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**SESSION 2: Mini presentation on producer price indices**

**THE DEVELOPMENT OF A PPI  
FOR  
RENTING OF AUTOMOBILES**

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## 1. Introduction

At the background of lacking Producer Price Index (PPI) for business services in Austria Statistics Austria started to participate in European-wide programmes for developing PPI's for business services. In October 2002 a Pilot Project was started granted by Eurostat in order to undertake the preparatory work. At the same time Statistics Austria joined the Eurostat/OECD TF whose major aim is to develop the methodological and conceptual basics of service price indices in the business sector. As priority service sectors to be treated first advertising services, legal services, post and courier services as well as scheduled passenger air transport services were taken into consideration.

With the basis of the Short-term Statistics Regulation (EC) No 1165/98 and its Amendment Regulation which is currently in process further investigations are going on in 2004 for other service sectors.

At national level a working party dealing with price statistics has been constituted by ST.AT. November 2003. During that event first results of our preparatory work were presented to a broader audience of national experts and users.

At present ST.AT is calculating experimental indices for scheduled passenger air transport and advertising services. Due to the experimental character of both indices and due to confidentiality reasons none of these indices is published at the moment.

This paper deals with Renting of automobiles for which preparatory work has started recently. The paper first presents a description of the respective service sector within the Austrian economy and will then concentrate on stipulated and planned pricing methodologies. Finally the next steps for the compilation of a service price index for renting of automobiles will be outlined.

## 2. Renting of automobiles in Austria

According to the Austrian Statistical Classification of Economic Activities<sup>1</sup> division 71 "Renting of machinery and equipment without operator and of personal and household goods" can be divided into the following ÖNACE groups:

KA 71.1	Renting of automobiles
KA 71.2	Renting of other transport equipment
KA 71.3	Renting of other machinery and equipment
KA 71.4	Renting of personal and household goods n.e.c

The index to be developed relates to ÖNACE activity 71.1 "Renting of automobiles". The two main service categories in this group and the corresponding ÖCPA<sup>2</sup> codes are:

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<sup>1</sup> ÖNACE 2003 is the Austrian version of and corresponds with NACE Rev.1.1 and ISIC Rev. 3.1 respectively.

<sup>2</sup> Austrian Statistical Classification of Products by Activity 2002 (Rev. 1)

Table 1: Description and structure of ÖNACE division 71.1

ÖNACE code	Description	ÖCPA code	Description	Share of the Production value of ÖNACE 50 - 93 2001	Share of the turnover* of ÖNACE 71.1 2001
KA 71.1	Renting of automobiles			0,98%	
KA 71.10-01	Leasing of motor vehicles up to 3,5 tons	KA 71.10.10-1	Leasing services of private cars and light vans, up to 3500 kg, without driver		80,23%
KA 71.10-02	Renting of motor vehicles up to 3,5 tons	KA 71.10.10-2	Rental services of private cars and light vans, up to 3500 kg, without driver		19,77%

\* According to the Structural Business Survey 2001

The whole sector “Renting of automobiles” had a share of about 1 % of the production value of all service sectors in total (ÖNACE 50 – 93) in 2001 (corresponds with about 0,5 % of the total production value of the Austrian Industry according to National Accounts data base). Table 1 also shows that ÖNACE 71.1 produces two categories of services, namely “Leasing of motor vehicles up to 3,5 tons” which produced about 80 % of the turnover and “Renting of motor vehicles up to 3,5 tons” contributing approximately 20 % to the turnover of sub-sector 71.1.

While in practice “renting of motor vehicles” mainly deals with short-term renting “leasing of motor vehicles” is mostly a long-term rental. It seems useful to have a closer look on the description in order to distinguish between both service activities.

### **KA 71.10-01 Leasing of motor vehicles up to 3.5 tons**

ÖNACE subclass 71.10-01 comprises operate leasing of motor vehicles up to 3.5 tons but excludes financial leasing. According to the European System of Accounts (ESA 1995) the following distinctions can be made to separate these two kinds of leasing:

#### ***Operating Leasing***

The lessee acquires the right to use a durable good for a certain period of time which is merely long-term (1 year or more) and not necessarily settled in advance. When the leasing period expires the lessor expects to receive his good back in the same condition as when he hired it out apart from normal wear and tear. The lessor is then likely to hire out the good to another lessee or to use it otherwise. Thus, the leasing period does not cover all or a predominant part of the good’s economic lifetime.

Units engaged in operating leasing possess expert knowledge about the kinds of durable goods they hire out. They keep stocks of these goods to be able to hire them out on demand or at short notice. Usually they offer a variety of models to choose from. In order to keep their

durable goods in good working order lessors must carry out maintenance and repair services on goods awaiting hire. Lessors also normally assume responsibility for repairs and maintenance of a good as well as replacement in case of a breakdown while the good is hired out to a lessee.

Operating leasing does not cover situations where the owner of equipment also provides staff to operate the equipment.

### ***Financial leasing***

The lessee acquires the right to use a durable good in exchange for rental payments over a predetermined and protracted term. If all risks and rewards of ownership are, *de facto* though not *de jure*, transferred from lessor to lessee, the lease is a financial one. In financial leasing, the leasing period covers all, or most of, the economic lifetime of the durable good. At the end of the leasing period the lessee often has the option to buy the good at a nominal price. The lessor does not need to possess any expertise about the good in question. He offers no repair, maintenance or replacement services to the lessee. Normally, the good is chosen by the lessee and delivered directly to him by the producer or seller. The lessor's role is thus purely financial.

The ESA recognises the economic reality behind financial leasing by recording it as follows: the lessor provides the lessee with a loan enabling the lessee to purchase a durable good, of which the lessee becomes the *de facto* owner. Thus, the system treats the durable good as if owned by the lessee from the beginning of the leasing period. Rentals actually paid by the lessee to the lessor have to be subdivided into repayments of principal and interest payments related to the imputed loan.

In NACE Rev. 1, operating leasing of real estate is classified in class 70.20 'Letting of own property'. Operating leasing of other durable goods is classified in division 71 'Renting of machinery and equipment without operator and of personal and household goods'. Operating leasing does not comprise the renting of machinery or equipment with operating staff, which is classified according to the services provided by the equipment and staff. For example, the hiring out of a lorry with driver is classified in class 60.24 'Freight transport by road'. Institutionally, operating leasing corporations are classified in sector S.11 'Non-financial corporations', but operating lessors may also be found in sector S.14 'Households'.

### **KA 71.10-02 Renting of motor vehicles up to 3.5 tons**

ÖNACE subclass 71.10-02 comprises renting of motor vehicles up to 3.5 tons without driver, explicitly excluding taxi operation. The same characteristics as mentioned for operating leasing also stand for 71.10-02 except that renting is mostly occurring for short periods (1 day, 1 week, 1 month).

After discussions with National Account unit and taking into account the expected difficulties in price measurement of "Leasing of motor vehicles up to 3.5 tons" it was decided to start with the investigation of ÖNACE 71.10-02, to preliminary use this price index for the total of 71.1 and to deal with ÖNACE 71.10-02 at a later date.

The planned price indexes will be primarily used as deflators in National Accounts and for volume measures in business service statistics. In both areas the existing data base for constant price estimates is still rather poor. Due to the fact that non-resident companies are excluded from GDP only domestic enterprises will be investigated for our PPI.

### 3 Description of the sector

From the Structural Business Survey (2001) which uses the Austrian Business Register (UBR) as a sampling frame some key figures for Renting of automobiles could be obtained in order to show a rough picture of this sector (see Table 2).

Table 2: Key figures on renting of automobiles (ÖNACE code 71.1)

Structural Business Survey (2001)				Provisional data from Austrian Federal Chamber of Commerce		
ÖNACE code	Companies	Turnover	Personnel	Authorisations	Registered cars	Members
		in 1000€				
71.1	249	1.378.025	1.561		27.209*)	10603*)
71.10-01	n.a.	80%	n.a.			
71.10-02	n.a.	20%	n.a.	1813	3318	

\*) incl. vehicle rental with driver (taxis, cabs [Fiaker], ambulances, rental horse cars) and guest cars

Table 2 gives a rough flavour of the structure of the whole sector "Renting of automobiles" (ÖNACE 71.1). Due to lack of detail in the data base it is not possible for the moment to distinguish output between the two categories "Leasing of motor vehicles up to 3.5 tons" and "Renting of motor vehicles up to 3.5 tons". Information based on the Structural Business Survey shows however that in 2001 249 enterprises were producing a turnover of more than 1.3 billion €.

According to the size of enterprises ÖNACE sector 71.1 shows a clear predominance of small enterprises. More than 90% have less than 20 employees, however the rest of 8% of enterprises produce about 55% of turnover (see Table 3). Due to confidentiality reasons it is not possible to publish more detailed information from Structural Business Report.

Table 3: Number and size of enterprises per employees and turnover

Employees	Number of enterprises	Share of turnover 2001
1 – 4	207	44,8 %
5 – 9	13	
10 – 19	10	
20 – 49	8	55,2 %
50 – 99	8	
100 – 249	2	

As to the organisational aspect enterprises included in ÖNACE 71.10-02 “Rental services of private cars and light vans up to 3.5 tons without driver” are organised in the national trade organisation for transport industries with automobiles within the Austrian Federal Chamber of Commerce and counted 10.603 members with 27.209 automobiles in the year 2003. Besides rental services this organisation also comprises the authorisations for taxis, rental cars with driver, guest cars, ambulances, cabs (Fiaker) and rental horse cars.

The enterprises are on the one hand working as subsidiary companies and on the other as hand as licensees. In comparison to other countries the whole sector of rental services of private cars and light vans up to 3.5 tons without driver is rather small in Austria. The lack of detailed information in this sector is still tremendous and contradictory, e.g. according to information provided by the above mentioned organisation the total number of authorisations for rental services of private cars and light vans up to 3.5 tons without driver was 1813 with 3318 used and registered cars (see Table 2) resulting in an average number of cars per enterprise of 1,8. On the other hand big enterprises are offering more than 700 – 800 cars on their homepages. It is planned to clarify the data situation in a forthcoming meeting with the respective industry bodies.

### 3.1 Cars

The range of offered cars is huge. They differ in size, engine performance, interior equipment etc. The first elementary distinction can be drawn between renting a **car** or a **light truck**.

Furthermore both, cars and trucks, can be divided into homogeneous groups of cars which can be classified, according to the practice of the enterprise, in different ways.

Some enterprises classify cars utilising an industry standard car classification code. This is a standard vehicle matrix to define car groups ensuring a like-to-like comparison of standards across countries. This matrix consists of four categories. Each position in the four character vehicle code represents a definable characteristic of the vehicle. The expanded matrix makes it possible to have about 400 vehicle types. The car codes are created by selecting one character in each column and combining them into a four-character car code. Table 4 illustrates the matrix.

Table 4: Industry standard car classification code

CLASS	TYPE	TRANSMISSION	AIR CONDITION
<b>M</b> Mini	<b>B</b> 2-Door	<b>A</b> Automatic	<b>R</b> Yes
<b>E</b> Economy	<b>D</b> 4-Door	<b>M</b> Manual	<b>N</b> No
<b>C</b> Compact	<b>C</b> 2/4-Door		
<b>I</b> Intermediate	<b>W</b> Wagon/Estate		
<b>S</b> Standard	<b>V</b> Van (passenger)		
<b>F</b> Full-Size	<b>L</b> Limousine		
<b>P</b> Premium	<b>S</b> Sport		
<b>L</b> Luxury	<b>T</b> Convertible		
<b>X</b> Special	<b>F</b> 4-Wheel Drive		
	<b>P</b> Pick Up		
	<b>J</b> All Terrain		

	<b>K</b> (Van Cargo)		
	<b>X</b> Special		

e.g.: **ECMN** = Economy Car – 2/4 Door – Manual Transmission – Non air conditioned  
 = VW Polo, Renault Clio, Ford KA

Other enterprises use a slight variation of the above mentioned system. Instead of using a four letter code to identify a homogenous group of cars, they only use the first letter of the above matrix for grouping their cars. In this case the car categories can look like as follows:

Table 5: Alternative classification of car groups

Automobile Classes	Short description	Example	Respective Car Code
Economy	For short distances and small luggage	VW Polo	EBMN
Compact	For small families, limited distances and small luggage	VW Golf	CDMR
Intermediate	For normal distances and normal luggage	Skoda Octavia TDI	IDMR
Standard	For average distances and normal luggage	VW Passat TDI	SDMR
4 – Wheel Drive	For big families, long distances and plenty of luggage	Audi A6 Quattro	XFAR
Premium	For long distances and plenty of luggage	Audi A6 TDI	PDMR
Luxury	For long distances and plenty of luggage	Mercedes E 220 CDI	LDAR
Vans & trucks	For big families, long distances and plenty of luggage	VW Sharan	FVWR
Fun Cars	Special car modells	Porsche Boxter	XTMR

e.g.: **Economy** = Economy Class car for short distances and small luggage  
 = VW Polo (EBMN), Seat Ibiza (EDMR), Skoda Fabia (EDMR)

Furthermore as a third alternative of grouping cars a single alphabetic character is used to indicate a homogeneous group of cars according to the **rental tariff**. The meaning of the code can vary between enterprises. Table 6 gives a rough overview of the car groups of one enterprise.

Table 6: Car groups according to the rental tariff

Tariff Group	Car Group	Car	4 Letter Code
A	Small and Compact Car	Hyundai Getz	ECMR
B	Compact Car	Opel Astra DTI	CDMR
C	Estate Car	Opel Astra DTI Caravan	CWMR
D	Limousine	Mitsubishi Carisma	IDMR
etc.			

The different classifications applied by enterprises allows index calculations according to car groups per customer type on enterprise level. Due to the fact that each group stands for a number of similarly equipped automobiles a practicable sampling and continuous price observation over time should be possible.

### 3.2 Price determining factors

From the tables above and analysing the homepages and contracts of different car rental enterprises the following major price determining factors can be distinguished:

- Class of the automobile: *e.g.: ECMN; Economy; A*
- Duration and day of renting: *e.g.: 1 hour, 1 day, a few days, a weekend*
- Consumed kilometres: *e.g.: a certain amount of included (flat-rate) kilometres; fee for every additional kilometre*
- Type of client: *e.g. business, government, private*

Contracts very often reveal additional factors (some examples):

- Obligatory fee for drivers under the age of 25 for limitation of the liability
- Additional insurance fees for trips to certain countries (Eastern Europe)
- Additional fee for every registered driver
- Additional fee (15%) for renting the car at the airport
- Additional fee for renting the car at one station and returning it at another
- Additional fee for renting the car in the winter
- Additional fee for the registration (per day, including road tax disc)
- Additional contract tax for contracts where the price exceeds a certain amount of money

To ensure comparable quality for a certain category of rental service over time across service providers the statistician has to be very careful and also to take into account all these details hidden in the service contracts. Some of these additional fees may be facultative (e.g.: more than one registered driver) others have to be added to the price (e.g. registration fee including road tax disc) because they might not be included in the “official” price lists for hiring the automobile.

## 4. Renting of automobiles in the Austrian Consumer Price Index

Expenditure on renting cars are also included in the Austrian Consumer Price Index (CPI) in the sub-index of COICOP group 07 "Transport", explicitly in COICOP subgroup 07.2.4 "Other services (private means of transportation)". The sub-index concerning Renting of automobiles has been included in the CPI since 2000. Before 2000 car renting has been excluded from the CPI. After the revision of the CPI in 2000 COICOP car rental got a weight of 0,0426% in the CPI and 0,04025% in the Harmonised CPI.

A sample of 9 automobiles has been selected with regard to the most popular cars in the consumer sector. The chosen automobiles mainly fall into the automobile segments economy class, compact class and vans. The sample of 4 enterprises covers some of the major car rental firms in respect of turnover in this sector.

Changes in the price for renting an automobile are recorded in the index in the month in which the car is rented. Prices are collected a few days before due date which is the second Wednesday every month. Prices are obtained directly from the homepages of car rental enterprises. For the various classes of cars no separate sub-indexes are compiled.

## 5. Planned sampling and pricing strategy

The following considerations are concentrating on renting of cars and will be supplemented with those for leasing of cars at a later stage.

Generally speaking the whole market of car hiring is more or less a jungle of tariffs. For renting a car a wide range of tariffs and additional fees have to be taken into account. Also discounts vary across enterprises and between types of customers (clients). Furthermore the names for one and the same class of cars vary between the enterprises.

### 5.1 Sampling of enterprises

As already mentioned in chapter 3, in comparison to other countries the whole sector of rental services of private cars and light vans up to 3.5 tons without driver is rather small in Austria. In this early stage of work a subjective cut-off sample including the 10 most representative enterprises representing approximately 88 % of the sector turnover is planned. In this case small enterprises chosen by random sampling will be added to the sample.

### 5.2 Sampling of Services

The following key questions need to be clarified:

1. Which classes of automobiles should be used in the PPI?
2. Which duration and day(s) of rental should be chosen?
3. Which additional fees are to be taken into account?

Ad 1:

Due to various classes of automobiles varying across enterprises it will be necessary to select several representative automobile classes per enterprise. A stratification according to different categories of cars seems useful. To get an overall PPI for ÖNACE 71.10-02 it is necessary to distinguish between representative cars for business, government and household purposes. Due to the lack of generally available information this task needs to be solved (turnover data by purpose of client) in cooperation with the rental enterprises.

Ad 2:

Since changes of tariffs may be different depending which weekday the car is rented a stratification according to time and duration is also necessary. Strata for the most important durations and weekdays are to be established. This kind of information can also be found out in cooperation with the enterprises.

Ad 3:

As already mentioned in chapter 3 there are a lot of additional “hidden” fees in the hiring contracts which can also have an impact on the price. The relevance of such fees for the pricing strategy has to be clarified in cooperation with the enterprises. These fees are a major element of the quality of the service which has to be held constant over time to measure the real price changes of the service.

## 5.2 Pricing

Pricing of non-unique services (Item pricing method)

Since car rental services are available mostly in a structured tariff system framework on the basis of which prices for certain items are listed the item pricing seems to be the predominant method. The starting point will be to collect list prices for the chosen representative services. To achieve an approximation to what is called a transaction price it will be necessary to add and subtract additional fees and discounts. The challenge will be to get enough detailed information on discounts and fees for different groups of customers (business, households) and different service categories.

Unit prices (“Swedish” method)

Another approach is a kind of unit value approach. It is based on rather detailed data on turnover by transactions, rental days, car classes and by type of customer. Furthermore the price per transaction is divided by the average number of days per transaction in order to achieve a price per transaction day. Value added tax and other taxes are excluded. This approach requires the access to rather detailed bookkeeping data as a result of a rather advanced bookkeeping system. The advantage is that average transaction values are comprehensive as well as robust if detailed at a low level. Especially the aim to approach transaction prices for different groups of costumers is evident.

Statistik Sweden which is collecting prices for car rental services since 2000 uses this practicable method efficiently because enterprises are willing and able to cooperate and to give such detailed data. The index is calculated in three steps by weighting together the enterprises, the car categories and the customer types using the Laspeyres index formula.

### 5.3 Quality adjustments

As mentioned earlier, automobiles are classified in homogeneous groups of cars, which are held constant over time. Surveying car groups instead of single car models will possibly avoid quality adjustment problems as to characteristics of cars, however other quality parameters concerning details of contract may also change and will be subject to quality adjustments.

### 5.4 Calculating the index

Similar to the practice in the CPI it is intended to combine the most important car groups with representative durations/time. This will result in a number of price quotations for the PPI on a regular base. The difficult task is to compile “clean” sub-weights by sub-categories (class of cars, type of customer) because of data problems. For aggregating the various enterprises already existing turnover data will be used as weights. Detailed weights will be obtained in collaboration with enterprises, the initial rather practical approach will be to start with simple rough weights and to improve the calculation of sub-indices according to the availability of appropriate sub-weights.

Taking into account the expected difficulties by surveying several specified car classes across all enterprises due to different classifications applied by enterprises, ST.AT. intends to survey the most representative car classes per customer type in each enterprise in order to calculate individual indices at the first stage of the index calculation.

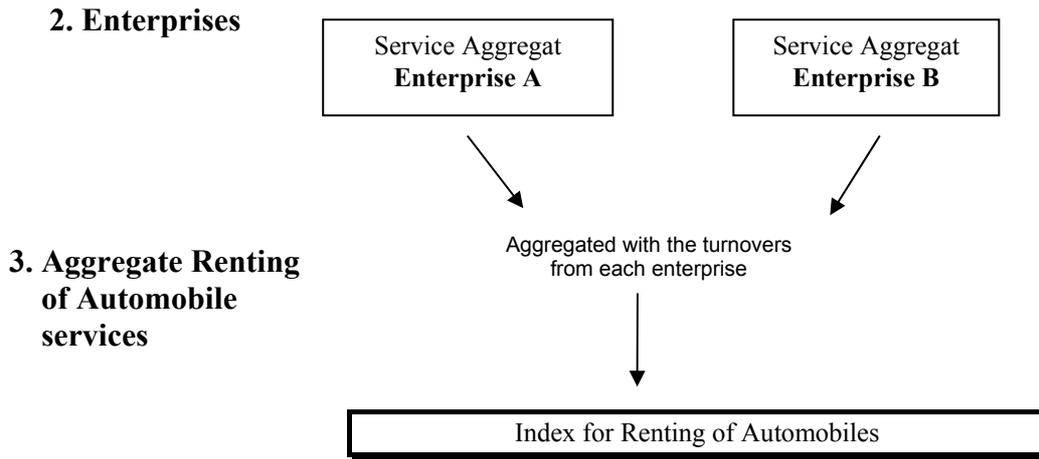
This approach aims to observe prices for a mixture of different services provided by an enterprise, to compile an average of the individual price series (weights: share of different types of services on the total turnover of the enterprise) and aggregate these indices using the share of the respective enterprise on turnover of ÖNACE 71.1

#### Stratification by enterprises

##### 1. Enterprise A

Business	Car class				
Government	Car class				
Household	Car class				

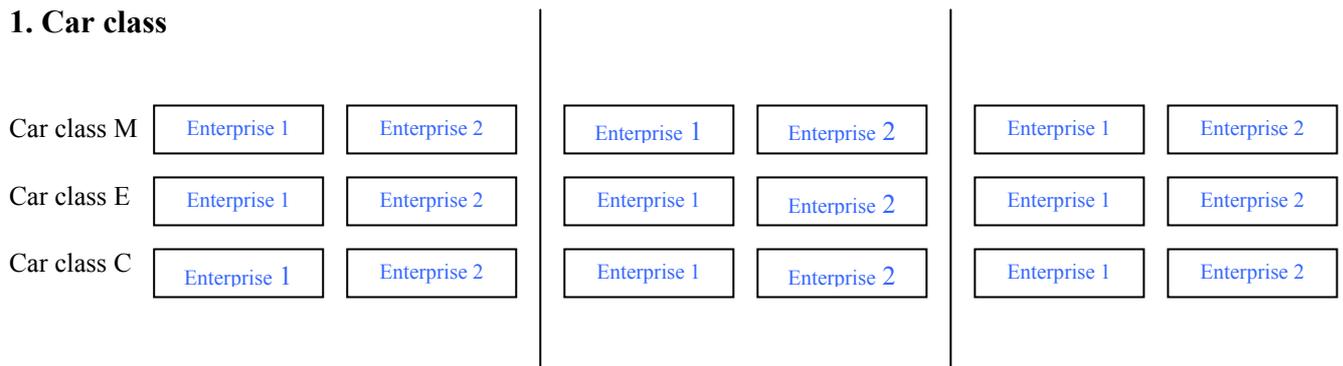
Aggregation with the shares of representative services in each enterprise



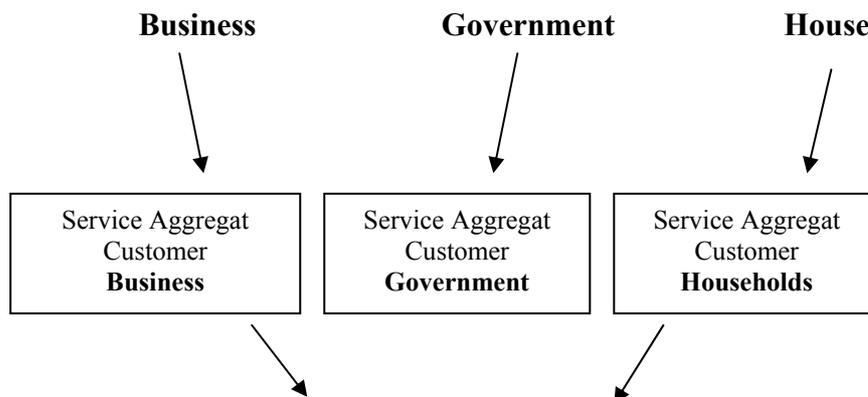
To achieve separated indices for each customer category, it would be necessary to calculate the index as follows:

**Stratification by car class and type of customer**

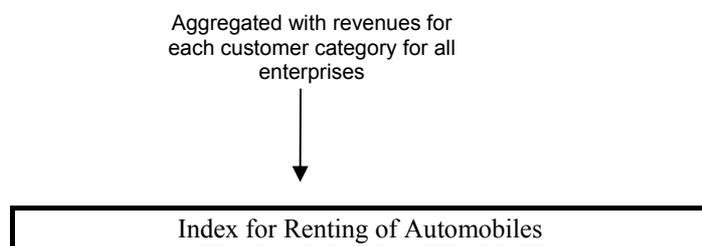
**1. Car class**



**2. Customer**



**3. Aggregate Renting of Automobile services**



The approach to be used is strongly dependent from the availability of the required data.

## 5.5 Data collection

The collection of data has not yet been started due to rather limited resources. Taking account of already existing tariff information systems the concept of pricing non unique services, using list prices plus detailed information on discounts normally achieved by companies, is considered to be the most appropriate alternative pricing methodology at the moment.

## 6. National Accounts requirements

According to the “Handbook on Price and Volume Measures” the collection of actual rental prices is considered as an A method. For services supplied according to a contract it is necessary to control for changes in quality over time. Furthermore, since the services can be unique, from client to client, close contact with the different enterprises in the industry is needed. It should be noted that changes in quality of the item rented (i.e. not only of the rental service) should also be reflected in the volume of the rental services. For unique services, the use of model prices would also be an A method.

Regarding services only to households, CPI information will often be available, and in that case making use of a CPI, adjusted to basic prices, will be an A method for deflating output. In the case where services are supplied to both businesses and private households, use of a CPI to deflate output will be a B method since it only covers the consumer market.

If no observable price of the rental service exists the price index of the actual product can be considered as a B method: on the assumption that there is a correlation between changes in the price of the item and changes in the rental price of the item.

Currently the characteristic output of ÖNACE 71.1 is deflated using a weighted price index formed from the price index for formation of fixed capital in equipment for personal vehicles and a price index for formation of fixed capital in equipment for lorries (B method).

## 7. Next steps

A meeting with members of the respective branch of the Austrian Chamber of Commerce is planned to clarify the data needs. A concrete sample of adequate car groups per customer type hopefully will be drawn and the weighting information will be compiled. The range of the sample is not specified at the moment but on all accounts, if data are available, it will be oriented on the revenues of the enterprises.

The following tasks remain:

- To clearly distinguish between business, government and private customers in the sector in order to produce an overall PPI for ÖNACE 71.10-02

- To derive a weighting scheme for types of customers and car groups in cooperation with the selected enterprises
- To ensure the regular co-operation of selected service enterprises
- To collect the prices and to install the survey routine
- To start the preparatory work for “Leasing of motor vehicles up to 3.5 tons”
- To compile a joint index for total “Renting of automobiles” including leasing services
- To investigate methods and procedures to be used for quality adjustments

Provided that resources will be available and enterprises will cooperate the regular data collection is planned to start still before end of this year.