

Value and volume measures within the services sector

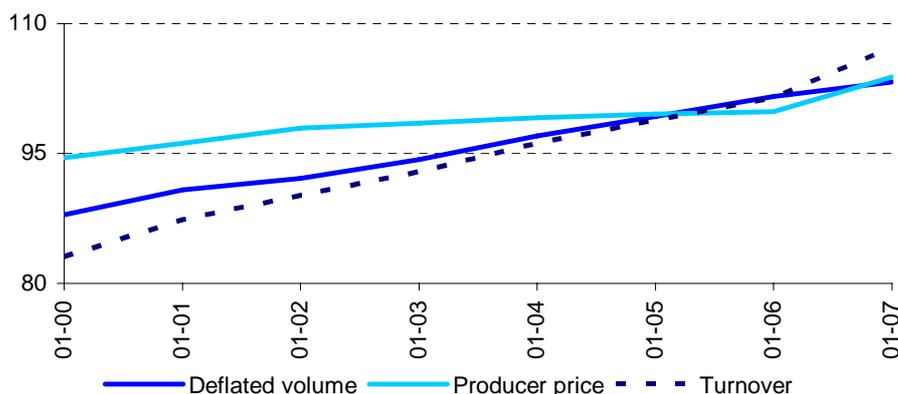
Indicators for detailed activities

This document analyses the first results received by Eurostat pertaining to services producer price indices. It analyses the results in relation to alternative volume and price measures, with the aim of highlighting a selection of activities where proxies for services volume and price movements follow closely the development of STS data.

Almost three quarters (72 %) of the EU-25's total value added in 2006 came from the services sector (NACE Rev. 1.1 Sections G to Q). This proportion continues to grow, due, in part, to factors such as out-sourcing to other resident enterprises (in particular for business services).

Short-term services statistics are relatively under-developed in relation to those for the industrial economy. Yet, the increasing weight of the services sector has led to growing interest from policy-makers, resulting in more pressure on statistical offices to produce comprehensive data in this area. For example, the European Central Bank (ECB) laid out requirements for the development of a services producer price index (SPPI) as one of their priority indicators¹. The SPPI subsequently became one of a list of Principal European Economic Indicators (PEEIs) which are considered of prime importance for the conduct of economic and monetary policy in the euro area. The development of an SPPI was thereafter integrated into the framework of European short-term business statistics (STS)² through an amendment to the related Regulation. Recognising that these series do not exist and it takes a number of years to put new data collection procedures in place the Council allowed a transition period up to the second half of 2008. Eurostat and the national statistical offices are working together to identify best practices to ensure quality and cost-effectiveness of the full data when it becomes available at the end of 2008. The purpose of this SiF is to outline the opportunities and the challenges that are to be faced in the next year. At the time of writing, the retail trade sector (see Figure 1 below) remains the only service activity for which the evolution of real output and a deflator are currently available for EU-27 and euro area aggregates.

Figure 1: Volume of sales and the index of turnover for retail trade, seasonally adjusted, EU-27 (2005 = 100)



¹ 'Statistical requirements of the European Central Bank in the field of general economic statistics', August 2000.

² The short-term statistics Council Regulation 1165/98 (STS-R) foresees the collection of quarterly indices for turnover and employment within the majority of service activities (as defined by the NACE classification). For retail trade, monthly turnover indices, as well as a monthly deflator of sales, and quarterly employment indices are requested. The STS-R was amended by Regulation (EC) No 1158/2005 of the European Parliament and of the Council, which increases the scope of short-term business statistics to cover the collection of output prices too for a selection of other services (see methodological notes for more details).

Statistics in focus

INDUSTRY, TRADE AND SERVICES

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Asymmetric coverage between industry and services

It is generally acknowledged that services statistics have progressed in the last couple of decades. These developments have been based around the development of classifications, including NACE (the statistical classification of economic activities in the European Community), the statistical classification of products by activity in the European Economic Community (CPA), and the European system of accounts (ESA). Basic concepts, definitions, and international standards for compiling services statistics have been laid out in various methodological manuals (often developed under the joint auspices of different international organisations).

However, statistics on services remain in the shadow of the vast array of data that is generally available to trace the performance of the industrial economy. Indeed, statistical systems are often centred on industrial goods, their production and trade. There are several reasons for this asymmetric coverage.

Goods historically played a more important role than services and so statistical systems initially measured tangible outputs (the quantity of coal or steel produced, the number of motor vehicles produced, etc.). Subsequently, monthly indicators for industry, such as the index of industrial production or the index of domestic output prices were considered as principal tools for evaluating business cycles. The tangible nature of goods makes them relatively easy to measure at frequent intervals.

In contrast, it can be difficult to measure the output of the services sector, due to a range of conceptual and practical problems. Many services are intangible in their nature and the output of the service sector is often already difficult to identify on theoretical grounds, let alone measure reliably. For example, services may be unique and have to be treated like new products for each measurement period (such as, consultancy services). In addition, many services can only be delivered when there is close proximity between supplier and customer (for example, restaurants, hair-

dressers, health and beauty services), and as such the services sector is characterised by a higher proportion of small and medium-sized enterprises. All of these factors imply complexity and higher costs for data collection.

In modern, service-based, developed economies, industrial indices for production and output prices are unlikely to be adequate measures for evaluating the performance of an entire economy and need to be complemented by similar information on the services sector. This view is reinforced by a divergence in the evolution of industrial and service activities (as industrial output and, in particular, industrial employment, is falling for a number of industrial activities). As a result, traditional tools for studying business cycles may be increasingly misleading and need to be re-assessed. These changes have led to calls for the compilation of a wider range of short-term indicators to study the evolution of the services sector, from central bankers (who need information on inflationary pressures), to business analysts (who require information on the short-term movement of service sectors) and national accountants (who need more complete information to measure volume changes and compile quarterly national accounts).

Development work in the areas of services prices and volume measures is therefore fundamental to achieving better measures of real services output and growth. The use of SPPIs to deflate the index of turnover is the preferred, but not the only, means of deriving volume measures. However, until SPPIs become available on a wider basis, there are a number of alternative methods that may be considered as proxies for studying price and volume changes within service sectors. Comparing the results of these proxies with the limited set of SPPIs and related volume measures that are already available within the short-term business statistics domain, it is possible to analyse those activities which may be considered to be good proxies and those where the proxies are less convincing.

Volume measures of services activity

The traditional short-term business statistics measure for output within the services sector is the index of turnover, a current price index that implicitly contains price movements. In order to obtain a volume measure of the growth of services output, price indices are required to deflate value measures, such as turnover. Deflation is a process which removes the impact of price changes from current price output (or output in nominal values). This is normally performed by dividing the current price value of output by a price index, referred to as the deflator. The deflator, if chosen with care, should give a good approximation of price movements that have affected the current price series, resulting in the calculation of an accurate constant price

series. There are three main types of proxy that exist for compiling services output, aside from the preferred measure of deflating the current price index of turnover by using an appropriate SPPI.

1. The use of an **input indicator** to measure the volume of output: for example, output can be approximated by using hours worked or deflated wages and salaries – this type of proxy is often used to measure public sector output, for example, the output of libraries, education, or health (areas that are not covered by STS).
2. An **output indicator** can be used as a proxy: for example, the output of postal services could be

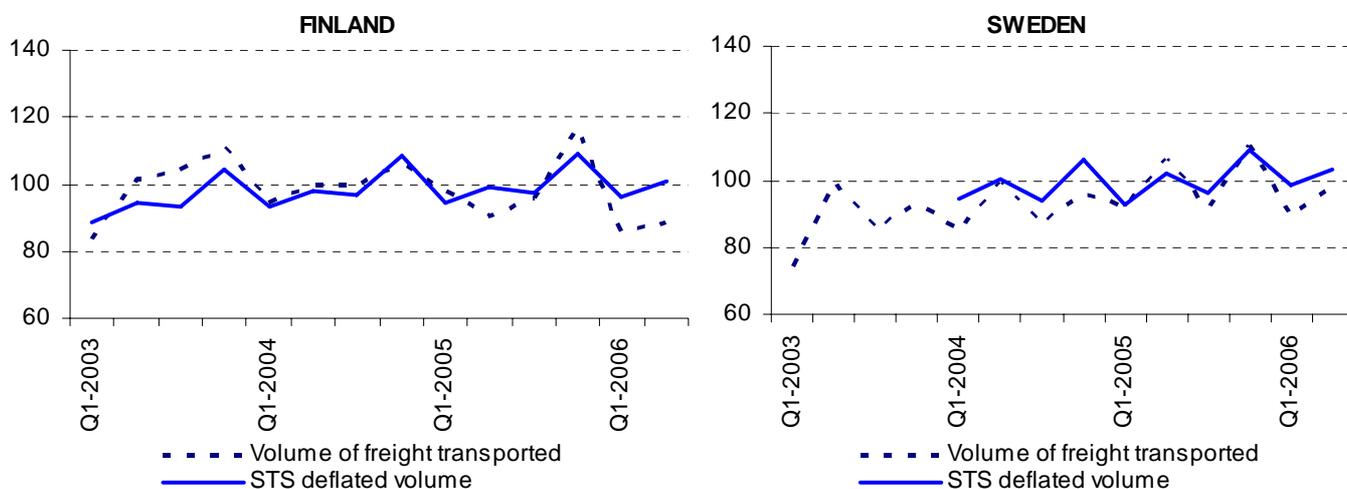
calculated as a weighted average of the volume of letter-post delivered, parcel deliveries, courier deliveries, etc. Similar output measures can be used in areas such as passenger or freight transport.

3. An **alternative price index** could be used as a deflator: for example, the turnover index could be deflated by the corresponding component (product) of the consumer price index (CPI). This method assumes that enterprise producer prices rise at the same rate as retail prices for consumers. It is likely that such a proxy is more robust for those service activities where the vast majority of output is destined for consumers/households, rather than other enterprises.

The **first example** (Figure 2 below) illustrates where a **proxy output indicator appears to compare well with the STS deflated volume index**. The example is that of road freight transport. Figure 2 compares the STS deflated volume index for freight transport by road, using the SPPI as a deflator, with the volume of road freight transport in terms of tons of goods transported. Note that the volume statistics cover own account operators and hire or reward operators, while STS data refer only to hire and reward operators.

In both Sweden and Finland, there is a strong correlation between these two volume indices both in terms of seasonal fluctuation (sharply lower volumes after the New Year and during the summer months) and their longer-term developments over time.

Figure 2: Road freight transport (2005 = 100)

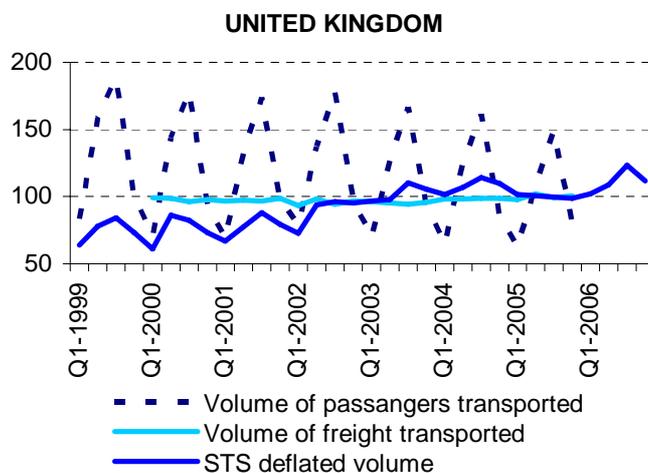


The **second example** (Figure 3 to the right) illustrates where a **proxy volume measure does not compare well with the STS deflated volume index**. It should be noted that turnover data for sea and coastal water transport services (from which STS deflated volume data are derived) do not distinguish between passenger (essentially a business to consumer activity) and freight (mainly a business to business activity) transport. In the United Kingdom, where the majority of external trade is shipped, and where such trade dominates sea and coastal water transport activities, this distinction is important.

Figure 3 compares the STS deflated volume index for sea and coastal water transport in the United Kingdom against volume measures for the number of passengers passing through main maritime ports in the United Kingdom and the volume of goods transported in the main ports of the United Kingdom. The STS deflated volume index indicates a strong rise over time in sea and coastal water transport. In the case of the volume of passengers transported, there is a strong spiking of demand during the summer holiday period in the 3rd

quarter of each year; this is mirrored by sharply higher prices. In contrast, volumes of sea freight transport are almost unchanged.

Figure 3: Sea and coastal water transport (2005 = 100)



Price measures of services activity

Price increases for services can be a major factor of potential inflationary pressures. Prices of services that are predominantly for household consumption are covered by consumer price indices. However, these CPIs do not cover price movements for services that are delivered to enterprises, the public administration or other institutions, and while producer price movements within the industrial economy are covered by domestic, non-domestic and total output price indices, the development of European services producer price indices is still in its infancy.

Within some services, the output of an enterprise is provided almost entirely to other businesses, for example, wholesaling or road haulage, while other services tend to provide most of their output to consumers/households, for example, retailing. There are also many service activities whose markets are orientated towards both business and consumers/households (for example, telecommunications or air transport services).

The compilation of producer price indices should be based on clearly specified, representative products whose prices are followed over time with due attention to quality change(s). One major difference between goods and services is that the delivery of services often coincides with their production. This is not normally the case for goods that may be routed via inventories and thus the link between production and sale is less direct. There are however some services where production and consumption do not necessarily coincide (for example, architectural or accounting services). As noted above, price compilation is generally more difficult for services because of a more frequent occurrence of unique services. A unique service is one that is only provided once to the specifications of an individual customer, making it difficult to observe prices over multiple periods. For some sectors, for example, research and development, health or education, the calculation of producer price indices is even more problematic due to a lack of observable prices³.

Furthermore, readily available observations on transactions and prices also need to be controlled for quality change. This gives rise to a range of issues, such as whether a more rapid delivery of the same service constitutes a quality change or not. Indeed, the duration of production is often of direct importance for the purchaser of a service and may constitute a major price determining factor – for example, a consumer with a preference for a high-speed train over a slower, regional train is likely to pay a premium price for their preferred means of travel. This issue of quality is not confined to the speed/duration of service provision. In retail trade, although a measure exists for the volume of

sales, there is no attempt to capture the quality of service – for example, a supermarket that stays open more days a week, or for longer hours, or has faster checkout procedures, or offers a greater variety of products. Similar quality issues, such as reliability, punctuality, network access and frequency of service also exist in most services, be they services such as transport, banking, or hotels and restaurants, or public services, such as education or health.

The **third example** (Figure 4 overleaf) illustrates one activity where there is a **close correlation between the development of the consumer price index and the SPPI**. The service concerned is postal and courier activities, which can be separated into national post activities and courier activities. National post activities cover principally the collection, distribution and delivery of mail and parcels; this activity has traditionally been dominated by a single, national, monopoly provider. Courier services, in contrast, are highly competitive and are for the most part a business to business activity. SPPI data are available for both post and courier activities in the United Kingdom (see Figure 4).

There was a strong correlation between the consumer price index for postal services and producer price indices for national post activities in the period after 1999. Indeed, price increases for consumers at the start of the period were often replicated in the producer price index of national post activities. Since the beginning of 2006, however, in the United Kingdom at least, there seems to have been a notable deviation in the price developments of postal services for consumers, and producer prices for both national postal activities and courier services.

³ In order to have a complete list of NACE activities covered by the amended STS-R, refer to the methodological notes on page 7.

Figure 4: Post and courier activities (2005 = 100)

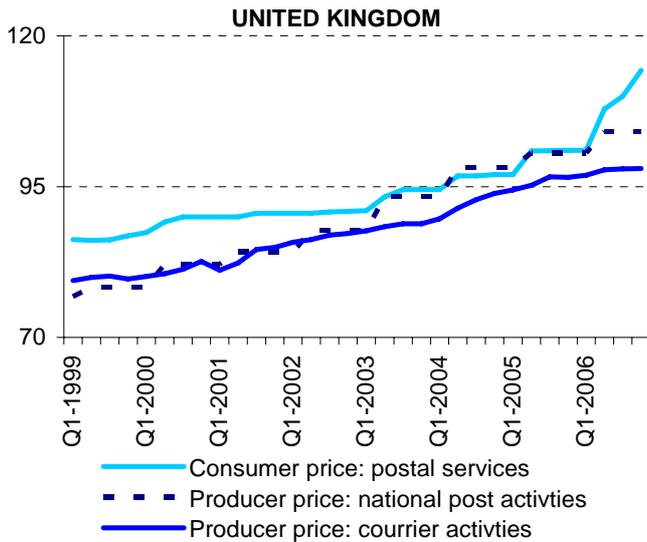
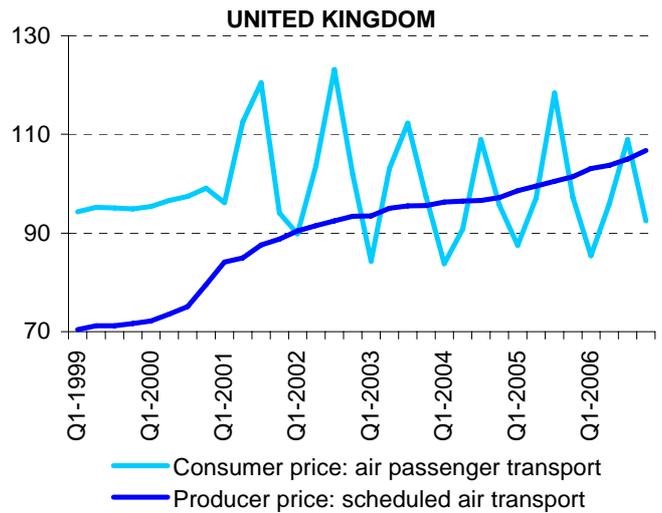


Figure 5: Air transport (2005 = 100)



The potential use of consumer prices as a proxy for producer price movements is considerably less clear for the vast majority of service markets, thus strengthening the calls for the rapid implementation of the SPPI internationally.

The **fourth example** (Figure 5, above-right) illustrates where there is little correlation between the consumer price index and the SPPI. The service concerned is scheduled air transport.

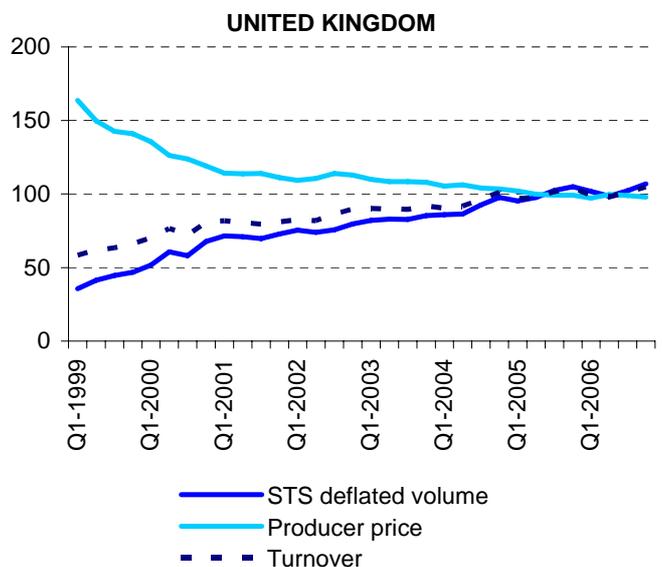
There are two key differences in the price developments for air transport in the United Kingdom. Firstly, there has been a sharp rise in the producer price of scheduled air transport which is not apparent for the consumer price of air passenger transport. Secondly, there is almost no seasonal pattern to the producer price index, in contrast to the consumer price index, that peaks in the summer, holiday months. Part of this difference may reflect the nature of the two price indices, in that the producer price for scheduled air transport includes other services, such as air freight and postal transport services, for which there is much steadier demand, while the consumer price index for air passenger transport should also include charter flights as well as scheduled flights, and be focused more on economy fares rather than business fares.

SPPI for economic analysis

The current availability of SPPI data for economic analysis is currently limited to only a few Member States. However, what information is available can provide a telling insight into the developments within those service activities for which some data exists.

The **fifth example** (Figure 6, right) illustrates the economic development of the telecommunications services sector in the United Kingdom. This is a service sector that has been changing rapidly as a result of deregulation, technological innovation and the provision of new services. As such it presents a challenge to accurately capture producer price trends. The United Kingdom provides a producer price index for telecommunications that is based upon unit-value statistics. The producer price index is shown together with the index of turnover and the resulting STS deflated volume index. As the price index has fallen, this is a rare example of constant price turnover exceeding current price turnover growth.

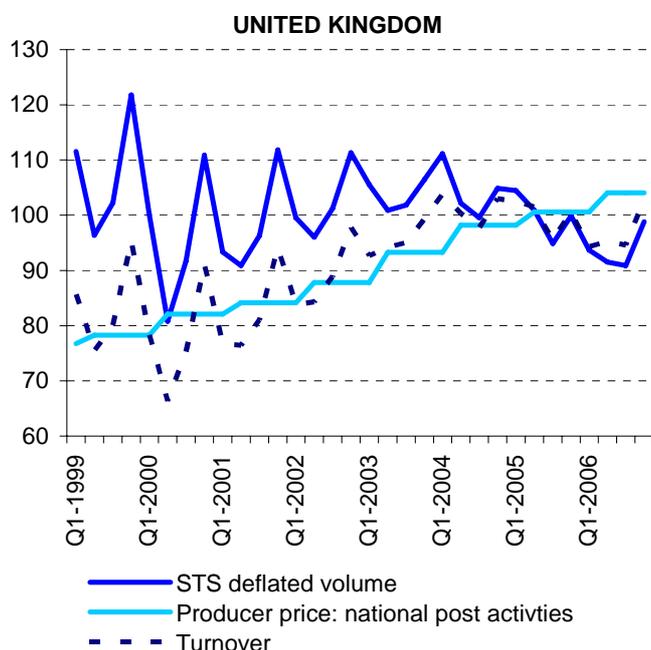
Figure 6: Telecommunications (2005 = 100)



Since 1999, there has been a strong decline in the producer price index of telecommunications in the United Kingdom, although this has been less steep than the corresponding decline in consumer prices for communications, where there has been particularly fierce competition in mobile telephony services. Despite falling prices, turnover has risen as the volume and range of telecommunications products has increased (particularly in services that have integrated telephone, computer, Internet and television content).

The next example (Figure 7 below) shows the relationship between turnover in value and volume and producer price indices for postal services in the United Kingdom. The pattern of economic development contrasts with that seen for telecommunications.

Figure 7: Postal services (2005 = 100)



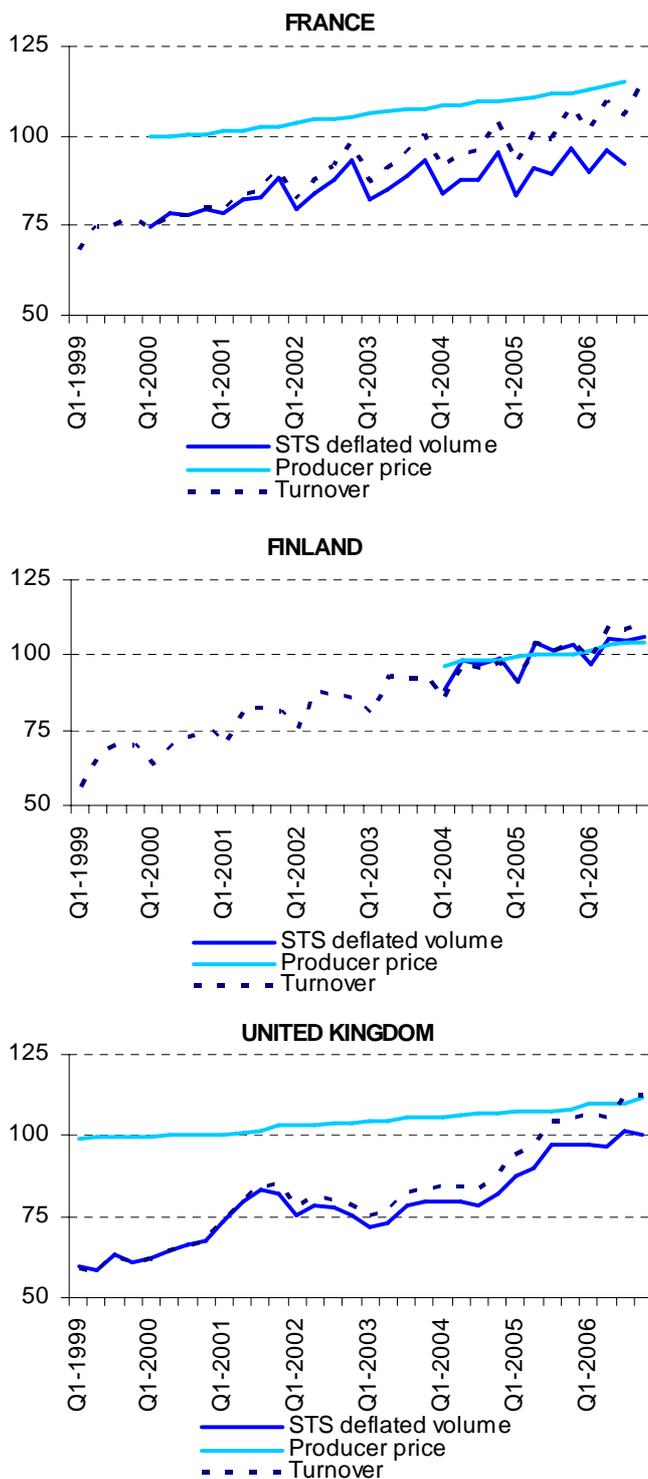
STS deflated volume and turnover indices for postal services are highly seasonal, with strong fluctuations either side of the Christmas/New Year period. Aside from the seasonal nature of the demand for postal services, the volume index appears, in the last couple of years, to be in decline; this may reflect the growth in substitute products such as e-mail and SMS traffic.

Where there are no obvious or reliable proxies for prices or volume changes, the importance of STS data as the principal means of understanding economic developments within a range of service activities can not be underestimated.

One such example, is the data for industrial cleaning activities: Figure 8 shows data for this activity in France, Finland and the United Kingdom. All three graphs show that producer prices rose slowly but steadily throughout the period for which data are available. In part, this

reflects the fact that the largest share of costs that must be covered within this activity are labour costs, which may have been kept low through factors such as rising competition, the use of migrant workers, and extended working hours. The STS volume index for industrial cleaning activities rose strongly, if unevenly, probably as a result of increasing volumes of cleaning work being outsourced by enterprises from many sectors of the economy.

Figure 8: Industrial cleaning (2005 = 100)



➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

LEGAL BASIS

Short-term statistics give information on a wide range of economic activities according to the NACE Rev. 1.1 classification (statistical classification of economic activities in the European community). The legal basis for the STS indices is Council regulation no 1165/98 of 19 May 1998 concerning short-term statistics (STS-R) and regulation (EC) no 1158/2005 of the European Parliament and of the Council of 6 July 2005 amending Council regulation (EC) no 1165/98. The definitions of short-term statistics variables are laid down in Commission regulation no 588/2001 of 26 March 2001 implementing Council regulation no 1165/98 of 19 May 1998 concerning short-term statistics as regards the definition of variables.

DEFINITION OF INDICATORS

Turnover

It is the objective of the turnover index to show the development of the market for goods and services. Turnover, or sales, comprises the totals invoiced by the observation unit during the reference period, and this corresponds to market sales of goods or services supplied to third parties. Turnover also includes all other charges (transport, packaging, etc.) passed on to the customer, even if these charges are listed separately in the invoice. Turnover excludes VAT and other similar deductible taxes directly linked to turnover as well as all duties and taxes on the goods or services invoiced by the unit. Reductions in prices, rebates and discounts as well as the value of returned packing must be deducted. Price reductions, rebates and bonuses conceded later to clients, for example at the end of the year, are not taken into account.

Volume of sales

The volume of sales represents the value of turnover in constant prices and as such is a volume index. It can be calculated as turnover at current prices, deflated by the deflator of sales, or as a quantity index derived directly from the quantity of goods sold.

Producer prices

The definition of producer prices was written for industrial producer prices, and as such focuses on goods.

The producer price index for an economic activity measures the average price development of all goods and related services resulting from an activity. It is essential that all price-determining characteristics are taken into account, including quantity of units sold, transport provided, rebates, service conditions, guarantee conditions and destination. The specification must be such that in subsequent reference periods, the observation unit is able uniquely to identify the product and to provide the appropriate price per unit. The appropriate price measure is the transaction price reflecting the revenue received by the producer for products actually sold to customers. The producer price index should take into account quality changes in products or services. Domestic and non-domestic services are monitored.

The producer price variable for other services is to be transmitted for the following NACE Rev. 1.1:

- 60.24 Freight transport by road
- 61.1 Sea and coastal water transport
- 62.1 Scheduled air transport
- 63.11 Cargo handling
- 63.12 Storage and warehousing
- 64.11 National post activities
- 64.12 Courier activities other than national post activities
- 64.2 Telecommunications

- 72.1 Hardware consultancy
- 72.2 Software consultancy and supply
- 72.3 Data processing
- 72.4 Database activities
- 72.5 Maintenance and repair of office, accounting and computing machinery
- 72.6 Other computer related activities
- 74.11-.14 Legal, accounting, book-keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy
- 74.2 & .3 Architectural and engineering activities and related technical consultancy; technical testing and analysis
- 74.4 Advertising
- 74.5 Labour recruitment and provision of personnel
- 74.6 Investigation and security activities
- 74.7 Industrial cleaning

A number of derogations were accorded to the Member States with respect to the provision of producer price indices for service activities. The transition period for providing producer prices ends no later than 11 August 2008 for the majority of the Member States and services activities (one year more for those Member States that have <1 % of EU turnover and for those activities within NACE Rev. 1.1 Divisions 63 and 74). By 2009 it should be possible to produce European aggregates for producer prices and deflated turnover across the range of services activities detailed above.

SUMMARY OF SERVICES DATA COLLECTION UNDER STS-R

NACE (Rev. 1.1)	Turnover index	Producer prices (deflator of sales)	Employment
Motor trades (50)	Quarterly	None	Quarterly
Wholesale trade (51)	Quarterly	None	Quarterly
Retail trade (52)	Monthly	Monthly	Quarterly
Hotels and restaurants (55)	Quarterly	None	Quarterly
Transport and communications (I)	Quarterly	Quarterly (in process of being introduced)	Quarterly
Business services (K)	Quarterly	Quarterly (in process of being introduced)	Quarterly

For more information:

Methodological guide for developing producer price indices for services (http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-BG-06-003/EN/KS-BG-06-003-EN.PDF)
Eurostat's Handbook on Prices and Volume Measures (http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-41-01-543/EN/KS-41-01-543-EN.PDF)

Further information:

Data: [EUROSTAT Website/Industry, Trade and Services/Data](#)

 Industry, trade and services

 Industry, trade and services - horizontal view

 Short-term Business Statistics - Monthly and Quarterly (Industry, Construction, Retail Trade and Other Services)

 Industry (NACE Rev.1 C-F)

 Construction (NACE Rev.1 F) - Building and civil engineering

 Trade and other services (NACE Rev.1 G-K)

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