

Summary Quality Report for Services Producer Price Indices

1 Introduction

This report is part of a rolling programme of quality reports being introduced by the Office for National Statistics (ONS). The full programme of work being carried out on [Statistical Quality](#)¹ is available on the National Statistics website. Summary Quality Reports are overview notes, which pull together key qualitative information on the various dimensions of quality as well as providing a summary of methods used to compile the output.

The Services Producer Price Indices (SPPI), formerly known as the Corporate Services Price Index (CSPI), is constructed from a statutory quarterly survey. The SPPIs are primarily a suite of individual price indices that provide information on price change for a limited range of service industries. Each SPPI captures quarterly changes in the price received for services provided by UK businesses to other UK businesses and Government. These individual price indices are also aggregated together to create a 'service industry' SPPI with limited coverage. The SPPI is an experimental index. This means that it has not yet been shown to meet the quality required for National Statistics status, but is being published to involve users in the development of the methodology and to help build quality. The SPPI forms part of ONS's commitment to improve the quality and scope of statistics on services, the fastest growing sector of the economy.

For more detailed information see: [Guide to SPPI](#)²

2 Summary of Quality

2.1 Relevance

The degree to which the statistical product meets user needs for both coverage and content.

The SPPI is based on one quarterly price survey and is underpinned by two supplementary surveys: an ad-hoc SPPI recruitment survey that targets areas of high sample attrition and one SPPI turnover survey that collects weighting information for rebasing purposes every five years.

When developing new industries for inclusion in the SPPI, consideration is given to the most appropriate method of data availability. Whilst the majority of price collection is carried out directly by ONS using postal questionnaires sent to respondents, a number of indices are compiled using data from third parties. Details of the external sources currently used in the compilation of SPPI are as follows:

- Investment Property Databank – property rental payments SPPI
- Office of Communications – business telecommunications SPPI
- Office of Water Services – sewerage services SPPI
- Office of Rail Regulation – business rail fares SPPI
- Parcelforce – national post parcels SPPI
- Bank of England – Financial Intermediation (banks) SPPI

Business prices outside of the service sector are not included in the SPPI. These are covered by the Producer Price Index (PPI).

	SPPI
What they measure	The SPPIs are primarily a suite of individual price indices that provide information on price change for a limited range of service industries. Each SPPI captures quarterly changes in the price received for services provided by UK businesses to other UK businesses and Government. These individual price indices are also

	aggregated together to create a 'service industry' SPPI with limited coverage.
Frequency	Quarterly
Target sample size	Approximately 1,600 respondents (4,250 prices) per quarter
Periods available	From 2001
Sampling frame	The main sampling frame is the Inter-Departmental Business Register (IDBR)
Sample design	Fixed panel. Initially selected using stratified random sampling by employment size band and industry
Weighting and estimation	The weights for SPPI are calculated every five years from the SPPI turnover survey. As from November 2008, the current series is based on 2005=100.
Imputation	Weighted averages of movements in received returns
Outliers	There is no specific outlier detection/treatment. However, atypical and extreme returns are identified and checked through general validation

A wide collection of representative services are selected for the SPPI and their prices are collected each quarter. The movements in these prices are weighted to reflect the relative importance of the services in a chosen year (known as the base year). The base year is currently 2005.

At the aggregate level, there are two types of SPPI series produced, which are:

- Net Sector Output (NSO) series
- Gross Sector Output (GSO) series

The net sector series measures transactions between business services and other sectors excluding business services.

The gross sector series measures transactions between business services and other sectors including business services.

The industry level SPPIs are published on a NSO basis (unless otherwise stated).

The structure of the SPPI is largely based on the [2003 Standard Industrial Classification \(SIC 03\)](#)³ However, due to the limited detail of service activities in SIC 03, the European [Classification of Products by Activity \(CPA\)](#)⁴ has been used to disaggregate the classification to a suitable product level of detail for data collection. In addition, consideration has also been given to specialist knowledge from industry experts within trade associations and regulators to ensure the classification hierarchies used in the SPPI adequately represent the service industry in question. Indices produced for around 190 detailed product sub-categories are grouped together to produce around 32 product class (four digit SIC 03) series, which in turn are grouped together to form the top-level NSO and GSO series.

The Statistical Office of the European Communities (Eurostat) requires the provision of quarterly SPPI data under the Short Term Statistics Regulation.

The SPPI has three main categories of customer:

- other parts of ONS, which use SPPI data to deflate the UK National Accounts, including the Index of Services (IoS) and the output measure of Gross Domestic Product (GDP (O))
- economists at HM Treasury and the Bank of England which regard the aggregate SPPI as an experimental measure of current inflationary processes in the economy. Department of Business, Innovation and Skills (BIS) and industrial economists use the experimental SPPIs for monitoring price pressures on sub-sectors of UK business services
- commercial customers including the Ministry of Defence and its suppliers which use the experimental SPPI for formulating cost adjustment contracts and compare price movements with national averages

The National Statistics website contains a link to the [2005 SPPI Triennial Review](#)⁵ which includes detailed information on SPPI users. As part of this review, the views of users were sought. All of the respondents indicated that the data were 'quite satisfactory' or 'very satisfactory' for their needs.

2.2 Accuracy

The closeness between an estimated result and the (unknown) true value.

Estimates from the SPPI are subject to various sources of error. The total error consists of two elements, the sampling error and the non-sampling error.

Sampling error

This occurs because estimates are based on a sample rather than a census; the precision is usually estimated through the calculation of standard errors.

Standard errors are not published for SPPI however, the use of random sampling techniques allows the standard error to be minimised for a fixed cost.

Non-sampling error

Non-sampling errors are not easy to quantify and include errors of coverage, measurement processing and non-response.

Various procedures are in place to ensure that errors are minimised. Validation checks on data, based on percentage movements from quarter to quarter, are conducted to highlight unusual price changes for items. Disparities in data are investigated by contacting respondents if not explained on the returned form. Quality issues such as specification changes are also routinely investigated together with any indices which move by 7.5 per cent or more. Letters are sent to respondents where no price change has been evident for eighteen months and analysts liaise with respondents to ensure that the prices they provide meet the specified criteria.

Another aspect of quality is reliability. Assessing the difference between the first published estimate and the final revised figure provides an indication of reliability.

SPPI policy is to show significant revisions, but to suppress minor changes to avoid unnecessary inconvenience to users. Indices for the most recent two quarters are regarded as provisional and can be changed as later data become available. The National Statistics website contains information on the SPPI [revisions policy](#)⁶.

Price Indices can also be subject to a range of price index specific bias, the main forms being substitution bias and quality change bias.

Substitution bias in a price index can be caused by the change in consumer/producer behaviour over time and is mitigated by the regular update of the underlying revenue or turnover for the market basket. The SPPI carry out this update to index weights every five years.

Quality change bias can be caused by the inaccurate measurement of price movements that are caused by a change in quality as opposed to actual inflation. To account for quality change, the SPPI use three different types of product specification change to separate out how much of a price movement is due to a change in quality and how much is actual inflation. This allows the SPPI to ensure only the inflation component is recorded. Further detail on the specification changes used in SPPI can be found in section 3.

2.3 Timeliness and Punctuality

Timeliness refers to the lapse of time between publication and the period to which the data refer. Punctuality refers to the time lag between the actual and planned dates of publication.

The [National Statistics Release Calendar](#)⁷ is available on the National Statistics website and provides twelve months advance notice of releases. SPPI has consistently met publication deadlines. In the event of a change to the release schedule, an announcement will be made at least two weeks in advance, as set out in the [Code of Practice for Official Statistics](#)⁸.

The experimental SPPI release is published approximately 8 weeks after the end of the quarter to which it relates. SPPIs are currently published on the fourth Wednesday in February, May, August and November in respect of the previous calendar quarter.

2.4 Accessibility and Clarity

Accessibility is the ease with which users are able to access the data, also reflecting the format(s) in which the data are available and the availability of supporting information. Clarity refers to the quality and sufficiency of the metadata, illustrations and accompanying advice.

SPPIs are published on the ONS website in the [Services Producer Price Indices \(experimental\) web release](#)⁹ which includes tables, text and charts. The release itself can be downloaded in pdf (Adobe Acrobat) format and detailed price data can be downloaded in .xls (Excel) format. All downloads are free of charge. Results and commentary are also published every quarter in the form of an [Economic and Labour Market Review article](#)¹⁰.

Further SPPI queries can be directed to:

SPPI publication queries : Simon Woodsford simon.woodsford@ons.gov.uk or (0044) 01633 455917

SPPI development queries: Christopher Jenkins christopher.jenkins@ons.gov.uk or (0044) 01633 455474

2.5 Comparability

The degree to which data can be compared over time and domain.

To ensure effective comparability it is essential that SPPI reflects the price movements of products of fixed quality. When the specification of an item changes only the 'pure' price change is recorded for SPPI purposes and this generally relies on advice from respondents.

All major western countries produce an SPPI. Please see the link to [Eurostat Concepts and Definitions Database](#)¹¹. At the individual industry level, each SPPI is comparable across Europe, with each country publishing industrial SPPIs as defined by the [European Classification of Economic Activities](#)¹². At the aggregate level, comparison is less successful due to the varying coverage of these aggregate indices.

To compare the indices between base years it is necessary to make adjustments for the differing weights applied.

2.6 Coherence

The degree to which data that are derived from different sources or methods, but which refer to the same phenomenon, are similar.

The major difference between the SPPI and the Retail Price Index (RPI) is that RPI measures business to household prices (the price a consumer pays for a product) in contrast to the SPPI which measures business to business prices (the price a business receives for a service). The weights in the RPI are updated every year, while weights in the SPPI are updated every five years. The SPPI and the PPI are more closely related although the SPPI is less established and remains experimental whilst the PPI has been in existence for over 100 years and is classified as a National Statistic.

3 Summary of Methods Used to Compile the Output

Sample design

At present the SPPI survey comprises approximately 1,600 respondents and 4,250 items per quarter. The sample covers Great Britain and is selected from a fixed panel, initially selected using stratified random sampling by employment size band and industry.

Raw price data are converted into a basic set of around 32 price indices. These are currently defined using [SIC 03](#)³.

Respondents to the price data survey are recruited by means of a recruitment questionnaire to obtain a representative price and a complete service description. The questionnaire requests the current quarter's price (with date of any price change). Respondents then return their prices by posting back the questionnaire or by using 'Telephone Data Entry' (TDE). The split is roughly equal.

After collecting prices, a price relative needs to be derived, which is the pure (quality adjusted) price of an item divided by its price in a given base year. The price relative in general follows the same movements as the price of the item but allowances are made for changes in specifications (ie change in quality).

There are three types of specification change that are used to reflect a change in service:

- The change in price is entirely due to the change in specification. The price relative is given the same value as the corresponding price relative for the preceding month
- The notional price change is due partly to a change in specification and partly to a genuine price change. The price relative is adjusted to remove the effect of the change in specification.
- There is no fundamental change in the product being sold, implying that the whole of the notional price change is a genuine price increase. The quoted price is used to calculate the price relative without any adjustment.

When an item is deleted or added to an index the index is 'reconstituted'. When this happens the weights of items are changed but continue to add up to 100.

Weighting and estimation

The SPPI is a Laspeyres type index with fixed weights updated every five years. It is rebased every five years to update weights used in the aggregation of the SPPI. Over time, relative volumes and prices of services sold will change and it is important to ensure that the weighting structure of the index is updated at regular intervals to reflect the current information on the relative importance of products.

The weights used in the SPPI system are based on the SPPI Turnover Survey carried out every five years.

Seasonal adjustment

The SPPI is not seasonally adjusted.

Imputation

The imputation rules are:

- if unit response in the lowest level index is more than 50 per cent, imputation is based on a weighted average of observed movements in received returns within the relevant sub-category.
- if unit response is below 50 per cent, imputation is based on the weighted average of movements at division level.

Statistical disclosure

[Statistical Disclosure Control](#)¹³ Methodology is also applied to SPPI data. This ensures that information attributable to an individual organisation is not disclosed in any publication. [The Code of Practice for Official Statistics](#)⁸, and specifically Principle 5: Confidentiality, set out practices for how we protect data from being disclosed. The Principle includes a guarantee to survey respondents to "ensure that official statistics do not reveal the identity of an individual or organisation, or any private information relating to them". More information can be found on the [Statistical Disclosure Control](#)¹³ page of the ONS website.

4 References

	Title of Reference	Website Location
1	Statistical Quality	http://www.ons.gov.uk/about-statistics/methodology-and-quality/quality/index.html
2	Guide to SPPI	http://www.statistics.gov.uk/CCI/nugget.asp?ID=13&Pos=1&ColRank=1&Rank=224
3	Standard Industrial Classification (SIC)	http://www.statistics.gov.uk/methods_quality/sic/contents.asp
4	Classification of Products by Activity (CPA)	http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=CPA_2008&StrLanguageCode=EN&IntPckKey=&StrLayoutCode=HIRARCHIC&CFID=20096476&CFTOKEN=f989aac7c76ca75b-1807B7D4-CCB7-6706-F45B9AE272BAB583&jsessionid=f900bf4da3c151545754
5	2005 SPPI Triennial Review	http://www.statistics.gov.uk/statbase/Product.asp?vlnk=14042
6	Revisions Policy	http://www.statistics.gov.uk/about/methodology_by_theme/revisions_policies/default.asp
7	National Statistics Release Calendar	http://www.statistics.gov.uk/ReleaseCalendar/currentreleases.asp
8	Code of Practice for Official Statistics	http://www.statisticsauthority.gov.uk/assessment/code-of-practice/code-of-practice-for-official-statistics.pdf
9	Services Producer Price Indices (experimental) web release	http://www.statistics.gov.uk/statbase/product.asp?vlnk=7351
10	Economic and Labour Market Review Article	http://www.statistics.gov.uk/CCI/article.asp?ID=2030&Pos=1&ColRank=2&Rank=528
11	Eurostat Concepts and Definitions Database	http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM&StrGroupCode=CONCEPTS&StrLanguageCode=EN
12	European Classification of Economic Activities	http://circa.europa.eu/irc/dsis/nacecpacon/info/data/en/NACE%20Rev.%20%20Introductory%20guidelines%20-%20EN.pdf
13	Statistical Disclosure Control	http://www.statistics.gov.uk/about/data/methodology/general_methodology/sdc.asp

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