

Statistical bulletin

Investment in intangible assets in the UK: 2022

Estimates of investment, both purchased and own-account production, of intangible assets, and investment in intangible assets by industry. These are official statistics in development.

Contact:
Intangible Assets and
Infrastructure team
nfa-development@ons.gov.uk
+44 1633 455612

Release date:
25 November 2024

Next release:
To be announced

Table of contents

1. [Main points](#)
2. [Total investment in intangible assets in the UK in 2022](#)
3. [Investment by asset in 2022](#)
4. [Investment by industry section in 2022](#)
5. [Data on investment in intangible assets](#)
6. [Glossary](#)
7. [Data sources and quality](#)
8. [Future developments](#)
9. [Related links](#)
10. [Cite this statistical bulletin](#)

1 . Main points

- Investment in intangible assets was £199.7 billion in 2022, £32.4 billion higher than investment in tangible assets, such as machinery and buildings, in the same period.
- Investment in intangible assets grew £12.9 billion in 2022, a second successive rise following a fall in investment during the coronavirus (COVID-19) pandemic-affected 2020.
- The largest capitalised intangible asset in 2022 was software (purchased and own-account), totalling £41.6 billion of investment.
- The largest uncapitalised intangible asset in 2022 was firm-specific training, accounting for £37.9 billion of investment.
- The manufacturing industry section was the biggest investor in intangible assets in 2022 with much of this investment (48.7%) going to research and development (R&D).
- In 2022, the most intangible intensive industry section, meaning it invests most in intangibles relative to its size as measured by gross value added (GVA), was information and communications with investment equal to 20.3% of GVA.

2 . Total investment in intangible assets in the UK in 2022

Intangible assets include products such as software and databases, research and development (R&D), mineral exploration, and artistic originals, as recorded in the UK National Accounts (capitalised). These are collectively referred to as intellectual property products (IPP). However, there is an additional set of intangible assets, such as branding, financial product innovation, firm-specific training, and design, which are not included in the UK National Accounts. These are referred to as "uncapitalised intangible assets."

This bulletin discusses both capitalised and uncapitalised intangibles, and all data are shown in current prices. This release also refers to tangible assets that are defined as physical items of value that businesses or individuals own and use to generate economic benefits. These assets can be touched, seen or utilised in the real world, such as buildings, machinery, and equipment.

Investment in intangible assets increased by 6.9% to £199.7 billion in 2022. This was the largest annual percentage increase since 2000 (8.2%). This follows a 5.0% increase in 2021, a rise that followed a fall in 2020 as the coronavirus (COVID-19) pandemic affected UK businesses' investment opportunities.

Meanwhile, investment in tangible assets increased by 12.3% to £167.3 billion in 2022. This follows a 6.0% increase in 2021 and a sharp 11.1% fall in pandemic-affected 2020.

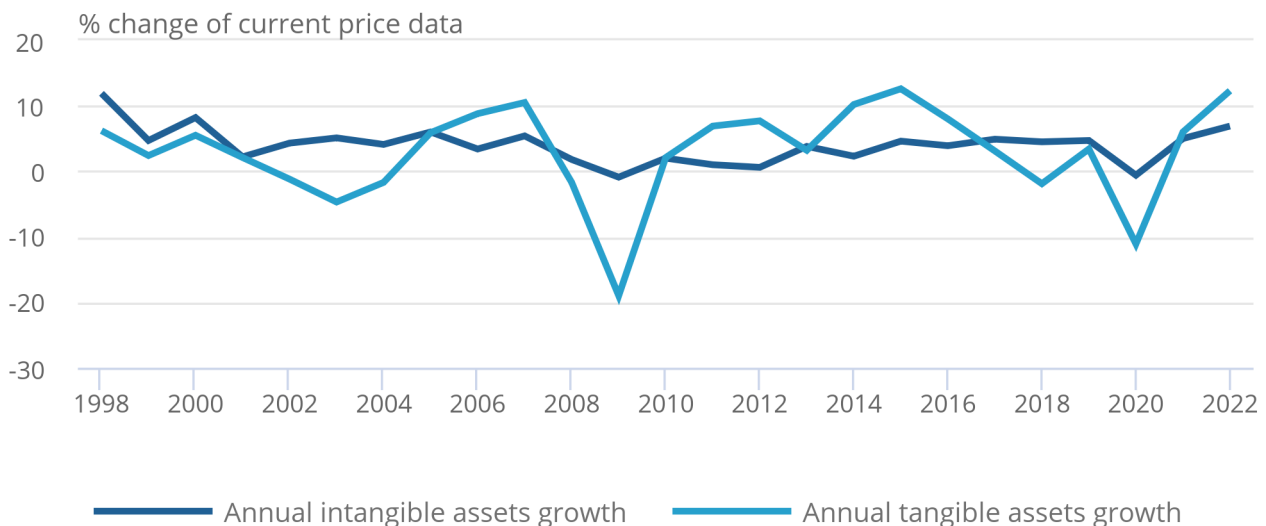
The 12.3% increase seen in investment in tangible assets shows that tangible investment continues to grow at a faster rate than investment in intangible assets, also seen in 2021 (Figure 1).

Figure 1: The annual percentage growth of investment in intangible assets in 2022 was much lower than the growth of investment in tangible assets

Annual percentage growth of investment in intangible assets compared with the annual percentage growth of investment in tangible assets, UK, 1998 to 2022, current prices

Figure 1: The annual percentage growth of investment in intangible assets in 2022 was much lower than the growth of investment in tangible assets

Annual percentage growth of investment in intangible assets compared with the annual percentage growth of investment in tangible assets, UK, 1998 to 2022, current prices



Source: Investment in intangible assets in the UK from the Office for National Statistics

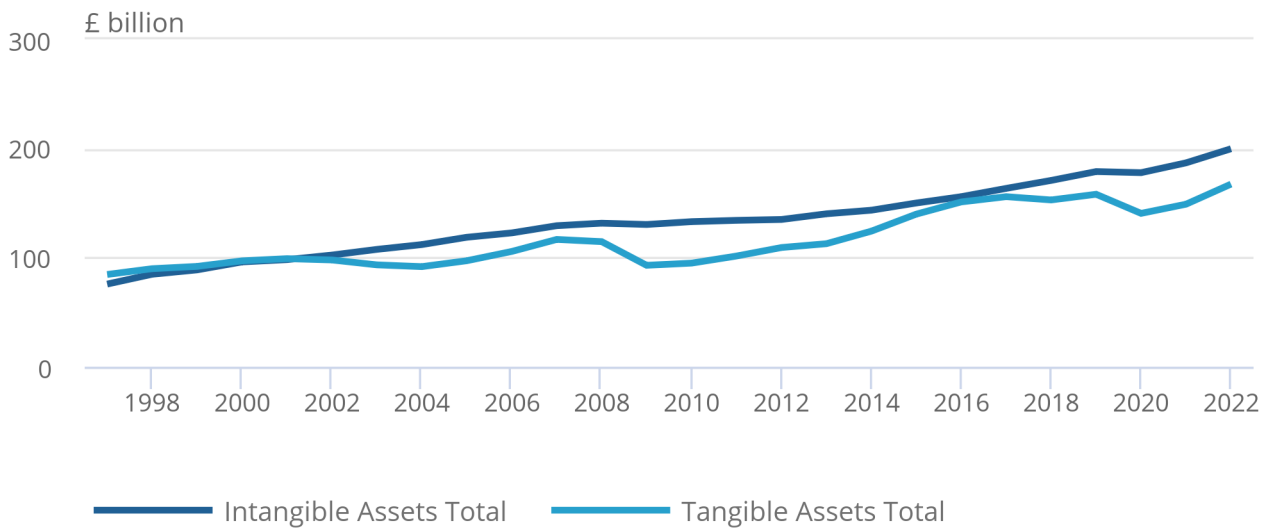
Investment in intangible assets is less vulnerable to economic downturn, such as the economic crisis of the late 2000s or the coronavirus (COVID-19) pandemic, compared with investment in tangible assets throughout the period examined in our data, 1997 to 2022 (Figure 2).

Figure 2: Intangible investment continued to be higher than tangible investment in 2022

Total investment in intangible assets (purchased and own-account) compared with the total investment in tangible assets, UK, 1997 to 2022, £ billion, current prices

Figure 2: Intangible investment continued to be higher than tangible investment in 2022

Total investment in intangible assets (purchased and own-account) compared with the total investment in tangible assets, UK, 1997 to 2022, £ billion, current prices



Source: Investment in intangible assets in the UK from the Office for National Statistics

When separating intangible assets, we see growth in both capitalised intellectual property products (IPP) and uncapitalised intangible assets in 2022, when compared with the previous year (Figure 3).

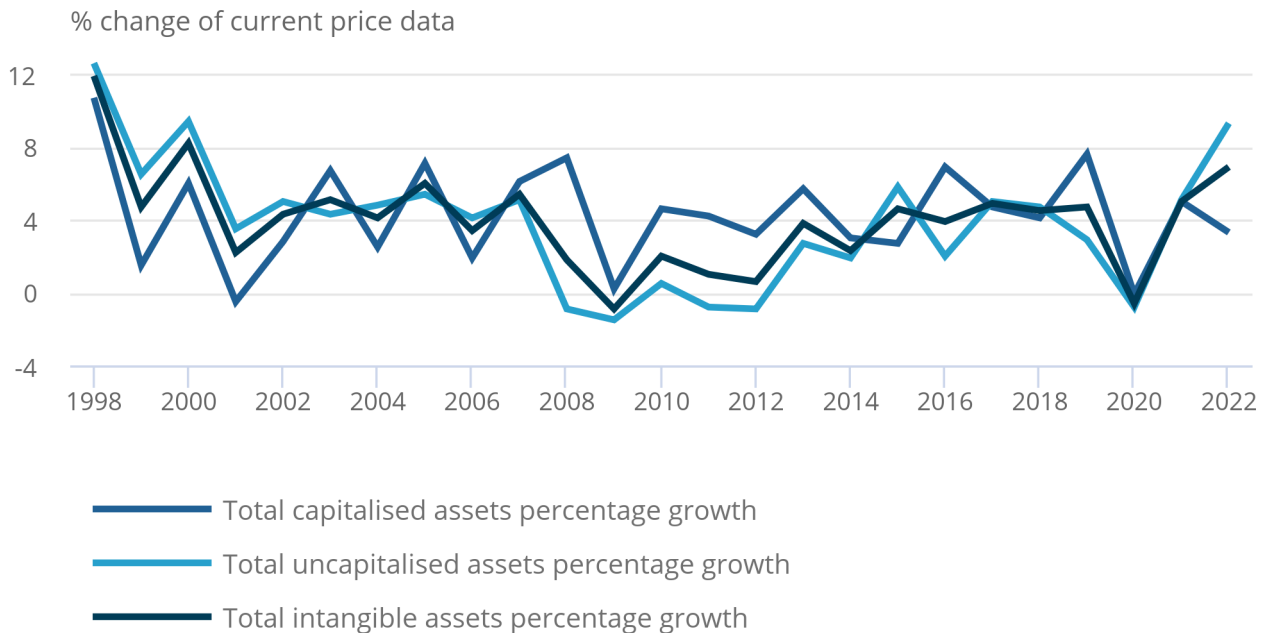
Investment in capitalised intangible assets, included in the UK National Accounts as intellectual property products (IPP), increased by 3.3% annually. Investment in uncapitalised intangibles increased by a much stronger 9.3%, with particular growth in branding and firm-specific training.

Figure 3: Uncapitalised intangible investment increased at a much greater rate in 2022

Annual percentage growth of investment in capitalised and uncapitalised intangible assets, 1998 to 2022

Figure 3: Uncapitalised intangible investment increased at a much greater rate in 2022

Annual percentage growth of investment in capitalised and uncapitalised intangible assets, 1998 to 2022



Source: Investment in intangible assets in the UK from the Office for National Statistics

Within capitalised intangible assets, except for own-account software, all other asset types saw an annual increase in investment in 2022, including a £1.4 billion increase in purchased software (10.1%). Overall, capitalised investment increased by £2.5 billion.

Investment in uncapitalised intangible assets showed falls in two areas in 2022: own-account organisational capital and own-account branding. However, these decreases in investment were more than offset by strong investment in other areas including firm-specific training (£3.6 billion) and purchased branding (£3.2 billion), leading to an overall increase in uncapitalised investment of £10.4 billion.

3 . Investment by asset in 2022

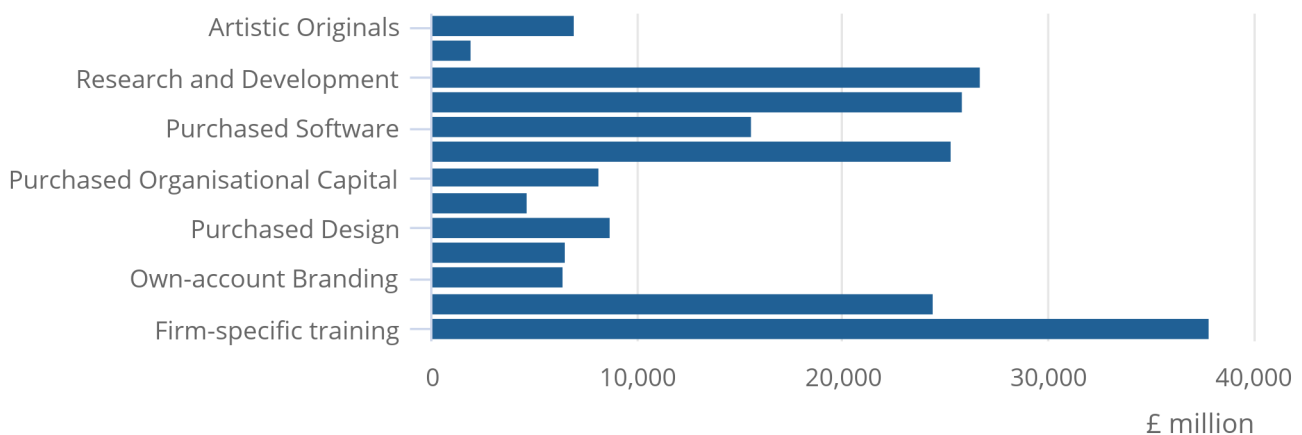
Figure 4 shows the level of intangible investment by asset in 2022.

Figure 4: Intangible investment was largest in training, research and development, and own-account software in 2022

Intangible investment by asset, current prices, £ million, UK, 2022

Figure 4: Intangible investment was largest in training, research and development, and own-account software in 2022

Intangible investment by asset, current prices, £ million, UK, 2022



Source: Investment in intangible assets in the UK from the Office for National Statistics

Entertainment, literary and artistic originals

Referred to as "artistic originals", the film, television programming and broadcasting industry invested the most in entertainment, literary and artistic originals in 2022, with £5.2 billion invested.

Mineral exploration

Investment in mineral exploration saw a 2.6% annual growth in 2022, to reach £2.0 billion, which is the highest value of mineral exploration seen across the data time series (1997 to 2022). Although mineral exploration has generally followed a cyclical growth cycle, we have now seen four years of consecutive growth, with investment over four times higher than it was in 2018.

Research and development

The highest investment in research and development (R&D) in 2022, £5.8 billion, was by the manufacture of motor vehicles, trailers, and semi-trailers industry. The manufacture of basic pharmaceutical products and pharmaceutical preparations was the second-highest investing industry at £4.3 billion. This was also the industry with the highest annual increase in investment in R&D in 2022 of £0.4 billion (10.4%).

Computer software and databases (purchased and own-account)

Software and databases (purchased and own-account combined) remained the largest area for intangible asset investment (£41.6 billion) in 2022, a position it has held since 2016.

Across all industries, investment in purchased computer software and databases reached a record £15.7 billion in 2022. The highest investment in purchased computer software and databases in 2022 was £1.7 billion by the telecommunications industry, followed by the retail trade, except the motor vehicles and motorcycles industry, with investment totaling £1.5 billion.

Total investment in own-account computer software and databases fell £0.3 billion annually to £25.9 billion in 2022, reflecting lower investment across several industries.

Design (purchased and own-account)

Investment in design (purchased and own-account combined) saw an increase of £1.6 billion (13.9%) in 2022 when compared with the previous year.

Investment in purchased design increased by £1.2 billion (15.2%) in 2022. The construction industry remained the largest investor in this asset (£2.8 billion). Construction invested nearly one billion more in purchased design than the next-highest industry, mining and support services (£1.9 billion).

Organisational capital (purchased and own-account)

Investment in purchased organisational capital in 2022 was £8.2 billion, a £1.0 billion (14.4%) increase on 2021. The financial service activities industry remained the largest investor in this asset (£2.6 billion). It invested over twice as much in purchased organisational capital than the next-highest industry, computer programming and information service activities (£1.2 billion).

The financial service activities industry remained the largest investor in own-account organisational capital in 2022, with an annual increase of £0.6 billion (25.8%) to reach investment of £2.9 billion.

Financial product innovation

Investment in financial product innovation (FPI) in 2022 showed a £1.5 billion (30.8%) increase, returning investment in this asset to growth following a fall in 2021.

The financial service activities industry is the largest investor in FPI, providing nearly 60% of the total investment seen (£3.9 billion) in 2022. It saw a £0.9 billion increase in investment in the latest year.

Branding (purchased and own-account)

Total branding increased by £2.7 billion (9.4%), to reach a record £31.0 billion, with increased investment seen in several industries.

Purchased branding investment rose to £3.2 billion in 2022. Over 25% of this increased investment came from computer programming and information service activities, with the industry's investment almost doubling on the year to reach £1.9 billion.

Firm-specific training

Firm-specific training is now the second highest individual investment asset at £37.9 billion. Training saw a decline in investment in 2020, which is likely to have been affected by the coronavirus (COVID-19) pandemic. However, as the UK adapted to new ways of delivering training, such as via virtual platforms, firm-specific training in 2021 reached a level not seen since records began and has continued this growth into 2022.

4 . Investment by industry section in 2022

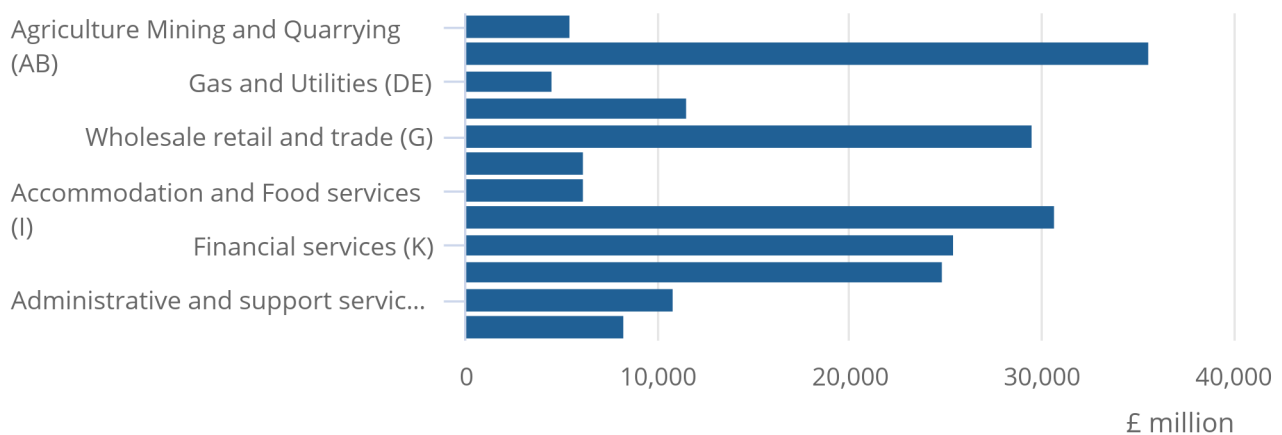
The manufacturing industries led investment in intangible assets in 2022, investing £35.7 billion, followed by the information and communication industry at £30.8 billion, and the wholesale, retail, and trade industries at £29.6 billion.

Figure 5: Manufacturing, information and communication, and wholesale, retail and trade, were the largest investing industries in intangibles in 2022

Intangible investment by industry, current prices, £ million, 2022

Figure 5: Manufacturing, information and communication, and wholesale, retail and trade, were the largest investing industries in intangibles in 2022

Intangible investment by industry, current prices, £ million, 2022



Source: Investment in intangible assets in the UK from the Office for National Statistics

In 2022, 48.7% of the intangible assets investment by the largest investing industry section, manufacturing, was in research and development (R&D). Manufacturers also invested strongly in a broad base of other intangible assets including software and databases, branding, organisational capital, and firm-specific training. Investment in each of these exceeded £3.0 billion in 2022.

Similarly, investment in the information and communication, and wholesale, retail and trade industries were spread across a wide number of intangible assets in 2022. Both invested strongly in branding, software and databases, and organisational capital in the latest period. The information and communication industries also invested heavily in artistic originals (£6.6 billion), reflecting one of its primary outputs: the production and distribution of information and cultural products.

Figure 6: Manufacturing industries invested most in research and development (R&D); information and communication invested most in artistic originals

Intangible investment by industry section and asset, current prices, £ million, UK, 2022

[Download the data](#)

The lowest level of intangible investment was seen in the gas and utilities (£4.5 billion) and agriculture, mining, and quarrying (£5.5 billion) industries. However, it should be noted that these are small industries in the UK both in terms of employee numbers and output. This reflects that intangible investment is not evenly distributed across industry sections. Some industries invest more than others, even after comparing their investment with their relative contribution to the UK economy, as measured by the industry's gross value added (GVA).

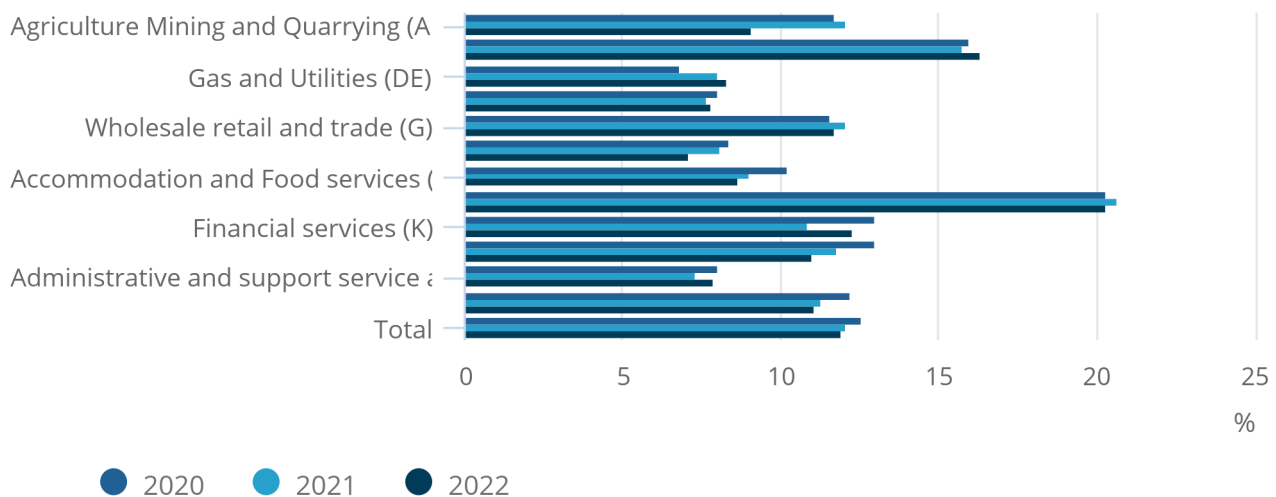
In Figure 7, intangible investment as a share of GVA by industry section in 2022 is shown. Note that GVA has been adjusted for the capitalisation of additional intangible assets ("uncapitalised assets"). It shows that the most intangible intensive industries (those that invest most in intangibles relative to their size) are typically services industries. The exception being manufacturing (Standard Industrial Classification (SIC) 2007, section C).

Figure 7: The most intangible intensive industry section as a % of gross value added in 2022 was information and communications

Intangible investment as a share of gross value added (GVA) by industry section, current prices, %, UK, 2020 to 2022

Figure 7: The most intangible intensive industry section as a % of gross value added in 2022 was information and communications

Intangible investment as a share of gross value added (GVA) by industry section, current prices, %, UK, 2020 to 2022



Source: Investment in intangible assets in the UK from the Office for National Statistics

Notes:

- Standard Industrial Classification (SIC) 2007 sections: AB = agriculture, forestry and mining; C = manufacturing; DE = electricity, gas and water supply; F = construction, G = wholesale and retail; H = transport; I = accommodation and food services; J = information and communication; K = financial services; M = professional and scientific activities; N = administrative services; RST = arts, households and other services.
- Industry gross value added (GVA) has been adjusted for the capitalisation of all intangible assets.

Intangible intensity in most industries has been stable or declined since the coronavirus (COVID-19) pandemic in 2020. The most intangible intensive industry section in 2022 was information and communications (SIC 2007, section J), for which intangible investment was equal to 20.3% of GVA in 2022. Section J shows a consistent level of investment, with the average investment as a percentage of adjusted GVA also standing at 20.3% between 1997 and 2022.

Production industries are less intangible intensive, relying more heavily on tangible capital. Of these industries, the manufacturing industries (SIC 2007, section C) are the most intangible intensive, primarily led by investment in research and development.

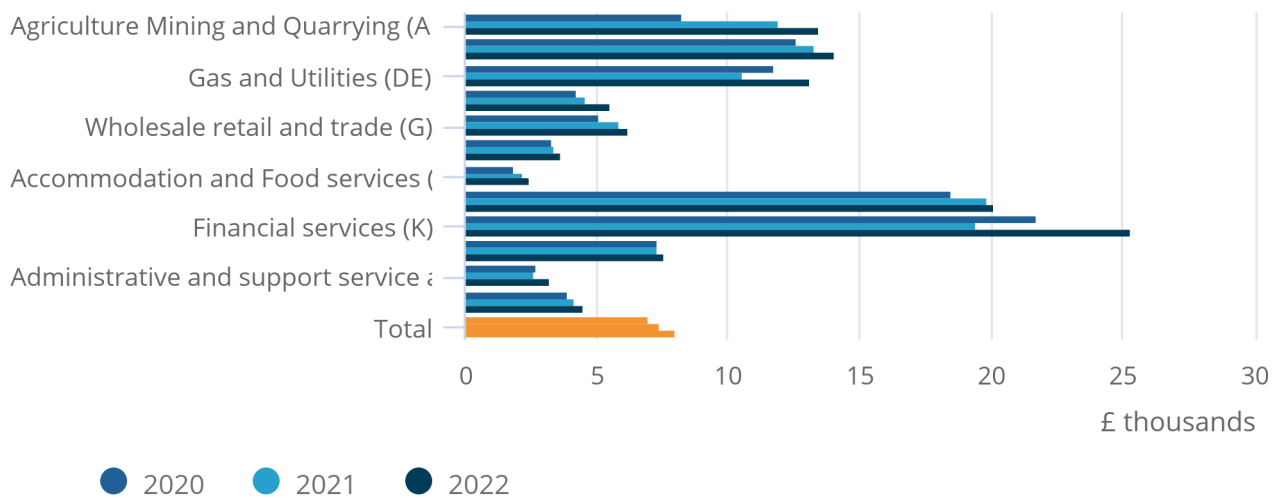
Another way of assessing intangible intensity is to examine intangible investment per worker for each industry (Figure 8). This differs from the measures used in Figure 7 as the industrial breakdown of GVA is not the same as the breakdown of employment across the economy, reflecting different production models.

Figure 8: Financial services, and information and communication, exceeded £20,000 investment in intangible assets per worker in 2022

Intangible investment per worker by industry section, current prices, £ thousands, UK, 2020 to 2022

Figure 8: Financial services, and information and communication, exceeded £20,000 investment in intangible assets per worker in 2022

Intangible investment per worker by industry section, current prices, £ thousands, UK, 2020 to 2022



Source: Investment in intangible assets in the UK from the Office for National Statistics

Notes:

- Standard Industrial Classification (SIC) 2007 sections: AB = agriculture, forestry and mining; C = manufacturing; DE = electricity, gas and water supply; F = construction, G = wholesale and retail; H = transport; I = accommodation and food services; J = information and communication; K = financial services; M = professional and scientific activities; N = administrative services; RST = arts, households and other services.
- Employment data from the [Output per job, UK dataset](#).

The total market sector invested a record £8,000 per worker in 2022, up from £7,400 per worker in 2021. This measure has been broadly increasing since the global financial crisis of the late 2000s.

Unlike the measure based on GVA in Figure 7, the distinction between production and services industries is less clear when comparing with employment. Among the service industries, the financial services (SIC 2007, section K) and information and communication industries (SIC 2007, section J) both exceed £20,000 investment in intangible assets per worker in 2022, at £25,300 and £20,100, respectively.

The accommodation and food services (SIC 2007, section I) and administrative and support service activities (SIC 2007, section N) industries were the lowest investors per worker, with both investing less than £3,500 per worker in intangible assets in 2022, reinforcing that the distinction between production and services industries is less obvious within this measure.

Of note within the production industries, is the significant increase in investment in intangible assets per worker in agriculture, mining and quarrying (SIC 2007, section AB), from 2019 onwards. In 2018, investment in intangible assets per worker stood at £4,500. In 2022, this same measure stood at £13,500 because of significant increases in investment in mineral exploration but also firm-specific training and design, while employment in the section remained steady.

5 . Data on investment in intangible assets

[Investment in intangible assets in the UK](#)

Dataset | Released 25 November 2024

Estimates of investment, both purchased and own-account production, of intangible assets, annual data. These are official statistics in development.

6 . Glossary

A detailed glossary of the working definitions of the assets in this publication can be found in [Investment in intangible assets in the UK: Quality and methodology information.](#)

More economic definitions can be found in our interactive glossary.

7 . Data sources and quality

Notes on measurement

Estimates include a degree of suppression, so there may be a small difference between the totals presented across the tables in our [Investment in intangible assets in the UK dataset](#).

The definition of the market sector in this article includes sections A to K, M to N and R to T in the Standard Industrial Classification (SIC) 2007. It excludes real estate (L), public administration and defence (O), education (P) and health and social work (Q). Note that this is different to the standard ONS definition of "market sector", which states that any unit selling at an economically significant price is operating in the market. Not all sections P and Q are non-market, and there are non-market parts of other industries.

Estimates of research and development (R&D) exclude estimates from our [recent Business enterprise research and development, UK: 2022 bulletin](#). Instead, our R&D estimates are consistent with gross fixed capital formation (GFCF) data presented in [UK National Accounts, The Blue Book: 2024](#).

Estimates for own-account branding, design, organisational capital, and financial production innovation (FPI) for 2022 have been produced using [Annual Survey of Hours and Earnings \(ASHE\) 2024](#) data used in the production of our publication.

The occupations used to produce investment in intangible assets are as defined by the [Standard Occupational Classification \(SOC\) 2020](#). SOC is a common classification of occupational information for the UK. SOC 2020 was initially used for revised 2021 ASHE estimates and provisional 2022 ASHE estimates.

In line with this, we have again reconsidered the SOC 2010 occupation list we use to produce relevant estimates for 2011 to 2020 inclusive, adding additional codes where the SOC 2020 occupation list suggested contributing occupations to the own-account investment activity we present had previously been excluded. This review led to revisions in all our own-account investment by asset analyses, particularly financial product innovation (FPI).

Quality

The estimates in this bulletin and dataset are based on developmental data and methods and are therefore subject to significant revision.

More quality and methodological information on strengths, limitations, appropriate uses, and how the data were created is available in our [Investment in intangible assets in the UK quality and methodology information \(QMI\)](#).

In addition, we will continue to collaborate with the international community, sharing insight and experience in contribution to revisions of the System of National Accounts (SNA) and other guidance, including the expansion of the definition of capitalised and uncapitalised intangible assets.

Official statistics in development

These statistics are labelled as "official statistics in development." Until September 2023, these were called "experimental statistics". Read more about the change in the [guide to official statistics in development](#).

We are developing how we collect and produce the data to improve the quality of these statistics. Once the developments are complete, we will review the statistics with the Statistics Head of Profession. We will decide whether the statistics are of sufficient quality and value to be published as official statistics, or whether further development is needed. Production may be stopped if they are not of sufficient quality or value. Users will be informed of the outcome and any changes.

User feedback is crucial in informing our work. Please send any questions or comments on the development of these statistics to nfa-development@ons.gov.uk.

Strengths and limitations

Strengths

The latest publication accounts for revisions to several sources used in our estimation of both purchased and own-account tangible and intangible investment. As such, estimates presented include updated methodological and survey collection data from each source.

The following source revisions have been included in our current estimates:

Office for National Statistics:

- Business investment (revisions 2020 to 2021)
- Annual Business Survey (revisions for 2021 only)
- Annual Purchases Survey (revisions 2016 to 2021)

Department for Education:

- Employee Skills Survey (revisions 2011 to 2022)

Limitations

In this bulletin we were not able to produce new constant price estimates for intangible investment because of ongoing improvement in deflator methodology for intangible assets.

The timeliness of estimates presented in this bulletin and accompanying dataset is controlled by the availability of our existing data sources. For example, purchased and own-account intangible investment use estimates presented in our [Input-output supply and use tables](#), with the most recent year presented being 2022. As part of our future workplan, we will investigate the incorporation of consistent, timely estimates and statistical modelling to extend the data available in future publications.

Pending a review of own-account intangible investment historic methods and data, estimates prior to 2011 in this bulletin continue to be produced by benchmarking previously published estimates to newly estimated 2011 data. This means that growth rates in most own-account data presented will match those for data published in previous bulletins.

8 . Future developments

Estimates of investment in intangible assets are under regular review as part of both the UK's and international partners' work to improve the methodology underpinning these data as well as expanding the definitions used.

Domestically, work continues to develop methods for "data" as an investment asset. Estimates of this activity will be presented in a future release of this bulletin.

In addition, we continue to review the list of occupations and time factors used in our sum of costs estimates of our own-account intangible investment, including work to review the relationship between Standard Occupational Classification (SOC) schemes. Developments in this area will also be presented in a future release of this bulletin.

As discussed in [Section 7: Data sources and quality](#), we will investigate the introduction of more timely source estimates and statistical modelling to extend the data available in future publications.

Finally, work is ongoing to improve our deflator methodology so that we can produce new constant price estimates for intangible investment in a future bulletin.

9 . Related links

[Investment in intangible assets in the UK QMI](#)

Methodology | Released 8 October 2024

Quality and methodology information (QMI) for investment in intangible assets in the UK. Includes strengths and limitations, methods, and data uses and users.

[Investment in intangible assets in the UK: 2021](#)

Bulletin | Released 23 April 2024

Developmental estimates of investment in intangible assets in the UK from 1997 to 2021, presented by asset category and industrial sector.

[UK inclusive wealth and income accounts: 2005 to 2022](#)

Article | Released 13 November 2024

Estimates and analysis of economic progress, including a broader range of economic activities and assets than gross domestic product (GDP), like unpaid household services, ecosystem services, and more.

[Investment in intangible assets in the UK: 2020](#)

Bulletin | Released 15 December 2022

Developmental estimates of investment in intangible assets in the UK from 1997 to 2020, presented by asset category and industrial sector.

[Investment in intangible assets in the UK by industry: 2019](#)

Bulletin | Released 1 December 2021

Developmental estimates of investment in intangible assets by industry at the Standard Industrial Classification 2007 (SIC) division level.

10 . Cite this statistical bulletin

Office for National Statistics (ONS), released 25 November 2024, ONS website, statistical bulletin,

[Investment in intangible assets in the UK: 2022](#)