Guidance on using indices in Indexation Clauses

Office for National Statistics

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GUIDE TO USING THE ONS PRICE INDEX IN CONTRACTS

The Office for National Statistics (ONS) price indices provides summary measures of the movements in various categories of prices over time. They are published primarily for use in Government economic analysis.

The ONS Price Indices are also used in contracts by businesses and government to adjust payments and/or charges to take account of changes in categories of prices (Indexation Clauses, also known as Escalation Clauses). A list of users and how they use indices is available on the ONS website:

Producer Price Index

Consumer Price Index

Services Producer Price Index

This paper sets out a range of issues that should be taken into account by parties considering including an Indexation Clause in a contract using an ONS published Index.

THE ROLE OF THE ONS IN RESPECT OF INDEXATION CLAUSES

Although the ONS acknowledges that the various price indices it publishes are used by businesses and government to adjust payments and/or charges, it neither encourages nor discourages the use of price adjustment measures in contractual agreements. However, ONS is aware many users use indexation to adjust contracts. For this reason, this guidance has been produced to help ensure the arrangements are compatible with the ONS publications policy, which is available from the ONS Media Relations Office, email: media.relations@ons.gsi.gov.uk

The decision to employ an indexation mechanism, as well as the choice of the most suitable index, is up to the parties involved. It should be noted that other government departments may have their own policies on the use of price indices, which may differ in some aspects from the guidance in this document.

When drafting the terms of an indexation provision for use in a contract to adjust future payments, both legal and statistical questions can arise. The ONS cannot help in relation to legal questions; in particular, it cannot draft specific wording for contracts nor mediate interpretative or other legal disputes which may arise between the parties to an agreement. On statistical questions, the ONS can provide basic assistance, and certain general guidance is set out in the following paragraphs. However, this assistance and guidance is provided without acceptance of any responsibility by the ONS. Users should form their own independent assessment in relation to the index and its use in specific cases, and should seek such professional advice as they consider appropriate. Users are advised to take account of the relative levels of accuracy of the relevant indices.

DISCLAIMER

This paper is intended to summarise information about the various price indices currently published by the ONS and some of the issues which should be considered by persons in deciding to use such price indices in Indexation Clauses. It is a brief description only and is not a comprehensive or exhaustive description of price indices or of the issues which should be considered by persons in deciding to use price indices or Indexation Clauses.

Neither the ONS, the UK Statistical Authority nor their employees, advisers or agents will in any way be liable to any person or body for any cost, expense, loss, claim or damage of any nature arising in any way out of or in connection with the statements, opinions or other representations, actual or implied, contained in or omitted from this paper or by reason of any reliance thereon by any person or body. This paper is not business, investment, legal or tax advice and persons should seek their own independent professional advice in respect of all matters in connection with the use of indices published by the ONS and their use in Indexation Clauses.

No representation or assurance is given that any ONS published indices are accurate, without error or appropriate for use by persons or that the ONS will continue to publish any of the price indices, publish them at a particular time or that the methodologies for their determination will not be changed or that they will be suitable for use in any Indexation Clauses.

GUIDELINES FOR DEVELOPING INDEXATION CLAUSES

(1) Define clearly the payment that is subject to review in line with the index

The item whose price is subject to indexation should be specified as precisely as possible.

(2) Establish the base selling price subject to indexation

State whether the base price refers to a per-unit quantity or a certain volume of units. Give the effective month or year of this base selling price; this time period is often called the base period. Indicate the length of time it will remain in effect.

(3) Select an appropriate index or indices

The available ONS price indices for selection are Consumer Price (CPI), Producer Price (PPI) and Services Producer Price (SPPI). The index or indices selected will affect the price change recorded and should be chosen carefully to best represent the item subject to indexation and the intention of the parties. While very detailed indices at the lower level might reflect a particular activity, they will be based on smaller datasets and will be subject to change and be more volatile.

(4) Clearly identify the selected index and cite an appropriate source

The indexation clause of a contract should identify the index selected by its complete title, index number and any identifying code(s).

Please note the term "Price Index" refers to a family of indices compiled by the Office for National Statistics. A specific index should be cited in the contract by referring to "the Producer Price Index for..." “the Services Producer Price Index for” or “the Consumer Price Index for…” followed by the exact title and any identifying code or number. The clause should also cite an appropriate source for the index selected. The primary official ONS source of index data can be found on the ONS website as Statistical Bulletins.

Contracting parties should not cite table numbers and/or table titles in their indexation contracts because they are subject to change. ONS sources are preferable to secondary sources such as, other government publications or private firms. If contracting parties agree to accept updated index values on the telephone from ONS staff members, the indexation clause should specify appropriate procedures and whether subsequent verification from a published source is necessary.

(Example: “the Producer Price Index for Textiles; index number: 7112130000; identifying code: K37R as published in the Producer Price Index Statistical Bulletin)

(Example: “the Services Producer Price Index for Rail freight; index number: 4921000000; identifying code: K8R2 as published in the Services Producer Price Index Statistical Bulletin)

(Example: “the Consumer Price Index for Health; identifying code: CHZW as published in the Consumer Price Index Statistical Bulletin)

(5) Specify whether seasonally adjusted indices or unadjusted indices are to be used

In general, seasonally adjusted indices are not appropriate in indexation agreements. Because price adjustment clauses usually are intended to capture actual price changes, contracting parties normally would not want to remove seasonal price movements from their adjustment calculations.

(6) State the frequency of price adjustment

The indexation clause should specify whether price adjustments are to be made at fixed intervals, such as monthly, quarterly, semi-annually, or annually, or only at the expiration of the contract. To conform to the procedure described in guideline (10), price adjustments have to be calculated over an interval whose beginning point is the contract's base period. (This is the time period associated with the chosen base price; for a discussion of base price, see guideline (2)).

Difficulties maybe encountered with those contracts which do not designate a specific frequency for price adjustment, but rather state that the latest data available as of a certain date should be used for adjustment. In this case, or for any other case that does not cite a specific time interval, problems will arise unless the designated procedure corresponds with the version of the data to be used, and the date on which the price adjustments will be made.

Avoid wording such as "the index for aluminium mill shapes as of September 30," since several different and equally plausible interpretations are possible for such language. It could mean the index that was available on September 30, which would be the August figure; it could mean the September index; or it could mean the October index, since the September index would be based on information supplied to ONS before September 30.

(7) Provide for missing or discontinued data

Occasionally any given index may be unavailable for a particular time period, usually because price information was not supplied by a sufficient number of survey respondents to meet ONS high publication standards. Highly detailed indices are more susceptible to this problem than indices for broader groupings. Wherever possible, and where other factors are not more important, using a broader grouping will reduce this risk. Indexation clauses should provide procedures to be used when required data are missing.

Sometimes an index is permanently discontinued when a commodity declines in market importance; this most commonly occurs as a result of periodic re-sampling by ONS. Indexation clauses may provide for successor indices if the original indices are discontinued, or for contracting parties to renegotiate a successor index. A default provision that calls for using the next higher-level series might be included in the contract.

Note that if ONS merely changes the title or recodes an index, it is considered to be the same series and therefore, presumably, should not necessitate any contract renegotiation. ONS publish documentation on methodology used for the Producer Price Indices, Services Producer Price Index and the Consumer Price Indices which can be found on the ONS website. There is a standard industrial classification (SIC) used for PPI and SPPI under which all products and services are categorised within industries and CPI use a similar classification called Classification of Individual Consumption by Purpose (COICOP), which links the outlets and items, both classifications are available on the ONS website.

(8) Specify that calculations of price adjustments shall always use the latest version of the index data published as of the date specified for such calculations; this requires that contracting parties explicitly agree on the date the price adjustment calculations are to be made.

Adherence to this principle and its implications should prevent many potential problems. Contracts that fail to incorporate this guideline will instead need to specify which version of the index data should be used, because: (a) ONS routinely revises data for certain surveys within a specific spectrum[1] time frame after initial publication; (b) data are rebased (PPI/SPPI) or chain linked (CPI) (c) reclassification may be carried out; and (d) on rare occasions, data may be corrected. PPI/SPPI revision policy (Link to be added) and CPI revision policy are available on the ONS website.

Among other advantages, following guideline (8) PPI and SPPI should resolve any ambiguities arising due to the fact that all index data are routinely subject to revision to reflect late reports and corrections by respondents in the surveys. Revisions are usually small at the higher levels of index aggregation, but often are relatively large for detailed indices. The version of any index published off spectrum[1] after its initial publication, is considered final and may not change again (barring corrections, chain linking and rebasing). It is not appropriate to refer to the first published PPI and SPPI version of an index as "preliminary," and neither the first published nor the final version of an index should be labelled "actual," a term that might mean different things to different contracting parties and which has no official meaning in Prices terminology. It is not appropriate to refer to the published CPI/RPI version of an index as provisional as CPI very rarely revise data and RPI data is not revised, therefore any publication is considered final and will not change again (barring corrections or chain linking).

To follow guideline (8) effectively, it is essential to specify the date on which the price adjustment is to be made. Currently, PPI and CPI data are usually published every month following the reference month in question, and SPPI every quarter (depending on which publication they appear in, publication dates are available on the GOV.UK). Thus, the earliest day for price adjustment that a contract ought to specify needs to be after the publication day of the month following the designated data month. The contracting parties' selection of the date on which the price adjustment is to be made, should be made only after they have agreed on, first, the reference month and, second, on whether their calculations are to be based upon the first published version or the final version of that month's index. The date for calculating the price adjustment can then be selected so that the desired data will be available.

It is vital to address these matters before a contract is ready for signature. Otherwise, disagreements may arise when the first published and final versions of the selected index are different, and there will be no criterion for selecting either version.

If contracting parties do not specify an exact date for making price adjustments, the contract should at least specify whether first published or final data should be used for calculations. If this is the case, the final version of the data should be specified whenever feasible, because only final data will be rebased/chain linked retroactively whenever ONS may update the index reference base.

Any procedure that departs from guideline (8), by failing to specify the version of the data or the date when the price adjustment is to be made, needs to be constructed so that it will be in harmony with the frequency of price adjustment, as specified elsewhere in the contract. This is discussed in guideline (6).

1 Spectrum relates to the Producer Price time frame used by ONS to revise data, i.e. five months for PPI and five quarters for SPPI.

A contract should not refer to an index value associated with a base price, but instead to its month and year alone. That is, what should not be written into the contract is language such as the following:

"Divide the current index value by 103.9 (which is the value of the index for the base period January 1990) and then......"

Rather, the following is preferable:

"Divide the current index value by the index value for January 1990, which represents the base period, and then......"

Contract clauses that incorporate specific index values will become problematic when the reference base is later changed by ONS; the index value incorporated into the contract will be incompatible with current official data after ONS has implemented the rebasing or chain linking.

(9) Avoid locking indices used for indexation into any particular reference base period

Contracting parties should simply follow the principle of guideline (10) by calculating percentage changes using indices expressed on the reference base period in effect when the contract indexation is carried out. In general, relying upon a new index reference base period as set by ONS should not affect calculations (except for rounding differences), as long as all percentage changes are derived solely from indices expressed on the official base period. Because rounding may indeed make a substantial difference when the pound amount of a contract is very large, it will be doubly important for such contracts to rely only upon official data on the current base as determined by ONS.

Official data for current time periods are not available on previous reference bases after a base change has been implemented by ONS. Further, as a general rule, estimating a conversion of data to an old base for the purpose of contractual price adjustment is inadvisable, because such a method could well be challenged for referencing something other than official government data.

Rebasing is carried out for PPI and SPPI every five years, whereby the weights are updated to the new base year and the index is re-referenced so that the index values are equal to 100 in the new base year. Rebasing factors are only made available by ONS to convert data on the current standard reference base period to the immediately preceding one, as long as both base periods are on the same Standard Industrial Classification (this is discussed later in this guidance note). CPI however is not rebased but is chain-linked with the weights updated annually and the resulting annual indices chained together to produce a continuous time series. The index is re-referenced occasionally but not on a routine basis.

Re-referencing of an index is not considered "revising," because the relative movements of any series over time are not affected. Users must recognize that the absolute level of any index has no intrinsic meaning other than relating a measurement to the base year, which is itself arbitrary to a degree.

Older contracts may already specify use of originally published indices; ONS is now strongly discouraging such language in indexation contracts, in accordance with guideline (8) recommending that the latest available version of index data be used. In addition, ONS does not maintain records for originally-published indices. As a result, no official rebased versions of such originally published indices exist.

(10) Define the mechanics of price adjustment

(a) Simple percentage method

One method of price adjustment is to have the base price changed by the same percentage as that calculated for the selected index.

To illustrate, suppose that the contract indexation clause refers to Manufacture of Textiles & Textile products, index 6107131400, and code: K5VT, as published in the PPI Statistical Bulletin. Also suppose that the index was 110.0 when the base price was set. A year later when the first adjustment is made, the figure is 115.5. This represents an increase of 5.0% in the Manufacture of Textiles & Textile products, index 6107131400, and code: K5VT, as published in the PPI Statistical Bulletin as shown below:

Index at time of calculation	115.5
Divided by index at time base price was set	110.0
Equals	1.050

This means that the base price should be increased by 5.0%. To proceed:

Base price	£1,000
Multiplied by	1.050
Equals adjusted price	£1,050

In later years, this procedure would be applied again by taking the current index value and dividing by the index value at the time the base price was set, and then proceeding just as described above.

(b) Index points

Relatively few indexation clauses which rely on index data adjust contract prices on the basis of changes in index points. When prices are adjusted by a percentage on the basis of a change in index points, the value of an index point will fall in percentage terms as the index level rises, and vice versa. For example, an increase of 1 index point from 205.5 to 206.5 represents an upward movement of only 0.5 per cent. Conversely, a 0.9% increase in an index of 205.5 would raise the index 1.8 points to 207.3.

Therefore, if the base price is adjusted by a pound amount according to a change of index points, the procedure is then vulnerable to changes in the index base period. Index point's values would differ for an index rebased to a later year.

In contrast, adjusting a base price by a percentage change in an index, as in approaches (a) and (b) above, will not result in these discrepancies.

Adjustment clauses using the CPI, CPIH, RPI or RPIJ usually involve changing the base period payment by the percentage change in the level of the CPI, CPIH, RPI or RPIJ between the base period and a subsequent time period. This is calculated by determining first the change between the two periods and then the percentage change. The example below illustrates the computation of the percentage change:

CPI for current period	136.0
CPI for base period	129.9
First figure less second figure equals change	6.1
Divided by previous period CPI	129.9
Equals	0.047
Result multiplied by 100	0.047 x 100
Equals percentage change	4.7

(c) Indexation of a portion of the base price

Another procedure sometimes employed changes the base price so that only part of it is escalated by a selected index, while the balance remains fixed. To illustrate, suppose that an item has a base price of £1,000, of which £700 is to be escalated by the index while the other £300 remains unchanged i.e. only 70% of the base price needs to be escalated using a price index.

As for the simple percentage method:

Index at time of calculation	115.5
Divided by index at time base price was set	110.0
Equals	1.050

Base price	£1,000
Variable element of base price	£700
Multiplied by	1.050
Equals adjusted variable element of price	£735
Plus fixed element of base price	£300
Equals	£1,035

Alternatively this may be done by changing the base price by a certain pound amount for each 1% movement in the selected index. To determine the "certain pound amount" that is needed for citation in the contract, simply divide the designated variable portion of the base price (£700) by 100, which in this case would yield £7. The indexation clause is written so that it provides that the base price of £1,000 shall change £7 for each 1% movement in the index.

Using this approach, the base price would rise to £1,035 for a 5% rise in the finished goods price index as shown below:

Base price	£1,000
Plus 5.0 times £7	£35.00
Equals adjusted price	£1,035

(d) Composite indices

Some contracts describe construction of a composite index based on several indices. The advantage of a composite index is that it may more accurately identify the appropriate change for a base price since it will refer to several of the costs involved in producing the product or service in question. However, a composite index entails more calculations at the time of adjustment than the simpler procedures described earlier.

One procedure for specifying a composite index is illustrated by the following steps:

(i) Choose the indices that will represent the different costs involved (such as a fuels index, a machinery index, or whatever else is appropriate);

(ii) Choose the appropriate weights for these indices, in accordance with the proportion of the production budget which may be devoted to these various categories. The list of chosen weights should sum to 100%.

(iii) Clearly specify the time period that these relative weights are supposed to represent. The weights should be chosen to represent the time period associated with the base price. (This will be referred to as the base period.)

(iv) The first step necessary for the calculation of the composite index is to rebase all of the original index data to the contract's base period. This is done for each series by dividing the indices by the index value for the base period, and then multiplying the result by 100. (For this and following steps, note the detailed example at the end of this report.)

(v) Then derive values for the composite index by multiplying the relative weights by the rebased index values for each index series and summing the results. (This calculation must be done for each month, or other time period, needed for determining the current adjustment.)

(vi) Using the composite index values created in step (v), calculate the current adjustment in standard fashion, that is, by using the procedure described in (a).

(e) Limits for price adjustment

Indexation clauses sometimes contain a floor, a ceiling, or both, to limit the total price adjustment during the life of the contract. If the upper or lower limit is reached, the parties may renegotiate prices for the duration of the contract. Some contracts specify that no price adjustments are to be made until a minimum change in the selected index has taken place. Contracts may also provide that an indexation is to apply in both an upward and downward direction or in one direction only.

(11) Other considerations

(a) Allow for negative price movements

Any potential variations from the recorded price movements should be explicitly set out. For example, in some Indexation Clauses, there is no change in the contract price in a period in which there is a fall in the price index being used for indexation. In some cases, there will be a catch up once the index rises again.

(b) Major revisions to the index structure

Provide a built-in method for handling situations that may arise because of major revisions to the structure of the index (rebasing or reclassification for example).

(c) Decimal places

If reference is made to the annual percentage change in an index, ensure that the number of decimal places to be used in the calculation is mentioned (preferably one decimal place). It is better to refer to the annual percentage change in the index as published by the ONS rather than attempt a calculation oneself, as PPI and SPPI calculate percentage changes from rounded index values, and then round these percentage changes as well, whereas CPI calculates from unrounded.

(d) ONS name change

Reference should be made to the possibility that the ONS may change its name at some point in the future, or the index may even be published by another Government department. The words “ONS or any successor Government department” may be used.

PITFALLS TO AVOID

- Vague citation of "the Price Index" rather than a reference to a specific index by its title and any identifying code number.
- Use of unofficial estimates derived from rebasing factors rather than relying upon official ONS data.
- Ambiguous reference to dates ("index as of May 30").
- Lack of a provision for a successor index should the designated index be dropped from the index program, or if it should become temporarily unavailable.
- Locking index into a specific base period. Using ambiguous terms. For example, referring to "actual" indices.

For more guidance on pitfalls to avoid, please refer to the section on guidelines for developing indexation clauses.

RELINKING (REBASING)

The Producer Prices and Services Producer Prices are series of base-weighted indices resting on the ‘basket of goods’ concept, and regular five yearly rebasing is carried out in order to reflect the changing pattern of industry’s sales and purchases in the index weights, [currently the PPI and SPPI are rebased on 2010=100 in October 2013. When the PPI and SPPI were rebased to 2010=100, the following instructions were given when users wanted to switch to an index with a base of 2010=100 from its former base of 2005=100. This means that the fixed weights used to combine product indices into broader aggregates will reflect the pattern of transactions in 2010 rather than 2005.

To convert 2010=100 indices (SIC 2007 only) back onto a 2005=100 basis

Please note: These instructions are only for prices indices on the same Standard Industrial Classification. For those who are using the 2005=100 indices in long-term contracts and wish to extend the series beyond August 2013 (the latest month for which 2005=100 figures were published), the following approach may be suitable.

First, select the nearest equivalent index published in the 2010=100 series and then calculate a linking factor as follows:

2005=100 index for June 2013, divide by

Nearest equivalent 2010=100 index for June 2013

Then simply multiply the 2010=100 index after June 2013 by this linking factor to extend the 2005=100 time series.

For example: 7200700000 (JVZ7): as published in the Business Monitor for Producer Price Indices for September 2014.

	April	May	June
2005=100	129.9	129.8	129.9
2010=100	112.3	112.5	111.4

The factor is calculated as 129.9/112.3 = 1.156 and figures for the 2005=100 extended series are calculated as follows:

May 112.5* 1.156 = 130.0

June 111.4* 1.156 = 128.8

This example can be applied to any future re-linking (rebasing) for example, 2005=100 back to a 2000=100 basis.

An alternative approach that may be adopted is to extend the newer index series backwards, rather than extending the older index series forwards. This methodology is also statistically sound and the calculation is very similar to the above example. The difference is that the 2010= 100 series is divided by the 2005=100 series to obtain the linking factor (in the above example this would be

0.928). The 2005=100 values are then multiplied by this linking factor, in order to extend the 2010=100 series backwards. This method can be more practical for contracts as the linking exercise only needs to be carried out once.

Re-referencing the CPI

When the harmonised index of consumer prices (HICP) was launched it was referenced on 1996=100. Starting with the publication of the January 2006 index, it has been referenced on 2005=100. The change of reference period was accompanied by a full re-referencing of all HICP indices back to 1996. This resulted in widespread revisions to 1-month and 12-month rates of change. This is because the 1996 based rates of change are calculated from indices rounded to one decimal place and are therefore subject to rounding errors. This is not the case for the 2005 based rates of change, which are calculated from indices rounded to six decimal places and therefore there will be no widespread revisions in future re-referencing exercises.

Estimates, which are broadly consistent with the data from 1996, are also available back to 1988 along with indicative figures for the period 1975-1987, but these data should be treated with some caution. O'Donoghue, J (2004) 'Harmonised Index of consumer prices: historical estimates' provides more details. More recently, ONS has produced a modelled back series for the CPI covering the period 1950-2011. Again these are indicative, modelled figures which should be treated with some caution. O'Neill, R and Ralph, J (2013) 'Modelling a Back Series for the Consumer Price Index' provides more details.

CHAIN LINKING

Chain linking is carried out on an annual basis and is a term used to describe a range of consecutive activities that update the consumer price indices basket of goods, and link the new index series directly to the previous series (thereby preserving the long term time series). Therefore it's the joining together of two indices which are overlapping in one period, by rescaling one of them to make its value equal to the other one in the same period, which combines them into a single time series.

More information on user guidance, methodology and developments is available in the Guidance and Methodology area of the ONS website

STANDARD INDUSTRIAL CLASSIFICATION CHANGES (SIC) AND CLASSIFICATION OF INDIVIDUAL CONSUMPTION BY PURPOSE

Since 1948 the United Kingdom Standard Industrial Classification of All Economic Activities (UK SIC) has been revised seven times (1958, 1968, 1980, 1992, 1997, 2003 and 2007). These reclassifications are motivated by the need to adapt the classifications to changes in the world economy. In essence, the introduction of a change in classification change reflects the growing importance of service activities in the economy of the last 15 years and in particular the developments in information and communication technologies.

We have generally advised that where there are fundamental differences to the index structures due to the SIC 2007 reclassification project then trying to link on isn't advisable, whether it be using one month or several. This is because the growth rates and index levels of the two series can be vastly different. Due to the fundamental changes of 'Input prices' due to a reclassification project, the new indices will provide you with the most up to date price measure.

There is generally a lot more correlation in the old and new SIC structures, especially in certain industries so linking on can be fairly sensible. However we do not advise any users which index to use in contract negotiations and this is purely a decision to be made between the customer and supplier. The ONS can only provide advice on what the index is trying to measure and supplementary guidance when large scale changes occur (e.g. Rebasing).

The ONS has provided lengthy time series of reclassified indices for users where we have the detailed price information, so, if people are drawing up new contracts then the correct and only advice would be to use the new indices for reasons mentioned above but also for the simple fact that the old index no longer exists. The linking (rebasing) advice given above is purely for rebasing purposes, which is, in principle, a lot more straightforward and it is not advisable to use for reclassification changes, *but* it is entirely up to the users to decide this.

The coverage and classification of the CPI item indices are based on the international classification system for household consumption expenditures known as COICOP (classification of individual consumption by purpose). Founded on National Accounts principles, the COICOP system, along with the conceptual coverage of Household Final Monetary Consumption Expenditure (HFMCE), is the starting point for defining which expenditures, in principle, should be included in the CPI. This is because ‘COICOP’ and HFMCE define which transactions constitute household final monetary consumption as opposed to other flows such as taxes, other transfers, or capital and financial transactions.

Again ONS do not advise any users which index to use in contract negotiations and this is purely a decision to be made between the customer and supplier. The ONS can only provide advice on what the index is trying to measure and supplementary guidance when changes occur.

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