

Article

GDP revisions in Blue Book: 2021

Revisions to UK National Accounts estimates introduced in Blue Book 2021

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1 . Main points

- Revisions to estimates of gross domestic product (GDP) published in the annual Blue Book 2021 are in line with recent historical Blue Book revisions - there was a mean absolute revision (MAR) of 0.12 percentage points in Blue Book 2021.
- Heightened levels of uncertainty have led to higher data revisions in 2020 - revisions have ranged from negative 0.9 to positive 1.9 percentage points for these quarters, although the size of the quarterly movements needs to be considered.
- The G7 countries have tended to revise up their first estimates of GDP over the course of the coronavirus (COVID-19) pandemic, where comparisons of revisions in part reflect measurement challenges and the revisions policies of countries.

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 Blue Book 2021 publication](#). It then looks at the international experience of GDP revisions over the course of 2020 and 2021.

3 . Revisions in Blue Book 2021

Figure 1 shows the revisions to volume estimates of quarterly gross domestic product (GDP) in recent Blue Books. We look at the revisions to quarterly GDP between the two relevant vintages, picking up the impact of that Blue Book.

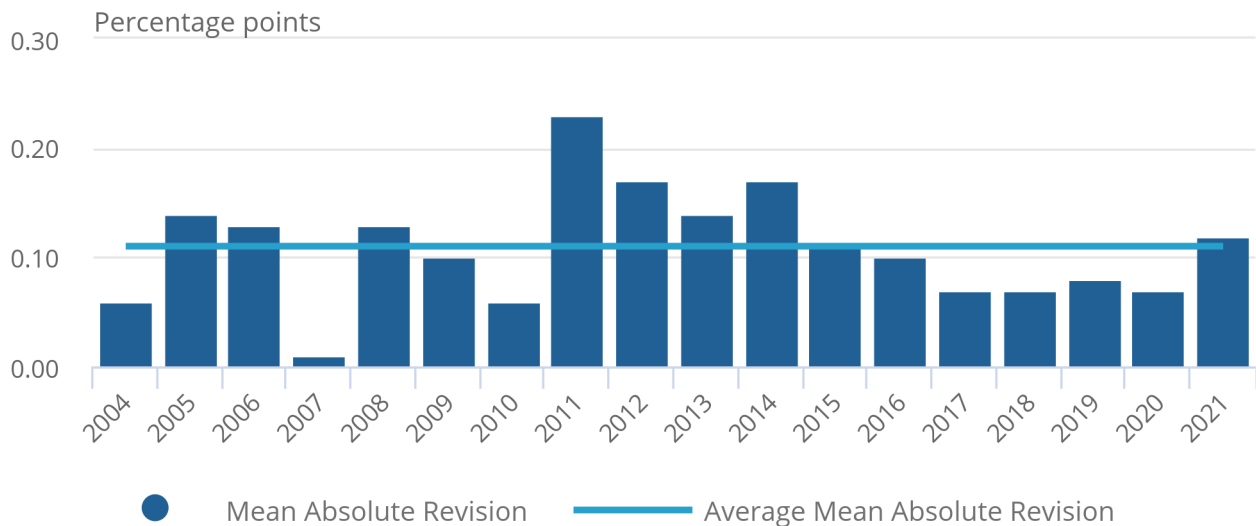
For example, the latest Blue Book revisions for 2021 reflect those between the August 2021 and September 2021 vintages. There was a mean absolute revision (MAR) of 0.12 percentage points in Blue Book 2021, in line with the average revision of Blue Books published since 2004.

Figure 1: Revisions to quarterly volume GDP in Blue Book 2021 were in line with recent historical revisions

Mean absolute revision to quarterly volume GDP, Blue Book 2004 to Blue Book 2021, UK

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Mean absolute revision to quarterly volume GDP, Blue Book 2004 to Blue Book 2021, 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 2021 revisions reflect those between the August 2021 and September 2021 vintages of quarterly estimates of volume GDP – this includes up to Quarter 2 2021.
2. The x-axis refers to that Blue Book publication, reflecting the MAR to quarterly volume estimates of GDP from Quarter 1 1997 onwards.

There is a zero mean revision (MR) at T+3 months, implying that there is no tendency for the first quarterly estimate to be revised up or down. The MR is a little higher when comparing the first published quarterly estimate with the estimate published three years later. However, the initial revisions (T+3 months) and those that tend to reflect the incorporation of annual benchmarks and balancing in a supply and use tables (SUTs) framework are not [statistically significant](#) (Table 1).

The MR is largely similar for a range of more mature estimates, although there is a more marked increase in the MAR in later vintages. This likely reflects the [impact of balancing](#) our full range of information in a (SUTs) framework for the first time and methodological improvements, which cannot be anticipated at the time of the first estimate.

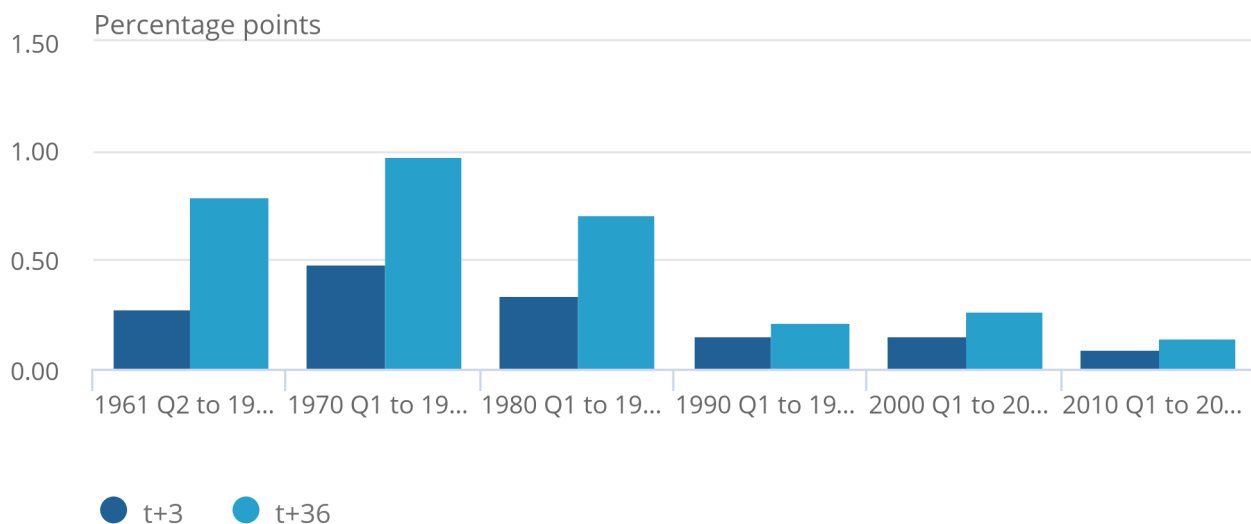
Figure 2 shows that the quality of early quarterly estimates has improved over time, which likely reflects cyclical and structural factors. There have been improvements to the measurement of GDP as well as a lower degree of volatility in the UK economy. The period excludes the coronavirus (COVID-19) experience for 2020 and 2021 as we do not have fully mature estimates yet and so this is still subject to further revisions once we obtain more detailed annual data. We will cover this in future updates.

Figure 2: The quality of early quarterly estimates of GDP growth 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 growth 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

Notes:

1. These revisions refer to those between the first estimates and those published 3 months and 36 months (or 3 years) later respectively.
2. Revisions to quarterly estimates of volume GDP only cover up to Quarter 4 2018 as T+36 months estimates are not available for more recent periods, including that covering the pandemic.

Table 1: Revisions for the most recent years remain statistically insignificant
Revision information and T-Test for statistical significance for quarterly GDP growth

Timespan	T + 3 months				T + 24 months				T + 36 months			
	Mean Revision (pp)	Absolute Average Revision (pp)	T Score 2	Statistically Significant?	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 2018 Q4 1	0.01	0.08	1.3865	No	0.04	0.49	0.8805	No	0.10	0.52	1.90	No
1961 Q2 to 1969 Q4 1					-0.01	0.69	-0.0606	No	0.06	0.79	0.38	No
1970 Q1 to 1979 Q4 1					0.08	0.91	0.4800	No	0.20	0.98	0.90	No
1980 Q1 to 1989 Q4	0.10	0.34	1.3791	No	0.09	0.80	0.5539	No	0.18	0.71	1.27	No
1990 Q1 to 1999 Q4	0.02	0.15	0.4767	No	0.06	0.18	1.7550	No	0.10	0.22	2.51	No
2000 Q1 to 2009 Q4	0.01	0.15	0.0659	No	0.01	0.23	0.1981	No	0.00	0.27	-0.01	No
2010 Q1 to 2018 Q4	0.02	0.07	1.2371	No	0.01	0.14	0.2192	No	0.06	0.14	1.90	No

Source: Office for National Statistics

Notes

1. Because of the compilation process at the time, T+3 months has no revisions pre-1980.
2. Two tailed standard significance test at 95% confidence interval.

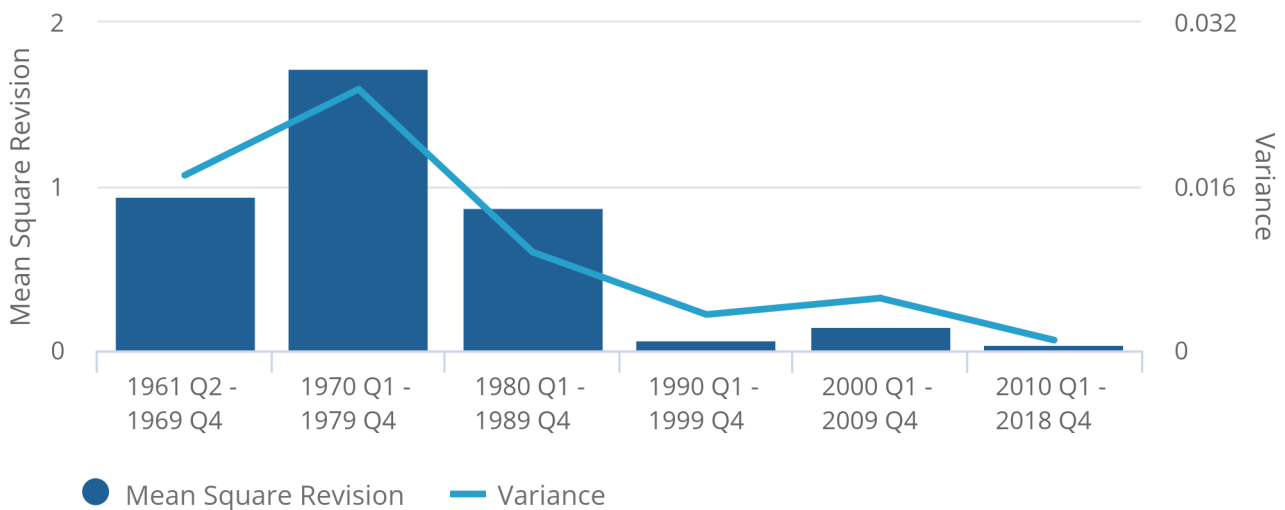
Figure 3 shows that the earlier periods were inherently more volatile for the UK economy relative to the most recent periods, which has also coincided with there being lower revisions of late.

Figure 3: There have been lower revisions to GDP growth between 1980 and 2018, likely because of reduced economic volatility and improvements in recording the GDP estimate

Mean square revision, Quarter 2 (Apr to June) 1961 to Quarter 4 (Oct to Dec) 2018, UK

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Mean square revision, Quarter 2 (Apr to June) 1961 to Quarter 4 (Oct to Dec) 2018, UK



Source: Office for National Statistics

Notes:

1. The MSR refers to the revision between the vintages T and T+36 months, while the variance refers to the vintage T+36.
2. The T+36 vintage will not include any periods during the pandemic at this stage so we can expect the latest period to show slightly larger mean.

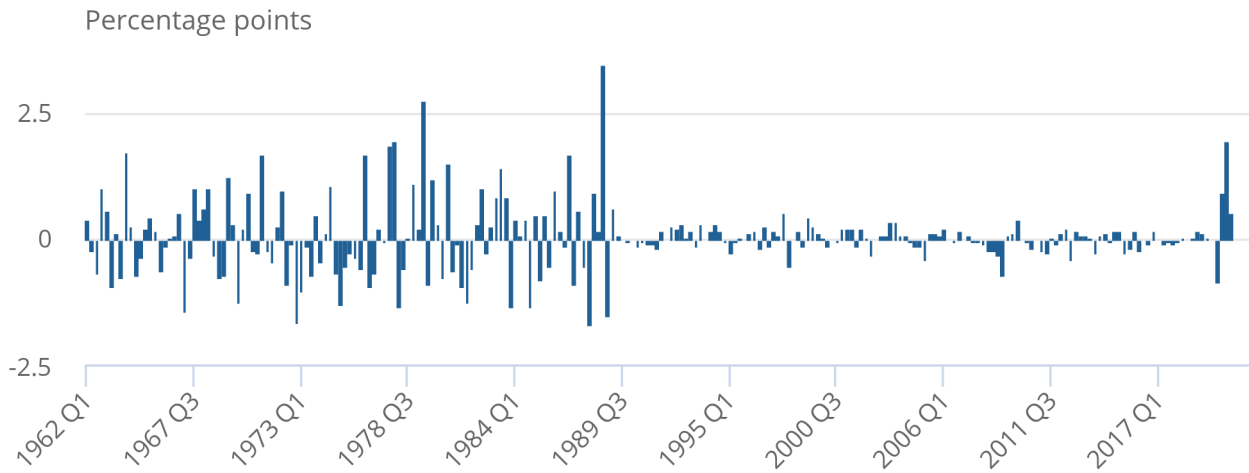
We have not been able to include the effects of the pandemic on these revisions, as we do not yet have "final" quarterly estimates of volume GDP between 2020 and 2021 - we take this to be the one published three years after the first quarterly estimate. However, Figure 4 shows some indicative insights into these effects, comparing the revision between the first estimate and that published one year later. It covers up to Quarter 4 (Oct to Dec) 2020, reflecting some of the [balancing challenges](#) so far. This shows that the revisions have been much larger for 2020 - revisions have ranged from negative 0.9 to positive 1.9 percentage points for these four quarters, although the size of the quarterly movements needs to be considered.

Figure 4: Revisions between the first estimate and the one published a year later have been larger for 2020 because of the uncertainty related to the coronavirus pandemic

Revision between t and t+12 months, Quarter 2 (Apr to June) 1961 to Quarter 4 (Oct to Dec) 2020, UK

Figure 4: Revisions between the first estimate and the one published a year later have been larger for 2020 because of the uncertainty related to the coronavirus pandemic

Revision between t and t+12 months, Quarter 2 (Apr to June) 1961 to Quarter 4 (Oct to Dec) 2020, UK



Source: Office for National Statistics

4 . International comparisons of GDP revisions during the coronavirus pandemic

We have provided information around possible reasons for there to be increased [uncertainty in the early estimates of gross domestic product \(GDP\)](#), including measurement challenges around new government interventions and [non-market output](#).

Figure 5 shows where levels of volume of GDP are compared with the pre-coronavirus (COVID-19) pandemic levels of GDP, comparing the latest estimate with what it would have been had there been no revisions. This is only to provide an indicative insight into the "final" revision.

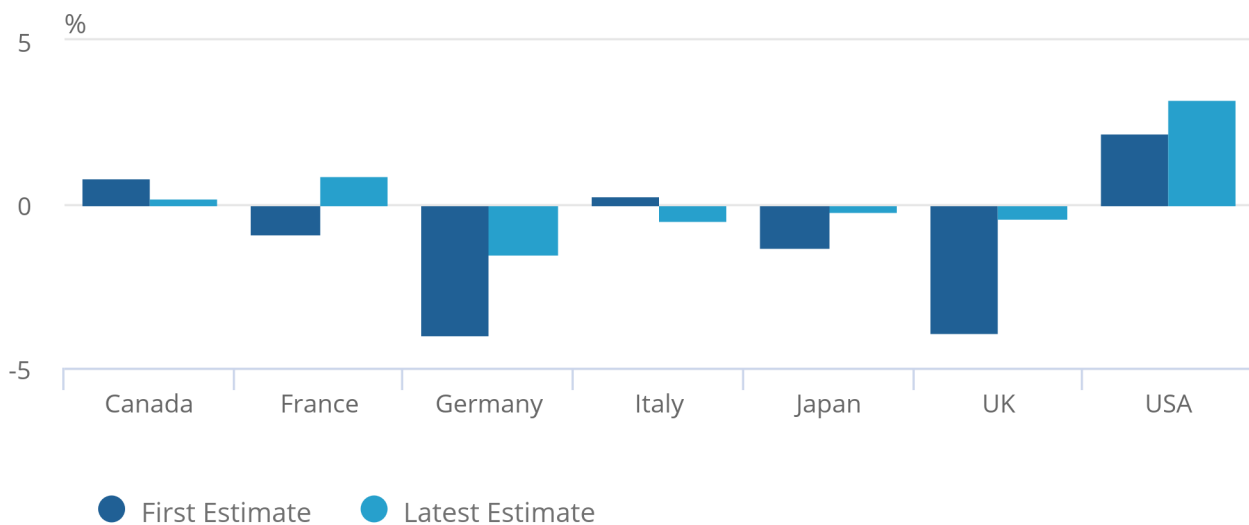
It reinforces how there has been a tendency for first estimates of GDP to be revised up - Germany, Japan and the UK are now closer to having recovered back to their Quarter 4 (Oct to Dec) 2019 levels, while there has been a stronger recovery in the United States than the first estimates would have implied. France is now estimated to have surpassed its pre-pandemic levels.

Figure 5: There has been a tendency for first estimates of GDP to be revised up

Cumulative change in GDP, Quarter 4 (Oct to Dec) 2019 to Quarter 4 (Oct to Dec) 2021, UK

Figure 5: There has been a tendency for first estimates of GDP to be revised up

Cumulative change in GDP, Quarter 4 (Oct to Dec) 2019 to Quarter 4 (Oct to Dec) 2021, UK



Source: Office for National Statistics – First Quarterly Estimate, Organisation for Economic Co-operation and Development

Notes:

1. We have taken the March 2022 vintage of real-time estimates of GDP from the OECD. However, this does not necessarily refer to when the National Statistical Institute published that vintage. For example, the UK GDP estimates refer to the February 2022 vintage. The ONS March 2022 vintage shows the level of volume GDP is now 0.1% below its pre-pandemic levels but this will not be published in the OECD database until April 2022.

This might only be an indicative picture of the revisions performance, given that each country will be at different points in their revisions policy. For example, some countries might be storing up any revisions until their first supply and use tables (SUTs) balancing process, whereas others might have incorporated their revisions on a more continuous real-time basis. There have been challenges in making [international comparisons of GDP](#), in particular the treatment of non-market output, which explains some of the revisions to UK GDP.

We expect further data revisions to these international estimates of GDP for 2020 and 2021 over the coming years, so there might be further changes in the relative profiles of country's GDP revisions. We will continue to communicate these GDP revisions and any wider impacts on uncertainty in our regular releases.

5 . Glossary

Gross domestic product (GDP)

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

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

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

6 . Data sources and quality

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

7 . Related links

[UK National Accounts, The Blue Book: 2021](#)

Compendium | Released on 29 October 2021

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