

Article

GDP revisions in Blue Book: 2022

Revisions to UK National Accounts estimates introduced in Blue Book 2022.

Contact:
Sumit Dey-Chowdhury and
Andrew Walton
gdp@ons.gov.uk
+44 20 7592 8622

Release date:
3 May 2023

Next release:
To be announced

Table of contents

1. [Main points](#)
2. [Overview of revisions](#)
3. [Revisions in Blue Book 2022](#)
4. [Glossary](#)
5. [Data sources and quality](#)
6. [Related links](#)
7. [Cite this article](#)

1 . Main points

- Revisions to estimates of gross domestic product (GDP) published in the annual Blue Book 2022 are broadly in line with recent historical Blue Book revisions; there was a mean absolute revision (MAR) of 0.14 percentage points in Blue Book 2022.
- Initial revisions to GDP estimates at the t plus three month horizon are not statistically significant, but those revisions that tend to reflect the supply and use tables (SUTs) balancing process (t plus 36 months) are now marginally [statistically significant](#) for the entire time period.
- Over the period Quarter 1 (Jan to Mar) 1990 to Quarter 4 (Oct to Dec) 2019, there is more volatility in the revisions performance if the first estimate shows a contraction in the economy.

2 . Overview of revisions

There is a trade-off between the timeliness and accuracy of estimates of gross domestic product (GDP). As additional information becomes available, we have a more complete picture of economic activity in that period. This production cycle can take up to three years and leads to revisions in our estimates of GDP. The annual Blue Book process is also when major methodological improvements are introduced in a consistent and co-ordinated way.

To assess revision performance of our GDP estimates, we can estimate:

- the mean revision (MR), which shows whether there is a systematic tendency for initial estimates to be revised upwards or downwards
- the mean absolute revision (MAR), which measures the absolute size of revisions so that upward revisions are not offset by downward revisions of the same magnitude
- the mean square revision (MSR), which incorporates the degree of bias and the variance of the revision, as large revisions are treated more seriously than small revisions

This article analyses the revisions that were published in our [October 2022 Blue Book publication](#).

3 . Revisions in Blue Book 2022

Figure 1 shows the revisions to volume estimates of the quarterly change in gross domestic product (GDP) as part of implementing our Annual National Accounts, or "Blue Book". In Blue Book 2022, there was a mean revision of 0.00 percentage points to our estimates of the quarterly change in GDP over the period Quarter 1 (Jan to Mar) 1997 to Quarter 2 (Apr to June) 2022, and a mean absolute revision (MAR) of 0.14 percentage points.

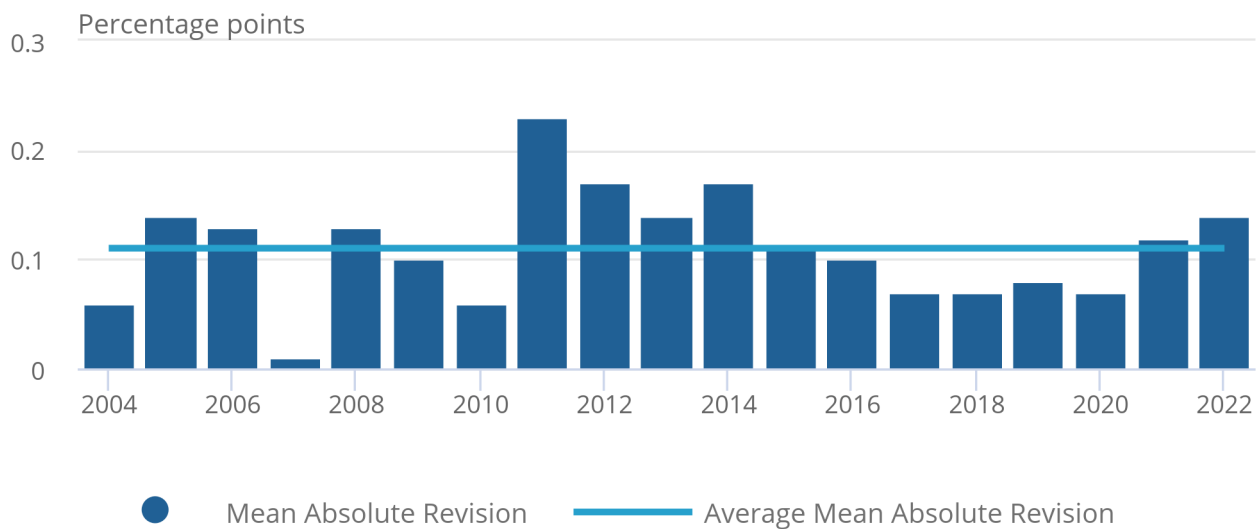
These Blue Book revisions would typically be an appropriate proxy of the impact of methodological improvements in the UK National Accounts, though it will always capture those revisions that reflect higher data content. In Blue Book 2022, this included the anticipated larger revisions that took place through 2020 and 2021. These revisions were caused by higher levels of uncertainty because of the coronavirus (COVID-19) pandemic. These revisions were also larger given the size of the change in GDP, reflecting the public health response at the time.

Figure 1: Revisions to quarterly volume GDP in Blue Book 2022 were broadly in line with recent historical revisions

Mean absolute revision to quarterly volume GDP, Quarter 1 1997 to latest quarter at time of each Blue Book, Blue Book 2004 to Blue Book 2022, UK

Figure 1: Revisions to quarterly volume GDP in Blue Book 2022 were broadly in line with recent historical revisions

Mean absolute revision to quarterly volume GDP, Quarter 1 1997 to latest quarter at time of each Blue Book, Blue Book 2004 to Blue Book 2022, UK



Source: Office for National Statistics

Notes:

1. The revisions in each Blue Book relate to the period from Quarter 1 1997 to the latest quarter available in that publication. For example, the Blue Book 2022 revisions reflect those between the August 2022 and September 2022 vintages of quarterly estimates of volume GDP – this includes up to Quarter 2 2022.
2. The x-axis refers to that Blue Book publication, reflecting the MAR to quarterly volume estimates of GDP from Quarter 1 1997 onwards.

Table 1 shows that there is a zero mean revision (MR) at t plus three months over the period Quarter 1 1961 to Quarter 4 (Oct to Dec) 2019, implying that there is no tendency for the first estimate to be revised up or down. That said, the revisions performance has not been constant over time, where revisions have tended to be larger in earlier periods and around turning points in the economy where uncertainty is likely to be more pronounced. Table 1 shows that the MR is a little higher when comparing the first published quarterly estimate with the estimate published three years later.

Figure 2 shows that the MAR is larger at the 36-month horizon for each of the last six decades. As additional information becomes available, the revision increases between t plus three months and t plus 36 months. However, the MAR is less in recent periods, including a reduction between these MAR revisions as later data are incorporated. It is likely that these revisions reflect the [impact of balancing](#) our full range of information in a supply and use table (SUT) framework for the first time and methodological improvements, which cannot be anticipated at the time of the first estimate.

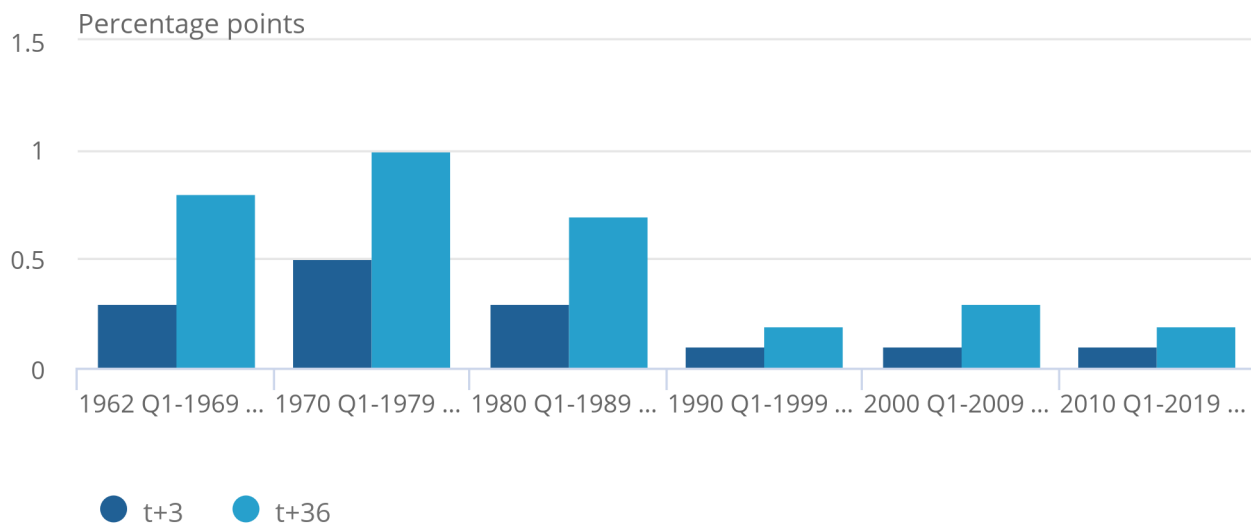
Figure 2 shows that the quality of early quarterly estimates has improved over time. There have been improvements to the measurement of GDP as well as a lower degree of volatility in the UK economy. The period excludes the coronavirus experience for 2020 and 2021, as we do not have fully mature estimates yet. As a result, this is still subject to further revisions once we obtain more detailed annual information. We will cover this in future updates.

Figure 2: The quality of early quarterly estimates of GDP has improved over time

Mean absolute revision, Quarter 2 (Apr to June) 1961 to Quarter 4 (Oct to Dec) 1969, to Quarter 1 (Jan to Mar) 2010 to Quarter 4 (Oct to Dec) 2018, UK

Figure 2: The quality of early quarterly estimates of GDP has improved over time

Mean absolute revision, Quarter 2 (Apr to June) 1961 to Quarter 4 (Oct to Dec) 1969, to Quarter 1 (Jan to Mar) 2010 to Quarter 4 (Oct to Dec) 2018, UK



Source: Office for National Statistics

Analysing how the first estimates of GDP have been revised for each of the quarters over the 30-year period 1990 to 2019 provides some insight into the extent to which revisions are cyclical, as it shows the size and direction of the first estimate of GDP and its revisions. We find that there is more volatility in the revisions performance if the first estimate shows a contraction in the economy, even if the mean revision is the same.

Table 1 shows that our latest findings indicate that while initial revisions (t plus three months) are not statistically significant, those revisions that tend to reflect the SUTs balancing process (t plus 36 months) are now marginally statistically significant for the entire time period.

Table 1: There is some evidence that revisions are marginally statistically significant when looking at the final estimate
Revision information and t-test for statistical significance for quarterly GDP growth, UK, Quarter 2 1961 to Quarter 4 2019

| Timespan | T + 3 | | | | T + 36 | | | |
|----------------------|--------------------|--------------------------------|-----------|----------------------------|--------------------|--------------------------------|-----------|----------------------------|
| | Mean Revision (pp) | Absolute Average Revision (pp) | T Score 2 | Statistically Significant? | Mean Revision (pp) | Absolute Average Revision (pp) | T Score 2 | Statistically Significant? |
| 1961 Q2 to 2019 Q4 1 | 0.03 | 0.23 | 1.51 | No | 0.12 | 0.53 | 2.28 | Yes |
| 1961 Q2 to 1969 Q4 1 | | | | | 0.03 | 0.23 | 1.51 | No |
| 1970 Q1 to 1979 Q4 1 | | | | | 0.28 | 1.04 | 1.31 | No |
| 1980 Q1 to 1989 Q4 | 0.10 | 0.34 | 1.56 | No | 0.20 | 0.72 | 1.35 | No |
| 1990 Q1 to 1999 Q4 | 0.01 | 0.12 | 0.37 | No | 0.10 | 0.22 | 2.57 | Yes |
| 2000 Q1 to 2009 Q4 | 0.00 | 0.12 | 0.18 | No | 0.00 | 0.27 | -0.03 | No |
| 2010 Q1 to 2019 Q4 | 0.02 | 0.06 | 1.40 | No | 0.07 | 0.16 | 1.80 | No |

Source: Office for National Statistics

Notes

1. Because of the compilation process at the time, t plus three months has no revisions pre-1980.
2. Two tailed standard significance test at 95% confidence interval.

This is the first opportunity we have had to look at the revision performance over the entire 2010s period. We look at the pattern of revisions over this 10-year period from Quarter 1 2010 to Quarter 4 2019 to provide more insight into our understanding of the first estimate of GDP. Figure 3 shows that there is not a consistent profile to these revisions. That is, there is a mean revision of 0.07 percentage points over this 10-year period, but this revision is not experienced in every quarter. There is some indication that these revisions were larger at the more volatile periods over this decade, particularly over Quarter 3 (July to Sept) 2011 to Quarter 1 2013.

Our [Economic review: Apr 2017 article](#) explains that revisions were relatively larger around the time of the global financial crisis. Early estimates of GDP through 2008 and 2009 tended to be revised down, as additional survey information picked up the larger fall in economic activity. However, the extent of the recovery in the early 2010s tended to be underestimated at first, reflected in upward revisions, as shown in Figure 3.

Revisions were also more pronounced in 2019. The within-year profile of GDP was particularly volatile, which reflected the cliff-edges in Brexit timings. Our [Quarterly economic commentary: October to December 2019 article](#) shows that there is some evidence that this uncertainty led to displacement effects in GDP over the course of that year. The displacement led to more irregular movements in GDP, particularly around stockpiling and trade flows. Revisions can be more pronounced if there are volatile movements in GDP, as this tends to be associated with inherently more uncertainty.

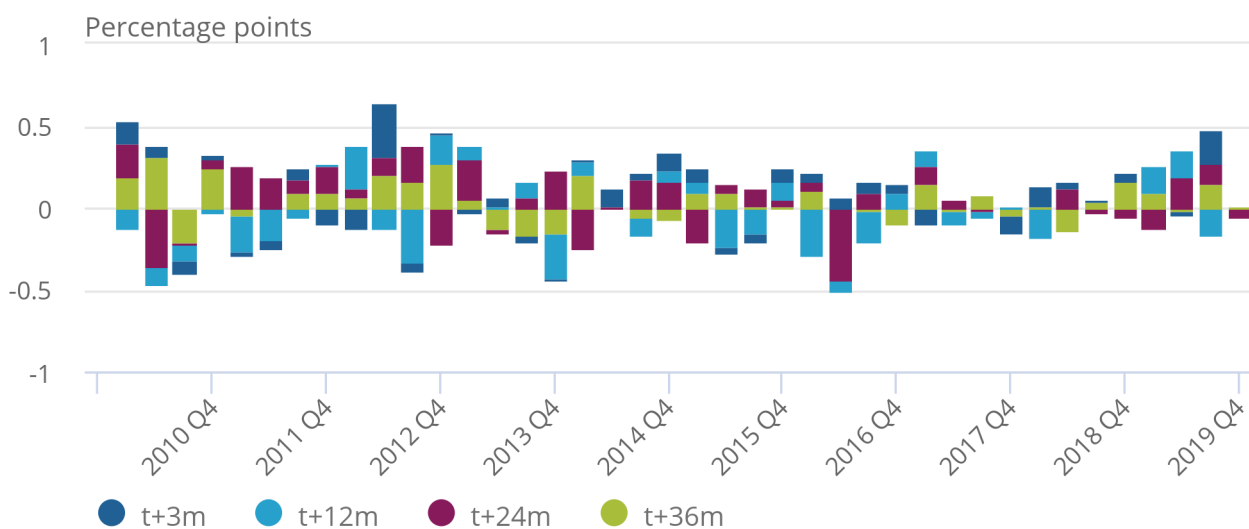
Figure 3 shows that there is no particular point in the three-year production cycle after the first estimate which explains when these revisions came into effect. The revisions tend to be smaller in early estimates of GDP. For example, there is only a mean revision of 0.02 percentage points between the first estimate and the one published three months later. This is then offset by the revisions that take place between t plus three months and t plus 12 months. The upward revisions are a little more pronounced at the two-year and three-year stages, which points to the effects of incorporating more complete data content from our comprehensive annual surveys and how we then reconcile this in our annual SUT framework.

Figure 3: The upward revisions are a little more pronounced at the two-year and three-year stages

Revisions to first quarterly estimate of GDP, Quarter 1 2010 to Quarter 4 2019, UK

Figure 3: The upward revisions are a little more pronounced at the two-year and three-year stages

Revisions to first quarterly estimate of GDP, Quarter 1 2010 to Quarter 4 2019, UK



Source: Office for National Statistics

Given the impact of the pandemic on the economy, we became more explicit in [communicating uncertainty](#) in our early estimates of GDP through 2020 and 2021. For a full explanation, see our [Communicating GDP article](#). We have not been able to include the full effects of the pandemic in our revision analysis in this article, as we do not yet have "final" quarterly estimates of volume GDP.

4 . Glossary

Gross domestic product (GDP)

A measure of the economic activity produced by a country. There are three approaches used to measure GDP:

- the output approach
- the expenditure approach
- the income approach

A more detailed [glossary](#) is available.

5 . Data sources and quality

More information about the strengths and limitations of national accounts data used in the Blue Book can be found in our [GDP Quality and Methodology Information (QMI)](.

6 . Related links

[UK National Accounts, The Blue Book: 2022](#)

Compendium | Released 31 October 2022

National accounts statistics including national and sector accounts, industrial analyses, and environmental accounts.

7 . Cite this article

Office for National Statistics (ONS), released 3 May 2023, ONS website, article, [GDP revisions in Blue Book: 2022](#)