

Market services – volume growth compilation

Examples from Norway

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Introduction

Most international harmonisation work of national accounts has focussed on current price estimates, and the level of GDP has increased in importance in recent years. However, for most users and compilers of national accounts, the volume growth of GDP has been the most utilised and important figure. In Norway, the number one priority has always been to compile correct volume growth rates of the national accounts aggregates.

In Europe, the importance of harmonising also national account's price and volume data was focussed when the European council in July 1997 agreed on the "Stability and Growth Pact". This was followed by a research programme that investigated how price and volume data in the EU could be improved, and this leading to a "Handbook in prices and volume measures in the national accounts", published in 2001 (Eurostat 2001).

The aim of the handbook is (Eurostat 2001, ch. 1.1 p 2): "... to provide unified framework for price and volume measures,

- which is consistent with SNA93, ESA95 and the Commission Decision;
- which is both theoretical sound and practical useful for improving existing methods, incorporating best practices from within the EU and from other experienced countries; and
- which gives detailed guidelines by product".

In the chapter on "Background and aim of this handbook" is underlined that the handbook is not the final work on prices and volume measures in national accounts, and "*Work on implementing, reviewing and improving the methods described will have to continue*" (Eurostat 2001, ch. 1.1. p 2).

Producer price indices of services in Statistics Norway

As a follow up from the work related to Eurostat's handbook on volume and prices, Statistics Norway initiated a project in 2003 with the aim of upgrading the price indices. The program covered mainly producer price indices for market services, and partly improving price indices of certain types of capital goods.

The division of national accounts prepared a background document giving priorities for certain market services. An enlarged version was later used for our first inventory to Eurostat on constant price calculations (delivered 2004). These documents showed clearly the lack of proper price indices for business services. Based on the background paper, about one fourth of the market production in the activities within NACE rev1 G-P should benefit from new more adequate price indices.

Producer price indices for services (SPPI) were not entirely new to Statistics Norway when the price project was launched. In the status report from the national accounts it was pointed to two indices; the SPPIs covering architects and civil engineering activities. These two producer price indices were used in the national accounts from 1999. Today, the SPPI for architects is still produced, while the index for civil engineering was, due to poor quality, discontinued after some years. A revised SPPI for civil engineering activities, based on improved methods, was again published from 2008 onwards.

The initiative taken from the start of the price project has gradually given results even though progress has been slow and expensive and more time consuming than initially thought. It turned out to be both data demanding and methodologically challenging to compile the new SPPIs.

Last year, Statistics Norway published SPPIs for most industries in NACE rev2 H, J, M, and N. In January 2012, PPI for services related to oil and gas extraction (NACE rev2 B) was published as well. The most recent improvements in price statistics have not yet all been taken into use in the annual national accounts, simply because to use a new price index we need two full years of price information. A producer price index for repair and installation of machines and equipment (NACE rev2 33) is still in progress.

Even though price information for market services has improved the last 5-6 years, some important market services still suffer from unacceptable price indices. An example is letting of business premises. This area has been on the top of the priority lists from the National accounts office since the preparation of the price project started, and still is a priority for us. Presently, in our national accounts, letting of business premises is deflated by an input price index.

Why are volume figures for services important.....

In order to bring out the volume growth rates, figures at current prices needs to be deflated. To do this we need to split growth at current prices in the two components: volume growth and price growth. This needs to be done for all products, services as well as goods.

There is also a demand for volume figures if one wants to study changes in productivity and changes in welfare of households. We need to use volume figures or figures at constant prices, when comparing national accounts data with physical measures such as emissions to air or number of employees. We don't want our per employee ratios to show a rising trend just because of price increases. This demand for volume or constant price data is for all products, goods and services alike.

In addition to the general interest for volume growth rates and productivity measurement, we should add that productivity of service industries has considerably interest in its own right. For a number of reasons, production of services has grown faster than production of goods in Norway. There is also a widespread view that service production increases in demand, and leaves little scope for productivity improvements. Bringing about productivity improvements is important, and volume figures are needed to study productivity development.

.... and why are they so difficult to do?

As already mentioned, it has proved to be harder to compile price changes of services, as compared to goods. In the handbook on price and volume measures in national accounts (Eurostat, 2001), we find the status summarized in the following way: *“This standard method [PPI] is well established for manufacturing products, but data for many services remain scarce.”* (Eurostat, 2001, 3.1.1.1. p.27).

A lot of work has been done to develop PPI type price indices for services (SPPI) since then. We can refer to the longstanding work of the Voorburg group on service statistics, the manual on PPI indices for services published by OECD (OECD, 2005) and the present efforts of a task force of OECD, Eurostat and the Voorburg group with the aim to update this handbook (Voorburg group, 2011).

The main reason for the challenges in compiling SPPIs is that it can be hard to define the quantity units of services that would allow observations of a related price. In addition an observed price change may reflect changes both in characteristics of the service and pure price changes. The price index should reflect pure price changes only (Eurostat 2001, ch, 2.4). Experience shows that it is difficult to measure the quality improvement of services (volume component) which is necessary for adjusting the price index. In the Norwegian price project, hedonic price indices were tested for several services, but compiling hedonic price indices is extremely data demanding. The results were volatile and judged to be of poor quality, and could not justify the heavy burden which was put on the respondents in order to collect data.

The SPPI method of hourly charge-out rates

The new SSPI indices in Norway are roughly of two different types (all the price indices are different when it comes to details). Some of them relates to what we might call the traditional PPI strategy: Defining specific, homogeneous, products (services), measuring the price change of these products and weighing them together to compile the relevant price index. This strategy is followed for instance in the case of the SPPI of telecommunication services.

The second type is those new market service producer price indices that are based on charge-out rates of hours worked. This is combined with some product specification, and there may be a further stratification by type of staff (qualifications) as well. Some doubt has been raised as to how well such price indices can represent quality and productivity growth. When the producers change their profits through adjusting their charge-out rates, the deflators would normally show price changes while an alternative input method would not. In this aspect, the SPPI is superior. In general, however, we are back to the question of the underlying quantity measures of the service. Is it reasonable to say that what you pay for is that a professional places his time and skills at your disposal, and thus, the charge-out rate can be interpreted as a proper unit price adjusted for quality improvements? It may sometimes be relevant to say that the real service received is a specific service even if you pay by the hours worked. One hour's work paid for, can then vary in terms of quality and quantity of the underlying services received, and this variation should be reflected in the volume and price indices respectively. If the customer gets more or better services in return for an unchanged charge-out rate, this should be reflected as a price decrease.

Coordination of SPPI and the CPI

In general, the national accounts of Norway use the consumer price index (CPI) to deflate household consumption. This is true for services as well as goods. Some SPPI distinguish between services sold to establishments (business to business, b to b) and services sold to households as consumers (business to consumers, b to c). If you compile both a CPI and SPPI (b to c) for a specific service there may be a possible conflict between the two indices (after having taken into account that CPI is a purchaser price and SPPI is a basic price). Because inconsistencies showed up in some areas, cooperation and coordination between the price index compilers was necessary. For some services this has led to consistency between the CPI and SPPI, but this is not always the case, see figure 1 which gives an illustration of two available indices for passenger air travel. When inconsistency occurs, the national accounts have to choose which index to use.

Figure 1. Price indices for household consumption of passenger services by air. 2008-2011. CPI and SPPI (business to consumers). 2006=100

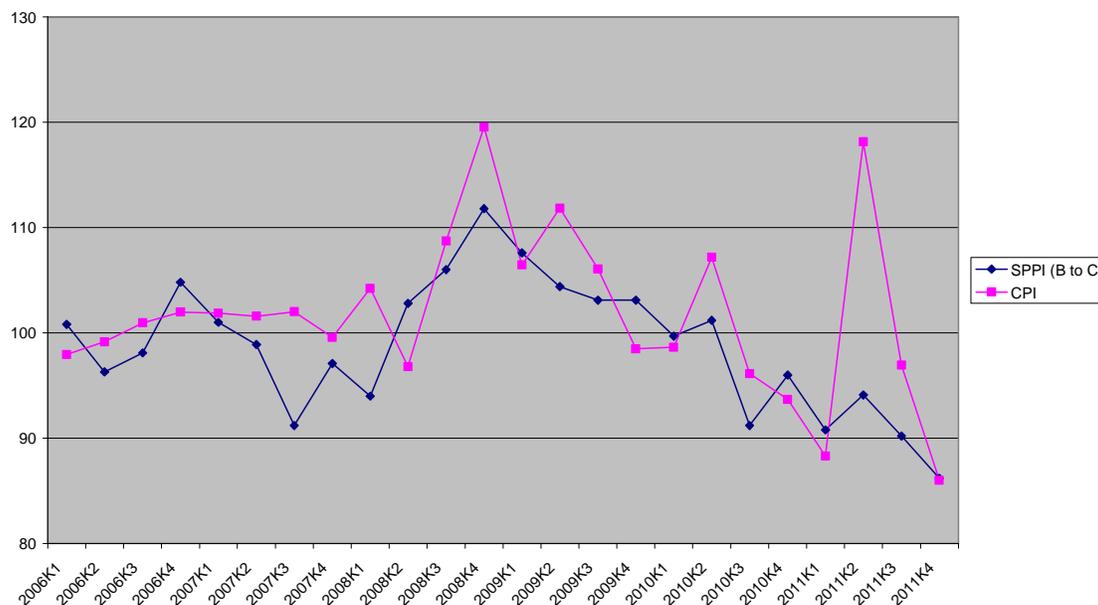


Figure 1 shows the SPPI index for air passenger transport, the subgroup for deliveries from business to consumers (B to C) and the CPI for the corresponding household consumption. The CPI cover VAT, however there were no changes in the VAT rate in the period. The two series show the same general trend, but with more volatility in the CPI series. The SPPI collects data from the air companies covering the price groups and the passenger groups paying the different prices. The CPI collects price data by ordering air travels by the internet for a sample of specified travels. Since CPI is a monthly index, it is, at least for the time being, impossible to use the same extensive data material as used for the quarterly SPPI, even though this would have improved the CPI index. Thus, the advice for the national accounts was to use the new SPPI for air travels.

Methods for market services deflation in Norway

In Norway, the tradition has always been to compile volume estimates of macroeconomic aggregates by working at a detailed product level. This means that each product is deflated by an appropriate price index within the framework of a supply and use table. According to System of National Accounts (2008 SNA) this is the ideal way of compiling volume estimates (2008 SNA par. 15.96). Norway has also since the end of 1980s deflated the products using the previous year's prices, and long time series are derived by being chained. For further details see Simpson (2009).

The Supply Table at current and the previous year's prices contains the following value classes:

- Basic values
- Taxes on products (paid by the producers)
- Subsidies on products (paid to the producers)
- Producer's values

The Use Table at current and the previous year's prices contains the following value classes:

- Basic values
- Taxes on products (paid by the producers)

- Subsidies on products (paid to the producers)
- Producer's values
- Retail and wholesale trade margins and transport margins at basic values
- Taxes on products (collected by wholesale and retail traders)
- Subsidies on products (paid to wholesale and retail traders)
- Value Added Taxes (VAT) (not refundable)
- Purchaser's values

The constant price SUT have the same structure as the SUT at current prices, and are compiled by deflating the current price SUT by appropriate price indices at the product level. This results in integrated Laspeyres volume indices and Paasche price indices for the aggregates.

Deflation is from the supply side. The balancing of the supply and use tables at constant prices is first carried out at the detailed product level at basic values. Integrated in the deflation process is constant price compilation for each of the "value classes", i.e. taxes on products, VAT, trade margins etc, all specified by product. Taxes on products, subsidies on products, VAT, trade and transport margins are compiled in constant prices for the detailed products by user categories, by applying tax rates and trade margins from the previous year. This method corresponds to the method recommended in 2008 SNA par. 15.175.

Regarding services there is no product taxes or subsidies except VAT, which simplifies the deflation process to only cover the basic value + VAT = Purchaser's value

Each of the products has three price indices:

- Domestic production (basic price)
- Imports (CIF value)
- Exports (FOB value)

In addition, household consumption is the only area, except exports, where we have price indices for purchasers' value which are taken into account.

Exports and imports are deflated with corresponding price indices. To form an index for total domestic supply of each product, the price index for exports is combined with an index for domestic production supplied to domestic users. The combined index is used to deflate domestic supply at basic prices from the various industries.

For each product, total domestic use in constant prices is calculated at basic value as total domestic supply plus imports minus exports. Constant price values for the various domestic uses are calculated by distributing total domestic use at constant prices proportionally with the domestic uses at current prices. However, if a specific price index is used for household consumption, the other domestic uses are corrected correspondingly, ensuring that supply and use of each product at constant prices will balance.

Limitations and challenges

One of the limitations of service deflation in the national accounts is that we have inadequate information on supply and use of the specific service products. Regarding supply, the service products tends to be defined as the characteristic production in sub-industries, while on the user side – exempt household consumption - the distribution to a large extent is based on "specialists' guestimates".

When a product seems to have different price development when used for household consumption than for intermediate consumption, it is easy to imagine that the product really is a bundle of services

and that those used for household consumption differ from those used for intermediate consumption. It would be expected, then, that different uses had different price development because of the heterogeneity introduced in the definition of the product.

Exports and imports

For services it is also a challenge in itself to estimate current value figures of exports and imports, and so far price observations are missing in most cases. For most services, we deflate exports using the same price indices as for domestic uses. There are some important items, however, that receive special attention, such as international shipping.

For import of services, we have special considerations of the travel item of the balance of payment. Expenditures of Norwegians abroad are deflated by CPI for selected countries, corrected for changes in exchange rates and weighted by expenditures according to the holiday surveys. Other imports of services are assumed to have the same price index as domestic supply of corresponding services.

One particular type of foreign trade is trade in processing fees, which is formally a new type of service introduced in the 2008 SNA. We need to develop price indices for these services both when produced domestically (and then exported) and for uses of such services (and the related imports). This particular type of internationalisation has received much attention during the last years, but advices for compiling relevant price indices are still few.

Surely, processing services can be a rather heterogeneous type of service. Different products can be produced under this label. In Norway, we think it is mainly the imports of processing services that can represent a wide range of products, whereas the Norwegian production of processing services is more likely to be related to a few industries. If so, export of processing services may be handled, even though it seems challenging, but the problems of formulating price indices of imports of services will be more difficult.

Concluding remarks

The international cooperation in relation to price indices and Eurostat's "Handbook in prices and volume measures in the national accounts" has led to the development of new producer price indices for services in Norway. Consequently, we have to a large extent been able to switch the deflation of services from using input price indices to using producer price indices, which is an improvement for the national account aggregates at constant prices. As pointed out there are still challenges to be faced, both with regard to the quality of the service price indices and with regard to service prices of exports and imports.

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