Office for National Statistics

Article

Business investment in the UK revisions in Blue Book: 2025

Business investment in the UK revisions for annual and quarterly rounds with a focus on Blue Book 2025. Analyses revisions affected by the coronavirus (COVID-19) pandemic period.

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1 . Main points

- We maintain a transparent approach to revising our Business investment in the UK estimates, by publishing real-time estimates of business investment alongside our data vintages, and by providing a timely assessment of those revisions.
- Business investment estimates for Blue Book 2025 incorporate revisions to the intellectual property products asset, including redeveloped research and development estimates which incorporate end-to-end redeveloped Business Enterprise Research and Development (BERD) survey data; and updated estimates of own-account software, including Annual Survey of Hours and Earnings (ASHE) data.
- The mean absolute revision (MAR) to quarterly business investment from Quarter 1 (Jan to Mar) 2020 to Quarter 2 (Apr to June) 2025 in Blue Book 2025 was the largest since Blue Book 2017.
- The most recent relative mean absolute revisions (RMAR), which account for the revisions to business investment relative to the size of the initial growth estimate, have returned to similar levels to those seen before the coronavirus (COVID-19) pandemic excluding Quarter 1 2020.
- The mean revision since Quarter 1 2000 is 0.5 percentage points (pp) after 3 months, and marginally statistically significant, and 0.6pp, but not statistically significant, after 36 months.

2 . Overview of revisions

This article has been prepared as part of our response to the Office for Statistics Regulation (OSR) Spotlight on Quality Assessment: Statistics on Business Investment.

There is a trade-off between the timeliness and accuracy of estimates of business investment. As additional information becomes available, we have a more complete picture of business investment during a given period. This compilation cycle can take up to three years, and leads to revisions in our business investment estimates. We also introduce major methodological improvements during the annual blue book process to ensure that changes are implemented in a consistent and co-ordinated way.

We can analyse revisions to our business investment estimates using three internationally recognised approaches, as outlined in the Organisation for Economic Co-operation and Development's (OECD's) Revisions in quarterly gross domestic product (GDP) of OECD and key partner countries update (PDF 5.2MB). These approaches are:

- 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 relative mean absolute revision (RMAR), which incorporates the size of the initial estimate in relation to the revision, as a large revision on a very large initial growth rate can have less impact than a large revision to a very small initial growth rate
- the mean revision (MR), which shows whether there is a systematic tendency for initial estimates to be revised upwards or downwards

This article analyses the revisions to our quarterly business investment estimates, which were published in our Business investment in the UK: April to June 2025 revised results in September 2025, consistent with Blue Book 2025.

3 . Revisions in Blue Book 2025

Changes introduced for business investment in Blue Book 2025

Blue Book 2025 saw updates to estimates of business investment because of later data, both revised and newly available, methodology improvements and reviews of our seasonal adjustment models.

In our Blue Book 2025-consistent business investment estimates we:

- included end-to-end redeveloped Business Enterprise Research and Development (BERD) survey data for 2022 and 2023 for the first time, and a revised back series for periods before 2022
- incorporated an improved research and development deflator which reflected changes as a result of the globalisation review of the pharmaceutical industry (the largest source of R&D) as discussed in our article, Blue Book 2025: Globalisation
- improved our estimates of own-account software using updated Annual Survey of Hours and Earnings (ASHE) data and updated occupation codes
- incorporated revised Annual Business Survey (ABS) benchmarks for 2022 and new ABS data for 2023
- moved the base year used for weighting our chained volume measure estimates from 2022 to 2023, to better reflect the changes in the composition of the economy in recent years
- included updates from the latest seasonal adjustment review, which is conducted each year, to ensure the seasonal adjustment models used to process data are still appropriate, following revisions to the data

Further information is available in:

- our Improvements to estimation of research and development within gross fixed capital formation and business investment article
- our Impact of new Business Enterprise Research and Development Survey data on UK business investment article

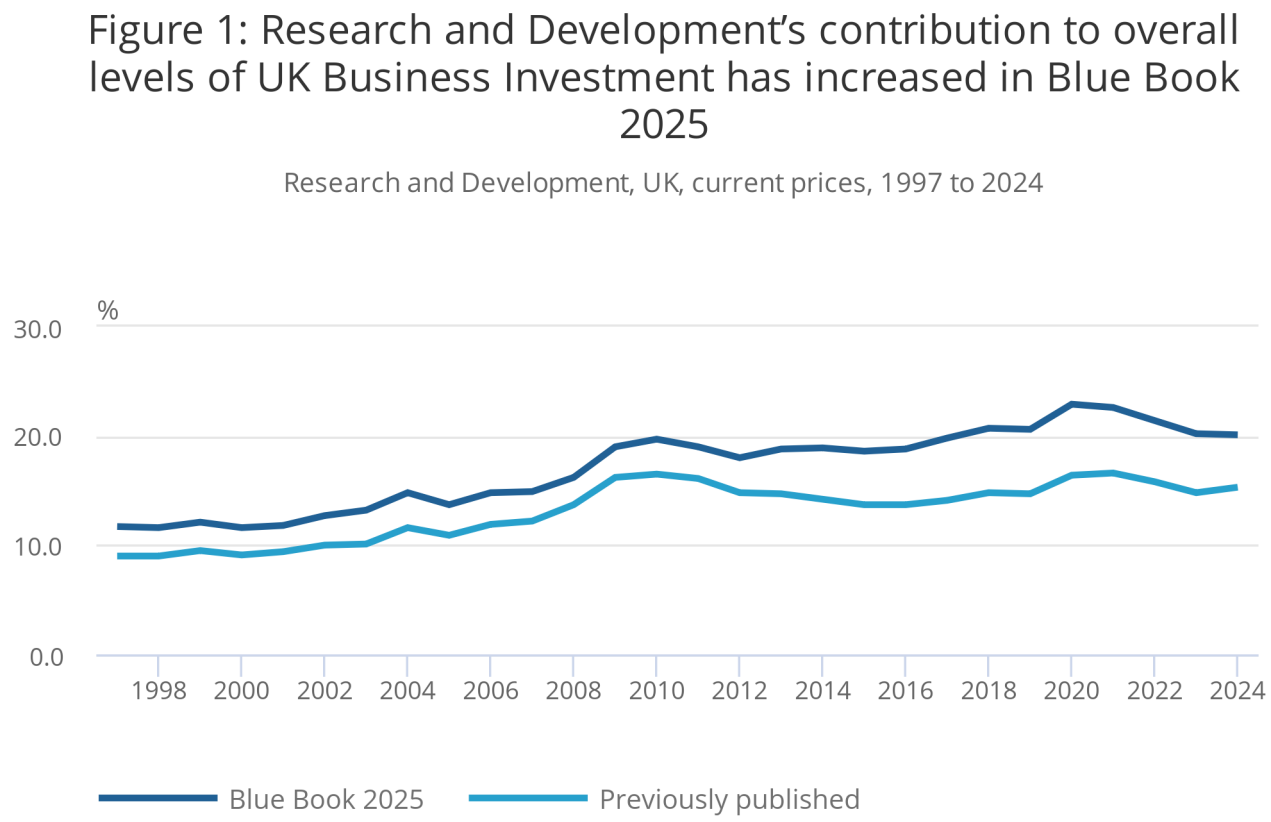
Users should be aware that, as BERD data are only available up to and including 2023, research and development will be subject to revision until BERD data become available for the latest time periods.

Impact of revisions to intellectual property products in Blue Book 2025

The improvements to our estimates of R&D increased its contribution to current price levels of Business Investment by 3.9 percentage points on average between 1997 and 2024. Previously R&D's contribution over that same period was 13.2% on average, but in our latest estimates this has increased to 17.1%. Further information is given in Figure 1.

Figure 1: Research and Development's contribution to overall levels of UK Business Investment has increased in Blue Book 2025

Research and Development, UK, current prices, 1997 to 2024

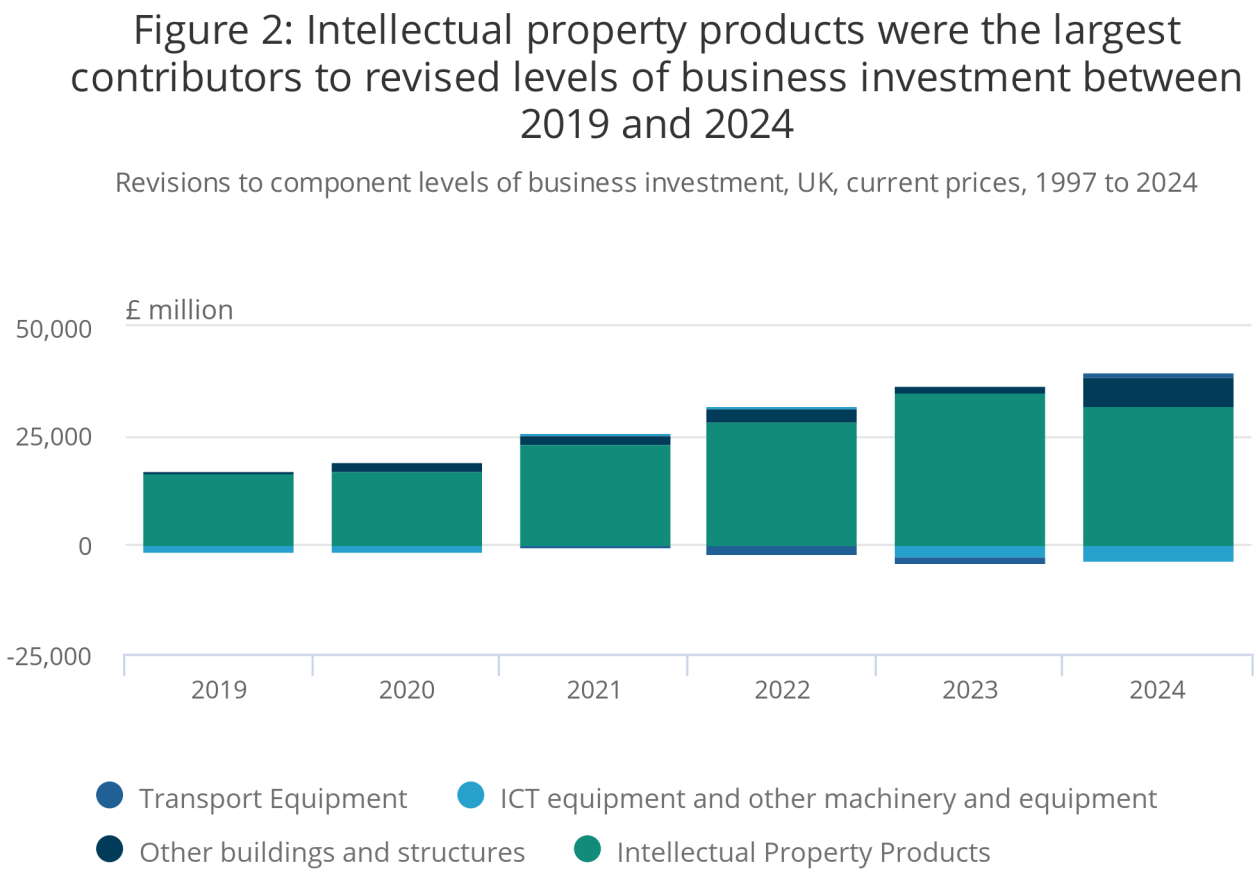


Source: Business Investment Revisions in Blue Book: 2025 from the Office for National Statistics

- entertainment and artistic originals
- mineral exploration

Figure 2: Intellectual property products were the largest contributors to revised levels of business investment between 2019 and 2024

Revisions to component levels of business investment, UK, current prices, 1997 to 2024



Source: Business Investment Revisions in Blue Book: 2025 from the Office for National Statistics

4 . Revisions analysis

Figure 3 shows revisions to our estimates of quarterly change in business investment, as part of implementing changes in our annual national accounts updates.

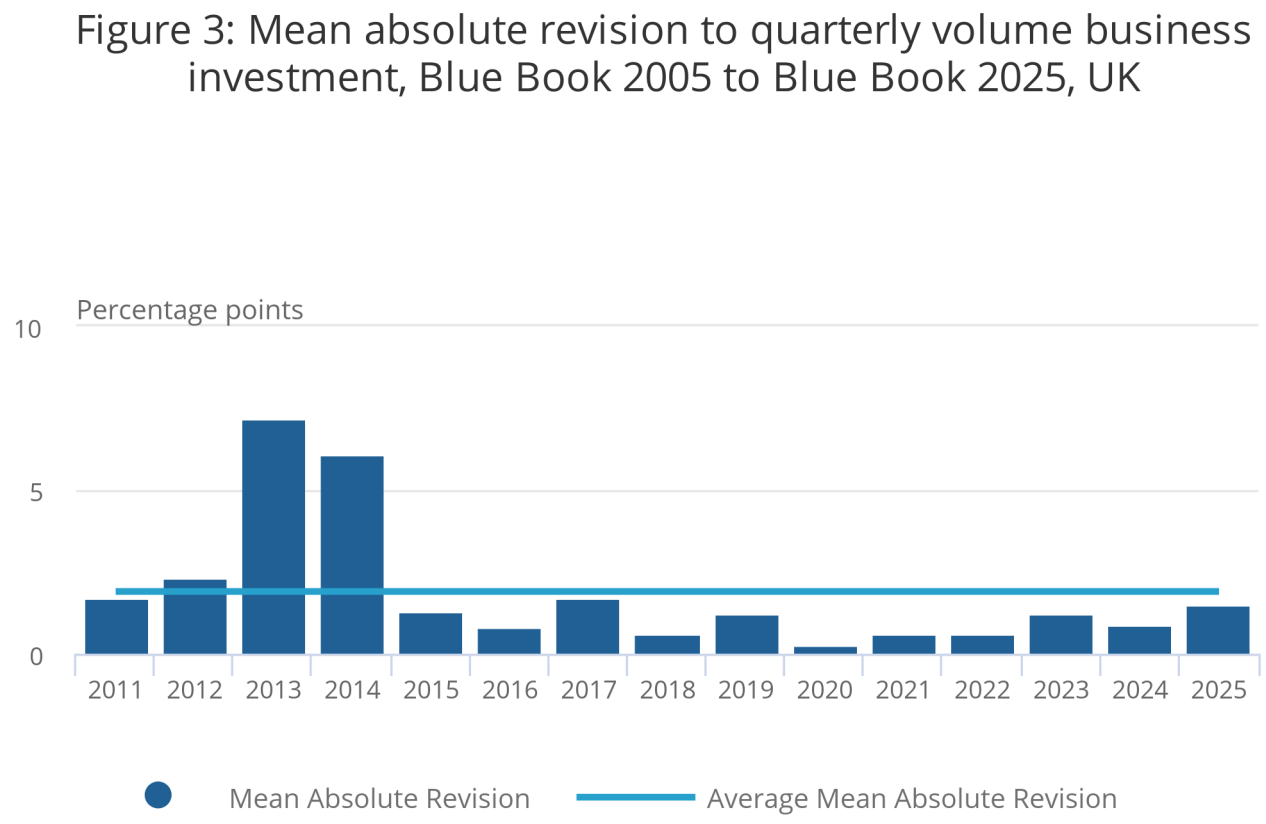
Revisions in 2013

We introduced updates to compilation methods in 2013, which included improvements to the measurement of investment in artistic originals and the inclusion of an operating surplus markup for own-account software. These updates all contributed to revisions in the Blue Book 2013-consistent estimates of business investment. Further information is available in our Analysis of the impact of improvements to the estimation of gross fixed capital formation in the UK National accounts.

Revisions in 2014

Revisions introduced in 2014 included implementing changes to the compilation of estimates under the European System of Accounts (ESA 10) for the first time, as part of the UK's then legal obligations in compiling the national accounts. This included the capitalisation of R&D as gross fixed capital formation (GFCF) instead of intermediate consumption, for the first time. Changes introduced in 2014 are described in our Investment - impact analysis of changes to the estimation of gross fixed capital formation and business investment article (PDF: 918 KB).

Figure 3: Mean absolute revision to quarterly volume business investment, Blue Book 2005 to Blue Book 2025, UK



Source: Business investment revisions in Blue Book: 2025 from the Office for National Statistics

Notes:

1. The revisions in each Blue Book relate to the period from Quarter 2 (Apr to Jun) 1997 to the latest quarter available in that publication. For example, the Blue Book 2025 revisions reflect those between the August 2025 and September 2025 vintages of quarterly estimates of volume Business Investment - this includes up to Quarter 2 (Apr to June) 2025.

2. The x-axis refers to that Blue Book publication, reflecting the mean absolute revision (MAR) to quarterly volume estimates of GDP from Quarter 2 1997 onwards. Blue Book 2024 is an exception as there was not a fully open revisions period as part of this update of the UK National Accounts. The MAR only covers the period from Quarter 1 2020 to Quarter 2 2024.

Large capital expenditure is often reported later in the data collection period than smaller capital expenditure. This means that larger expenditures are often included in revised business investment results but are not reported in time for the provisional results. This can result in upward revisions in the later estimates for business investment. Following investigation of the impact of this effect, from Quarter 3 (July to Sept) 2013, a bias adjustment was introduced in the provisional estimate.

This adjustment was suspended in Quarter 3 2020 because of the uncertainties surrounding the effect of the coronavirus (COVID-19) pandemic. However, the bias adjustment was reintroduced to business investment in Quarter 4 (Oct to Dec) 2021, after further investigation and analysis of its impact.

The bias adjustment is applied to provisional business investment estimates and removed for revised estimates. We continually review and update our approach to the bias adjustment once additional information becomes available.

Table 1 shows that the mean absolute revision (MAR) tends to be larger in later periods. However our analysis shows that late revisions (t plus 36 months) are not statistically significant in any of the selected time spans. The size of the revisions has not been consistent over time, with larger revisions for estimates published during the pandemic period. Over the full time series, our analysis shows a marginal statistical significance on the initial estimates (t plus 3 months).

Table 1: Revisions analysis differs over time when selected time spans are considered
Revision information and t-test for statistical significance for quarterly business investment growth, UK, Quarter 1 2000 to Quarter 1 2025

	T+3 months				**T+36 months**			
Timespan	Mean Revision (pp)	Mean Absolute Revision (pp)	T Score [note 1]	Statistically Significant?	Mean Revision (pp)	Mean Absolute Revision (pp)	T Score [note 1]	Statistically Significant?
Q1 2000 to latest 1	0.5	1.4	2.7	Yes	0.6	2.7	1.7	No
Q1 2000 to Q4 2009	0.5	1.4	1.9	No	0.8	2.5	1.9	No
Q1 2010 to Q4 2019	0.5	1.2	1.7	No	0.1	2.5	0.1	No
Q1 2020 to latest1	0.7	1.8	0.9	No	1.8	3.7	1.4	No

Source: Business Investment Revisions in Blue Book: 2025 from the Office for National Statistics

Notes

1. The latest data point is the period ending 2025 Quarter 1 for t plus 3 months analysis and 2022 Quarter 4 for the t plus 36 months data.

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

3. We do not have a t plus 36 months estimate yet for Quarter 3 (July to Sept) 2022 and Quarter 4 (Oct to Dec) 2022.

4. However, our revisions policy is such that these current estimates will not be revised before we get to the t plus 36 months stage, so this has been inferred for these purposes. These data have gone through two supply and use tables balancing processes, which is the basis of the "final" estimate being chosen.

5. The significance test for the period from Quarter 1 (Jan to Mar) 2020 to Quarter 4 2022 may not contain sufficient data points to be reliable at this stage.

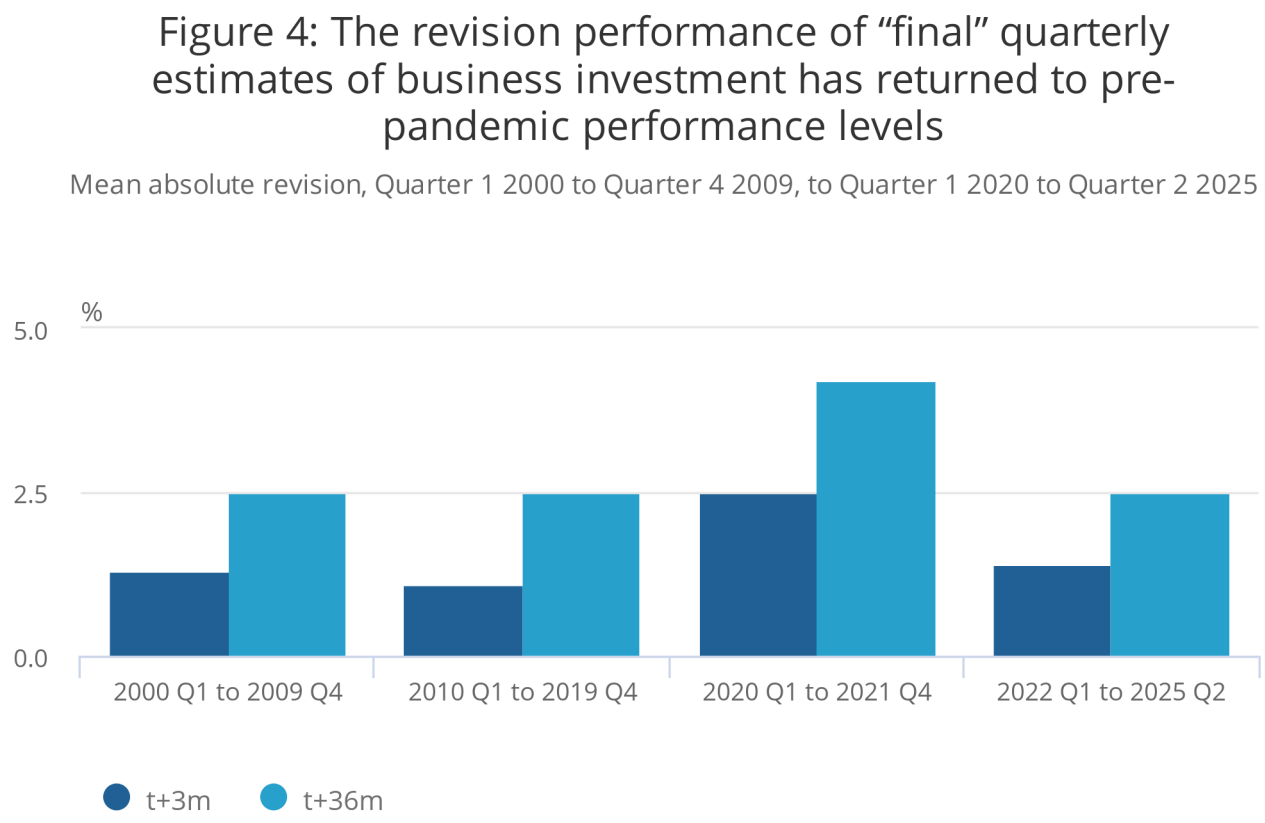
6. Span analysis aligns to analysis presented in GDP revisions in Blue Book: 2025

The revision of our initial data (t plus three months) has improved since the pandemic period (Figure 4) but has not returned to its pre-pandemic performance. The revision magnitude of our inferred "final" estimate has returned to its pre-pandemic level. Figure 4 shows that the MAR is larger at the three-year horizon in each time period. As additional information becomes available, the revision increases between t plus three months and t plus 36 months, although there are other revision points before t plus 36 months. These include:

- the first annual dataset for the latest year in the quarterly national accounts round in March each year
- the first supply-and-use balance at t plus 24 months

Figure 4: The revision performance of "final" quarterly estimates of business investment has returned to pre-pandemic performance levels

Mean absolute revision, Quarter 1 2000 to Quarter 4 2009, to Quarter 1 2020 to Quarter 2 2025



Source: Business Investment Revisions in Blue Book: 2025 from the Office for National Statistics

Notes:

1. The latest data point is the period ending 2025 Quarter 1 for t plus 3 months analysis and 2022 Q2 for the t plus 36 months data.

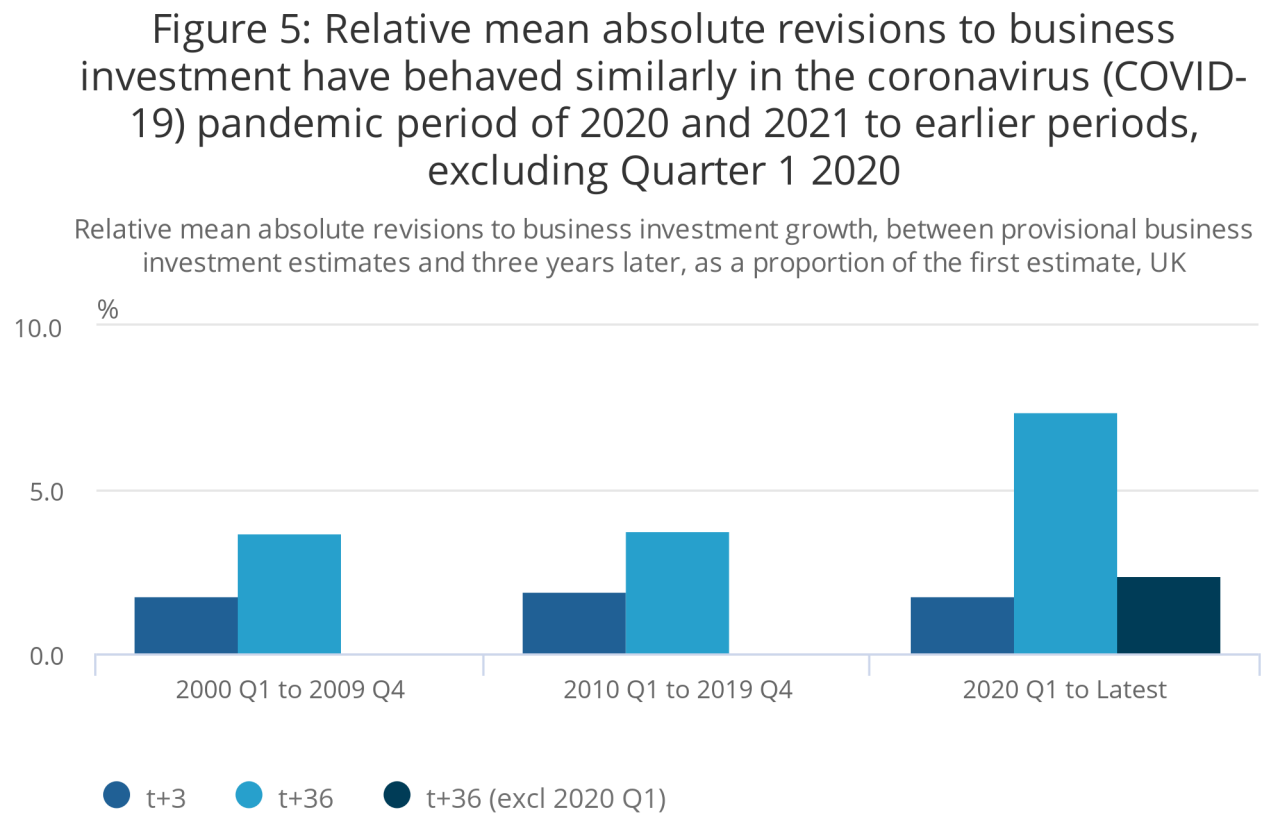
2. We do not have a t plus 36 months estimate yet for Quarter 3 (July to Sept) 2022 and Quarter 4 (Oct to Dec) 2022. However, our revisions policy is such that these current estimates will not be revised before we get to the t plus 36 months stage, so this has been inferred for these purposes. These have gone through two supply and use tables balancing processes, which is the basis of the "final" estimate being chosen.

Figure 5 shows how the relative mean absolute revision (RMAR) has varied during the same time period (where we compare the revision between the first estimate and the "final" estimate three years later, as a proportion of the first estimate).

For the period "2020 Q1 – latest", we have also shown the RMAR, excluding Quarter 1 (Jan to Mar) 2020, as this quarter had the lowest survey response period because of the start of the pandemic. The response rate for the Quarterly Acquisitions and Disposals of Capital Assets Survey (QCAS) at provisional business investment estimates was 51.4% in Quarter 1 2020, compared with an average of 67.3% per quarter in 2019. QCAS response for revised estimates was similarly low, reaching 66.6% in Quarter 1 2020, compared with an average of 82.0% per quarter for revised estimates in 2019.

Figure 5: Relative mean absolute revisions to business investment have behaved similarly in the coronavirus (COVID-19) pandemic period of 2020 and 2021 to earlier periods, excluding Quarter 1 2020

Relative mean absolute revisions to business investment growth, between provisional business investment estimates and three years later, as a proportion of the first estimate, UK



Source: Business Investment Revisions in Blue Book: 2025 from the Office for National Statistics

Notes:

1. The latest data point is the period ending 2025 Quarter 1 (Jan to Mar) for t plus 3 months analysis and 2022 Quarter 4 (Oct to Dec) for the t plus 36 months data.

5 . Performance of revisions before, during and after the coronavirus (COVID-19) pandemic

The Office for Statistics Regulation (OSR) published their Spotlight on Quality Assessment: Statistics on Business Investment, in October 2024. This set out a list of requirements, including:

"Requirement 2: Substantial revisions to Business Investment statistics since the start of the COVID-19 pandemic have impacted user confidence. To regain that trust, ONS should:

- conduct a comprehensive revisions analysis covering the period from 2020 onwards, including for estimates published as part of the annual Blue Book process. The findings of this analysis should be effectively communicated to users, along with a clear plan for any methodological improvements aimed at minimising future revisions

- reinforce transparency and reliability, by publishing revisions analysis annually with explanations of the reasons for any revisions, reassuring users about the quality of the data and restoring their confidence in the statistics"

We have been unable to assess the full effects of the pandemic and post-pandemic periods in any revisions analysis to date, as we only have "final" (t plus 36 month) quarterly estimates of volume business investment up to Quarter 2 (Apr to June) 2022 in Blue Book 2025. Table 2 sets out the periods during which revisions data are available for the Blue Book 2025 dataset.

Table 2: Availability of revisions data as of Blue Book 2025

	Revisions Data available for			
	t + 3 months	t + 12 months	t + 24 months	t + 36 months
Q1 2020	Yes	Yes	Yes	Yes
Q2 2020	Yes	Yes	Yes	Yes
Q3 2020	Yes	Yes	Yes	Yes
Q4 2020	Yes	Yes	Yes	Yes
Q1 2021	Yes	Yes	Yes	Yes
Q2 2021	Yes	Yes	Yes	Yes
Q3 2021	Yes	Yes	Yes	Yes
Q4 2021	Yes	Yes	Yes	Yes
Q1 2022	Yes	Yes	Yes	Yes
Q2 2022	Yes	Yes	Yes	Yes
Q3 2022	Yes	Yes	Yes	No
Q4 2022	Yes	Yes	Yes	No
Q1 2023	Yes	Yes	Yes	No
Q2 2023	Yes	Yes	Yes	No
Q3 2023	Yes	Yes	No	No
Q4 2023	Yes	Yes	No	No
Q1 2024	Yes	Yes	No	No
Q2 2024	Yes	Yes	No	No
Q3 2024	Yes	No	No	No
Q4 2024	Yes	No	No	No
Q1 2025	Yes	No	No	No
Q2 2025	Yes	No	No	No

Source: Business Investment Revisions in Blue Book: 2025 from the Office for National Statistics

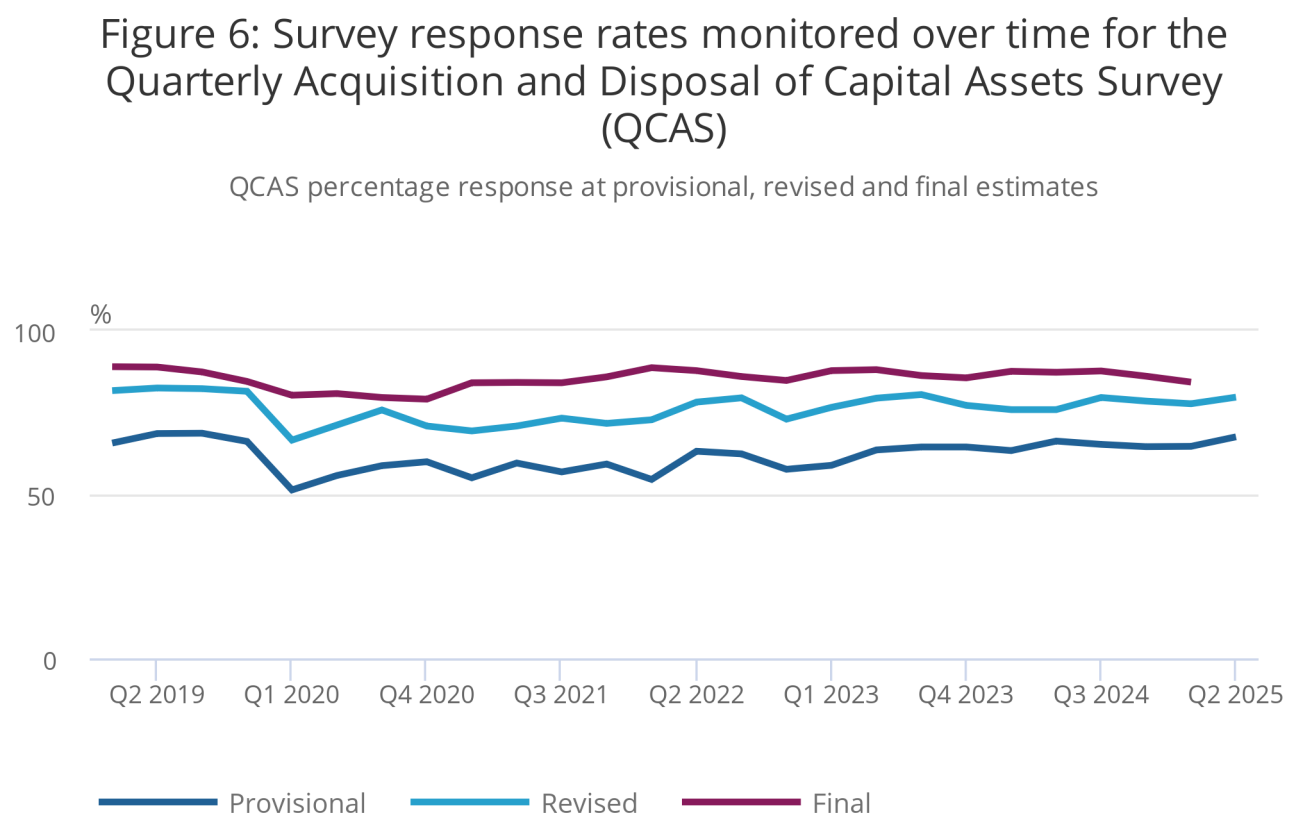
Notes

1. Q1 refers to Quarter 1 (Jan to Mar), Q2 refers to Quarter 2 (Apr to June), Q3 refers to Quarter 3 (July to Sept) and Q4 refers to Quarter 4 (Oct to Dec).

Business investment estimates between the pandemic period of 2020 and 2022 were subject to more uncertainty than usual because of the challenge in collecting survey data. Figure 6 shows response rates for the QCAS, one of the largest data sources for provisional, revised and final business investment estimates.

Figure 6: Survey response rates monitored over time for the Quarterly Acquisition and Disposal of Capital Assets Survey (QCAS)

QCAS percentage response at provisional, revised and final estimates



Source: Business Investment Revisions in Blue Book: 2025 from the Office for National Statistics

Notes:

1. Q1 refers to Quarter 1 (Jan to Mar), Q2 refers to Quarter 2 (Apr to June), Q3 refers to Quarter 3 (July to Sept) and Q4 refers to Quarter 4 (Oct to Dec).

2. Quarter 2 2025 has only been revised once to date.

Additionally, business investment estimates are benchmarked to Annual Business Survey (ABS) estimates during the compilation of annual updates. In Blue Book 2025, for example, the latest available ABS estimates are for 2023.

In 2020, 59.3% of sampled businesses were included in the final ABS results. The average response rate in previous years was approximately 75%. The 2020 rate was lower than usual because the coronavirus (COVID-19) pandemic made it more difficult to contact respondents to process survey returns. This means that the estimates in this release are subject to greater uncertainty than usual.

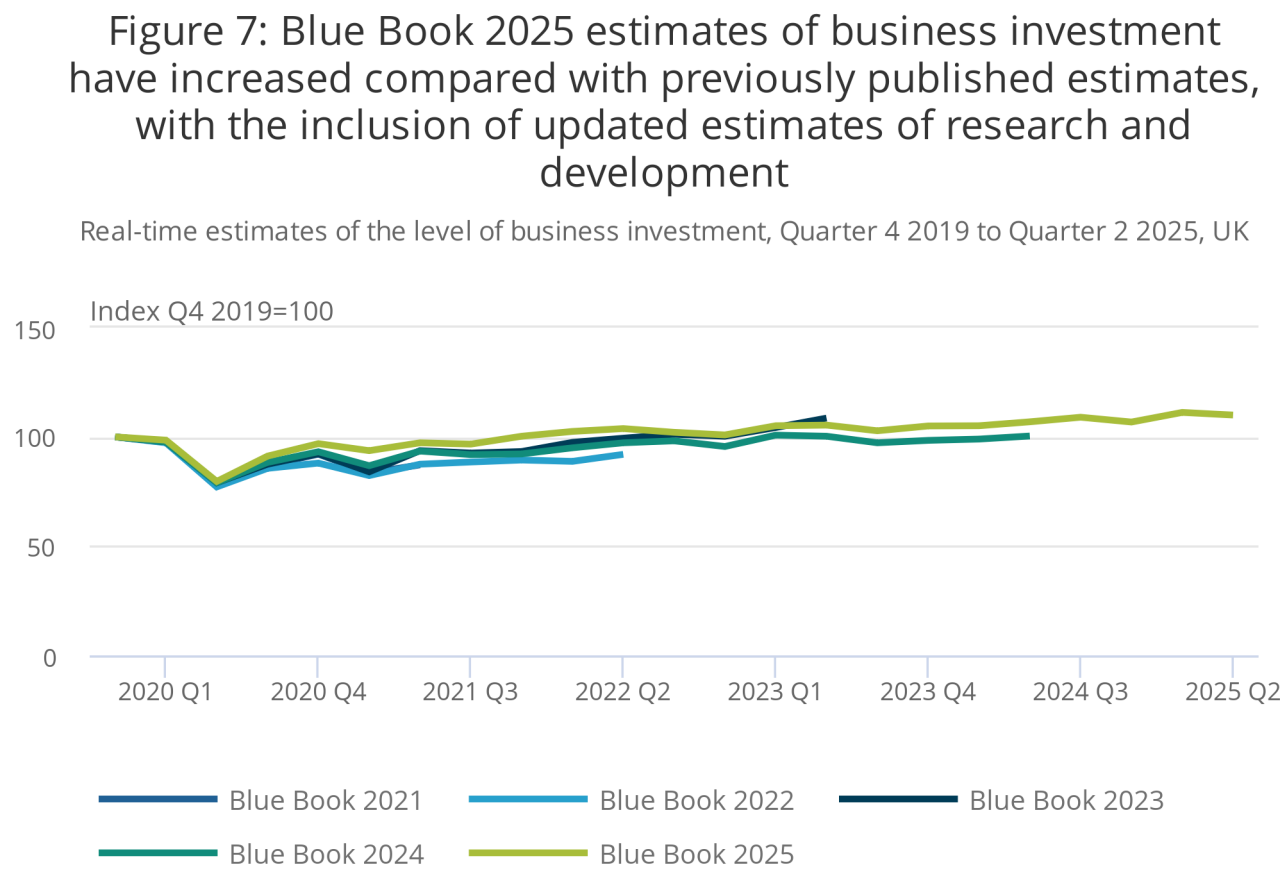
Figure 7 shows the level of business investment in recent blue books, which demonstrates how our understanding of the effects of the pandemic on business investment evolved when additional data became available.

All versions of blue book datasets show the drop in business investment in Quarter 1 (Jan to Mar) 2020, with an increase in Quarter 2 2020. This increase is stronger in Blue Book 2023. Overall, Blue Book 2023 has revised the level of business investment upwards.

Blue Book 2025 revised business investment estimates for Quarter 2 2020 upwards further. The causes of the revisions in Blue Book 2025 are discussed in more detail in Section 3: Revisions in Blue Book 2025.

Figure 7: Blue Book 2025 estimates of business investment have increased compared with previously published estimates, with the inclusion of updated estimates of research and development

Real-time estimates of the level of business investment, Quarter 4 2019 to Quarter 2 2025, UK



Source: Business Investment Revisions in Blue Book: 2025 from the Office for National Statistics

Notes:

1. Q1 refers to Quarter 1 (Jan to Mar), Q2 refers to Quarter 2 (Apr to June), Q3 refers to Quarter 3 (July to Sept) and Q4 refers to Quarter 4 (Oct to Dec).

6 . Future developments

Revisions are a natural part of statistical compilation. We balance timeliness with accuracy, making the best use of the data available at the time.

We continue to publish full revisions performance information for business investment in a timely and transparent way. We published our latest revisions triangle and real-time database for business investment in September 2025.

7 . Glossary

8 . Data sources and quality

More quality and methodology information

More quality and methodology information (QMI) on strengths, limitations, appropriate uses, and how the data were created is available in our Business investment QMI.

9 . Related links

Business investment in the UK: April to June 2025 revised results
Bulletin | Released 30 September 2025
Estimates of short-term indicators of investment in non-financial assets; business investment, and asset and sector breakdowns of total gross fixed capital formation.

GDP revisions in Blue Book: 2025
Article | Released 31 October 2025
GDP revisions in annual and quarterly rounds, focusing on revisions in Blue Book 2025.

10 . Cite this article

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