

Article

# National accounts, deflator strategy: September 2020

Strategy for developing the suite of deflators used across the UK National Accounts, including the main aims for deflator research and development and a roadmap of deliveries that will improve our measure of gross domestic product (GDP) and trade in the coming years.

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# 1 . Overview of strategy

This article sets out the Office for National Statistics (ONS) strategy for developing and improving the suite of deflators used across the UK National Accounts. It identifies the main aims for deflator research and development and defines a clear roadmap of deliveries that will improve our measure of gross domestic product (GDP) and trade in the coming years.

We will use a mechanism of continuous feedback and horizon-scanning activity to understand areas of research to develop and implement improved deflators for use in our main economic indicators. We will work across organisational and international boundaries to ensure our research remains world leading, and we will work with service providers to make practical changes to the UK National Accounts to better reflect the changing economy and to assist with measurement questions around the [productivity puzzle](#).

## Deflators in UK National Accounts

Deflators are an important input into the measurement of a number of economic statistics, including GDP. Deflators allow the effects of price changes to be removed from current price data series, enabling data to be compared across time in "real terms" (with the effects of inflation removed).

Price indices are used to compile deflators, which are in turn used in the compilation of some of our main economic statistics. However, other data sources are also used to fill gaps not covered by price indices. Examples of where we may use an alternative source to a price index include where there are measurement challenges around effectively capturing the difference between the price paid by business versus the price paid by consumers for a commodity or where there are shifts in consumer behaviour (for example, when consumers substitute goods for a lower price item to maintain the cost of living).

In some instances, we adjust a price series, moving away from the published value, to make it more representative as a national accounts deflator. An example of this is the use of weight-modified consumer price indices in our measure of trade in services to better capture exchange rate movements in transactions that take place in foreign currencies. In other instances, we use separate current price and direct volume sources and derive implied deflators; this is often the case when measuring government output where volume sources are more representative of output and prices are difficult to measure.

Through our deflator research programme, we will work to understand the national accounts concept and what the relevant price indices are measuring to ensure we are using the most appropriate deflator. This may result in deviation away from using standard price indices as a deflator where we feel this is conceptually the best option for the national accounts concept being measured.

Price indices also have a different revisions policy to national accounts and so there may be instances where we revise the method for a deflator within the national accounts and do not immediately reflect this in the corresponding price index, or vice versa. In general, our aim will be to keep price indices and deflators in line where it is sensible to do so, but occasionally there may be instances when a price index and deflator may vary to ensure both are delivering data against the most recent and relevant international standards and meet user needs in a timely manner.

When implementing any methods changes to deflators into the national accounts, we will also need to consider that there may be different sources across the three different measurement approaches to GDP (income, output and expenditure). A deflator method change in one particular approach to measuring GDP may not mean there will be a corresponding change in the other approaches; therefore, the need to confront the three approaches via the supply and use balancing framework and apply balancing adjustments to reconcile the accounts will still remain.

## Research and development aims

In his report, the [Independent Review of UK Economic Statistics \(PDF, 5.1MB\)](#) (March 2016), Professor Sir Charles Bean set out a number of areas where the ONS could improve its methods for measuring the economy. Several of these recommendations referenced improving the deflator suite used across the UK National Accounts.

In response, the ONS has set up a deflators research and development team with responsibility for researching, developing and improving the deflators used. The team will explore important issues including the role that mismeasurement of deflators could have on things such as the productivity puzzle.

The main aims of the deflator research and development team are:

- to capture quality change more effectively in fast-changing industries
- to make better use of existing data sources and methods, improving quality and consistency of deflators across economic statistics
- to ensure we have an efficient and effective process that improves the production, quality assurance and narrative around deflators
- to make better use of administrative sources and microdata within our compilation methods

Sections 2 to 5 will provide additional detail on each of these aims, setting out the research and findings that have been undertaken and the main areas of work we have planned to improve the current suite of deflators being used in the UK National Accounts.

[Section 6: Future developments](#) will set out our research and development roadmap for the upcoming years.

## 2 . Capturing quality change more effectively in fast changing industries

Some crucial deflation challenges arise around quality change needing to be more effectively captured in price series. Changes in quality should be measured as a volume change and not a price change; therefore, we need to ensure that quality change is adequately accounted for in terms of volume rather than in the price series being used as deflators. This can be a challenge for the measurement of fast growth industries, particularly those within the service sector.

We will improve our understanding of deflator measurement by making use of international best practice, working collaboratively with countries that share similar economies. Working closely with stakeholders and topic experts will help us to drive and prioritise our research agenda.

Initial work in this area has focussed on some of these aspects; deflation in the service industries for telecommunications has been part of ongoing research. Working collectively with industry experts, the Office for National Statistics (ONS) has acquired alternative administrative data sources that look to cover more of the activities in the telecommunications industry; the methodology utilises a [unit value approach](#), and these changes have allowed the quality change and fast-moving service to be better reflected in the deflation measures.

To scrutinise the wider suite of deflation carried out in the estimates produced by the ONS, particularly to identify other areas where quality change was not effectively captured, we conducted a full-scale review of the deflators used across ONS economic estimates. This review has allowed us to expand our suite of research, continuing with our core research agenda around measurement of services and high-quality change industries, to other considerations.

This review has identified several other areas, particularly within the services sector, where we plan on investing research time. These include fast-changing industries such as architecture and engineering, computing and accommodation services.

Increased use of design and modelling software has radically changed the way in which the architecture and engineering industry provides services to its customers. For example, the adoption of building information modelling (BIM), a process that involves the generation and management of digital representations of physical and functional characteristics of a planned building. BIM also allows for information about the building to be exchanged easily between various parties involved in the design and construction of a project. As such, the customer has access to an improved service today compared with the days of hand-drawn plans. This change has happened mostly within the last decade, and we would like to explore whether this quality change is captured as part of our measurement of output in this industry.

The use of cloud computing for both processing and storage has increased dramatically over recent years. Additionally, there has been change in the computer services industry linked to changes in the use of technology in both business and household sectors. These are fast-changing areas where we plan to undertake research to better understand how price movements have changed to ensure we are reflecting this within the deflators we are using.

It is worth reiterating that in some cases, the research and development to improve our deflators will consider the use of new methods and data sources that may be in advance of recognised international best practice for the production of price indices. Where appropriate, any new development of a deflator will also be considered in the context of potentially using them in our suite of price indices, although this will need to be considered against any other planned developments of our price indices, maintaining international comparability and considering the available resources.

### **3 . Making better use of existing data sources and methods, and improving quality and consistency of deflators across economic statistics**

We will make better use of existing sources and methods, aligning with international best practice and being at the forefront of international development, allowing us to improve the quality and consistency of the deflators being used across UK economic statistics.

The first step toward this is introducing an [annual chain-linking process for our business price statistics](#) in Blue Book 2020. We are implementing chain-linked business prices in line with international best practice and to improve consistency with other price indices such as the Consumer Prices Index (CPI). This is a significant improvement to the weighting and linking of business inflation statistics. The implementation of [chain-linking is recommended by Eurostat](#) over the current method of rebasing for price statistics as the weighting structures are updated annually rather than every five years, making the series more representative and better capturing change.

We have conducted research and aim to implement improvements to the clothing and footwear deflator in 2021. This will allow us to align the back series being used for this deflator in the national accounts with the latest methodological and sample improvements that have been made in the CPI from 2010 onwards. These improvements will allow us to better reflect the changes in clothing and footwear prices within the calculation of volume estimates of household final consumption expenditure across the entire time series.

We will conduct research into other industries, including financial services and insurance and pension services, over the coming year. We plan to begin by assessing how we collect both nominal and real price data for the financial intermediation services indirectly measured (FISIM) sector, with the aim of improving the data collection or calculation method to improve the quality of data being used in the national accounts.

Improvements to the scope and coverage of Services Producer Price Indices (SPPIs) over recent years provide the potential for more widespread use of these price series as deflators in the UK National Accounts. In the absence of appropriate SPPIs, we currently make use of alternative sources to compile deflators in some areas. This change in coverage of SPPIs will mean there will be areas where SPPIs will now be conceptually more aligned to the current price series we need to deflate. Price measurement in the services sector has historically been difficult to measure, so improvements to the measurement and coverage of SPPIs should therefore lead to the availability of higher quality deflators for use in measuring the UK National Accounts. Rolling reviews will continue to identify potential for further improvements to SPPIs (such as sample improvements), which we will assess and, where possible, we will implement iterative improvements to services sector deflators.

## **4 . Ensuring we have an efficient and effective process that improves the production, quality assurance and narrative around deflators**

We have established deflator teams to focus on horizon scanning, research and development of deflators. These teams are focused not only on improving methods but on systems improvements to allow better transparency and consistency in the use of deflators across the UK National Accounts.

We aim to improve the visibility and consistency of deflators by improving the systems and process through which deflators are created and flow through the national accounts, introducing a deflator gateway system to control the vintage, consistency and quality of price indices being used as deflators. This is important to ensure use of the best deflator estimates across the suite of national accounts for consistency in production of important economic indicators.

As part of the implementation of double-deflated estimates of industry gross value added (GVA), set out in [A new framework for UK GDP: progress, challenges and the future](#), we recognise there are challenges in the current deflator suite being used in the UK National Accounts. The deflators research and development teams will complete analysis and research to help inform deflator choices for publication of [experimental](#) estimates of double-deflated GVA alongside Blue Book 2020 and for future Blue Books. We will make recommendations based on data currently available and use the information gathered to help inform our future research agenda aimed at continuous improvement of deflators.

## **5 . Making better use of administrative sources and microdata within our compilation methods**

Aligned with the wider aims of economic statistics in the Office for National Statistics (ONS), we want to make better use of microdata and increased use of administrative data sources. This will help to ensure our statistics are fit for the future, allowing increased granularity and improved quality.

The ONS initiated a project in 2016 to transform UK trade statistics following the increase in user demand as a result of the UK referendum on EU membership. One of the five main objectives set out in the [UK trade development plan](#) centres around improvements to deflators, and we will help deliver improvements to the capture of import and export price series. In the [UK National Accounts, The Blue Book: 2019](#), we introduced improvements to how deflation is carried out for trade in services, to better capture the currency mix of those transactions that are carried out in a foreign currency.

We carried out a complete review of trade in services deflators in 2019, which led to a number of recommended areas for improvement. The first deliverable improvement will be to the tourism deflator; in this space, we are currently utilising international knowledge to help us develop improved methodology and research alternative data sources. Many of the improvements identified for trade deflators will require longer-term research and development, such as ways of compiling a trade Services Producer Price Index (SPPI) using available data sources. Given the complexity and importance of trade deflators, we will continue to make incremental changes over the short, medium and long term.

In addition to our trade-based research, there are a number of other areas where we aim to explore the use of alternative data sources such as administrative data and microdata. The emergence of the gig economy has had an impact on a number of industries, one in particular being the way the accommodation services industry operates. Companies such as Airbnb have increased their market share over the last decade, and this is an area where we would like to explore how price is captured and whether this change has had an impact on price.

Alongside this research agenda, we will work closely with our prices colleagues to help optimise survey samples and to understand and analyse how improvements made to price surveys will impact on national accounts deflators.

## **6 . Future developments**

We recognise that achieving the aims set out in the previous sections is likely to require iterative improvements to methods and sources. We will also have to be pragmatic in our approach to these improvements because of a number of factors, including the availability of the required data.

In this section, we will discuss our research and development roadmap for the upcoming years. Table 1 sets out our research agenda, providing details of our main areas of focus in the short to medium term. Although we have set targets for delivery post-2021, these dates should be considered provisional. As a development and research team, we may need to pivot our resources to work on other high priority goals or aims; therefore, our focus may shift dependent upon the needs of other project and research areas within the Office for National Statistics (ONS) or changes in user demand.

Table 1: Deflators research and development roadmap

<b>Workstream</b>	<b>Date deliverable</b>	<b>Purpose or outcome</b>
Annual chain-linking	Blue Book 2020	Replacement of rebasing process for business prices with annual chain-linking process. Ensuring UK follows international best practice and aligning business prices with the annual chain-linking process already adopted for consumer price statistics.
Telecommunications	Blue Book 2021	To review and research alternative methods and data to measure this changing service. Assessment of alternative and innovative methods to deflate telecommunications, implementing a unit value approach.
Clothing	Blue Book 2021	Implement a revised back series for clothing and footwear deflator in line with methodological changes made to the Consumer Prices Index (CPI). To improve estimates prior to 2010 that currently use the previous methodology.
Tourism deflator	Blue Book 2022	Develop improved methods and sources to be used, delivering a price series that is more representative, with source data available on a regular basis.
Deflator gateway system	Blue Book 2022	A central compilation system for deflation, utilising price data, alternative data sources and robust methods to create fit-for-purpose deflation measures for customers and the national accounts. A consistent and coherent application of deflators to all teams, supported with analytical briefing on a regular basis.
Import price indices	Blue Book 2022	Look to extend coverage of the current sample to capture products at the level of detail required, supplementing price collection where appropriate with administrative data sources.
Financial services review and improvement	Blue Book 2022	To review and research alternative methods and data to measure the ever-changing service. To work internationally and with Office for National Statistics (ONS) Fellows to assess alternative and innovative methods to deflate financial services in the future, exploring volume estimates.
More widespread use of Services Producer Price Indices (SPPIs)	Blue Book 2022 onwards	Review improvements made to SPPI series, identifying where these can be used to improve the quality of deflators used in national accounts and analysing impacts.
Trade SPPI	Blue Book 2023	To research data sources that could be used to build estimates of a trade SPPI. Develop methods and analyse results with intention of improving volume estimates of trade in services.
Insurance and pension services review	Blue Book 2023	To review and research alternative methods and data to measure the ever-changing service. To work internationally and with ONS Fellows to assess alternative and innovative methods to deflate financial services in the future, exploring volume estimates.

Source: Office for National Statistics – National accounts, deflator strategy: September 2020

While we have ambitious timescales for the improvements identified in Table 1, we also recognise that we will have to make the best use of the technology and data available at the time. This may result in iterative improvements over a slightly longer timescale to make advantage of the best quality data and technology. There are also other areas – particularly fast-changing industries – where we intend to focus our research, as discussed in [Section 2: Capturing quality change more effectively in fast changing industries](#). While these do not currently feature in our roadmap, once we begin research in these areas we will aim to identify timescales for their review and potential development.

The full-scale deflator review we conducted in 2019 has been used to inform our research agenda and will also help us to inform deflator recommendation to support the new approach we are adopting for compiling the UK National Accounts through the production of supply and use tables in previous years' prices. In addition to the areas of focus outlined in Table 1, part of our work plan is to focus on areas specifically needed to help support this implementation.

## 7 . Related links

### [Chain-linking in business prices](#)

Article | Released 20 July 2020

The methodology and practical implementation of chain-linking for business prices, including the technical process of price updating sales data to forecast more representative weights.

### [Improvements to the measurement of UK GDP: an update on progress](#)

Article | Released 6 July 2020

This article will provide an update to our work and sets out a change to how we will deliver double-deflated industry gross value added (GVA) in the UK National Accounts. Progress on wider improvements to the deflators used in the UK National Accounts are also presented.