

Article

# VAT turnover implementation into national accounts: December 2017 update

Provides information on the impact of using Value Added Tax returns within the UK National Accounts.

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# 1 . Executive summary

For the first time, Office for National Statistics (ONS) is using Value Added Tax turnover (VAT) data from 630,000 businesses within gross domestic product (GDP) estimates, published on 22 December 2017. This represents a significant advance in the transformation of UK National Accounts and short-term economic indicators.

New technology and methods have been developed, which allow us to use VAT turnover to supplement data from 45,000 businesses selected as part of our Monthly Business Survey (MBS). This will enable us to [Transform short-term turnover statistics: October 2017](#) by the end of 2020, cutting the survey burden on small- and medium-sized businesses while allowing us to deliver more detailed regional and industrial data.

This article presents the impact of using VAT turnover data to estimate [GDP in the Quarterly National Accounts \(QNA\)](#) published on 22 December 2017. Quarterly data from January 2016 to September 2017 are open to revision in the QNA release, VAT turnover are used for the period from January 2016 to June 2017 in the output approach to GDP (GDP(O)).

This article takes data published in the [Second estimate of GDP](#) on 23 November 2017 and adds the impact of incorporating VAT turnover into GDP(O), but does not consider the impact of any other data changes that would be routinely taken on in the QNA.

The revisions for GDP(O) have not been significant. For GDP(O), the introduction of VAT turnover data has caused an upward revision of 0.1 percentage points (to one decimal place) for periods Quarter 3 (July to Sept) 2016 and Quarter 1 (Jan to Mar) 2017. All other quarters have a revision of less than plus or minus 0.1 percentage points (to one decimal place). However, revisions have been broadly upward, driven by construction and service sector industries. Also provided is information on the background, challenges overcome and next steps.

A separate more detailed methodological paper will be released in early 2018.

## 2 . Background

An extensive development programme has been undertaken to use administrative data from Her Majesty's Revenue and Customs (HMRC) Value Added Tax (VAT) turnover data as a data source within the compilation of the output approach to gross domestic product (GDP(O)). The approach has been to use VAT turnover to supplement turnover estimates from the Monthly Business Survey (MBS).

Notable achievements of the work are detailed in this section.

We are now using VAT return data for 630,000 reporting units across the economy. This will supplement the information we currently receive from 8,200 questionnaires for small- and medium-sized businesses. This represents half of the MBS strata at which we select businesses for quality assurance, as explained in [VAT turnover implementation into National Accounts: November update](#). To achieve this, analysis of over 600 strata level series has been undertaken to understand features of both the Office for National Statistics (ONS) survey data in comparison with VAT turnover data.

More detailed industrial breakdown of the reporting units with comparable MBS questionnaires can be found in Table 1.

**Table 1: Detailed industry breakdown of Value Added Tax return information against Monthly Business Survey questionnaires**

	<b>MBS sample size in available strata</b>	<b>VAT records available</b>
Production	1,800	76,500
Construction	2,400	86,500
Services	4,000	470,000
Total	8,200	633,000

Source: Monthly Business Survey - Office for National Statistics, Value Added Tax - Her Majesty's Revenue and Customs

Work will be conducted throughout 2018 to undertake further analysis, which will allow an increase in the number of strata selected in the matrix. Table 2 shows the number of strata and industries where we use VAT data to measure the industry. This is broken down by production, services and construction sectors.

**Table 2: Amount of Value Added Tax turnover being used, broken down by sector**

	<b>Number of strata where VAT turnover will be used</b>	<b>Number of strata in scope</b>	<b>Number of UKSIC 2007 industries where VAT turnover will be used</b>	<b>Number of UK SIC 2007 industries in scope</b>
Production	138	240	64	80
Construction	25	56	9	14
Services	77	192	35	64
Total	240	488	108	158

Source: Office for National Statistics

Another notable achievement is the delivery of a new IT system using the latest technologies to process the dataset. This is a significant development, as traditional ONS systems would not be able to process and compute this large dataset in a monthly production round. This has led to a significant reduction in processing time, allowing more time for quality assurance and analysis.

We have developed methods at macro level, which take the advantages of both turnover datasets in the creation of a hybrid series as the indicator for an industry. These advantages are the timeliness and monthly path of the ONS survey data and the vastly increased number of companies from VAT turnover data for the small- and medium-sized businesses.

We have developed methods at a micro level to transform the dataset from an administrative dataset collected for HMRC, to a dataset which can now be directly compared with ONS short-term turnover surveys at the business unit level. These methods include:

- the ability to clean the micro level data
- the ability to match and link to the same sampling frame (Inter-Departmental Business Register) as ONS surveys; the method has achieved matching rates of greater than 99% for each month
- the ability to transform the quarterly and annual VAT returns to obtain the best monthly path as possible
- the ability to estimate for missing response; this could be due to under coverage of VAT within some industries and also due to missing data, mainly due to the various reporting staggers a business can return on

We have also developed an agreed business process from receipt of the dataset to publication within the UK National Accounts.

The functionality within the UK National Accounts processing system, to take on either VAT turnover or ONS turnover data, has allowed flexibility to gauge the impact of selections and prepare an approach that allows for further expansion.

### 3 . Impact analysis

Within the [UK Quarterly National Accounts: July to September 2017](#) release, the impact analysis considers how the Value Added Tax (VAT) data have changed the data from the [Second estimate of GDP: July to September 2017](#). This change of data source from the Monthly Business Survey (MBS) to VAT turnover has resulted in revisions across the period where VAT turnover is now being implemented (from January 2016 to June 2017).

Methods prior to January 2016 remain the same, where gross domestic product (output approach) (GDP(O)) data use MBS turnover data for quarterly movements but the data are constrained to supply and use totals annually. The latest period (July 2017 to October 2017) will also use the MBS due to its greater timeliness. The method as to how these data sources have been combined can be found within section 5 of the following article [VAT turnover implementation into National Accounts: November update](#).

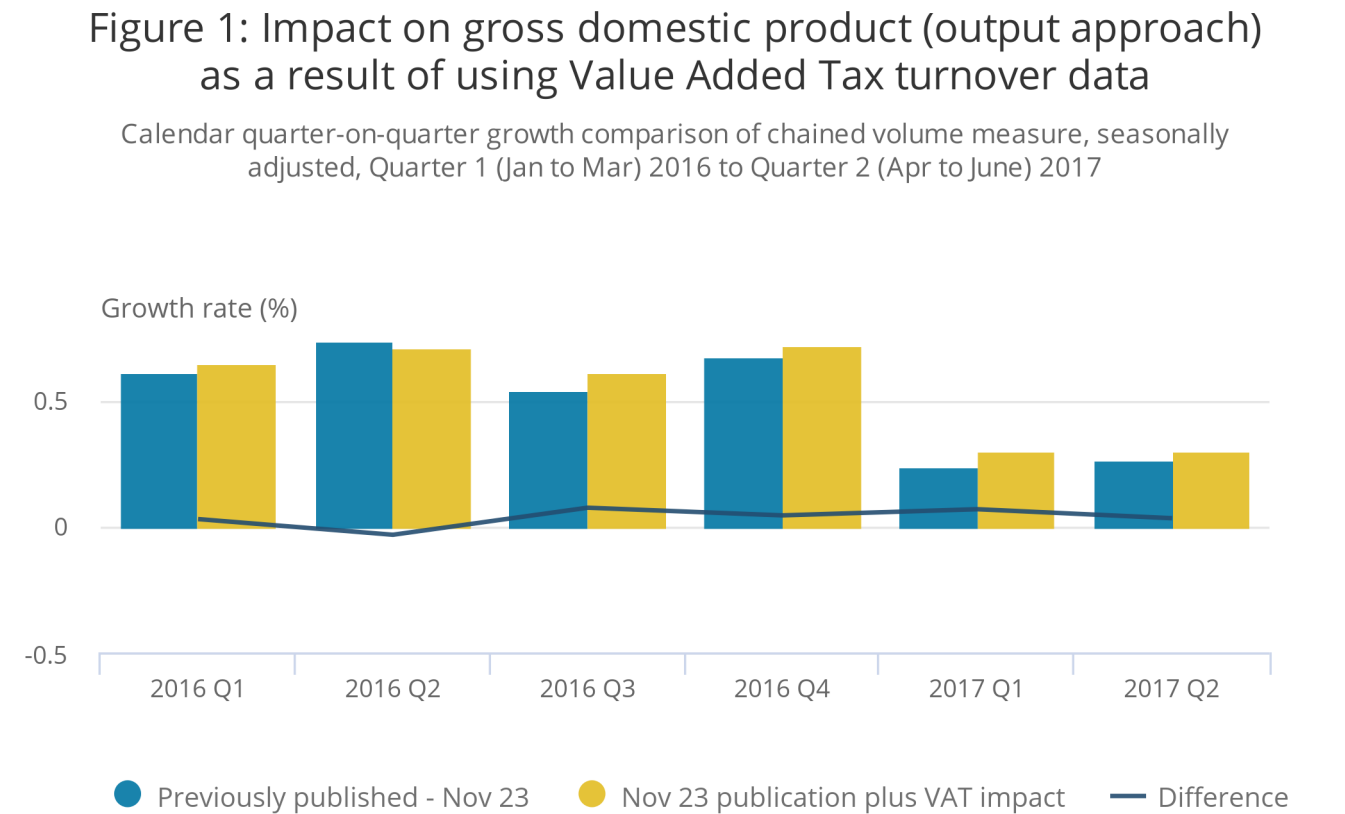
VAT turnover data have been used in specific industries for small- and medium-sized businesses. Detailed information on the industry and size selection can be found in the [VAT selection matrix](#).

Figures 1 to 5 show the impact of incorporating VAT turnover data for the first time. The left-hand bars in Figures 1 to 5 show the previously published data, as published in the [Second estimate of GDP: July to September 2017](#) on 23 November 2017. This was the last gross domestic product (GDP) publication to include MBS data as the sole data source as the measurement for economy of short-term turnover. The right-hand bars in Figures 1 to 5 illustrate the impact of solely introducing VAT compared with previously published data in the second estimate of GDP. The impact analysis has focused on the calendar quarter-on-quarter change in the chained volume measure, seasonally adjusted data. This has been broken down by sector and whole economy level.

In line with the usual UK National Accounts approach, the Quarterly National Accounts (QNA) will take on data from a range of additional sources that could lead to revisions. This article does not show the impact of these revisions.

**Figure 1: Impact on gross domestic product (output approach) as a result of using Value Added Tax turnover data**

Calendar quarter-on-quarter growth comparison of chained volume measure, seasonally adjusted, Quarter 1 (Jan to Mar) 2016 to Quarter 2 (Apr to June) 2017



**Source: Monthly Business Survey - Office for National Statistics Monthly Business Survey for Construction and Allied trades - Office for National Statistics VAT - Her Majesty's Revenue and Customs**

For the output approach to GDP (GDP(O)), the introduction of VAT turnover data has caused an upward revision of 0.1 percentage points (to one decimal place) for periods Quarter 3 (July to Sept) 2016 and Quarter 1 (Jan to Mar) 2017. All other quarters have a revision of less than plus or minus 0.1 percentage points (to one decimal place).

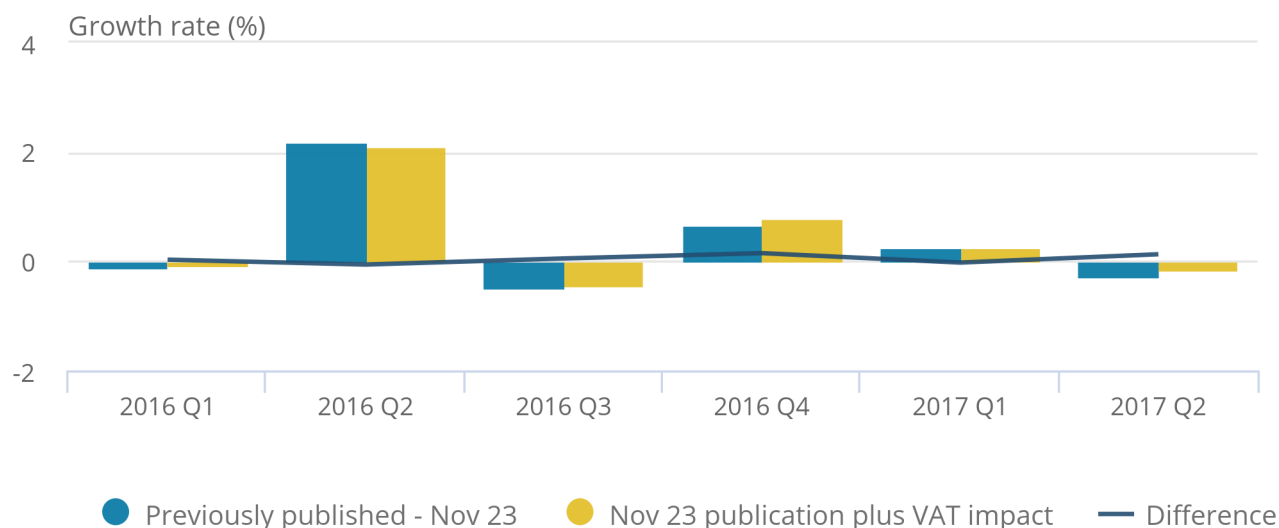
Revisions are small across the time series at the aggregate level, but significant improvements have been made at the lower industrial levels due to the usage of VAT turnover data. These changes in data source have removed volatility due to sample rotation and improved seasonal patterns. These are explained in further detail later in this article.

## Figure 2: Impact on Index of Production (IoP) as a result of using Value Added Tax turnover data

Calendar quarter-on-quarter growth comparison of chained volume measure, seasonally adjusted, Quarter 1 (Jan to Mar) 2016 to Quarter 2 (Apr to June) 2017

### Figure 2: Impact on Index of Production (IoP) as a result of using Value Added Tax turnover data

Calendar quarter-on-quarter growth comparison of chained volume measure, seasonally adjusted, Quarter 1 (Jan to Mar) 2016 to Quarter 2 (Apr to June) 2017



Source: Monthly Business Survey - Office for National Statistics VAT - Her Majesty's Revenue and Customs

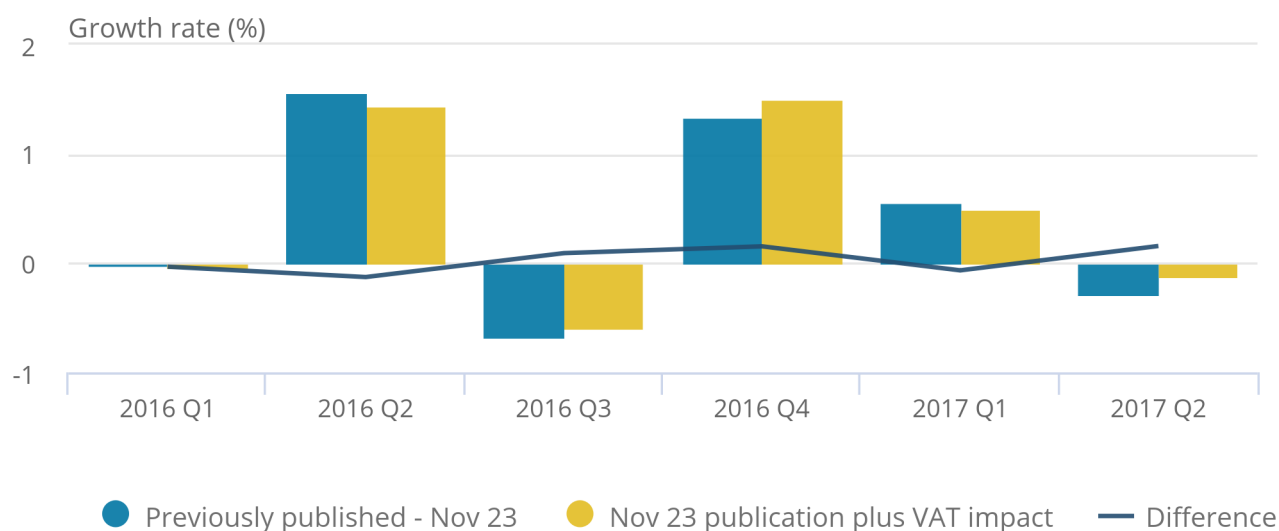
The introduction of VAT turnover data has had a small impact in revising the Index of Production (IoP) across the time series from Quarter 1 (Jan to Mar) 2016 to Quarter 2 (Apr to June) 2017. This is primarily down to strong positive revisions in the calendar quarter-on-quarter chained volume measure, seasonally adjusted (CVMSA) growth for Quarter 4 (Oct to Dec) 2016 and Quarter 2 (Apr to June) 2017, at 0.15 and 0.13 percentage points respectively. For both Quarter 4 (Oct to Dec) 2016 and Quarter 2 (Apr to June) 2017, this is driven by changes to UK Standard Industrial Classification 2007: SIC 2007 section C – Manufacturing.

**Figure 3: Impact on manufacturing as a result of using Value Added Tax turnover data**

Calendar quarter-on-quarter growth comparison of chained volume measure, seasonally adjusted

## Figure 3: Impact on manufacturing as a result of using Value Added Tax turnover data

Calendar quarter-on-quarter growth comparison of chained volume measure, seasonally adjusted



**Source: Monthly Business Survey - Office for National Statistics VAT - Her Majesty's Revenue and Customs**

The introduction of VAT turnover data has had a small impact in revising the manufacturing sector across the time series from Quarter 1 (Jan to Mar) 2016 to Quarter 2 (Apr to June) 2017. Like IoP, larger positive revisions in the calendar quarter-on-quarter CVMSA growth can be seen for periods Quarter 4 (Oct to Dec) 2016 and Quarter 2 (Apr to June) 2017, at 0.15 and 0.16 percentage points respectively.

For Quarter 4 (Oct to Dec) 2016, the sub-sections driving this impact are CM – Other manufacturing and repair, CE – Manufacture of chemicals and chemical products, and CH – Manufacture of basic metals and metal products.

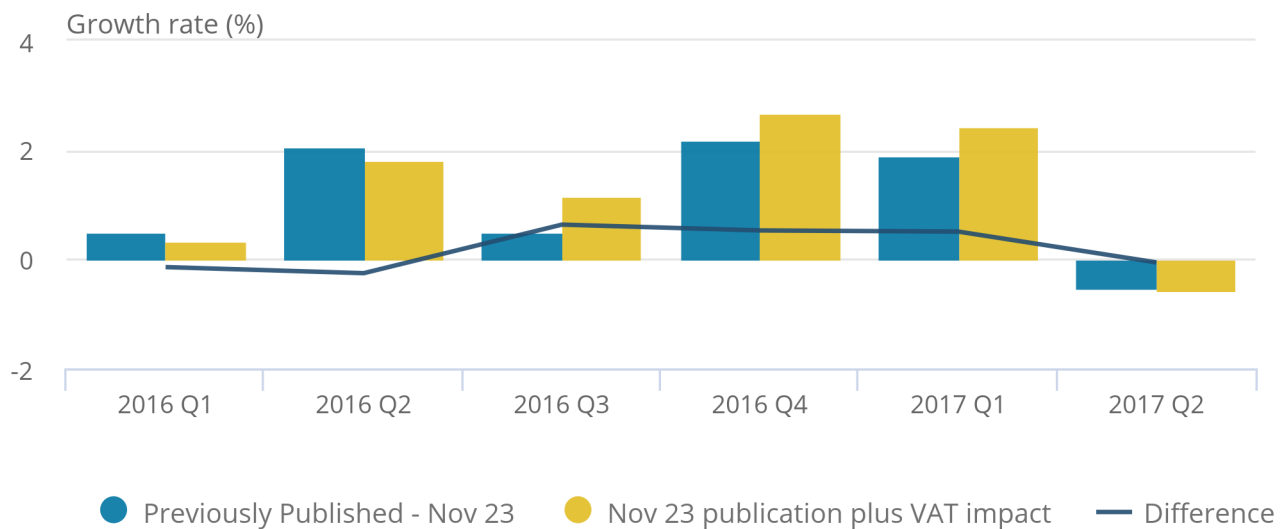
For Quarter 2 (Apr to June) 2017, the sub-sections driving this impact are CA – Manufacture of food products, beverages and tobacco, CM – Other manufacturing and repair, and CI – Manufacture of computer, electronic and optical products.

**Figure 4: Impact on construction output as a result of using Value Added Tax turnover data**

Calendar quarter-on-quarter growth comparison of chained volume measure, seasonally adjusted, Quarter 1 (Jan to Mar) 2016 to Quarter 2 (Apr to June) 2017

## Figure 4: Impact on construction output as a result of using Value Added Tax turnover data

Calendar quarter-on-quarter growth comparison of chained volume measure, seasonally adjusted, Quarter 1 (Jan to Mar) 2016 to Quarter 2 (Apr to June) 2017



Source: Monthly Business Survey - Office for National Statistics Monthly Business Survey for Construction and Allied trades - Office for National Statistics VAT - Her Majesty's Revenue and Customs

The introduction of VAT turnover data has had an impact of revising construction output across the time series from Quarter 1 (Jan to Mar) 2016 to Quarter 2 (Apr to June) 2017. Construction output has been revised down for the early part of 2016. This was followed by some larger upward revisions in the second half of 2016 and Quarter 1 (Jan to Mar) 2017. It is our expectation that this will reduce future revisions to output in the construction industry.

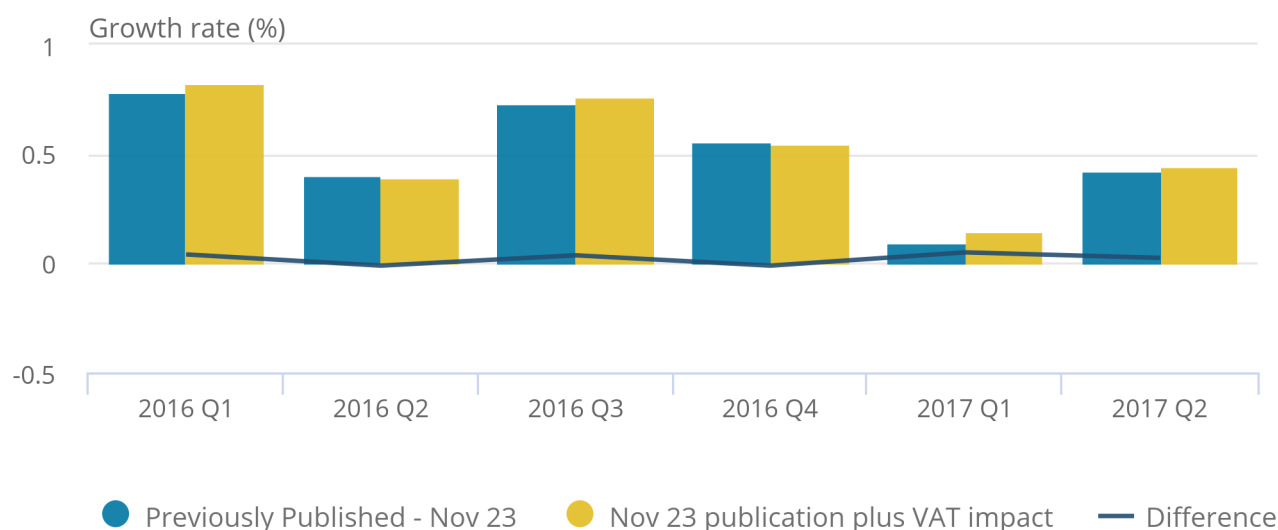


**Figure 5: Impact on Index of Services (IoS) as a result of using Value Added Tax turnover data**

Calendar quarter-on-quarter growth comparison of chained volume measure, seasonally adjusted, Quarter 1 (Jan to Mar) 2016 and Quarter 2 (Apr to June) 2017

## Figure 5: Impact on Index of Services (IoS) as a result of using Value Added Tax turnover data

Calendar quarter-on-quarter growth comparison of chained volume measure, seasonally adjusted, Quarter 1 (Jan to Mar) 2016 and Quarter 2 (Apr to June) 2017



Source: Monthly Business Survey - Office for National Statistics VAT - Her Majesty's Revenue and Customs

The introduction of VAT turnover data has had minimal impact in revising the Index of Services (IoS) across the time series from Quarter 1 (Jan to Mar) 2016 to Quarter 2 (Apr to June) 2017. There are no revisions to the calendar quarter-on-quarter CVMSA greater than plus or minus 0.05 percentage points.

## 4 . How have we selected VAT turnover data for use in specific industries?

The inclusion of Value Added Tax (VAT) turnover within the national accounts has been assessed against a variety of criteria to assess its suitability. The criteria have acted as a guide and have been viewed as a collective group, with no one element taking priority. This has allowed decisions to be made on selection for industries within the matrix by using as much of the information as is available.

One new feature of the project is the flexibility within our IT systems to be able to select either VAT turnover or Monthly Business Survey (MBS) turnover data to measure each particular stratum. This flexibility is a significant improvement that can reflect the strengths of each data source. For further information as to how strata are constructed on MBS, please see the [Quality and Methodology Information report](#). These criteria are detailed in this section.

This considers how the VAT turnover data correlate to current Office for National Statistics (ONS) short-term turnover surveys at MBS size band level. It is important to understand that a poor fit does not necessarily lead to exclusion; if we are confident that VAT estimates better reflect business turnover and the differences can be explained, then the VAT series have been selected for inclusion.

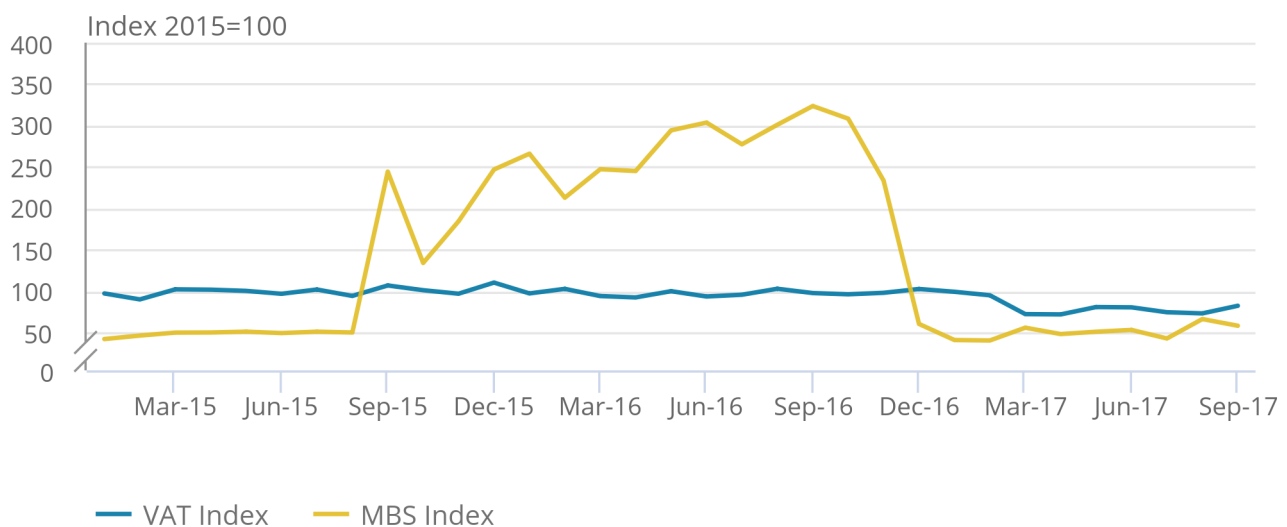
Much of the difference between the two data sources can often be due to random sampling in the MBS in comparison with the more comprehensive coverage provided by VAT returns. We have identified examples where estimates from the two sources at a detailed industry level can differ significantly, but the overall impact of these changes at an aggregated level have been muted as illustrated in the overall impact analysis.

**Figure 6: Comparison of Value Added Tax turnover compared with Monthly Business Survey turnover, January 2015 to September 2017**

**UK SIC 2007: 10.1 – Processing of meat and production of meat products, employment range 0 to 9, current price, non-seasonally adjusted**

Figure 6: Comparison of Value Added Tax turnover compared with Monthly Business Survey turnover, January 2015 to September 2017

UK SIC 2007: 10.1 – Processing of meat and production of meat products, employment range 0 to 9, current price, non-seasonally adjusted



**Source: Monthly Business Survey - Office for National Statistics VAT - Her Majesty's Revenue and Customs**

In Figure 6 the MBS data are more representative of the impact of sampling rotation than genuine activity levels within the industry, as a sample of 11 units each month is more volatile than the 571 VAT units that are available.

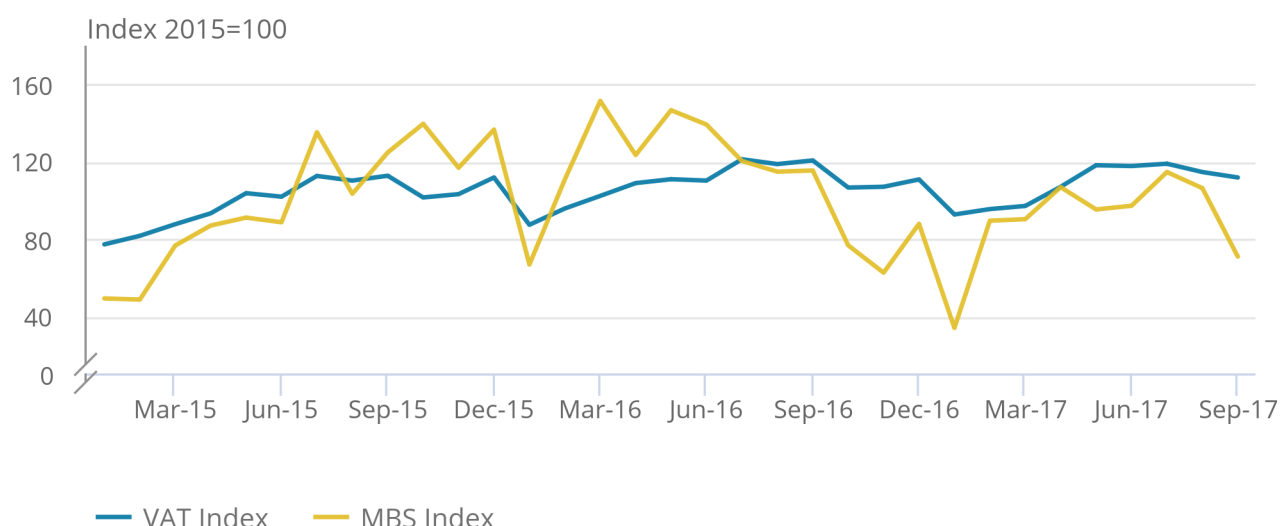
Another important feature of the use of VAT turnover data is the improvement in the seasonal pattern at the low level. The VAT data are less volatile and have a better seasonal path, as illustrated in Figure 7.

**Figure 7: Comparison of Value Added Tax turnover compared with Monthly Business Survey turnover, January 2015 to September 2017**

UK SIC 2007: 11.02 to 11.05 – Manufacture of wine, cider, beer and other non-distilled fermented beverages, employment range 0 to 9, current price, non-seasonally adjusted

Figure 7: Comparison of Value Added Tax turnover compared with Monthly Business Survey turnover, January 2015 to September 2017

UK SIC 2007: 11.02 to 11.05 – Manufacture of wine, cider, beer and other non-distilled fermented beverages, employment range 0 to 9, current price, non-seasonally adjusted



Source: Monthly Business Survey - Office for National Statistics VAT - Her Majesty's Revenue and Customs

## Impact

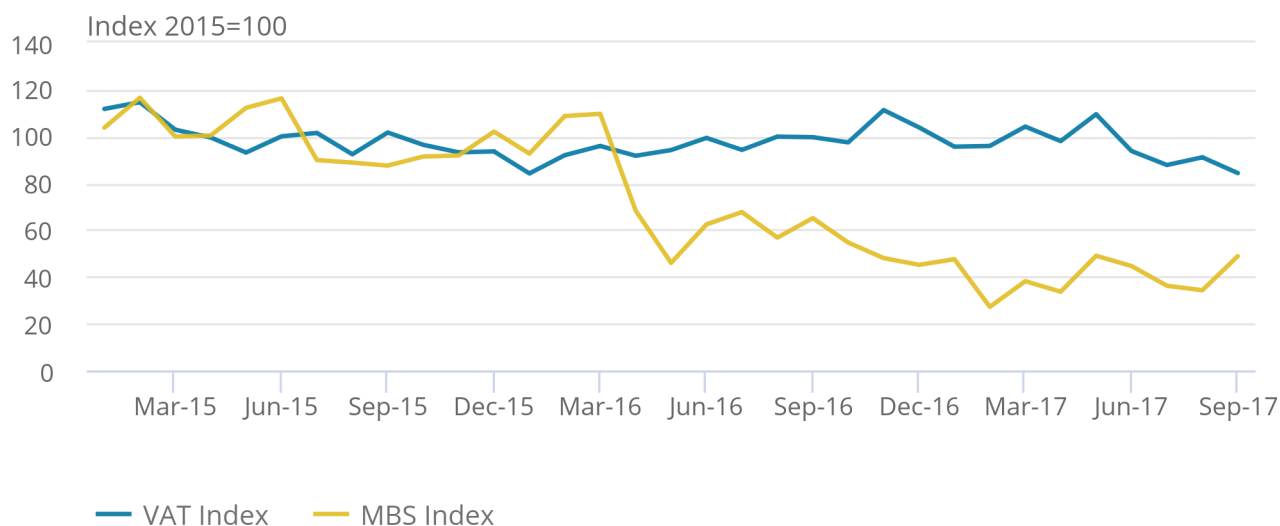
Where there has not been a suitable fit between MBS and VAT data we have considered the overall trend and behaviour of the two series. This criterion examines what impact is made by switching from MBS to VAT turnover as the data source for the stratum. A large impact does not necessarily mean we have not used the VAT turnover for the stratum. If, using expert knowledge of the industry, a valid reason can be found to include the stratum within the matrix, then VAT turnover has been selected. An example of a stratum providing a significant impact that has been selected in the matrix can be found in Figure 8:

**Figure 8: Comparison of Value Added Tax turnover compared with Monthly Business Survey turnover, January 2015 to September 2017**

UK SIC 2007: 32.9 – Manufacturing not elsewhere classified, employment range 0 to 4, current price, non-seasonally adjusted

**Figure 8: Comparison of Value Added Tax turnover compared with Monthly Business Survey turnover, January 2015 to September 2017**

UK SIC 2007: 32.9 – Manufacturing not elsewhere classified, employment range 0 to 4, current price, non-seasonally adjusted



Source: Monthly Business Survey - Office for National Statistics VAT - Her Majesty's Revenue and Customs

MBS has a sample of 40 businesses for this stratum, whereas we now have data for 3,180 units from the VAT dataset. Quality assurance confirmed that the number of businesses did not decline in this stratum and the trend over the period for other size bands within the industry was one of growth. The decline has been due to sample rotation where units with high turnover have been replaced with units with low turnover. Therefore, we have accepted that the VAT data are a better reflection of the stratum performance and have accepted the revisions that this series has provided.

## Revisions performance

Revisions analysis has been conducted to understand how the VAT data are revised over time. The VAT data are reasonably stable at five months from the reference period. This has led to the decision to use VAT turnover one quarter in arrears of the Quarterly National Accounts (QNA) publication. For example, in the QNA for July to September 2017, VAT data are used for the period January 2016 to June 2017. The MBS then provides the information for the latest quarter as it is timelier than the VAT data.

Further work will be conducted to assess how the combined VAT and MBS series performs over time. As we begin to use these data, we will also consider how the revisions from VAT turnover perform in comparison with when annual data are used for the first time, as part of the supply and use balancing process.

## Data journey processing statistics

As the VAT turnover data are processed, statistics on the various methodological steps that have been applied have been used to make decisions as to where VAT turnover can be used. This includes data on how much data has been cleaned, how much of the data has been apportioned and how much estimation has been applied.

### Micro data

Micro data analysis has been conducted for each stratum, comparing the turnover data for both VAT and MBS at the reporting unit level. This has demonstrated strong, positive correlations between the two series overall, providing reassurance that the data sources are well matched and VAT turnover can be used to supplement and enhance industry estimates. The analysis has shown that over 60% of strata have a correlation coefficient value greater than 0.7. Where differences have occurred, it has tended to be in the higher employment size band strata where apportionment can be more of a factor. This has led to fewer high employment strata (size band 3) being selected within the matrix.

Further work is required to understand these differences, including the impact of adopting different methodologies for apportioning turnover for businesses that have more than one economic activity.

### Large businesses within the MBS are fully enumerated

Large businesses are fully enumerated with returns available more quickly than the VAT data. We are also able to contact large businesses and gain insight surrounding data movements, which we are unable to do with VAT turnover, so there are clear advantages in retaining survey data for large businesses.

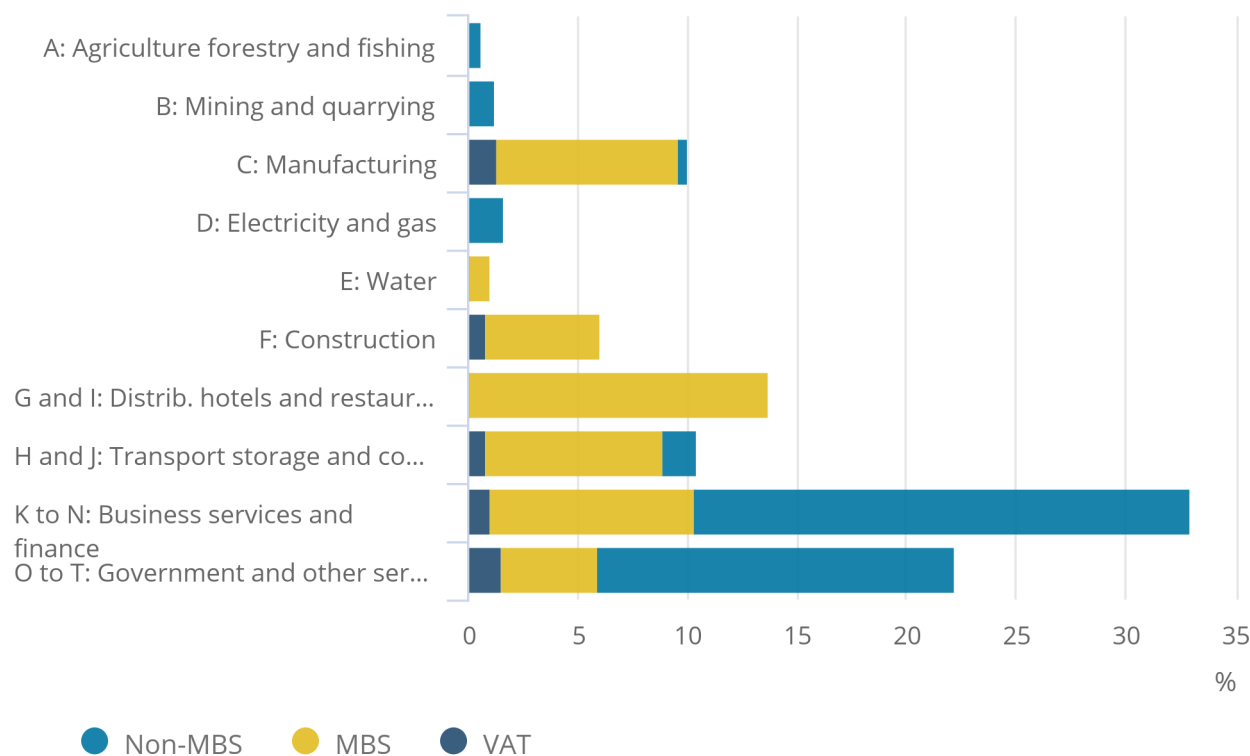
Moreover, the VAT turnover data can be negatively impacted by challenges surrounding apportionment. Other options for apportioning turnover data across complex corporate structures have yet to be explored. Consequently, we have decided to exclude large businesses and this has meant a significant amount of data are not in scope.

Prior to the implementation of VAT data, the MBS was used in 55% of the output approach to gross domestic product (GDP(O)) (by turnover). Removal of the fully enumerated strata from scope has meant we are left with approximately 20% of output gross value added (GVA).

Figure 9 illustrates by sector how much of the industry (by turnover) will now be measured by either; an MBS survey, VAT turnover data or a non-MBS data source. For the purposes of Figure 9, an MBS survey consists of the Monthly Business Survey (production and services), Monthly Business Survey (construction) or the Retail Sales Inquiry. For a full list of the data sources used in the compilation of GDP(O), please see the [GDP\(O\) source catalogue](#).

**Figure 9: Gross domestic product percentage contribution from UK SIC 2007 sectors, broken down by data sources, UK, GVA 2015 weights**

Figure 9: Gross domestic product percentage contribution from UK SIC 2007 sectors, broken down by data sources, UK, GVA 2015 weights



Source: GDP(O) data sources catalogue - Office for National Statistics Monthly Business Survey - Office for National Statistics

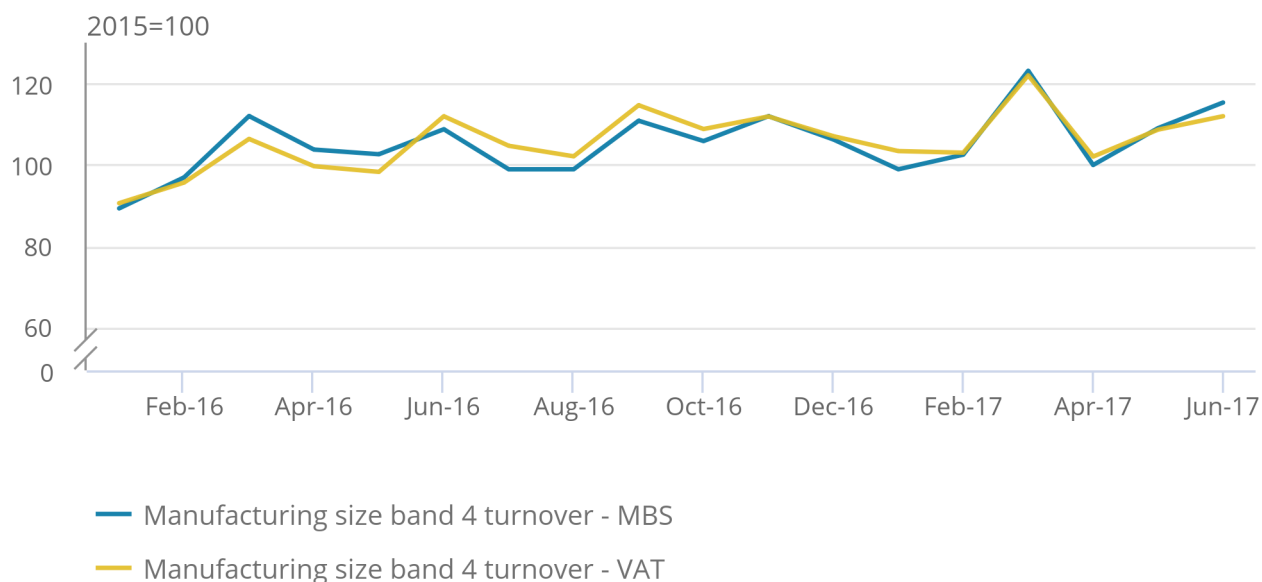
However, it should be noted that the fully enumerated element of the MBS and VAT are very highly correlated. This is a piece of analysis that has reassured us that what is being collected on the MBS is consistent with the figures returned by larger businesses. Figure 10 illustrates how all size band 4 businesses within UK Standard Industrial Classification 2007: SIC 2007 – Section C – Manufacturing compare. These businesses hold approximately 70% of the turnover within manufacturing.

**Figure 10: Comparison of Value Added Tax turnover compared with Monthly Business Survey turnover, all size band 4 turnover**

Current price, non-seasonally adjusted

**Figure 10: Comparison of Value Added Tax turnover compared with Monthly Business Survey turnover, all size band 4 turnover**

Current price, non-seasonally adjusted



Source: Monthly Business Survey - Office for National Statistics VAT - Her Majesty's Revenue and Customs

## **No industries selected for UK SIC 2007 – Section G – Wholesale and retail; repair of motor vehicles and motorcycles**

By the end of 2018, the first short-term economic indicator (Section G) will be fully transformed. UK SIC 2007 divisions 45 (motor trades) and 46 (wholesale) are currently included with the Index of Services but will join UK SIC 2007 division 47 (retail) in an expanded definition of retail output.

Given the potential for significant change to these industries over the next year, we have concluded that these will not be in scope for inclusion in the VAT selection prior to transformation, minimising the potential impact of revisions.

The difference in turnover definition as collected on the retail sales inquiry (retail turnover) in comparison to what is collected on a VAT return (total value of sales and all other outputs excluding any VAT) is another reason to exclude these industries at this stage of the project. The article [Transforming short-term statistics: October 2017](#) explains this work in more detail.

For those interested in more detailed supporting information, we will publish a methodological report in early 2018. This will cover additional topics such as:

- background and history as to the use of VAT turnover data within the national accounts
- an overview of the ONS surveys that collect monthly turnover data
- international comparisons in the use of VAT turnover data
- detailed VAT turnover micro and macro processing methods
- detailed ONS turnover sample counts with VAT comparisons

For further information on this project, please see the following articles:

[Feasibility study into the use of HMRC turnover data within Short-term Output Indicators and National Accounts](#) (14 August 2015)

[Exploitation of HMRC VAT data](#) (7 October 2015)

[HMRC VAT update December 2015](#) (21 December 2015)

[HMRC VAT update April 2016](#) (4 April 2016)

[VAT update July 2016](#) (12 July 2016)

[VAT turnover, initial research analysis, UK: January 2014 to March 2016](#) (6 October 2016)

[VAT turnover, research analysis, UK: January 2014 to March 2016](#) (2 February 2017)

[VAT turnover implementation into National Accounts: June update](#) (1 June 2017)

[VAT turnover implementation into National Accounts: November update](#) (20 November 2017)

## **5 . Timetable for future inclusion of VAT turnover data within the national accounts**

Value Added Tax (VAT) turnover data will be used in the UK National Accounts and Table 3 outlines when VAT will be used up to and including June 2018.



**Table 3: Planned revisions for the monthly gross domestic product (GDP) cycle, commencing with the Quarterly National Accounts, Quarter 3 (July to September) 2017**

Month of publication	First period being revised	GDP publication	VAT data taken on	VAT periods open for revision	VAT periods taken on for first time
Dec-17	Q1 (Jan to Mar) 2016	Quarterly national accounts estimate Q3 (July to Sept) 2017	Yes	2016Q1 - 2017Q2	2016Q1 - 2017Q2
Jan-18	Q4 (Oct to Dec) 2017	Preliminary estimate of GDP Q4 (Oct to Dec) 2017	No	N/A	N/A
Feb-18	Q1 (Jan to Mar) 2017	Second estimate of GDP Q4 (Oct to Dec) 2017	No	N/A	N/A
Mar-18	Q1 (Jan to Mar) 2017	Quarterly national accounts estimate Q4 (Oct to Dec) 2017	Yes	2017Q1 - 2017Q3	2017Q3
Apr-18	Q1 (Jan to Mar) 2018	Preliminary estimate of GDP Q1 (Jan to Mar) 2018	No	N/A	N/A
May-18	Q1 (Jan to Mar) 2018	Second estimate of GDP Q1 (Jan to Mar) 2018	No	N/A	N/A
Jun-18	Fully open for revision	Quarterly national accounts estimate Q1 (Jan to Mar) 2018	Yes	2016Q1 - 2017Q4	2017Q4

Source: Office for National Statistics

## 6 . Next steps

Whilst 22 December 2017 represents a significant milestone in the use of administrative data to supplement Office for National Statistics (ONS) survey data across economic statistics, further work is planned to investigate the full potential of the Value Added Tax (VAT) turnover dataset. These include:

- the use of VAT turnover data in the transformation of short-term turnover surveys within ONS; for more details please see [Transforming short-term statistics: October 2017](#)
- expanding the VAT selection matrix to include more industries and more employment size bands; this will be re-examined alongside the Blue Book process for 2018
- expanding selections to include industries that are not currently collected via a monthly business survey
- continual improvements to the current micro and macro processing VAT methods

A detailed Quality and Methodology Information report will also be published for VAT turnover. This will be published in the first half of 2018.

## 7 . Authors

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