

Article

National Accounts articles: gross fixed capital formation (GFCF) new system deployment and data impact assessment

Summary of new system deployment on gross fixed capital formation and business investment data.

Contact:
Alison McCrae
gcf@ons.gsi.gov.uk

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1 . Summary

This article summarises the effect of the methodological and processing improvements described in [Changes to the gross fixed capital formation methodology and processing](#), (McLaren and Murphy, January 2017) on the gross fixed capital formation (GFCF) and business investment estimates for Quarter 1 (Jan to Mar) 2016 through to Quarter 3 (July to Sept) 2016. The [Business Investment in the UK: Quarter 4 \(Oct to Dec\) 2016 provisional results](#) release is the first to include these improvements, which have impacted on current price (CP) and chained volume measures (CVM) of GFCF.

2 . Introduction

2.1 Article scope

The purpose of this article is to show the impact on gross fixed capital formation (GFCF) estimates as a result of the deployment of methodological and processing improvements to the GFCF estimation system.

This article will not focus on the detail of the processing and methodological improvements as these have been described in the article [Changes to the gross fixed capital formation methodology and processing](#) (McLaren and Murphy, January 2017), but a high level summary is provided alongside the analysis of the impact of these changes.

2.2 Data scope

The improvements have been introduced in the [Business Investment in the UK: Quarter 4 \(Oct to Dec\) 2016 provisional results](#) release and are also reflected in the [Second Estimate of GDP: Quarter 4 \(Oct to Dec\) 2016](#) release.

Following [National Accounts Revisions Policy](#), the improvements have taken effect for 2016 only (the period open for revision). Data prior to 2016 are as previously published, but the improvements will be incorporated when that earlier period is next open for revision at the Blue Book 2017-consistent Business Investment and Quarterly National Accounts publications in September 2017. At that point, annual improvements to GFCF source data and methodology will also be incorporated, as described in [Annual Improvements to Gross Fixed Capital Formation source data for Blue Book 2017](#) (Evans and McCrae, February 2017).

To avoid a step change between the data in and prior to 2016, the estimates have been constrained by applying the percentage movements from the new estimation system to the data levels previously published.

The impact analyses will be based on the GFCF estimates prior to the normal quality and gross domestic product (GDP) balancing adjustment processes and therefore will not align directly with latest or previously published GFCF estimates. They will also, as a result, not include an estimated impact on the contribution of the revisions to GDP latest estimates. Further information on the GDP balancing process can be found in [Balancing the Three Approaches to Measuring Gross Domestic Product, 2012](#) (Lee, July 2012).

2.3 Summary of improvements

The improvements made to the GFCF estimation system are both statistical and methodological and include:

- improvements to deflation processing resulting in deflators more reflective of the specific assets used by different types of institutional units
- the level at which current price data is seasonally adjusted (this now aligns to that applied to chained volume measure (CVM) data, that is, at industry total, by detailed asset and sector for acquisitions and disposals)
- better use of our source data leading to a more detailed asset breakdown for some sectors

3 . Main data points

As a result of the improvements made to the gross fixed capital formation (GFCF) estimation system:

- GFCF has been revised down by £36 million, on average, between Quarter 1 (Jan to Mar) 2016 and Quarter 3 (July to Sept) 2016 in volume terms, seasonally adjusted
- business investment has been revised up by £52 million, on average, between Quarter 1 2016 and Quarter 3 2016 in volume terms, seasonally adjusted

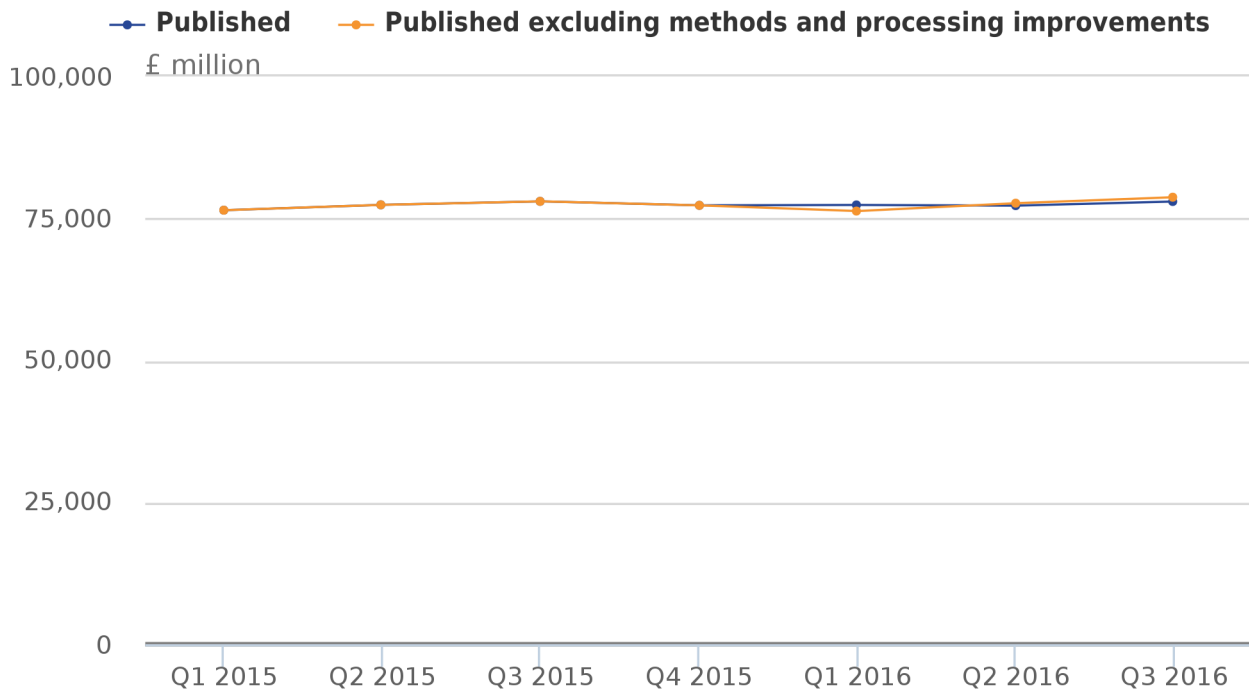
Though business investment is a component of GFCF it excludes investment by central or local government, investment in dwellings and the costs associated with the transfer of non-produced assets. The contrasting GFCF and business investment revisions need to be considered with this in mind.

4 . Revisions to GFCF and business investment

Figures 1 and 2 show the effect of the new system improvements on gross fixed capital formation (GFCF) and business investment in context of the provisional estimates published in the Quarter 4 (Oct to Dec) 2016 Business investment release. The published series is consistent with the [Business Investment Provisional release for Quarter 4 2016](#). Alongside this is the same series, excluding revisions due to the methods improvements. When comparing the 2 series it is important to remember that the published series excluding the methods improvements is indicative only, as this series was not subject to the GDP balancing process. For that reason we cannot draw conclusions on what the published levels of GFCF and business investment would have been if still estimating from the previous processing system.

Figure 1: Quarterly levels of gross fixed capital formation, chained volume measure, seasonally adjusted

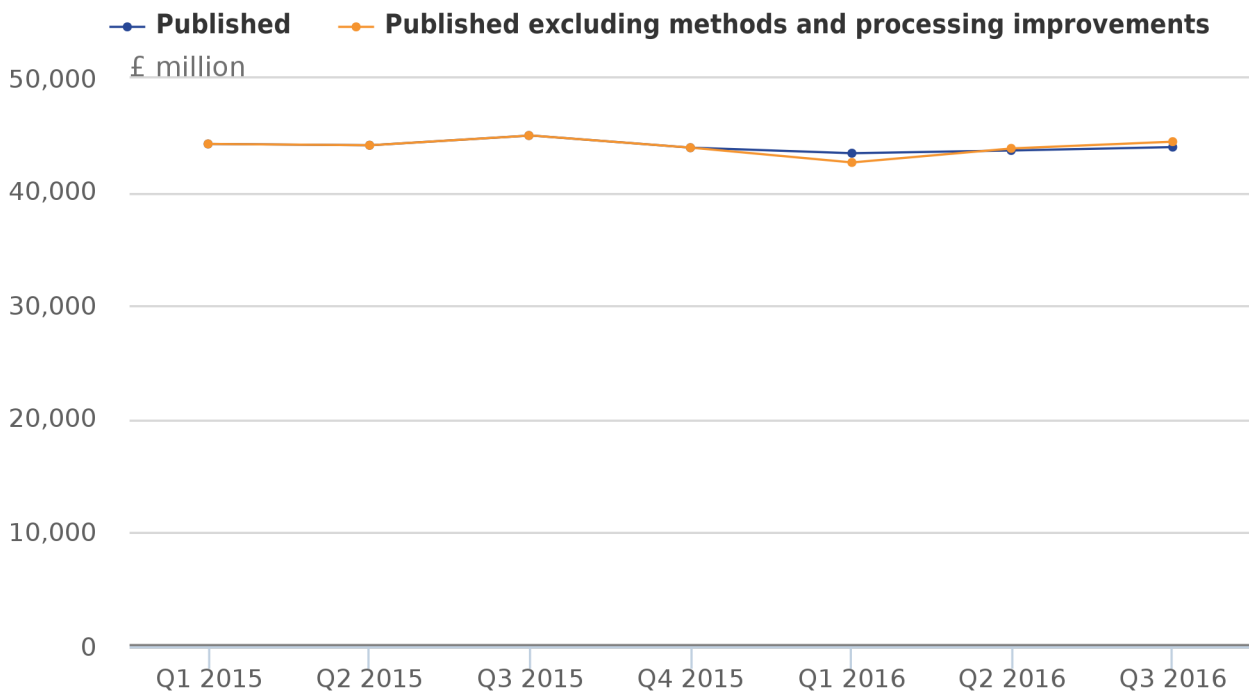
UK, Quarter 1 (Jan to Mar) 2015 to Quarter 3 (July to Sept) 2016



Source: Office for National Statistics

Figure 2: Quarterly levels of business investment, chained volume measure, seasonally adjusted

UK, Quarter 1 (Jan to Mar) 2015 to Quarter 3 (July to Sept) 2016



Source: Office for National Statistics

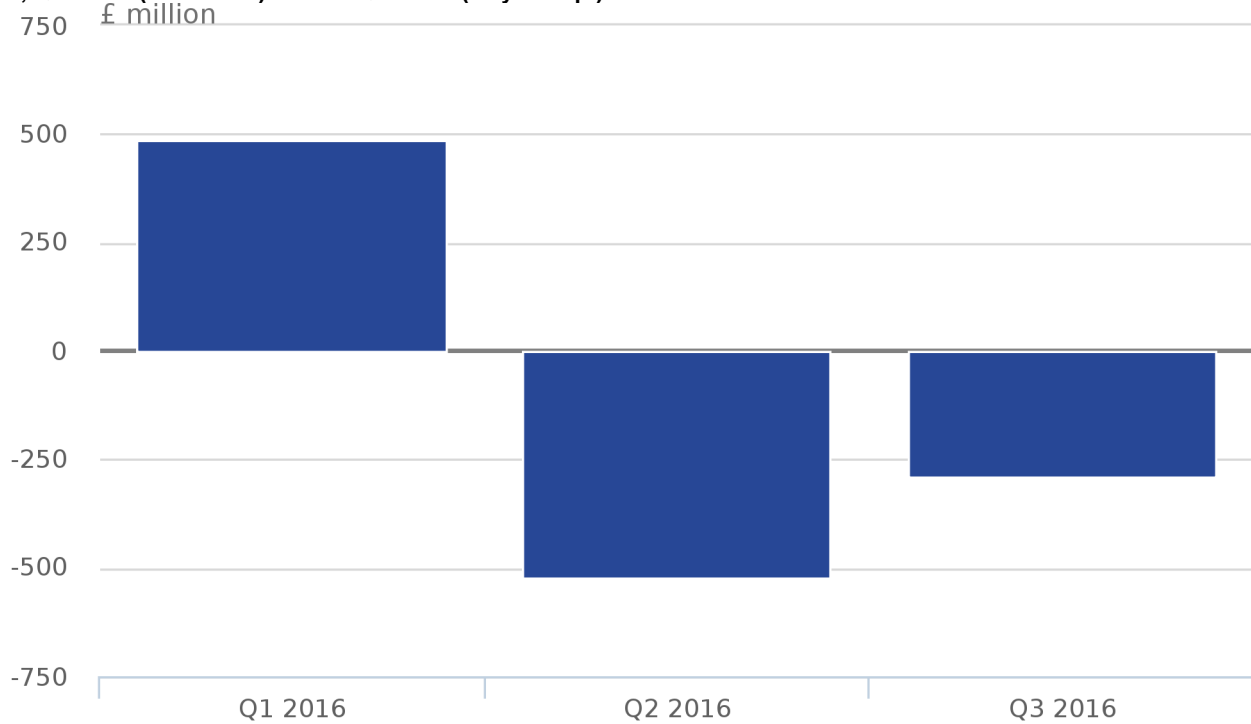
5. Estimated impact of the improvements on GFCF estimates before quality and balancing adjustments

5.1 Current price GFCF and business investment: seasonally adjusted

The revisions shown in Figures 3 and 4 are due to using a more appropriate level to seasonally adjust current price (CP) data, which now aligns to that applied to chain-linked (CVM) data (that is, at industry total, by detailed asset and sector for acquisitions and disposals). The full impact of these seasonal adjustment improvements on the quarterly path of gross fixed capital formation (GFCF) will be seen when the GFCF estimates are fully open for revisions, back to 1997, at the Blue Book 2017 consistent release in September 2017.

Figure 3: Revision to quarterly levels of gross fixed capital formation, current prices, seasonally adjusted before quality and balancing adjustments

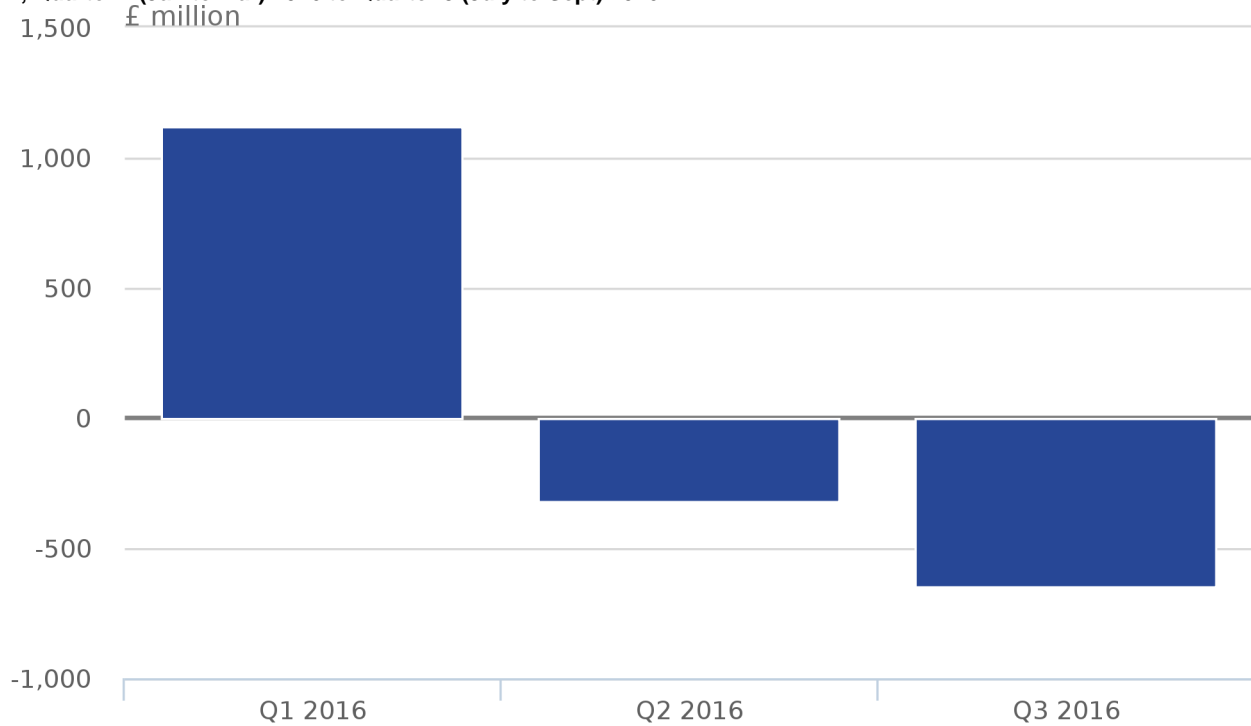
UK, Quarter 1 (Jan to Mar) 2016 to Quarter 3 (July to Sept) 2016



Source: Office for National Statistics

Figure 4: Revision to quarterly levels of business investment, current prices, seasonally adjusted before quality and balancing adjustments

UK, Quarter 1 (Jan to Mar) 2016 to Quarter 3 (July to Sept) 2016



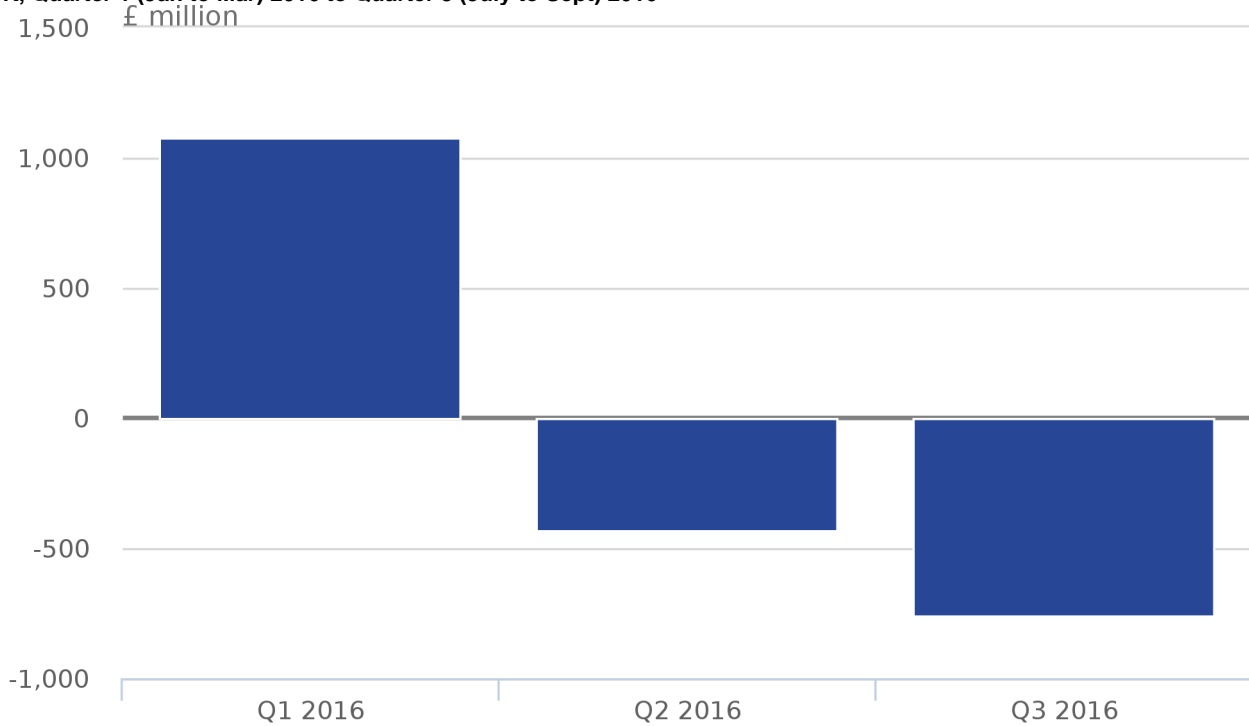
Source: Office for National Statistics

5.2 Chained volume measure GFCF and business investment: seasonally adjusted

The revisions in Figures 5 and 6 are due to processing improvements, which have resulted in a more appropriate allocation of deflators to assets and improved seasonal adjustment models.

Figure 5: Revision to quarterly levels of gross fixed capital formation, chained volume measure, seasonally adjusted before quality and balancing adjustments

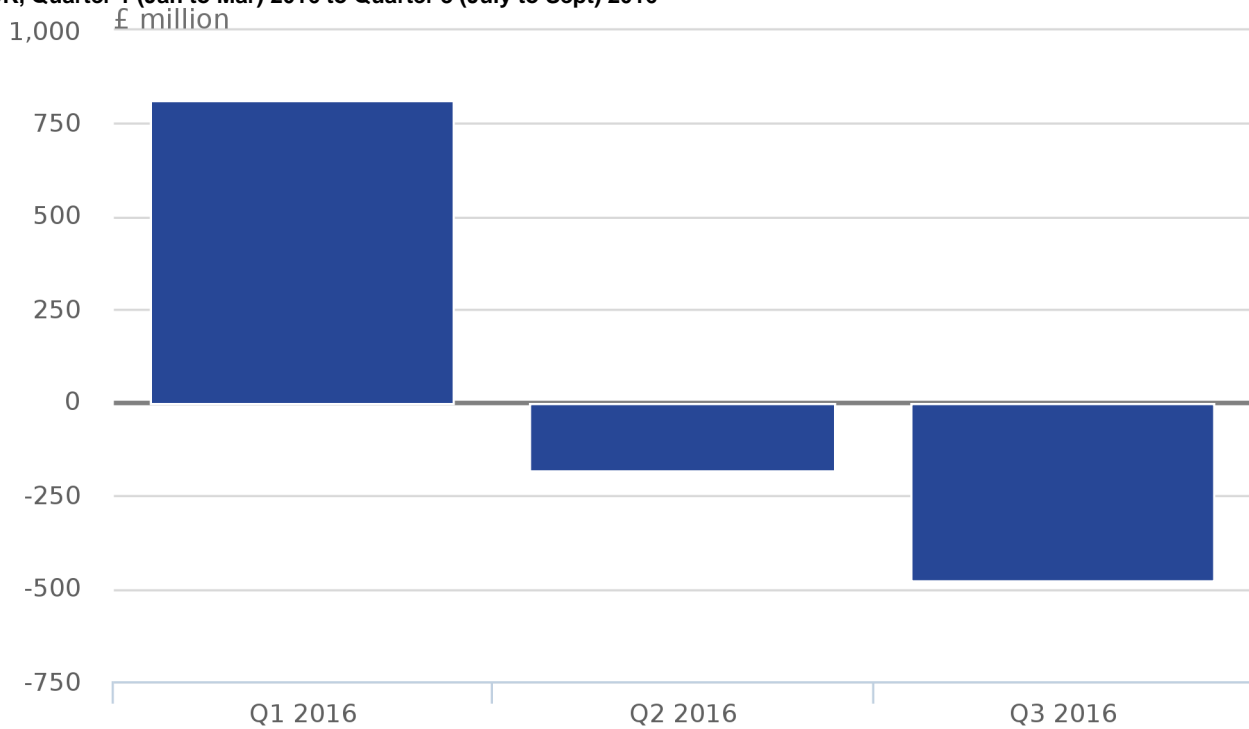
UK, Quarter 1 (Jan to Mar) 2016 to Quarter 3 (July to Sept) 2016



Source: Office for National Statistics

Figure 6: Revision to quarterly levels of business investment, chained volume measure, seasonally adjusted before quality and balancing adjustments

UK, Quarter 1 (Jan to Mar) 2016 to Quarter 3 (July to Sept) 2016



Source: Office for National Statistics

6 . Estimated impact of the improvements on GFCF estimates by sector and asset

6.1 Revisions to GFCF by sector before quality and balancing adjustments

The revisions to gross fixed capital formation (GFCF) by sector in Table 1 reflect the improved seasonal adjustment models and deflator allocation improvements. In particular, the revisions in Quarter 1 (Jan to Mar) 2016 reflect the way in which the seasonally adjusted series improvements have enabled better handling of the way in which we benchmark the path of the quarterly GFCF data to that of the annual.

Table 1: Revisions to gross fixed capital formation in the UK by institutional sector, chained volume measure, seasonally adjusted*

	£ million	£ million	£ million
	Q1 2016	Q2 2016	Q3 2016
	1	2	3
Gross fixed capital formation	1074	-427	-757
Business investment	813	-182	-477
General government	167	-37	-107
Public corporations dwellings	-2	2	-6
Public corporations cost of ownership	8	-3	1
transfer on non-produced assets			
Private sector dwellings	34	-126	-125
Private sector cost of ownership	53	-82	-42
transfer on non-produced assets			

Source: Office for National Statistics

Notes:

* Series may not sum to totals due to rounding

1. Q1 is Quarter 1 (Jan to Mar)

2. Q2 is Quarter 2 (Apr to June)

3. Q3 is Quarter 3 (July to Sept)

6.2 Revisions to GFCF by asset, before quality and balancing adjustments

The revisions in Table 2 are again due to improved seasonal adjustment models and deflator allocation improvements, as well as better handling of benchmarking quarterly to annual data resulting from seasonal adjustment improvements.

Other buildings and structures and transfer costs have particularly been impacted by the improved deflator allocation and benefitted from the seasonal adjustment model improvements. As the transfer costs element of this asset is not included in business investment, its impact on GFCF will be different to that on business investment. Additionally, investment by general government is included in GFCF, but not business investment, so again that will lead to differing impacts, which can be seen in the revisions to other buildings and structures and transfer costs.

Transport equipment has likewise benefitted from seasonal adjustment model improvements and impacted GFCF and business investment revisions equally.

Dwellings revisions have impacted on GFCF, but not business investment, due to this asset not being included in business investment.

Table 2: Revisions to gross fixed capital formation in the UK by asset, chained volume measure, seasonally adjusted*

	£ million	£ million	£ million
	Q1 2016	Q2 2016	Q3 2016
	1	2	3
Gross fixed capital formation	1074	-427	-757
Transport equipment	29	-348	-856
ICT equipment and other machinery and equipment	-15	220	391
Dwellings	32	-124	-131
Other buildings and structures and transfer costs	1053	3	-229
Intellectual property products	-23	-178	67

Source: Office for National Statistics

Notes:

* Series may not sum to totals due to rounding.

1. Q1 is Quarter 1 (Jan to Mar)

2. Q2 is Quarter 2 (Apr to June)

3. Q3 is Quarter 3 (July to Sept)

7 . Authors

Ellis Best, Marc Evans, Alison McCrae; Office for National Statistics

8 . References

Evans, C and McCrae, A. (2017) Annual Improvements to Gross Fixed Capital Formation source data for Blue Book 2017

Lee, P. (2012) Balancing the Three Approaches to Measuring Gross Domestic Product, 2012

