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Producer price index for telecommunication services

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1. Pilot Study

The Federal Statistical Office of Germany (Destatis) has been commissioned by contract with EUROSTAT to conduct a pilot study in order to develop a producer price index (ppi) for telecommunication services (TCS). The study started in April 2003 and ended in April 2004. The index will have the base year 2005, so at the moment the index is not yet calculated. Destatis could use detailed CPI experiences to develop the PPI for telecommunication services.

2. Description of the sector

In the late 80s, the German postal market was reformed as part of the liberalisation efforts of the EU. Deregulation steps have also radically changed the telecommunication market over the last few years. Nevertheless, the Deutsche Telekom AG was a quasi monopolist on the telecommunication sector. That monopolistic system was gradually broken up, starting in the field of data and mobile communication. The last step leading to a complete deregulation of the telecommunication market was made in early 1998 by abolishing the network monopoly regarding voice transmission for the general public. Now it was possible to choose other telecommunication companies for long distance connections and to phone „call by call“. Since April 2003 this has also been possible for local connections.

The market for digital mobile phone services is relatively new and not dominated by a monopolist. Therefore, it was not regulated from the very beginning and was free for competition. In the meantime four carriers, enterprises with an own mobile network, (T-Mobil, Vodafone, E-plus, O2) and a large number of service providers, enterprises without their own network, are competitors in this market. There is a great variety of new products and services.

With the launch of UMTS individual business solutions are also becoming important in the mobile phone market. Additionally to discounted tariffs business customers will also have the opportunity to get contracts with individual services for their enterprises. So it can be assumed that a non-standardised sector will arise for mobile phone telephony according to the fixed line market.

The mobile phone market was gaining in importance during the last years. Particularly substitution effects with fixed line local calls can be observed. More and more local calls are made by mobile phone.

Internet usage has permanently increased in Germany in the last years. So a tremendous change has taken place. On the one hand the number of customers is increasing on the other hand new products and technologies are entering the market nearly every day.

A development from narrowband internet access to broadband internet access (e.g. DSL) is obvious. According to the annual report of the Regulatory Authority the share of DSL grew in the last years from 0.16 mill. customers in 2000 to 4.5 mill. customers in 2003. The share of customers, which buy their DSL access from competitors of the former monopolist, is growing but still small. In 2003 only about 9% of all DSL contracts where closed with competitors.

The supplier pattern of the German cable TV market is extremely heterogeneous. Due to the fact that the net development was carried out considerably by the „Deutsche Bundespost”, the “Deutsche Telekom” as the succeeding company was a monopolist on network level one and two a few years ago. This also applies mainly to network level 3 where apart of “Telekom” only few network providers are in the market. In contrast on network level 4 more than 6000 enterprises provide cable-TV services. At present there is no cable supplier that provides its services all over the country.

54% of all German households have a cable connection but there is no decisive growth expected in this market. Every year about three to four hundred thousand new consumers will join the market. This points out a growth rate of 1% till 2%.

In the next few years one trend will be observed. Analogue transmitted programs will decline while digital transmitted programs will rise. Digital transmission will not only be dominated by cable TV. Also terrestrial TV signals and such via satellite will gain in importance.

3. Classification aspects and scope of the survey

Telecommunication activities are defined in NACE 64.20. This class includes transmission of sound, images, data or other information via cables, broadcasting, relay or satellite:

- telephone, telegraph and telex communication
- maintenance of the network
- transmission (transport) of radio and television programmes
- internet access provision

In the first steps Germany focused on the three sectors fixed line telephony, mobile phone telephony and internet access. Cable TV has been neglected at the moment because it is to expect that terrestrial TV will gain in importance increasingly. So cable TV will lose importance and the market share of about three percent in the tc market will decrease.
The other sectors are neglected at the moment, too.

4. Regulatory Authority

The Regulatory Authority (RA), which is called Regulierungsbehörde für Telekommunikation und Post, took up its work on the 1st of January, 1998. The core task of state regulation is the supervision on each dominant provider's position in the market and to create a level playing field to protect the new entrants. RA mainly puts attention on fixed line telephony because of the important role of the former monopolist “Deutsche Telekom AG” but mobile phone telephony, Internet and cable TV are supervised as well, however, they are not regulated.

To perform its tasks the regulatory authority asks for key data from the telecommunication companies in an obligatory survey once a year. RA by legislation is not allowed to provide these confidential data for statistics. RA only publishes accumulated data in the annual report once a year. Thus the Federal Statistical Office Germany is not in the situation like other countries.

5. Index concept

The price indices for telecommunications services are part of the system of price statistics. Thus they are subject of the measurement concept traditionally applied in German price statistics, i.e.

the Laspeyres fixed base concept. In an economic sector in which "technological and economic parameters" change very quickly – like in the telecommunication sector - the ideal measurement concept can only be implemented under great methodological restrictions. It is rather necessary to consider changes in connection with technological developments when they become relevant for sales.

The index is distinguished into four main parts. Sub-indices will be calculated for the following sectors: fixed line telephony, mobile phone telephony, internet services and cable TV. Producer Price indices for TC indicate the price development of all products and services which companies provide for their customers. This comprises private customers, business customers and public customers[1]. Business customers again are differentiated into customers of standardised services and customers of non-standardised services, which are individual solutions, developed especially for one business customer. The economic activity of business customers is of no interest. Customers can be industry companies as well as telecommunication companies themselves.

Tariffs for small and medium sized business customers have to be included in the index. For them and especially for big enterprises the demand of telecommunication products and services differ from private customers. So products and services, as for example leased lines, platform solutions, and other services used by enterprises, will enter the index.
For big enterprises tariffs are less relevant. Here TC services are sold with the help of individual contracts. They also have to be included in the index.

Services offered by TC companies for TC companies as interconnection[2] and carrier[3] services are theoretically also part of the index. The problem is that prices for these services are mostly negotiated between the two involved companies. Only in the fixed line sector interconnection prices are regulated and frank for everyone. These prices can be observed and thus influence the index. Otherwise no company is plainly willing to provide interconnection and carrier prises, even not for statistical purposes. So it will not be possible to include the price developments of these services into the new ppi.

6. Deriving the weights

For deriving weights data providing turnover structures, tariffs and customer behaviour are needed. For this reason Destatis started a survey. The most important enterprises in each sector where ask for data which are suitable for deriving weights. The questionnaire of Destatis was partly similar to the questionnaire of the RA.

6.1 Fixed Line

Weights in a ppi for fixed line services represent the share of the turnover of a category of products or services proportionally to the total turnover of all firms within a sector. For these categories representative products and tariffs were defined.

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[1] For simplicity in the subsequent text business customers and public customers are called "business customers"
[2] Interconnection: The commercial and technical arrangements under which service providers connect their equipment, networks and services to enable customers to have access to the customers, services and networks of other service providers.
[3] Companies which offer telecommunication services and endue own networks

Companies provided data about their best sold tariffs. Additionally they provided data about the length of calls regarding different points of time during the day (in the morning, evening etc). So it was possible to name representative calls with a specific length at a specific time with a specific tariff. These data were available for private customers as well as for business customers.

Beside special business tariffs for small and medium sized business customers the business customer market is embossed by individual contracts for TC–solutions. In the German market only four firms are important in this sector.
Here the telecommunication company provides a complex offer containing different services as for example:

- leased lines
- platform solutions (tcp/ip, mpls),
- voice product
- different management services

For this bundle of services only one price is paid. The customer does not buy single products; he buys the whole package for one price. This price depends on several factors:

- amount of the demanded products,
- distances which have to be connected,
- locations which have to be connected (rural environment is more expensive than big cities),
- terms of contract,
- strategic considerations.

For the price observation it will be necessary to observe the actual price for the whole package and not the catalogue prices for each component of the solution.

In cooperation with the TC companies Destatis developed a model approach: Telecommunication enterprises should provide a number of fictive contracts for business solutions. The chosen contracts have to represent as many of their contracts with own customers as possible. The contracts become part of the calculation system of each TC company so that they can report the price development on a monthly or quarterly basis. It is still questionable if this model approach can be implemented. Companies are not cooperating satisfactorily.

The field of interconnection has to be part of the fixed line index, especially of the sub-index for business customers. Interconnection means that companies use the telecommunication network of other carriers to connect their own customers with customers of other companies. The company has to pay a minute fee to the network owner. These fees are regulated. There are six different interconnection tariffs. Enterprises – as interconnection customers - are divided into three groups: local tariff, single transit tariff and double transit tariff. They differ from each other by a different number of interconnection points. The more they have the cheaper is the tariff they have to pay. The weights were derived from the total turnover of the firms which have to pay each tariff. Interconnection prices also differ from each other dependent on the point of time of the call. There is an off-peak and a peak time.

6.2 Mobile Phone

For the ppi four user profiles should represent the customers of the whole market. The user profiles of rare callers, low level callers and average callers represent the private customers while the high level callers represent small or medium sized business customers. Big companies which also act as mobile phone business customers are not part of these profiles. They are integrated in the sub-index of individual business solutions. Therefore the big business customers will not become part of the mobile phone index. Prepaid customers were completely assigned to private customers.

A decision was to be made whether only carriers or both – carriers and service providers - have to be considered in the index. Destatis decided to consider only the four network carriers. Service providers only sell products of the carrier, mostly they adopt even the tariffs. So it can be assumed, that the customer structure of the service providers is nearly the same as the one of the carriers. So it probable, that customers use their mobile phone in the same way, to the same extent regardless if they are customers of carriers or of service providers. The assumptions are made that both types of customers:

→ phone at the same time
→ make – on average - phone calls with the same duration of time
→ make on average the same number of calls in one month

→ make calls into the same direction (use own network, other networks, fixed line)
→ can be divided into the same shares of business and private customers

If data provided by the carriers are not sufficient to calculate the index (e.g. if new services like UMTS enter the market) also service providers will be surveyed.

6.3 Internet

Regardless which kind of connection the customer uses, a special tariff is necessary for going online. Here different types of tariffs are offered in the market. These tariffs can be divided into:

→ internet by call
→ internet by call with registration and a monthly basic charge
→ flat rates
→ tariffs depending on the transmitted data volume
→ tariffs depending on the online time

The first two types of tariffs are usually used with a narrow band internet connection technology, the other with broad band. Tariffs depending on transmitted volume and flat rates become more and more important. It can be expected, that tariffs depending on time will disappear in the next years.

In the new producer price index all tariff types mentioned have to be observed. Therefore data are required from the companies about turnover structure, the importance of their single tariffs and online time or transmitted data volume. With the help of these data it will be possible to develop user profiles for calculating the index.

It will particularly be important to distinguish between business and private customers. Most companies offer special tariffs for business customers. But there are also services, as e.g. SDSL, which are not called “business services” but which are mostly used by business customers. So it can be estimated that the turnover of SDSL for example is part of the sub-index for business customers.

7. Regular Price Observation

For price collection mostly sources will be used which are accessible without contacting the firms. Especially in the standardised sector price lists and data bases are important and can be found in the internet. For the non-standardised sector it will be necessary to get into contact with the firms. Here the providers have to be asked quarterly. Prices for Interconnection in the fixed line sector are regulated and available from the Regulatory Authority.

8. Differentiation of the three Sectors

The index consists of the parts fixed line telephony, mobile phone, internet services and cable TV. But it is doubted that this differentiation can be kept for the next few years. In general especially the fixed line sector and the internet sector are merging more and more.
For business customers this development is more obvious than for private customers. Often bundles of services are offered and the share for fixed line telephony and for internet or data transmission in general cannot be defined.

In the next years this development will accelerate. According to the information of large companies the sector of telecommunication services is likely to grow together with the sector of information technology services until about 2007. This means especially for business customers companies will provide services which include beside telecommunication services also information technology services[4]. A differentiation between these sectors will become increasingly impossible.

Especially services in fixed line telephony and internet services are linked regarding to the following aspects:

- → for data transmission the fixed line network is used
- → leased lines are used for fixed line telephony as well as for data transmission and internet access
- → basic charges for DSL access e.g. are part of the costs for using the internet, but they are offered from the fixed line companies.

9. Future Developments on the TC – Market

In the next years the telecommunication market is going to change permanently. There will be technological progress as well as changes in tariff structure and the multiplicity of offers. So it is expected that especially in the sector of business customers the range of telecommunication products which are linked to IT components will increase rapidly. An enterprise network is no longer simply a TC product. It will be controlled by software which was only programmed for

[4] e.g. TC solution include special software and hardware solutions which where develop for one special customer according to the TC requirements.

this purpose. So a differentiation between these two sectors will hardly be possible within two or three years.

New developments like Voice over IP or wireless LAN have also to be considered.

A similar development is obvious in the mobile phone market. Because of new technologies as for example UMTS it will be possible to transmit big amounts of data. That is why also TV, radio and internet application via mobile phone will be taken for granted in the next years. Here also different sectors of telecommunication will grow together. Calculating an index will need a lot of conceptual adaptations.

Technological changes in the fixed line sector are not as important as in the other sectors. But here new tariffs concepts are discussed. So it can be expected that in a certain time fixed line calls will be free of charge. Instead the basic charge will increase. So there will be a kind of flat rate for fixed line telephony.

The cable market is stagnating. Because of that the cable companies try to gain new customers by offering internet or telephony via cable. It had to be checked if these services will play such an important roll in the market that it will be necessary to implement them in the index.
Additionally the market share of the digital terrestrial TV has to be observed. In some areas of Germany it probably will have greater market shares than cable TV.

Future Developments in the TC market

Fixed Line	- Fixed line telephony will become cheaper and cheaper - In future: call time will be free, monthly basic charges will become more expensive
Mobile Phone	- New services will enter the market: →UMTS, →Transmission of big amounts of data, →Multimedia
Internet	- Consolidation of the telecommunication market and the market for information technology - Internet telephony (Voice over IP) - WLAN
Cable	- Integration of TV, Radio, Internet, and Telephony in one cable network all over the country - Growing market share of the digital terrestrial TV