survey to first and business class tickets which seem representative. But economic developments, in particular the financial crisis in 2008 and 2009 and the resulting intensions to save cost have shown that on the one hand the air transport service branche has been hit massivle by the crisis (and other catastrophies) and on the other that business travellers have switched over to less expensive ticket types.

The following graph shows the development of "Revenue Passenger Kilometers (RPKs)" which are measures of traffic for an airline flight. A passenger for whose transportation an air carrier receives commercial remuneration is called a revenue passenger. This excludes passengers travelling under fares available only to airline employees and babies and children who do not have a seat of their own. Revenue passenger kilometres (RPK) is a measure of the volume of passengers carried by an airline and therefore a measure of sales volume of passenger traffic also.

Graph 2.0: Revenue Passenger Kilometer Growth: Passengers Total
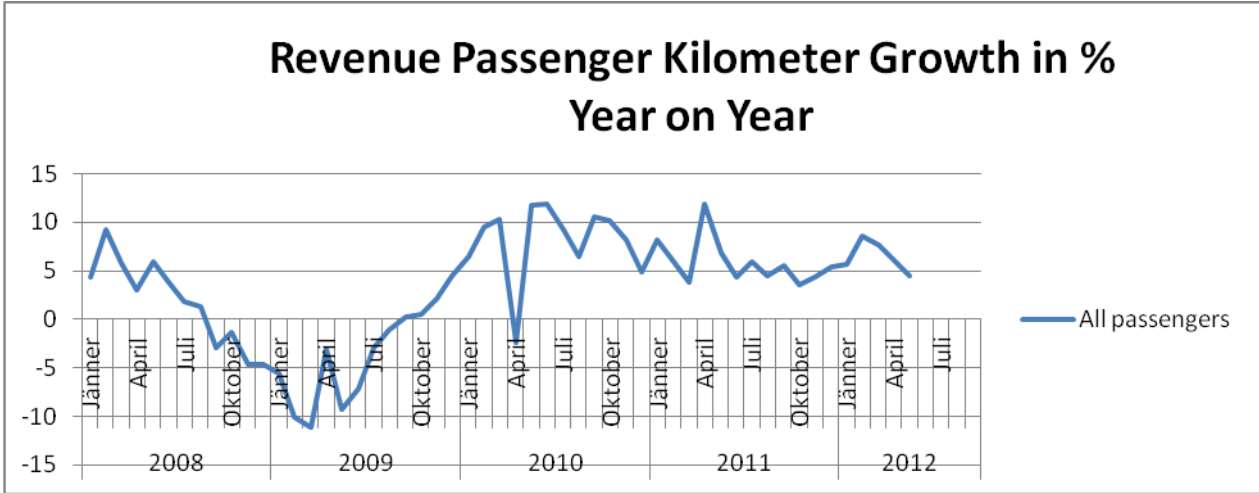


Source: IATA

The graph above shows the growth of RPKs in a year to year comparison for the total segment of passenger air transport. It could be seen that beginning in 2008 a continuous decline in the groth rate could be observed which could be seen as a direct consequence of the financial crisis and the resulting recession which startet in 2008 and lastet till early 2009.

Going into more detail concerning the effected booking categories in passenger air transport the next graph shows a differentiation in the development of growth in regard to premium travel (first and business class) and economy.

Graph 2.1: Revenue Passenger Kilometer Growth: Premium vs. Economy
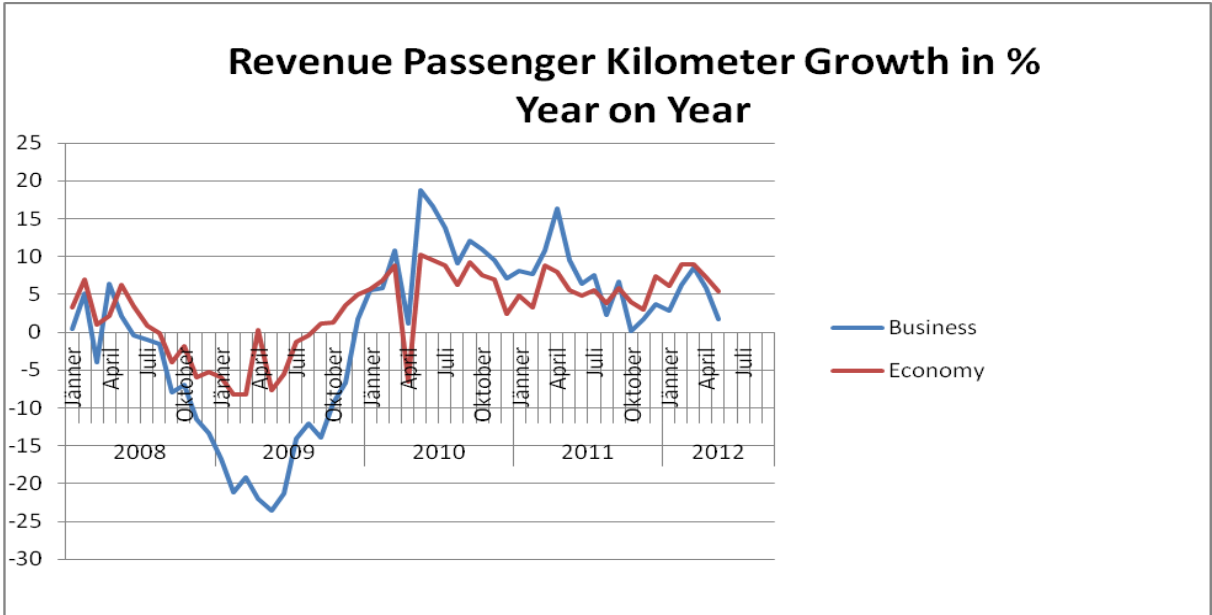


Source: IATA

Business as well as economy travel has slowed in the face of weakness in financial market but compared to business the economic development had been surprisingly more robust. According to IATA information this happened because:

- Leisure trips at this time of the year may well have been pre-booked before the full extent of the recession was apparent

- There is strong evidence that business passengers are trading down to cheaper tickets. Economy travel has been falling at a slower rate than premium travel

Taking this development into account the solely selection of business class tickets for a b2b passenger air transport SPPI should be reassessed and some more flexible economy class booking categories should also be considered to be part of the basket of selected services.

For the sake of completeness it has to be mentioned that the second sharp but short decline in growth in 2010 has been caused by the ash plume from Iceland's Eyjafjallajokull volcano, and the associated European airspace closures.

## 2.2.2 Yield managment System

As already pointed out in the previous chapter due to the availability of electronical reservation systems travel agents and travellers tend to make their ticket purchases online via the internet.

In economically difficult times and increasing competition due to the deregulation tendencies in the air transport service branche carriers have implemented so called Yield Management Systems (YMS) which are computer–developed pricing mechanisms. The aim is to establish a kind of price discrimination system in order to sell every seat on a a plane on a given route. The underlying assumption is due to the different needs of a traveller the same ticket could be sold at different times to different customers for a different amount of money. This results in

- Cheaper tickets with restrictions that have to be bought in advance (target population = housholds)
- Expensive flexible tickets which are immediately available (target population = business traveller)

Innovations in the yield management systems allow airlines to observe real-time vacancies for each scheduled flight and change their price quotes more flexibly in order to maximize their profit. These innovations offer more challenging environment for NSI's price survey. For example, ticket prices for certain destination and flight class on the same day do vary significantly depending on the timing of the ticket purchase

The impact of these yield managment systems on the price collection method will be discussed in Chapter 5.4 where the various pricing methods will be highlighted.

## 2.2.3 Air Passenger taxe (Ecological departure tax)

Impacts on turnover and price statistics in the field of passenger air transport could arise in some countries in recent years by introducing Air passenger taxes. For example in Germany since this taxes have been introduced in 2011 an airline is charged by the government a specific amount of money depending on the destination country for every flight passenger departing from a national airport.

Amount of money in 2012 depending on the travel distance

- 7,50 € short haul flights (e.g. Europe, Russia)
- 23,43 € long haul flights (e.g. Afrika, Israel, Agypt)
- 42,18 € all other destinations (in 2011: 8,-/ 25,-/ 45,- €).

This departure taxes are collect in the UK, France Ireland and Austria as well too. Besides the differentiation between various flight distances in France and the UK the amount of money also depends on the booking category in the way that the higher the booking category the higher the departure tax.

By passing on this taxes to the passengers by increasing ticket prices the following consequences of the introduction of departure taxes seem feassible:

- Passengers switch over to foreign airports near the national boarder
- On this airports they travel with low cost carriers
- A drift to other alternative means of transport on the same route (e.g Rail)

An already introduced departure tax has been abolished in Denmark and the Netherlands due to shift of passengers to nearby foreighn airports and the resulting economic loss for the airline and country.

## 2.2.4 European Union Emission Trading Scheme

Due to the fact that the $CO_2$ emission in air transport has increased dramatically in the last decade on December $20^{th}$ 2007 an agreement amongst the European Union environment ministers established that with beginning of the year 2012 the air transport branch will be incorporated in the European Union Emission Trading Scheme.

Airlines will receive a specific amount of certificates free of charge which authorizes them to emit a specified amount of $CO_2.$ If the airline does not need all the allocated certifiates it is allowed to sell them to competitors.

All airlines, regardless their provenience, have to buy emmission certificates if they are landing or departing in the European Union. But furthermore, not only the distance traveled in the european airspace counts for amount of certificates that have to be owned. Instead for example a fleight that starts in America and arives in Spain

must have EU certificates for the whole flight distances, and therefore for the flown distance in the american airspace or over the atlantic too. Not EU countries have already made protest against this decission.

Howsoever the decission in regard to these non EU countries will look like the incorporation of these certificates and the resulting possible costs will have an considerabel impact on the air transport industry in the way that:

- Airlines will have to bear the additional costs at least partly if they cannot pass on the full amount these probably additional expenses to the passenger through increasing ticket costs due to increasing market pressure.

- Airlines will be able to not only to pass the additional fees for certificates they have to buy but could also increase the ticket prices by passing on "costs" for the certificates they got for free.

# 3 Classification

In regard to the respective industry and product classification system used by most countries that already produce or plan to produce SPPI no changes have occurred since 2009. The latest major revision of international and European classifications of economic activities and products, known as "Operation 2007" ended with the coming into effect of the revised classification systems in 2008.

The following industry and product classification systems will be compared in this chapter to give a general idea of the provided services in this branch:

- International Standard Industrial Classification (ISIC Rev. 4)
- Statistical Classification of Economic Activities in the European Community (NACE Rev. 2)
- Australian and New Zealand Standard Industrial Classification (ANZSIC 2006)
- North American Industry Classification System (NAICS v. 2012 US)

The corresponding product classifications to the above mentioned industry classifications in this updated sector paper are

- Central Product Classification (CPC Ver. 2)
- Classification of Products by Activity (CPA 2008)
- North American Product Classification System (NAPCS, provisional version).

A detailed description and comparison of these classifications in regard to air transport activities could be found in Annex 1 and Annex 2 of this paper.

# 3.1 Industry classification

## 3.1.1 ISIC Rev. 4

Division 51 "Air transport services" in the International Standard Industrial Classification (ISIC Rev. 4[2]) can be found under section H - Transportation and storage.

- Section: H - Transportation and storage
- Division: 51 - Air transport

Depending on the "subject" of the transport the following groups could be differentiated

- Group 511 - Passenger air transport
- Group 512 - Freight air transport

The services provided in these two classes range from non-scheduled and scheduled transport of passengers and freight to sightseeing flights and renting of air transport equipment. Space transport and general aviation activities are included as well.

## 3.1.2 NACE Rev. 2

The "Nomenclature générale des activités économiques dans les Communautés Européennes" a.k.a. NACE[3] in its current Revision 2. is the European equivalent to the above mentioned ISIC. Furthermore, by introducing NACE Rev. 2 the convergence between the classification systems of the UN and the European community and the already mentioned North American Industry Classification System (NAICS) has been improved and the degree of detail on group- and class level has been enhanced. The member states of the European Union are free to develop national versions of the NACE to better illustrate specific national economic conditions.

In NACE Rev. 2 air transport services can be found under section H 51. which includes similar activities like scheduled and non scheduled passenger and freight air- and space transport activities.

- Section H  Transportation and Storage

- Division 51 Air transport

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[2] http://unstats.un.org/unsd/cr/registry/isic-4.asp
[3]

http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NACE_REV2&StrLanguageCode=EN &IntPcKey=&StrLayoutCode=HIERARCHIC&CFID=18842342&CFTOKEN=1dd93854ccf069f-C513E89C-CCD2-021F-F256198D7A877F23&jsessionid=f9006c99559071469585

- Class 51.1 Passenger air transport
- Class 51.2 Freight air transport and space transport

### 3.1.3 ANZSIC

A further indication for efforts to harmonise the various existing classification systems is the fact, that the Australian and New Zealand Standard Industrial Classification (ANZSIC 2006[4]), with regards to content is nearly identical to the two above mentioned industry classifications. In ANZSIC air and space transport services are subsumed under class 4900 "Air and space transport". This class includes services for the transportation of passengers and freight as well as Aircraft charter, lease or rental activities with crew, for freight and/or passengers.

- Division I Transport, Postal and Warehousing
- Subdivision 49 Air and Space Transport
- Group 490 Air and Space Transport
- Class 4900 Air and Space Transport

The group comprises

- Air freight transport service
- Air passenger transport service
- Aircraft charter, lease or rental, with crew, for freight and/or passengers

### 3.1.4 NAICS

The final classification system covered in this updated sector paper is the North American Industry Classification System (NAICS 2007 US[5]). Class 481 "Air transportation" comprises establishments primarily engaged in scheduled and non scheduled air transportation activities such as scheduled passenger- and freight transportation, non scheduled chartered passenger- and freight air transportation and other non scheduled air transportation.

- Sector 48-49 Transportation and Warehousing

- Subsector 481   Air Transportation

- Code 4811   Scheduled Air Transportation
- Code 48111   Scheduled Air Transportation
- Code 481111   Scheduled Passenger Air Transportation
- Code 481112   Scheduled Freight Air Transportation

- Code 4812   Nonscheduled Air Transportation
- Code 48121   Nonscheduled Air Transportation

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[4] http://www.abs.gov.au/AUSSTATS/abs@.nsf/ViewContent?readform&view=DirClassManualsbyTopic&Action=Expand&Num=6.1.2
[5] http://www.census.gov/eos/www/naics/

- Code 481211   Nonscheduled Chartered Passenger Air Transportation
- Code 481212   Nonscheduled Chartered Freight Air Transportation
- Code 481219   Other Nonscheduled Air Transportation

Table A.2 in the appendix provides a general overview along with industry classification details.

# 3.2 Product Classification

## 3.2.1 CPC Ver. 2

The Central Product Classification, CPC Ver. 2[6], the respective product classification to the industry classification ISIC, identifies four separate classes and eight sub-classes for air transport activities:

- Section: 6 - Distributive trade services; accommodation, food and beverage serving  services; transport services; and electricity, gas and water distribution services

- Division: 64 - Passenger transport services

- Group: 642 - Long-distance transport services of passengers

- Class 6424 - Air transport services of passengers

- Subclass 64241 - Domestic scheduled air transport services of passengers
- Subclass 64242 - Domestic non-scheduled air transport services of passengers
- Subclass 64243 - International scheduled air transport services of passengers
- Subclass 64244 - International non-scheduled air transport services of
    - passengers

- Class 6425 - Space transport services of passengers

- Subclass 64250 - Space transport services of passengers

- Division: 65 - Freight transport services

- Group 653 - Air and space transport services of freight

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[6] http://unstats.un.org/unsd/cr/registry/cpc-2.asp

- Class 6531 - Air transport services of freight

    - Subclass 65311 - Air transport services of letters and parcels
    - Subclass 65319 - Air transport services of other freight

- Class 6532 - Space transport services of freight

    - Subclass 6532 - Space transport services of freight


## 3.2.2 CPA

The European equivalent to the CPC is the Statistical Classification of Products by Activity (CPA[7]) which nearly follows the identical breakdown of service products. Compared to former times where the main split existed between scheduled and non-scheduled air transportation in the new version of these product classifications the division of freight and passenger air transportation is the main distinctive criterion. Space transportation services are subsumed as code 51.22.11 (passenger) and 51.22.12 (freight) under section H 51 "Air transport".


**Code 51.1 Passsenger Air Transport Services**

Subcategories

- 51.10.11- Domestic scheduled air transport services of passengers

- 51.10.12- Domestic non-scheduled air transport services of passengers, except for sightseeing

- 51.10.13- International scheduled air transport services of passengers

- 51.10.14- International non-scheduled air transport services of passengers

- 51.10.15- Non-scheduled passenger air transport services for sightseeing


**Code 51.2 Freight Air transport and space transport**

Subcategories

- 51.21.11 – Scheduled air transport services of intermodal containers

- 51.21.12 – Air transport services of letters and parcels

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- 51.21.13 – Scheduled air transport services of other freight

- 51.21.14 – Non-scheduled air transport services of other freight

- 51.21.20 – Rental services of freight air transport equipment with operator

- 51.22.11 – Space transport services of passengers

- 51.22.12 – Space transport services of freight


## 3.2.3 NAPCS

Compared to CPC and CPA the North American Product Classification System, NAPCS[8], which is a trilateral initiative of Canada, Mexico and the United States, exists only at a self definend provisional stage at the moment. Nevertheless even now it could be noticed that the upcoming NAPCS will differ dramatically in regard to the level of detail of the services included.


**The following main groups and subgroups could be identified:**

Service product belonging to NAICS 48111 (Scheduled Air Transportation)

- Scheduled passenger transportation by air (1.1; 1.2: further distinction available)
- Non-scheduled (chartered) passenger transportation by air
- Transportation of goods by air
- Rental of aircraft without crew (4.1; 4.2 further distinction available)
- Rental of aircraft with crew (5.1; 5.2 further distinction available)
- Related products (6.1; 6.2; 6.3 further distinction available)

Service product belonging to NAICS 48121 (Non-Scheduled Air Transportation)

- Non-scheduled (chartered) passenger transportation by air
- Transportation of goods by air
- Related services

Compared to CPC and CPA which draw a distinction between passenger and freight air transport at the first stage, the NAPCS differentiates between scheduled and non scheduled air transport as an elementary separation. The further distinctions go into much more details than the before mentioned product classifications do.

Further distinctions are available in regard to:

- Type of destination: domestic, international, etc.
- Ticket classes: first class, business class, coach class (restricted-unrestricted) etc.

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[8] http://www.census.gov/eos/www/napcs/index.html

- Region: America and Caribbean, Atlantic Region, Asia and Pacific etc.
- Type of means of transport etc.
- With or without crew etc.
- etc.

Table A.3 in the appendix provides a general overview along with product classification details.


# 4. Turnover Statistics


## 4.1 Introduction

It has already been pointed out in the revisited sector paper on air transport in 2009 in the respective chapter on turnover information that rather not very much information on this subject has been gathered in the course of the Voorburg Group development work.

In the respective revisited sector paper a description of the results of a survey on own account amongst VBG member countries was presented in regard to country practice.

The following paragraphs are based on an Eurostat Article called "PEEIs in focus[9]" dealing with indices in turnover and a little survey in 2012 and should give a short overview over the current practice of NSIs in regard to turnover collection. The findings are based on the response of 28 countries of the report in 2009 and 15 countries of the VBG survey.


## 4.2 Data Availability

All the responding countries reported that they are collecting information on turnover in one way or the other. The respective statistics which are compiled using these turnover information are:

- STS Short-Term Statistics

- SBS Structural Business Statistics

**Short-term statistics (STS)** aim to describe the most recent developments of European economies and its indicators are published monthly as indices. Information about economic short-term developments is collected by the national statistical

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[9] PEEIs in focus. A summary for the index of turnover in sevices, plublicated on CIRCA

institutes with business surveys and in addition administrative data are used. STS statistics cover the following economic

- Industry
- Construction
- Retail trade
- Other services (but not financial services).

**Structural Business statistics (SBS**) describe performance, the structure and main characteristics of economic activities within the business economy in a detailed level of several hundred sectors.

In structural business statistics, contrary to the STS the indicators are not presented as indices but as monetary values (e.g. number of persons employed, number of enterprises)

SBS covers the 'business economy' which includes:

- Industry
- Construction, and
- Distributive trades and services.

# 4.3 Collection of Data

The pratice in data collection varies amongst the responding countries. Some countries are carrying out surveys; others collect data due to the concentrated character or the service branch in their country troughout a census. Some countries also report that they use a mixture of both. In thoses cases enterprises above a certain threshold of turnover and persons employed are part of the census and a sample survey is carried out amongst the other enterprises above another certain threshold.

For example in Ireland the NSI uses:

- Census of enterprises with 20+ persons employed
- Random stratified sample of enterprises with less 20 persons employed

In Finland the national statistical institute is acting similar in the way that they carry out a:

- A census which covers enterprises with more than 50 or 100 employees, depending on the industrial sector.
- A sample survey including enterprises with more than 10 employees

A complete census for example is carried out by Canada which covers all Canadian licensed air carriers that are licensed to perform commercial scheduled and/or charter transportation of passengers and/or goods. The census is carried out by Statistics Canada and the resulting data are conjointly used by Statistics Canada, Transport Canada and the Canadian Transportation Agency for statistical, policy and regulatory purposes. Similar to the above mentioned differentiation Statistics Canada uses the following distinction criteria for their reporting level thresholds:

- Level I air carriers (2010). This includes every Canadian air carrier that, in the calendar year before the year in which information is provided, transported at least 2 million revenue passengers or at least 400 thousand tonnes of cargo

- Level II air carriers (2010). This includes every Canadian air carrier that, in the calendar year before the year in which information is provided, transported (a) at least 100 thousand but fewer than 2 million revenue passengers; or (b) at least 50 thousand but less than 400 thousand tonnes of cargo

- Level III air carriers (2010). This includes every Canadian air carrier that (a) is not a level I air carrier or level II air carrier; and (b) in the calendar year before the year in which information is provided, realized gross revenues of at least 2 million dollars for the provision of air services for which the air carrier held a licence

- Level IV air carriers (2010). This includes every Canadian air carrier that (a) is not a level I air carrier, level II air carrier or level III air carrier; and (b) in the calendar year before the year in which information is provided, realized gross revenues of less than 2 million dollars for the provision of air services for which the air carrier held a licence

As a next step of an applied differentiation according to the already mentioned split in census and survey enterprises countries reported that they use different reporting channels.

For the Irish example it was reported that

- Enterprises with 20+ persons employed received a postal questionnaire but it is planned to extend the internet option to larger enterprises next year

- For enterprises with less than 20 persons employed an internet response option was provided. Such enterprises received a shorter questionnaire than larger enterprises.

In the case of Canada the differentiation into 4 Levels of carriers results in an

- Monthly, quarterly and annual data collection for Level I air carriers.
- Quarterly and annual data collection for Level II air carriers.
- Annual data collection for Level III and IV air carriers.

A third option is the combination of survey instruments and the use of administrative data sources. Countries may for instance survey big enterprises (as census or sampling) and use social security data on employment and tax data for turnover in combination with statistical calculation methods for smaller enterprises. This is the current practice in Austria for calculating the turnover of service industries within the annual Structural Business Survey. This combination will briefly be described in the chapter 4.5 "Complementary data sources".

## 4.4 Data Issues

According to the Short Term Statistcs Regulation countries are allowed to provide services turnover data either as values or as an index. The already mentioned Eurotat survey in regard to turnover service indices in 2009 pointed out that from 28 responding countries

- 4 countries produce a time series of the value of turnover instead of an index
- 8 countries compile a simple value relative (i.e. no weights are used in the index calculation)
- 13 countries calculate Laspeyres or a fixed base indices

Due to the fact that STS Regulation requires turnover data on at least a quarterly basis the respective data for these statistics were reported to be collected in the following frequencies

- Monthly: 13 countries
- Quarterly and bimonthly: 1 country
- Quarterly: 9 countries
- Monthly and quarterly: 6 countries

As for SPPIs concerning the coverage of the selected units in regard to the total turnover coverage by the statisticsl survy the vast majority of countries reported that with 2 up to 30 units in the sample they cover 97 – 100 % of the branch.

In regard to the two surveys on own account in the forefront of Voorburg Group Meetings in 2009 and 2012, in 2009 in most cases data collection has been done at a rather aggregated industry level. Out of the countries inquired only 5 collect turnover data at the product level, most of them do this at the CPA 5-digit level (except CZ at the 6-digit level). Most of the countries differentiate at least between scheduled and non-scheduled air transport, for each category passenger and freight transport being together. A certain problem emerges from the separation of turnover between regular air transport and charter flights because especially big air companies with the main activity on scheduled air transport are also doing charter air transport and vice versa, for many such respondents a diversification of turnover is not possible.

Accrduing to the results of the 2012 survey the situation has not changed. Turnover information are still collected rather on industry level than on detailed subcategory or product level.

Irland, Germany and France reported that they are collecting data on NACE Rev. 2 4-digit-level for

- Passenger air transport
- Freight air transport (and space transport)

In Canada in principle scheduled air transportation and non-scheduled air transportation are covered by the surveys, but the data are not categorized by NAICS but by Canadian regulatory licensing structure.

Japan highlighted that it is collecting turnover data on the levels of:

- International air passenger transportation
- Domestic air passenger transportation
- Domestic air freight transportation
- Aircraft service, except transportation

As already pointed out in the section data collection the countries provide various options to the respondents to transmit the requested data.

Germany for example provides different reporting options to their respondents. The surveyed enterprises can fill in a questionnaire and send it back by post or by fax, fill in an online version of the questionnaire or use eSTATISTIK.core, which is a software module that is integrated in an ERP-software. The software module allows the enterprises to compile the necessary data automatically and send them to the responsible Land Statistical Office via a secure internet connection.

Two other countries are providing electronically reporting systems too. In Austria a similar approach is in use. Respondets can fill in their data in a web questionnaire or use a software product called e-Quest to provide the requested data.

## 4.5 Complementary data sources

Another option to collect information is to use administrative data sources when available. Such administrative data can be e.g. tax data, company reports to regulation authority or trade association statistics. They can be less precise in terms of the level of detail, turnover revenues may include bundled items and other revenues that do not relate to the service category under examination.

In many cases administrative data is not available sub-annually or can only be used to extrapolate annual values into other periods. Anyway it does not impose any additional burden on respondents and is normally much cheaper than any survey (although estimation procedures and data processing facilities have to be developed and put in place).

Germany for example also reports that for Short therm statistics the NSI is combining administrative data (by the tax authorities) with survey data of large enterprises. Therefore it is a mixture of two sources for one variable.

In Austria both types of data sources are used depending on the type of statistics produced. For the quarterly short-term statistics – compilation of quarterly turnover and employment indicators - the major source are administrative data, e.g. tax data from Ministry of Finance, data on number of employees from social insurance board and business register (for the employment indicators). For the structural business statistics the survey method in general is applied only for the biggest 10% of enterprises (in service industries representing about 86% of total turnover) which are selected by purposive sampling. The legally based threshold for enterprises in service industries to be in the sample is a turnover of min. 850.000.-€ per year. The rest of the turnover is estimated by regression model using administrative and register data. Social security data and VAT data are the most important administrative sources, which are linked to the Business Register (BR) in a sufficient way since reference year 2002. This method minimises respondent burden.

# 4.6 Recommendet approaches

Table 4.0: Options for Developing Turnover Statistics

| Category | Data source and method of collection | Level of detail collected | Frequency | Advantages | Disadvantages |
|---|---|---|---|---|---|
| Best practice | Surveys<br>- One or many<br>- Different frequencies<br>May include Economic Census | Industry detail (ISIC, NACE, NAICS, ANZSIC) and Product detail (CPC, NAPCS, CPA) | Annual and sub-annual (quarterly or monthly) | Turnover data on a detailed level can be collected<br>Timely data | Most expensive<br>Large response burden |
| Good | One or many surveys | Industry detail only | Annual and sub-annual (quarterly or monthly) | Turnover data on a detailed level can be collected<br>Timely data | Expensive<br>Large response burden<br>The national accounts' need of product detail may not be fulfilled |
| Minimum | Administrative data (tax data, industry association data etc.) | Industry detail only | Annual, quarterly, monthly | -Least expensive<br>-Little or no response burden<br>-Large coverage<br>-Satisfying data quality (depending on data base) | -Can be less precise in terms of level of detail<br>-Least timely<br>-Difficult to check incomplete or wrong data with the respondent |

# 5. Service Producer Price Index (SPPI)

## 5.1 Data Availability

In regard to the general availability of SPPI data a Eurostat survey showed that in Europe 23 countries are already producing SPPIs for Air transport of which 17 countries disseminate the results too. 6 countries produce SPPIs but do not yet disseminate them.

Concerning the data collected from the respondents 8 countries reported that a product list is defined especially for the SPPI with the respondents or their representatives. 5 countries collect prices for specific products or transactions which are agreed with each individual observation unit. A standard statistical product list (e.g. CPA) is used by 4 countries for the data collection and 2 NSIs quoted that a product list developed by themselves is in use.

The respective data are collected via post, electronic questionnaires via mail and phone surveys. As some countries for turnover information Sweden is reporting the use of an electronically reporting system which improves their data collection. Index Calculations are done with Excel- and Access –Aplications as well as using other computer software applications like SAS. Improvements in methods of tabulation, cleaning of the information, imputation, etc. are continuous with the development of new software products

## 5.2 Source of SPPI data

Data for the compilation of an Air Transport SPPI can be gathered from various sources. In the most cases statistical surveys are carried out by the national statistical institutes (see PEEI article). In this case the resulting indices are based on "hard" industry price data which are collected from the respondents. Some countries reported that they use published web price list for their index compilation. Some countries of the PEEI survey and the VBG survey reported that they are using the already existing CPI as an alternative data source for their Passenger air transport SPPI. For Air freight a possible alternative is to buy data from the International Air Transportation Association. (IATA)

Concerning the sample size of respondents a quite similar situation can be observed across countries. The markets seem to be very concentrated which results in a common sample size of up to 3 enterprises in the most cases. Only 4 countries reported a sample size bigger than 10 enterprises.

# 5.3 Target Coverage

## 5.3.1 Recipient of the service

SPPIs essentially include services that are provided by a domestic company and sold nationally and abroad. Imported services provided by non-resident entities, on the other hand, are not classified as domestic output and therefore not included in the Output Price Index for Business Services.

By definition, services provided by non-resident units are not within the scope of SPPIs, which are designed to reflect price movements in domestic producers. Whether or not service production belongs within the scope of SPPI depends on the residency of the service provider.

Even though according to EU Regulation No. 1158/2005 amending Council Regulation (EC) No. 1165/98 concerning short term statistics the coverage of SPPIs is limited to services provided from business to business the SPPI Task Force has, with a view to the needs of National Accounts, extended the desirable coverage to:

- b2b (business to business)
- b2g (business to government)
- b2c (business to consumers/households)

Regarding this differentiation the problem arises that in the majority of ticket sales it could not be stated without fail who is buying a certain ticket type. A possible approximation in regard to a differentiation into segments could be the use of a CPI for the segment b2c (business to consumers/households). In regard to a breakup into b2b and b2g maybe the airlines can provide useful information about the price strategies and different discounts applied to these segments. And if no price discrimination between these segments exists a b2g index becomes obsolete.

Concerning this matter the already mentioned PEEI survey points out that 8 countries solely calculate a b2all index and 3 countries calculate only a b2b SPPI. Some countries reported that they calculate a combination of b2b and b2all or a combination of b2b and b2c.

## 5.3.2 Coverage of Services

In regard to the services covered by the produced SPPI the starting point is the respective national industry and the corresponding product classification system. In the most cases a first distinction is drawn between passenger and freight transport and in a second step scheduled and charter air transport services are differentiated. Space transport is also covered by air transport services.

According to the Eurostat PEEI survey scheduled passenger transport is covered by all the countries whereas charter and non scheduled services are excluded by round the half of the responding countries. Freight Air transport is covered roughly by 75 %

and rather the majority of countries is excluding space transport from their index calculation.


# 5.4 Pricing Methods used

Based on this PEEIs in focus report and the information received in the course of a survey undertaken in the forefront of the 27th Voorburg group meeting it could be stated that a wide variety of pricing methods is used by the different NSIs for air transport activities. A more comprehensive and detailed description of the various pricing methods could be found in the joint OECD/Euostat "Methodological guide for developing producer price indices for services"[10] which is currently under revision and the "Thesaurus of Producer Price Indices for Services"[11].

The Eurostat survey showed that the most commonly used method for compiling SPPIs for air transport services is **transaction pricing** (21 countries), followed by the **unit value** pricing method (5 countries). Two countries additionally use **contract price** and one country **component pricing**. Due to this distribution only the two most preferred methods are described in detail in this paper. Detailed descriptions of other existing pricing methods could be found in the papers mentioned above.

In the most cases the NSIs are collecting quarterly data for their range of SPPIs, but 7 countries highlighted that they have monthly data collections. In regard to the accounting period the collection of monthly averages prevails followed by point in time prices.


## 5.4.1 Prices of repeated services

One of the pricing methods measuring real transaction prices is the "Direct use of prices of repeated services" where real transactions are surveyed every period in the one way or the other. This method is still preferably used in the field of passenger air transport. Relating to the services in this branch this method implies that the NSI has to select representative destinations ((routes and ticket types (fare codes)) conjointly with air transport enterprises (carriers) and/or travel agencies. Depending on the purpose of the index (e.g. business 2 business) appropriate destinations have to be selected (e.g. business destinations like Brussels, New York, Moskau, etc). This principle of a kind of purposive sampling has also to be applied to the characteristics of the respective ticket types that have to be chosen in the next step of the index composition/compilation.

In former times this may has lead to the sampling of tickets types which are very flexible and could be rebooked or cancelled very easily and free of charge (e.g. Business Class, First Class) which is still feasible nowadays to some extent.

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[10] Methodological Guide for Developing Producer Price Indices for Services", European Communities/OECD, ed. 2006
[11] Kennesey A. et al, *Thesaurus of Producer Price Indices for Services (SPPI's),* 22nd Voorburg Group meeting, September 2007

As having shown in Graph 2.1 in chapter 2.2.1 on the other hand in times of an stagnating and/or recessive economic climate and where enterprises have to reduce all kinds of expenses according to information of airlines and travel agencies also flexible economy class ticket types should be included in the sample.

In principle the resulting price information should represent real transaction prices. However, a less preferred modification of this method uses list prices surveyed via Internet without any additional information. Advantage of this alternative is the minimization of respondent burden as long as the characteristics of the service product are held constant. A big drawback of this alternative method is the use of list prices where at least additional information (discounts, surcharges) have to be gathered and taken into account to meet the demands of an SPPI.

Considering the characteristics and intentions of the yield managment systems used by airlines (see chapter 2.2.2) using prices of repeated services surveying the representative ticket prices for representative flight classes to the representative destinations using point in time price collections might be a good choice in the case that the prices are not vacancy-dependent and the carrier has a rudimentarily yield managmant system.

If prices for the same ticket can vary over time due to vacancy dependency a monthly or quarterly average price for this ticket category would be a better fundament for price developments.

## 5.4.2 Unit Values

According to an Eurostat survey representing the European practice in 2010 using unit values for SPPIs purposes is the other frequently used pricing method in the area of air transport activities. Using this method a value of service output is divided by the corresponding output quantity. A basic prerequisite in the use of this method is that homogeneous sub-sets of services have to be formed in advance to calculate a significant SPPI

For the air transport service branch this means that for passenger transport services as well as for freight air transport, homogeneous groups of services which could be surveyed over time have to be selected and formed. Possible examples for service subgroups in the area of passenger transportation are classes of ticket types (fare codes, booking classes, etc.) for selected originations and destinations. The characteristics of the ticket types (e.g. changeable, refundable, flexible, carrying weight, meal) for the chosen destination should be held constant over time in order to reflect pure price changes.

The unit value method could also be applied to freight transportation services by developing the index in a similar way as described above. After selecting representative destinations for air freight transportation the statistician has to define additional price relevant characteristics of the services like kind of transported good (refrigerated-, valuable-, dangerous goods) or eventually type of transport container (different sizes of containers, pallets or bulk goods). Another price determining characteristic could be the speed of delivery (standard, priority) which could also be

used to form a homogeneous subgroup in which services could be summarized and defined.

The use of the unit value method is becoming more preferable under the prevailing yield management practice in the airline industry since it is immune to the problem caused by the vacancy-dependent pricing stated above. If airlines are willing to cooperate, monthly average revenue per detailled generated ticket subgroup and destination accurately captures price developments.

### 5.4.3 CPI data

According to the little survey undertaken by the author in the forefront of the 27th VBG meeting in order to get the latest available information on the practice on NSIs in their Air transport SPPI calculation a few countries reported that they are compiling their SPPIs by using CPI data (Irland, Slovakia, Spain).

One country reports that the prices are collected by the CPI unit directly from the airline carrier's websites one month in advance of the CPI reference month. For example, prices for return airfares are collected in January for travel during the month of February and are used to compile the passenger transport by air component of the February CPI. In a next step the index itself is also calculated by the CPI unit and on the one hand monthly disseminated via the CPI and a quarterly via the SPPI release.

Another country reported that they are using CPI data in the way that the CPI collects prices of different air tariffs belonging to different routes. For the SPPI compilation they exclude the lowest tariffs, that are which do not allow any change at all (which are supposed to be used in a majority way by consumers and not by businesses). Over all the b2b index is aggregated with the CPI results in order to get a b2all index for air transportation.

## 5.5 Weights

The needed weighting information to calculate an adequate SPPI for Air transport activities depend on the used index aggregation structure. Additionally in the case of Air transport and the already made descriptions of main pricing method (see chapter 5.4) using for example the method of the "direct use of prices of repeated services" for passenger air transport and unit values for freight transport the weighting structure could look like the following example which I already have incorporated in the revision of the SPPI guide.

Figure 5.0: Index Aggregation
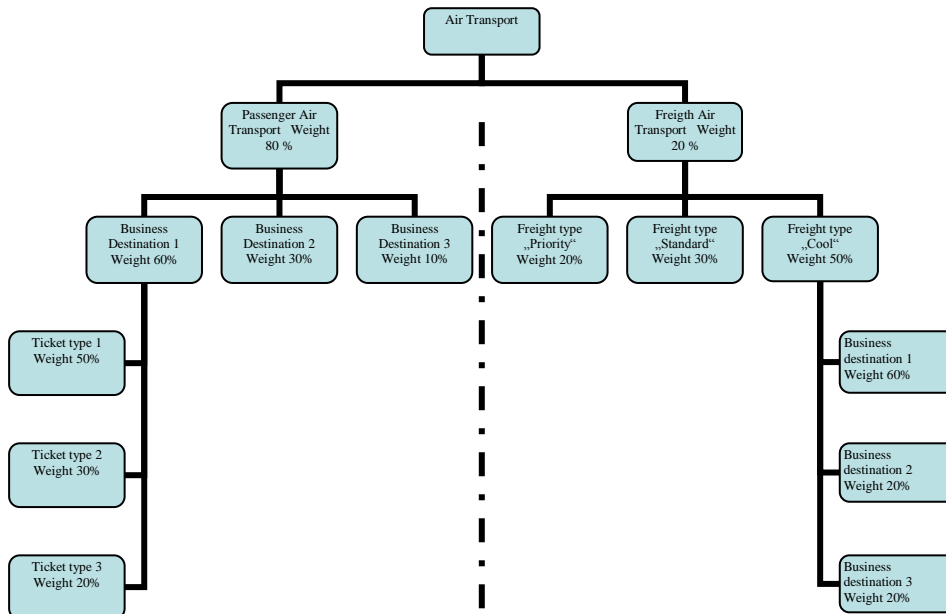


## Passenger air transport

Given the assumption that the above shown aggregation tree only represents the segment of b2b services for passenger transport representative destinations and business traveller ticket types have to be selected. Weighting details in terms of turnover information on this level of detail could only be provided by the airliner itself. In regard to the selected business destination maybe additional information can be provided by travel agencies.

## Freight air transport

Using the unit value pricing method holds two advantages. On the one hand it is less burdensome for the respondent due to the fact that the needed information could easily be provided via the accounting system and on the other hand by receiving turnover and quantity data, the needing weighting information is immediately available.

## Aggregation of passenger and freight

At this stage of the aggregate structure in air transport weights could be provided by turnover statistics of the NSIs or once again by the responding airlines.

The example above has been kept intentionally very simple showing the aggregation structure for an SPPI that exists of only one airline and only represents the b2b segment. If further airlines are part of the index calculation and other price segments are also covered the aggregations structure will look different and will be more

complicated. Countries have reported that at least for the base year surveys are undertaken to gather weighting information. Some countries reported that they collect turnover data for weighting purposes even yearly.

# 5.6 Main issues with the measurement of price indices

### 5.6.1 CASS (IATA)

For the freight air transport sector, as in some other service branches where regulators are a possible alternative source for the needed information, the International Air Transport Association (IATA), which is in fact no regulator, but a global association with huge amounts of useful data of their members, could provide the NSI with the respective data for a freight index. This could be done via IATAs Cargo Account Settlement System (CASS) by statistics based on so called air waybills which are standard documents adopted by nearly all the air transport companies, which describes the type of goods, their weights, the terms of the transportation contract, the price of the transport service, and some other information.

An initiative for getting data has started subsequent the VBG meeting in Wiesbaden in November 2006 during a first meeting with a representative of the IATA and some EU member countries (e.g. Germany, France).

Countries have agreed to buy reports from the IATA which include the following information:

- Turnover and weight transported by air company by destination (airport level) by country of origin for the last available year (or the 12 cumulative last months).

- For the same level of detail and in a quarterly frequency, average yields (revenue per kg)

Due to the fact that those date do not include all relevant information needed for the calculation of an meaningful SPPI some extra research has still to be done by the NSI in the way that extra surcharges (i.e. fuel surcharge, security charges) are not included and have therefore to be surveyed on own account.

Overall this solution has considerable advantages in the way that:

- It saves development costs and resources of the NSI
- Minimizes respondent burden
- Data are based on real transactions and hard industry facts

and it therefore represents an excellent alternative to build up an SPPI for air transport in a cost effective way.


## 5.6.2 Price determining characteristics

As in other industries in the air transport service sector it is of particular importance to identify the price determining characteristics of the service product in order to guarantee that prices of comparable products are surveyed over time.

In regard to the major distinction of services provided the following price determining characteristics have been reported by countries already producing SPPIs:

**Passengers**

- Destination/route (e.g. domestic, long-haul)
- Distinction business/economy
- Fare type
- Time of reservation
- Type of connection
- Flexibility of cancellation

**Freight**

- Destination/route
- Type of good
- Weight
- Speed of delivery

If services (e.g. ticket types in this case) are no longer available for price observations they have to be replaced by paying particular attention that the introduced ticket type enables the NSI to continue the measurement of the price observation in the way that the new service product is comparable to the old one. If there are differences in the composition of the two services quality adjustment procedures have to be started.


## 5.6.3 Quality adjustment

In the forefront of the 25th VBG meeting a little survey was undertaken by the UK and Austria by sending out a questionnaire concerning quality adjustment to selected member countries of the Voorburg Group in order to prepare a paper on quality adjustment in the air transport activities. The respective paper has been an agenda item in the 2010 and 2011 meetings.


Out of the thirteen responding countries of which eleven countries are producing air transport SPPIs only 7 countries apply quality adjustment methods. The majority of countries prefers implicit methods namely the overlap method or the comparable

replacement method. In the first method the old and new service product (e.g. ticket type) is available in the same period (t) and a price difference between product A and product B in the overlap period (t) will be treated as a complete quality change. The price index measuring price change between period t and t+1 will be affected only by price changes of product B between period t and period t+1.

In the latter product B which replaces product A is a service product of identical type and quality and does not differ in its price determining characteristics. Due to the identical product specifications no quality change occurs and the possible price difference will be represented in the price index.

A lot of discussion was going on about from which perspective to quality adjust

- Production function (of the producers point of view)
- Consumer utility (consumer point of view)

Due to the fact that a service producer price index should be calculated and consistency with the SNA should be the aim the opinion of the group is to quality adjust in the case that the production function has changed and not to quality adjust when the consumer utility changes. Nevertheless currently this issue has also been adressed to quality adjustment experts of the Ottawa Group to gather further oppinions.

Further information on quality adjustment could be found in the repective paper on the VBG website.

# 5.7 Recommended Approaches

Table 5.0: Choices for Developing SPPI Statistics

| Category | Pricing method | Data type in the survey and frequency | Quality and Accuracy | Cost |
|---|---|---|---|---|
| Best | Prices of repeated services<br><br>Contract pricing<br><br>Unit Values | Data are based on real transaction prices | Advantages:<br><br>Resulting price index is based on real transaction prices<br><br>Disadvantages:<br><br>Hard to keep the service specifications constant | Relatively high. Much work is needed to maintain constant quality.<br><br>If unit values are used a time lag has to be accepted |
| Good | Model Pricing | Expert estimate. The data are fictitious prices estimated by the respondent | Advantages:<br><br>Ability to incorporate productivity changes<br><br>Disadvantages: | High.<br><br>Good industry contacts are needed |

| | | | High respondent burden | |
|---|---|---|---|---|
| Minimum | List Prices | List prices without additional information on discounts and surcharges | Advantages:<br><br>Easy and fast to obtain for the NSI<br><br>Disadvantages:<br><br>No "transaction" prices | Low. |

# 6. Summary of Main Conclusions

In the last century the air transport service sector has been strongly affected by deregulation tendencies which have resulted in many structural developments. Airlines have formed strategic alliances in order to exhibit synergism and to generate advantages out or have been part of a merger and acquisition projects. On the other hand a completely new type of airliner, the so called Low Cost Carriers has emerged in the air transport service sector to compete with the traditional airlines by offering flights at considerably reduced prices. For the coming years, due to profit-maximizing intensions and to be keep competitative, further structural changes are to be expected and prices for air transportation may be influenced by the introduction of additional taxes (e.g. Ecological departure tax) or enviromental protection actions (e.g. European Union Emission Trading Scheme).

In regard to the NSI practice it could be said that no tremendous changes have taken place during the last 3 years. The vast majority of countries is collecting data for turnover and price statistics in the field of air transport services. The markets seem to be very concentrated in the way that for both statistics a sample of few enterprises results in a market coverage above 70%.

Concerning the covered service products in the field of SPPIs for passenger air transport the solely selection of business class tickets for a b2b passenger air transport SPPI should be reassessed and some more flexible economy class booking categories should also be considered to be part of the basket of selected services.

For SPPIs transaction pricing and the unit value pricing method are still the most prevalent pricing methods in the field of passenger air transport. Nevertheless according to the information of some countries the use of adjusted CPI data for air transport for b2b SPPIs or the comsumer part of a b2all SPPIs are a cost effective alternative and starting point compared to price surveys on own account. Using the above mentioned transaction pricing and taking into account the characteristics and intentions of yield managment systems a monthly or quarterly average price for ticket categories would be a better fundament for price developments instead of using point in time prices.

For air freight transport services a possible cheap and practical alternative is to build up a SPPI based on IATAs Cargo Account Settlement System (CASS) by statistics based on so called air waybills which provide all the needed information for a SPPI. Nevertheless few additional information have to be collected by the NSI.

With respect to the way of the data collection fully electronic reporting systems have been implemented only by a few countries. Nevertheless this seems to be the way to go because of reported rising user acceptance, increasing data quality and decreasing costs for the statistical institute.

In regard to quality adjustment the majority of countries prefers implicit methods namely the overlap method or the comparable replacement method. Concerning the perspective when to quality adjust currently the group prefers to quality adjust in the

case that the production function has changed and not to quality adjust when the consumer utility changes.


# 7. Appendix


## 7.1 Overview of International Progress


Due to the fact that till now no country progress reports in regard to air transport services have been gathered by the Voorburg Group, the following table provides a rough overview about the collection of services producer prices amongst EU member states in 2010 and countries responded to the little survey in the forefront of the meeting.

Table A.1: International Progress

| Category | Number of Countries |
|---|---|
| Countries developing or producing SPPIs | 26 |
| | |
| Type of index | |
| b2b | 10 |
| b2c | 3 |
| b2all | 13 |
| Pricing method (double counting) | |
| Transaction pricing | 22 |
| Unit Value | 6 |
| Contract pricing | 2 |
| Model pricing | 1 |
| Collection frequency | |
| Quarterly | 16 |
| Monthly | 10 |
| Availability | |
| Publishing the index | 20 |
| Produced but not published | 6 |

Table A.2: Overview of International Industry Classification

| | Classifications | | | |
|---|---|---|---|---|
| | ISIC Rev.4, 51 – Air transport | NAICS .2007 US, 481 – Air Transportation | ANZSIC 2006, 4900- Air and Space Transport | NACE Rev.2, 51 - Air transport |
| **Definition** | This division includes the transport of passengers or freight by air or via space. | This sub-sector comprises establishments primarily engaged in for-hire, common-carrier transportation of people and/or goods using aircraft, such as airplanes and helicopters. | This class consists of units mainly engaged in operating aircrafts for the transportation of freight and passengers | This division includes the transport of passengers or freight by air or via space. |
| **Inclusions** | - Transport of passengers by air over regular routes and on regular schedules<br>- Charter flights for passengers<br>- Scenic and sightseeing flights<br>- Renting of air-transport equipment with operator for the purpose of passenger transportation<br>- General aviation activities<br>- Transport freight by air over regular routes and on regular schedules<br>- Non-scheduled transport of freight by air<br>- Launching of satellites and space vehicles<br>- Space transport<br>- Renting of air-transport equipment with operator for the purpose of freight transportation | - Scheduled Air Transportation<br>- Non-Scheduled Air Transportation | - Air freight transport<br>- Air passenger transport<br>- Aircraft charter, lease or rental, with crew, for freight and/or passengers | - Transport of passengers by air (over regular routes; charter; sightseeing; renting of aircrafts with operator)<br>- Freight air transport (on regular schedules; non-scheduled)<br>- Space transport (launching of satellites and space vehicles; space transport of freight and passengers) |
| **Exclusions** | - The overhaul of aircraft or aircraft engines (see class 3315) and support activities, such as the operation of airports, (see class 5223).<br>- Activities that make use of aircraft, but not for the purpose of transportation, such as crop spraying (see class 0161), aerial advertising (see class 7310) or aerial photography (see class 7420). | - Scenic or sightseeing air services (48799, Scenic and Sightseeing Transportation, Other)<br>- Air courier services (49211, Couriers) | - Providing aerial surveying services (see class 6922 Surveying and Mapping Services)<br>- Repairing aircraft (see class 2394 Aircraft Manufacturing and Repair Services)<br>- Operating ticket sales or booking offices of non-resident airlines (see class 7220 Travel Agency and Tour Arrangement Services)<br>- Domestic and international air freight forwarding (see class 5292 Freight Forwarding Services)<br>- Transport of passengers by aircraft solely for sightseeing purposes (see class 5010 Scenic and Sightseeing Transport) | - Crop spraying, (see class 01.61)<br>- Overhaul of aircraft or aircraft engines, (see class 33.16)- operation of airports, (see class 52.23)<br>- Aerial advertising (sky-writing), (see class 73.11)<br>- Aerial photography, (see class 74.20) |

Table A.3: Overview of International Product Classification

| | Classifications | | | | | |
|---|---|---|---|---|---|---|
| | CPC Ver.2 | | NAPCS (Provisional Version) | | CPA 2008 | |
| | Class | Sub-classes | Output group | Sub-groups | Category | Subcategory |
| **Inclusions** | 6424 – Air transport services of passengers | 64241 – Domestic scheduled air transport services of passengers 64242 – Domestic non-scheduled air transport services of passengers 64243 – International scheduled air transport services of passengers 64244 – International non-scheduled air transport services of passengers | 48111 - Scheduled passenger transportation by air | Scheduled passenger transportation by air (further distinction available) Non scheduled (chartered) passenger transportation by air Transportation of goods by air Rental of aircraft without crew (further distinction available) Rental of aircraft with crew (further distinction available) Related products | 51.10.1 – Passenger air transport services | 51.10.11- Domestic scheduled air transport services of passengers 51.10.12- Domestic non-scheduled air transport services of passengers, except for sightseeing 51.10.13- International scheduled air transport services of passengers 51.10.14- International non-scheduled air transport services of passengers 51.10.15- Non-scheduled passenger air transport services for sightseeing |
| | 64245 – Space transport services of passengers | | | | | |
| | 6531 – Air transport services of freight | 65311Air transport services of letters and parcels 65319Air transport services of other freight | 48121 - Non-Scheduled Air Transportation | Non-scheduled (chartered) passenger transportation by air Transportation of goods by air Related services | 51.21 – Freight air transport | 51.21.11 – Scheduled air transport services of intermodal containers 51.21.12 – Air transport services of letters and parcels 51.21.13 – Scheduled air transport services of other freight 51.21.14 – Non-scheduled air transport services of other freight 51.21.20 – Rental services of freight air transport equipment with operator |
| | 6532 Space transport services of freight | 65320 Space transport services of freight | | | 51.22 – Space transport services | 51.22.11 – Space transport services of passengers 51.22.12 – Space transport services of freight |
| **Exclusions** | | - -Sightseeing passenger air transport services, cf. 64134 - -Rental services of passenger aircraft with crew, cf. 66031 | | | | |