Article

GDP revisions in Blue Book, 2020

Revisions to UK National Accounts estimates introduced in Blue Book 2020 including early analysis of revisions to international estimates of GDP in the coronavirus (COVID-19) pandemic.

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1 . Main points

- Revisions to estimates published in the annual Blue Book 2020 were relatively modest in comparison to previous years, and revisions up to three years after the first published estimate are not statistically significant.

- Revisions are typically larger around turning points, but this might be more pronounced because of the challenges in compiling their National Accounts over the course of the pandemic.

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. The annual Blue Book process is also when major methodological improvements are introduced.

To assess revision performance, 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 in Blue Book 2020. It then looks at initial revisions to UK GDP compared with those in other countries in 2020.

3 . Revisions in Blue Book 2020

Figure 1 shows the revisions to volume estimates of gross domestic product (GDP) in recent Blue Books. Revisions to Blue Book 2020 were relatively modest with a mean absolute revision (MAR) of 0.08 percentage points compared with an average of 0.11 percentage points over this entire period.

Figure 1: Revisions in Blue Book 2020 were relatively modest

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Percentage points

Legend: ● Mean absolute revision ▬ Average mean absolute revision
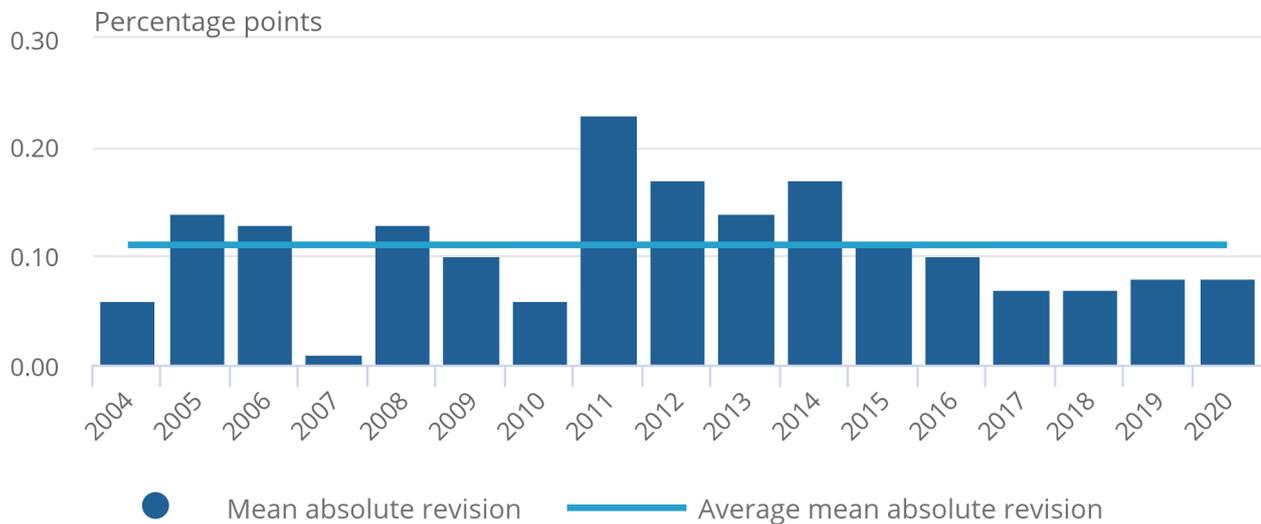
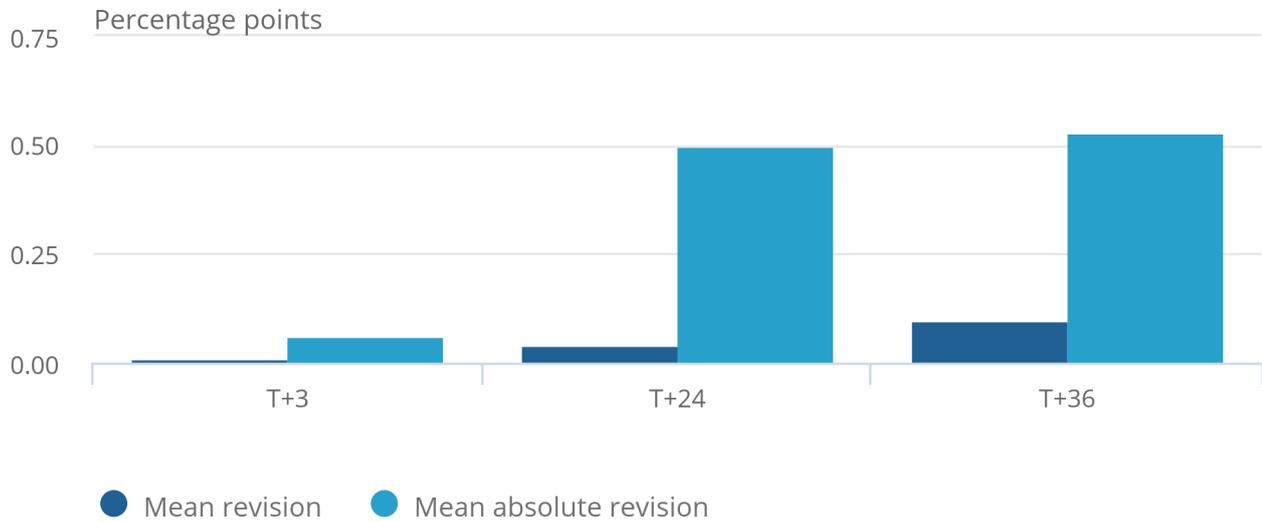**Source: Office for National Statistics**

Notes:

1. The revisions in each Blue Book relate to the period from Quarter 1 1997 to the latest quarter available in that publication.

Figure 2 shows there is a zero mean revision (MR) at T+3 months, implying that there is no tendency for the first estimate to be revised up or down. The MR is a little higher when comparing the first published estimate with later ones. The initial revisions (T+3 months) and those that tend to reflect the incorporation of annual benchmarks and balancing in a supply and use framework (T+24 months and T+36 months) are not statistically significant (Table 1). This is not the case for those revisions in the more mature estimates. Since these methodological changes cannot be anticipated at the time of the first estimate, these revisions are a less accurate reflection of the quality of early estimates.

Figure 2 shows that it is more likely that there will be a higher frequency of offsetting revisions in the first two years, relative to the subsequent revisions. This highlights why a low MR can be a misleading signal of quality. While the MR is largely similar at T+3 months and T+24 months, there is a more marked increase in the MAR.

Figure 2: Revisions tend to be larger when compared with more mature estimates

Source: Office for National Statistics

Notes:

1. This covers the period Quarter 2 1961 to Quarter 4 2017.

Table 1: Revision information and T-Test for statistical significance for quarterly GDP growth

	T + 3				T + 24				T + 36		
Timespan	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 Sco
1961 Q2 to 2017 Q4 1	0.01	0.06	0.9361	No	0.04	0.50	0.8706	No	0.10	0.53	1.94
1961 Q2 to 1969 Q4 1	n/a	n/a	n/a	n/a	-0.01	0.69	-0.0606	No	0.06	0.79	0.38
1970 Q1 to 1979 Q4 1	n/a	n/a	n/a	n/a	0.08	0.91	0.4800	No	0.20	0.98	0.96
1980 Q1 to 1989 Q4	0.03	0.06	1.3791	No	0.09	0.80	0.5539	No	0.18	0.71	1.27
1990 Q1 to 1999 Q4	0.01	0.07	0.4767	No	0.06	0.18	1.7550	No	0.10	0.22	2.57
2000 Q1 to 2009 Q4	0.00	0.11	0.0659	No	0.01	0.23	0.1981	No	0.00	0.27	-0.0
2010 Q1 to 2017 Q4	0.01	0.07	0.7896	No	0.00	0.15	0.1405	No	0.05	0.15	1.66

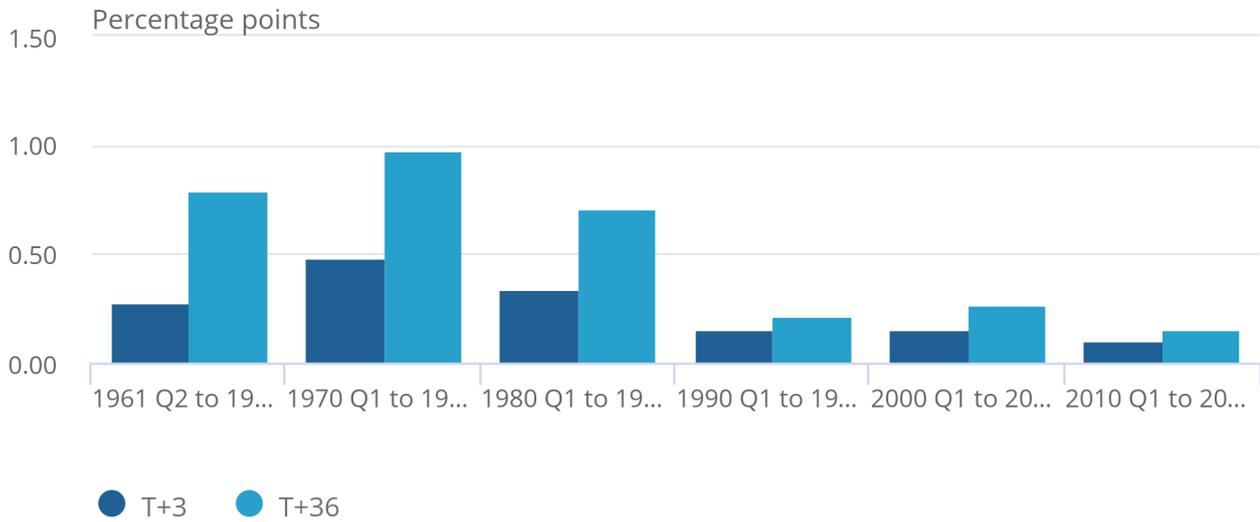Source: Office for National Statistics

Notes

1. Due to the compilation process at the time, T + 3 has no revisions pre-1980.

2. Two tailed standard significance test at 95% confidence interval.

Figure 3 shows that the quality of early 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. Figure 4 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 - although this excludes the coronavirus (COVID-19) experience for 2020 onwards. There have also been improvements in how we record GDP estimates, which is likely to be another explanation for the lower mean square revision (MSR) in these years.

Figure 3: The quality of early estimates of GDP growth has improved over time, with a lower mean absolute revision in more recent periods

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Percentage points

	1.50	1.00	0.50	0.00

1961 Q2 to 19...   1970 Q1 to 19...   1980 Q1 to 19...   1990 Q1 to 19...   2000 Q1 to 20...   2010 Q1 to 20...

● T+3   ● T+36

Source: Office for National Statistics

Figure 4: There have been lower revisions to GDP growth in recent periods, likely because of reduced economic volatility and improvements in recording GDP estimates
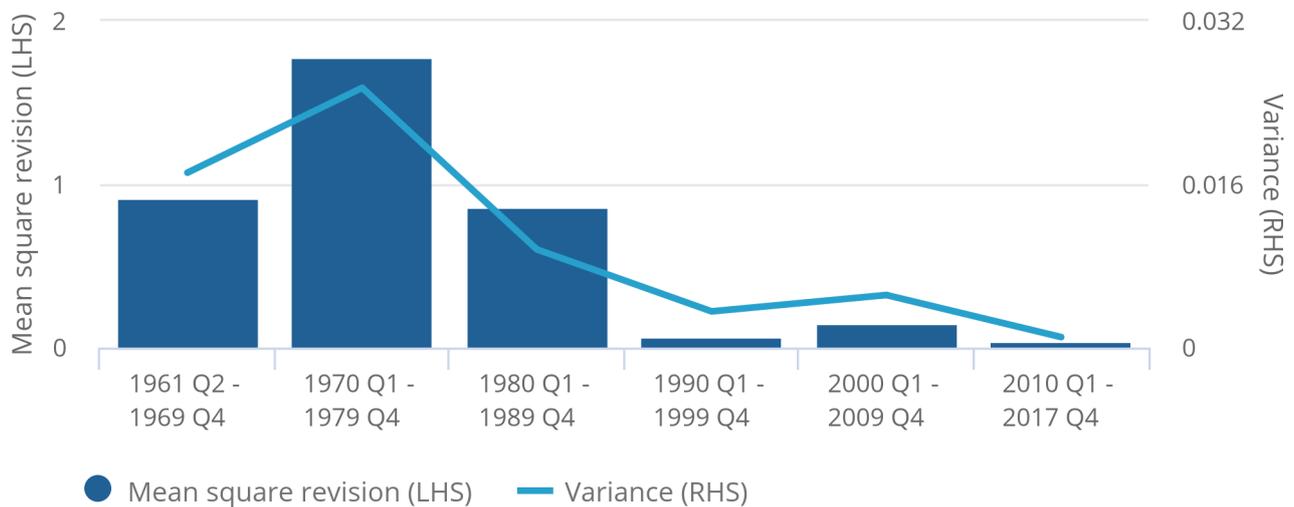
Source: Office for National Statistics

Notes:

1. The MSR refers to the revision between the vintages T and T+36, while the variance refers to the vintage T+36.

4 . Revisions in the coronavirus (COVID-19) pandemic

Previous analysis shows revisions have typically been larger around turning points, which might be more pronounced because of the challenges for National Statistical Institutes (NSI) in compiling their National Accounts over the course of the pandemic. In the UK, we have had to review continually how we measure non-market output while we have initially relied on forecasts in estimating the Coronavirus Job Retention Scheme (CJRS) and the Self-Employment Income Support Scheme (SEISS) subsidies. These higher uncertainties have been inevitable but have led to larger revisions in our early estimates.

Given the revisions policies of NSIs, it is unclear when these revisions may be reflected in later estimates of gross domestic product (GDP), so these international comparisons are only indicative at this stage. Furthermore, traditional indicators of revisions do not consider the point estimate of GDP itself. Given the record quarterly changes in GDP, revisions might be larger for this period.

There are no "final" estimates yet, so we compare the first estimate with more mature estimates available as a proxy of this uncertainty. It should be noted that the most recent vintage of GDP here does not necessarily correspond to the latest published GDP estimates. We show specific vintages at three monthly intervals.

Figure 5 shows that the contraction in UK GDP in Quarter 1 (January to March) 2020 has been revised down over time. Italy experienced a similar profile of revisions over time, while Germany and Canada had slight upward revisions over time. For the US, France and Japan, GDP estimates for the first quarter are broadly unrevised.

Figure 5: The contraction in UK GDP in Quarter 1 has been revised down over time

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Source: OECD

For Quarter 2 (April to June) 2020, the UK initially estimated that GDP fell by 20.4%, which has been revised up in the latest published figures to a 19.5% contraction (Figure 6). Canada and the US have similarly experienced upward revisions, while Italy and Japan have revised down their initial estimates.

Figure 6: The latest estimate for Quarter 2 2020 shows that the record contraction in UK GDP was not as large as first estimated
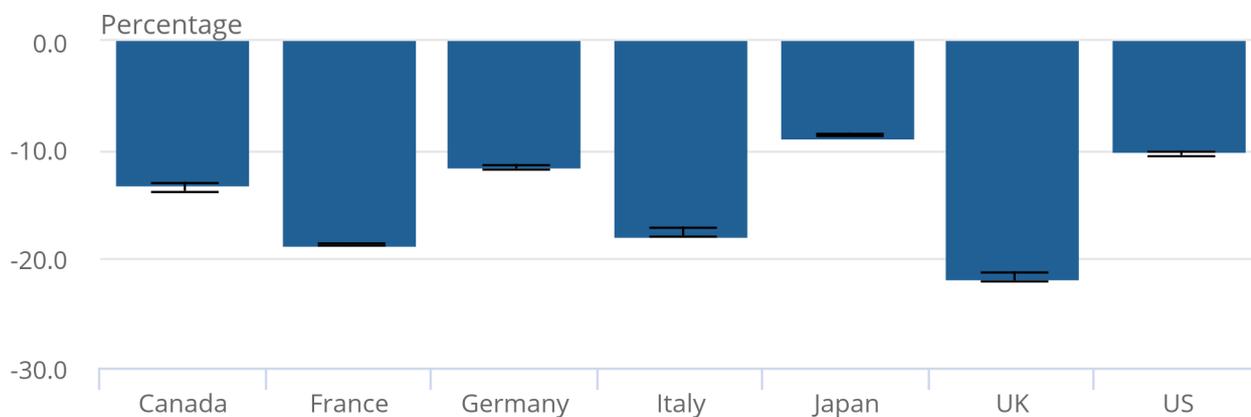

Source: OECD

There has been a range of estimates for the peak-to-trough falls in GDP in the first half of 2020. Figure 7 shows the latest estimates as well as the maximum and minimum estimates over the revision period. In the UK, the cumulative fall was initially estimated to be 22.1% but is now estimated to be 21.8% - a relatively small revision given the speed and magnitude of the coronavirus (COVID-19) impact. Only Italy and Japan have revised down their estimate for the first half of the year.

Figure 7: There has been a range of estimates for the peak-to-trough falls in GDP in the first half of 2020, reflecting the uncertainty surrounding GDP estimates during this period

Source: OECD

Notes:

1. The 'whiskers' capture the range of real-time estimates of the contraction in GDP in the first half of 2020.

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 . Future developments

Revisions are typically larger around turning points. It has been particularly challenging for National Statistical Institutes to compile gross domestic product (GDP) estimates over the course of the pandemic, given the heightened levels of statistical uncertainty.

As more information becomes available over time, this might lead to higher levels of revisions in more mature estimates, which might also impact upon international comparisons. We will communicate such revisions as part of our future engagement to improve wider understanding of the effects of the coronavirus (COVID-19) pandemic.

Revisions in this article relate to data published in the UK National Accounts, The Blue Book: 2020.

More detailed information on the compilation of the latest national accounts, including quality and reliability issues, is available in the background notes.

7 . Related links

UK National Accounts, The Blue Book: 2020
Compendium | Released on 30 October 2020
National accounts statistics including national and sector accounts, industrial analyses and environmental accounts.