Annual Purchases Survey QMI

Quality and Methodology Information for the Annual Purchases Survey, detailing the strengths and limitations of the data, methods used and data uses and users.

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1 . Output information

- Survey name: Annual Purchases Survey

- Data collection: Sample of around 33,000 businesses selected from the Inter-Departmental Business Register

- Frequency: Annual

- How compiled: Business survey

- Geographic coverage: UK

- Related publications: Energy, goods and services used by UK businesses

2 . About this Quality and Methodology Information report

This quality and methodology report contains information on the quality characteristics of the data (including the five European Statistical System dimensions of quality) as well as the methods used to create it.

The information in this report will help you to:

- understand the strengths and limitations of the data

- learn about existing uses and users of the data

- help you to decide suitable uses for the data

- understand the methods used to create the data

- reduce the risk of misusing data

3 . Important points

- The Annual Purchases Survey (APS) provides detail on the energy, services, goods and materials used up or transformed in the production process and running of UK businesses, otherwise referred to as intermediate consumption.

- The APS specifically excludes capital investment (including fixed assets), staff costs, goods and services bought for resale without further processing.

- The original Purchases Survey ran from the 1950s to 2006 (with the final reference period being 2004) and was reintroduced, as an annual survey, from the 2015 reference period; processing for the 2019 and 2020 APS was deprioritised during the coronavirus (COVID-19) pandemic and data for these years have not been published.

- The APS product-level information is used in supply and use tables (SUTs), which are an integral part of the UK national accounts.

- The APS sample covers the majority of the private sector; using data from the Annual Business Survey, figures in the publication have been re-calculated to estimate for the whole of the UK business population.

- This document should be read in conjunction with our APS technical report.

4 . Quality summary

Overview

The primary aim of the Annual Purchases Survey (APS) is to provide detail on the goods and services used in the production process and running of UK businesses, otherwise referred to as intermediate consumption. This document should be read in conjunction with our APS technical report which, while duplicating some of the information below, expands further on some of the detail.

Uses and users

Intermediate consumption is required as part of the process to set the annual level of gross domestic product (GDP), which is an essential statistic for informing fiscal and monetary policy decisions. Broadly speaking, GDP is calculated by adding up the value of the output of firms, minus the goods and services that are used in the production of that output. The value of these goods and services used in production is called "intermediate consumption" and is defined within the European Systems of Accounts: ESA 2010 manual as follows:

"Intermediate consumption consists of goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as consumption of fixed capital. The goods and services are either transformed or used up by the production process."

The data collected from the APS feed into the supply and use framework, which is a central component of the national accounts balancing process and sets the annual level of nominal GDP.

Office for National Statistics (ONS) statistics on trade, intangible assets and environmental accounts incorporate relevant parts of the APS dataset. Externally to the ONS, other users include the Department for Energy Security and Net Zero and the Department for Business and Trade, who use the energy consumption information for policy making.

Data is also used by the Northern Ireland Statistics and Research Agency, as well as the Scottish and Welsh Governments.

The APS falls under the remit of the "Government User Group", which has regular meetings. This, along with bilateral meetings with other stakeholders, provides an opportunity for any changes, developments or quality concerns relating to the survey to be discussed directly with its government users, so that, where possible, their requirements can be met.

Strengths and limitations

The main strengths of the APS include:

- the survey is very comprehensive, covering many products purchased at a much greater level of detail than other ONS surveys (see Section 9 of our Technical report for the products collected)

- the high level of detail in APS data shows a thorough insight into the purchasing patterns of businesses

The main limitations of the survey include:

- as the APS is an annual survey, there are restrictions on the timeliness of the data available

- the APS requires a high level of product detail, and some businesses find it difficult to provide this level of detail, often because of differences in accounting systems

- the APS is subject to continuing development and improvement work, a situation exacerbated by the pause in processing during the coronavirus (COVID-19) pandemic

5 . Quality characteristics of the Annual Purchases Survey data

This section provides a range of information that describes the quality and characteristics of the data and identifies issues that should be noted when using the output.

Relevance

The Annual Purchases Survey (APS) was reinstated by the Office for National Statistics (ONS) in 2015. This was done to meet a range of user demands and to fulfil the recommendations for its reinstatement from two independent reviews, one by Dame Kate Barker and Art Ridgeway the other by Professor Sir Charles Bean.

Gross domestic product (GDP) is the primary measure of the overall state of a country's economy; it is extensively reported in the media to track the UK's economic performance. APS outputs are used as part of the national accounts supply and use tables (SUT), an integral part of the measurement of GDP.

Accuracy and reliability

The total error in a survey estimate is the difference between the estimate derived from the data collected and the true (unknown) value for the population. Sampling error is the error that arises because the estimate is based on a survey rather than a census of the population. The results obtained for any single sample may vary from the true values for the population, but the variation would be expected to be zero on average over a number of repeats of the survey. Non-sampling errors cover all errors unrelated to sampling methodology. These can be difficult to quantify and relate to errors in coverage, measurement, processing and non-response.

Industry reclassification (a business moving from one Standard Industrial Classification (SIC) to another) can occur because of a relatively small change in the way the business operates but can have a significant effect on APS estimates. When a survey does not cover the whole business population, as with the APS (see Section 3.1 of our Technical report), reclassification can lead to units moving in and out of scope of the sample. We minimise this error by ensuring that the main respondents remain in the sample where possible. The correction of misclassified businesses can lead to bias, particularly when there is systematic movement from one industry to another. This is because, where classification updates are identified through survey returns, it is only units in the survey sample that are updated.

Data for the 2019 and 2020 reference periods has not been published because of quality concerns caused by the deprioritisation during the coronavirus (COVID-19) pandemic.

APS statistics are currently experimental (see our Guide to experimental statistics), as we work towards achieving National Statistics status.

Coherence and comparability

Coherence with the Annual Business Survey (ABS)

In the publication, figures from the APS are currently benchmarked to the ABS estimates (see our ABS Quality and Methodology Information (QMI)). Although the ABS does not specifically collect intermediate consumption, it does ask businesses for their total purchases and contains a number of questions that can be used to derive such an estimate.

The comparison with ABS also forms part of the validation process and ABS is used in imputation or construction of missing data. It is not expected that ABS and APS figures will be the same at the aggregate level, as there are notable differences between the surveys, such as:

- coverage (APS only covers the private sector)

- definitions (treatment of stocks, activity by overseas branches)

- methodology (APS uses employment as the auxiliary variable for calculating the calibration weights; the ABS uses turnover)

Further, the ABS has long and short versions of questionnaires. The short version only asks for totals, including the total purchases figure. The figures from the long version (mostly sent to the larger businesses) are used to derive intermediate consumption for those responding to the short version (mostly smaller businesses). APS asks the same "total intermediate consumption" question on all forms. The detailed methodology for the ABS is explained in our ABS technical report.

Coherence across time series

While estimates currently remain unpublished for the 2019 and 2020 reference periods, quality assurance of the 2020 data (now we have returns for 2021) is being undertaken with the aim of publishing if possible.

Accessibility and clarity

Our recommended format for accessible content is a combination of HTML web pages for narrative, charts and graphs, with data being provided in usable formats such as CSV and Excel file types. We also offer users the option to download the narrative in PDF format. In some instances, other software may be used or may be available on request.

For information regarding conditions of access to data, please refer to our Terms and conditions (for data on the website), Freedom of information (FOI), and our Accessibility statement.

Timeliness and punctuality

The time lag between collection and publication reflects the complexity of the survey and the detail of the published product-level estimates.

Publications are pre-announced on our Release calendar.

Concepts and definitions

The classifications used for the APS are harmonised with other government surveys. They include our UK Standard Industrial Classification and the Statistical Classification of Products by Activity (CPA) v2.1.

Why you can trust our data

The ONS is the UK's largest independent producer of statistics and its National Statistics Institute. We treat the data that we hold with respect, keeping it secure and confidential, and we use statistical methods that are professional, ethical, and transparent.

The APS data are currently experimental. We are working within the core principles of the Code of Practice for Statistics, with a view to achieving National Statistics status, as designated by the UK Statistics Authority in accordance with the Statistics and Registration Service Act 2007.

6 . Methods used to produce the Annual Purchases Survey (APS) data

How we collect the data

Data collection information, including more detailed discussion of the sampling method and coverage is included in our Technical report but, in summary, the APS sample frame is the Inter-Departmental Business Register (IDBR). The IDBR is used by government departments, including us at the Office for National Statistics (ONS), as the sampling frame for most business surveys.

The APS has a sample size of approximately 33,000 businesses across the UK. It has a stratified random sample design with strata defined by employment size band, industry and country. It does not cover businesses outside the "private sector", and it excludes parts of some industries.

Data are collected from businesses primarily through paper questionnaires. Questionnaires for year t are dispatched in February or March of year t plus one, with a deadline for receipt by the end of April or May.

When questionnaires are received, they are scanned and transferred to a data validation team for processing. Reminders are sent to businesses that do not respond.

How we process, analyse and validate the data

Our APS technical report includes a lot of detail on the processes carried out. Rather than duplicating the information held in the technical report in full, this section just gives a summary of that processing.

Once the data are collected, the ONS Surveys team initially analyses responses (through automated validation checks) and will contact businesses where substantial data changes are identified. The data at record level and aggregated, are then assessed by the Results and Processing team who conduct further validation checks. Respondents may receive further queries if changes are highlighted.

The following processes also occur.

Imputation

Automatic imputation using ratio of means imputation is used when unit non-response occurs in a business with employment greater than or equal to 250 employees.

Automatic imputation using component breakdown imputation is used when item non-response occurs in any businesses.

An "influential" responder (a business that is likely to make a significant contribution to the aggregate data) has its data manually constructed if it does not respond or if the data returned fails the validation rules. This construction is based on previously provided product breakdowns and alternative, broadly comparable, data sources such as the Annual Business Survey (ABS).

Estimation

Estimation is carried out using standard statistical techniques for stratified random sampling. Each sampled business is weighted by its design weight (a-weight) and a calibration factor, which is calculated using ratio estimation (g-weight).

Outliers

Businesses with atypical values compared with other businesses in their industry and employment size are treated as outliers, using a post-stratification method. Product values returned by businesses that are automatically identified as outliers have dampened weights, which means they represent less of the universe than they would originally. Businesses that are manually found as outliers are given a weight of one in estimation calculations -- that is, they represent only themselves.

How we disseminate and review the data

The APS data are published in our statistical bulletin, Energy, goods and services used by UK businesses.

Our Disclosure control procedures are implemented prior to publication and detailed in Section 7 of our Technical report.

Data for the current year (t) are used to inform and revise previous years, to ensure the quality of the time series. Revisions are most likely for the previous year (t minus one) but there may also be revisions to earlier years.

7 . Related links

Annual Purchases Survey: technical report
Methodology | Revised 8 August 2023
Detailed information about the methodological and technical procedures used to produce the Annual Purchases Survey (APS) estimates.

Development of the Annual Purchases Survey
Article | Released 15 December 2017
Article providing detail on the development and reinstatement of the UK Annual Purchases Survey, detailing goods and services used by businesses in the production process, otherwise referred to as intermediate consumption.

For further information, please contact the Annual Purchases Survey Team at abaps@ons.gov.uk.

8 . Cite this methodology

Office for National Statistics (ONS), released 8 August 2023, ONS website, methodology, Annual Purchases Survey Quality and Methodology Information (QMI)