

APPENDIX 3:

The Swedish Producer Price Indices for Telecommunications

A. Business Model

Telecommunications services for both household and corporate sectors are divided into three subgroups: fixed telephony, mobile telephony and Internet. The weight distribution of these subgroups in the total telecommunication index for 2001 are 65.4 % for fixed telephony, 29 % for mobile telephony and 5.6 % for Internet. The weights are derived from net revenues calculated from annual surveys of Telecom companies, which is performed by a division of The Statistics Sweden situated in Örebro (ES/TN). This survey gives net revenues divided on household and corporate sector and in each sector divided on subgroups of telephony services.

The only weakness in this survey is that it is already considerably out of date, when it is published. These figures comprise of the results for three years before the year we price measure. For the year 2001 the net revenues of 2000 are forecasted based on the survey of 1998, expert opinions and a market survey from The National Post & Telecom Agency in Sweden (PTS).

B. Pricing Methodology

Statistics Sweden has just derived a model to calculate monthly producer price indices for telecommunications (with Dec 1998=100). An index for total telecommunication services is given and it is the combination of telecommunication services to both household and corporate sectors. This total index is divided in three indices for subgroups fixed telephony, mobile telephony and Internet.

B-1. Fixed telephony

The price index for fixed telephony is measured by the service of the dominating telecommunication provider, which represent the services of the whole fixed telephony sector except for international calls. This telecommunication provider has a market share of about 90 % in 1999 for fixed telephony international calls excluded and 87 % with international calls included.

For 2001 the international calls are measured from three telecommunication providers. The dominating telecommunication provider has about 60 % and 55 % market share in household respective corporate sector. We choose one representative provider from each sector for the rest of the markets for international calls

Since the deregulation of the Swedish market for telephony there has been increasing competition. The market shares for the dominating telecommunication provider have gone from 99 % in 1994 to 90 % in 1999. In the future new telecommunication service providers may have to be incorporated in the index if the trend of increasing competition continues.

In table 1 and 2 below we lists the services within fixed telephony to the household respective corporate sector for which prices are measured. The household sector has a share of 61.2 % and the corporate sector has a share of 38.8 % of the fixed telephony services.

Table 1. Service of fixed telephony to household sector with weights in 2001

Services	Weight
Registration fee, adults	0,009
Registration fee, youth (18 – 25 year)	0,004
Subscription	0,362
Call set up charges	0,164
Calls in Sweden, daytime, Monday – Friday	0,116
Calls in Sweden, all other time	0,130
International calls	0,062
Calls from fixed phone to mobile phone, daytime, Monday - Friday	0,060
Calls from fixed phone to mobile phone, all other time	0,056
Subscription fee, ISDN 2-channels	0,006
Change of number due to change of address	0,015
Directory enquiries	0,007
Value added services: Premium-rate calls (071 and 072)	0,007

Table 2. Services of fixed telephony to corporate sector with weights in 2001

Services	Weight
Registration fee, direct access (fixed charges, non recurring charges)	0,009
Registration fee, indirect access (fixed charges, non recurring charges)	0,006
Subscription, direct access (fixed charges, non recurring charges)	0,137
Subscription, indirect access, analogue (fixed charges, non recurring charges)	0,057
Subscription, indirect access, digital (fixed charges, non recurring charges)	0,022
Call set up charges	0,157
Calls in Sweden, daytime, Monday – Friday	0,146
Calls in Sweden, all other time	0,022
International calls	0,163
Change of number due to change of address	0,003
Directory enquiries	0,017
Value added services: Premium-rate calls – 071-number	0,003
Value added services: Premium-rate calls – 072-number	0,001
Calls from fixed phone to mobile phone, daytime, Monday - Friday	0,153
Calls from fixed phone to mobile phone, all other time	0,027
Freephone services 020-number (mail order business)	0,046
Subscription fee, ISDN 30-channels	0,032

The weight of each service consists of the gross revenue of each service the year before the price measuring year. Gross revenue weights of each service within household and corporate sectors are calculated. We receive volume weights from the telecommunication provider each year, number of subscriptions and share of services per subscription. These volume weights are from two years before the year we are price measuring. According to the Laspeyres index these figures should be only one year old. The gross revenue weights are then calculated by multiplying volume weights with average prices from one year before the price measuring year.

Within international calls we have volume weights for the 10 most called countries. We have these weights from the two telephone service providers in household sector, but only from the domination provider in corporate sector, the second provider here is assumed to have the same weights.

Prices are received from pricelists over Internet or by telephone inquiries. The international calls index is calculated with the RA-formula and the total fixed telephony index is calculated with the Laspeyres formula.

B-2. Mobile telephony—GSM

Mobile telephony consists of three companies in both household and corporate sectors. Together these three mobile telephone service providers have nearly 100 % of the market for mobile telephone service in Sweden. We receive quarterly statistics from all three concerning revenues on registration fees, subscriptions, calls and stock of subscriptions. From one provider we also receive number of minutes and number of calls. The weights are based on gross revenues from the previous year.

Typical subscriptions in household and corporate sectors are chosen from each provider. This gives six subscriptions of which three are representative of the household sector and three are representative of the corporate sector.

Table 3. Services of mobile telephony to household sector with weights in 2001

Services	Weight
Registration fee	0,014
Monthly subscription	0,066
Domestic calls, daytime, Monday - Friday	0,670
Domestic calls, all other time	0,165
Call set up charges	0,085

Table 4. Service of mobile telephony to corporate sector with weights in 2001

Services	Weight
Registration fee	0,004
Monthly subscription	0,244
Domestic calls, daytime, Monday - Friday	0,602
Domestic calls, all other time	0,103
Call set up charges	0,046

These weights are averages over the three companies.

Separate price indices are calculated within each chosen subscription for registration fee, monthly subscription, domestic calls daytime, domestic calls all other time and call set up charges. Then indices for each provider are calculated and for each sector. In the total index of mobile telephony services the household sector has a share of 57 % and the corporate sector has a share of 43 %. These shares are calculated using information of the annual survey of the total revenues, which are up to two years too old.

Prices are measured over Internet and price indices are calculated with the Laspeyres formula.

B-3. Internet

For the price index of Internet we use different services for household and corporate sectors. For the household sector we measure modem dial up subscriptions, one subscription from each of three Internet service providers. These providers are the dominating companies on the market, with a market share of 70 % for dial up subscriptions in 1999. Here we are measuring subscription fee and the price per minute (low time rate). For the corporate sector we measure subscriptions for fibre/LAN access. Only two Internet service providers are measured and they have a market share of 67 % for fixed Internet access in 1999.

The weights for the sectors and within sectors are all derived from the annual survey of the total net revenues and the figures are two years too old. The household sector has 73.5 % and the corporate sector has 26.5 % of the weights.

C. Limitations and Concerns Regarding Published Data

C-1. Fixed telephony

The use of the gross revenue implies that discounts are excluded, which is a weakness in the calculation. In particular this is a problem in the corporate sector, where we know that discounts are common. The second shortcoming of the fixed telephony index is the one-year too old volume weights.

C-2. Mobile telephony—GSM

The shortcomings of this index are the use of gross revenue weights, the use of too old data to divide between household and corporate sector and the missing of SMS (messaging service), which has grown rapidly during the last year. In future there will be new technology first GPRS and later 3G, with possibilities to transfer data over mobile telephony. Pricing will be different, by quantity of transferred data instead of calling time. There is also the possibility that new mobile telephony providers will enter the market.

C-3. Internet

This index has several shortcomings, the weights are based on too old data, the index comprise of very few representative services and the Internet service providers that we measure have a market share of less than 70 %.

As Internet get more and more important this index has to be broader in the future. For the household sector Internet access via TV-cable and ADSL are possible choices. For the corporate sector more Internet service providers with fibre/LAN access.

D. Analysis of “Goodness” of Published Data

The price index of mobile telephony cover almost the whole market, uses representative services and uses up to date values within each sector. It could be concluded that this index has a good quality.

Developments of price indexes are as follows:

Figure 1. Producer price index for telecommunications, 1999 = 100,

Figure 2. Producer price index for mobile telephone services, 1999 = 100,

Figure 3. Producer price index for Internet services, 1999 = 100.