

Article

# Impact of coronavirus (COVID-19) using Input-Output Supply and Use Tables, UK: 2019 to 2020

Estimates of industry inputs and outputs, product supply and demand, and gross value added (GVA) for the UK, consistent with the UK National Accounts in Blue Book 2022.

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# 1 . Main points

- The total value of goods and services in the UK economy fell by 8.2% between 2019 and 2020 in current prices.
- This fall in the total value of goods and services was driven by a fall in domestic output of the distribution, transport, hotels and restaurants industry, which were affected by the restrictions on activities implemented during the coronavirus (COVID-19) pandemic in 2020.
- The composition of current price domestic output changed between 2019 and 2020 with market output decreasing by 9.0%; and current price non-market output increasing by 5.3%, driven by higher spending on human health activities.
- Current price gross value added (GVA) fell by 4.8% between 2019 and 2020, driven by the distribution, transport, hotels and restaurants industry, particularly accommodation and food and beverage service activities, reflecting travel and other restrictions.
- Final demand for products decreased by 8.6% in 2020 in current prices, the decline being greatest by households, reflecting reduced consumer spending in restaurants and hotels, and on travel and transport.
- The largest increase in final demand was for government, health and education services, which increased by 6.6%.
- Intermediate consumption fell by 7.5% in current prices between 2019 and 2020, driven by the production industry, and particularly a decline in intermediate consumption of products of crude petroleum and natural gas extraction.

## 2 . Supply and Use Tables framework

The annual Supply and Use Tables (SUTs) provide a framework for the reconciliation of the three approaches to gross domestic product (GDP), thereby producing a single balanced estimate of GDP. This brings together all the available information on inputs, outputs, gross value added (GVA), incomes and expenditures, including the supply of products via domestic output and through the import of goods and services, and the uses of products in intermediate consumption and in final demand, including for export.

It should be noted that total supply of products must equal total demand and total inputs in each industry must be equal to total output. Final demand equals total demand minus intermediate consumption.

The latest SUTs capture the changes in current price estimates of the three approaches to GDP between 2019 and 2020, when the coronavirus (COVID-19) pandemic first affected the domestic and global economy. The SUTs, and the analysis in this article, are in current prices, and not volume measures. It should be noted that changes can differ considerably depending on whether they are measured in current price (nominal) or volume (real) measures. SUT data in volume measures will be available in due course.

### 3 . Supply of products

One way to approach understanding the UK economy is to consider the composition of supply. The global coronavirus (COVID-19) pandemic affected the total value of the goods and services available for use (supply) in the UK economy. The effects were most strongly felt in the goods and services of those industries which were most severely affected by coronavirus lockdowns and other public health measures. This included ["high-contact" industries](#) such as transport, hotels and restaurants, and personal services.

Figure 1a shows that there was an 8.2% decrease in the total value of the products (goods and services) available for use in the UK economy in current prices, where there was a contraction in domestic output of products in several sectors. Domestic output of distribution, transport, hotels and restaurants products made the largest contribution. This was driven by a fall in the products of food and beverage serving activities (down 28.4%) and products of air transport (down 67.6%) as restrictions were in place for the hospitality industry, while border restrictions limited international travel.

Domestic output of the products of the production (down 8.9%) and construction (down 12.4%) sectors also faced significant declines, including falls in the output of coke and refined petroleum products (down 32.7%). Domestic output of the products of professional and support activities also experienced a contraction (down 8.0%) in 2020, driven by products of travel agency, tour operator, other reservation services and related activities (down 57.3%).

The increase in current price output experienced by the government, health and education sector was driven by products of human health activities (up 17.8%) This reflected the increase in nominal spending on healthcare activities during the coronavirus pandemic in 2020. There was also a small increase in output of products of residential care and public administration, and a slight decrease in education products.

International trade flows were adversely affected by the effects of the coronavirus pandemic on the demand and supply of goods and services. Imports of goods fell by 13.8% between 2019 and 2020, particularly manufactured products. There was an annual 24.1% fall in imports of motor vehicles, trailers, and semi-trailers. Imports of products of crude petroleum and natural gas extraction and mining of metal ores (down 34.0%), and coke and refined petroleum products (down 44.8%) also declined, reflecting the closure of sections of the economy as part of the coronavirus restrictions which were implemented during 2020.

Total services imports decreased by 25.0% in 2020. The largest fall was in imports of distribution, transport, hotels, and restaurants products (down 63.7%). This primarily reflected a fall in imports of air transport (down 65.4%), accommodation (down 77.9%), and food and beverage service products (down 78.4%), reflecting the travel and transport-related restrictions and closures of hospitality.

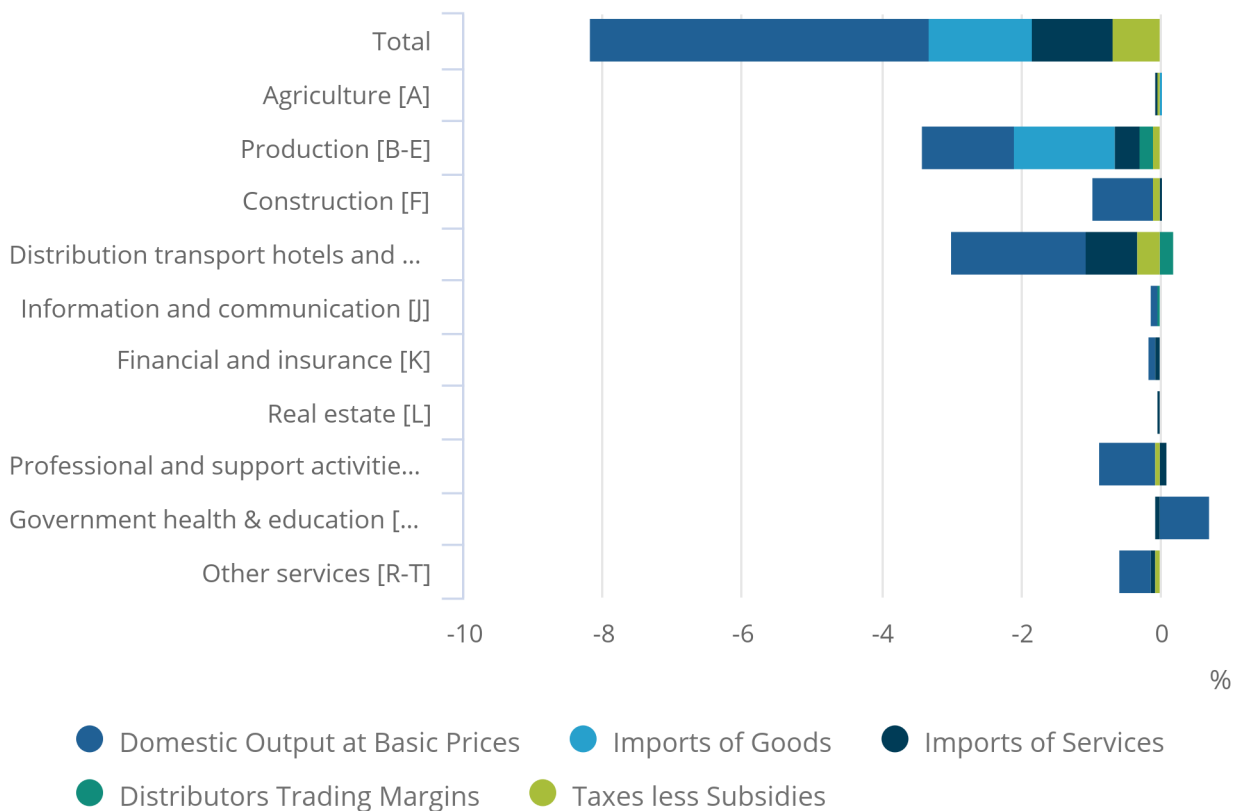
There was a 13.5% decrease in taxes less subsidies on products in 2020. This was mainly because of a reduction in product taxes paid, such as value added tax (VAT). The largest impact was on products of agriculture (taxes less subsidies down 71.2%), reflecting the [funding for farmers](#) put in place following the extreme weather and flooding across England in February 2020. Products of the distribution, transport, hotels, and restaurants industry, which were affected by the reduced rate of VAT payable on hospitality, also fell (taxes less subsidies down 69.4%). However, the main government interventions to support the economy through the coronavirus pandemic are classified as subsidies on production; these are discussed in [Section 5: Gross value added](#).

**Figure 1a: The value of goods and services provided in the UK declined by 8.2%, driven by decreased domestic output in all sectors except for government, health and education**

Total change in the value of goods and services available for use (supply): domestic output at basic prices, imports of goods, imports of services, taxes less subsidies on products, contribution to change in total supply of products, percentage contribution by sector, current price, 2019 to 2020, UK

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Total change in the value of goods and services available for use (supply): domestic output at basic prices, imports of goods, imports of services, taxes less subsidies on products, contribution to change in total supply of products, percentage contribution by sector, current price, 2019 to 2020, UK



Source: Office for National Statistics - Input-Output Supply and Use Tables

Notes:

1. Distributor trading margins (DTM) are the output of wholesale and retail businesses. They are reallocated to the products the margins are earned on to get supply at purchaser prices. The DTM change for products G-I therefore is matched by an equal and opposite impact on output of the same product.

## 4 . Domestic output

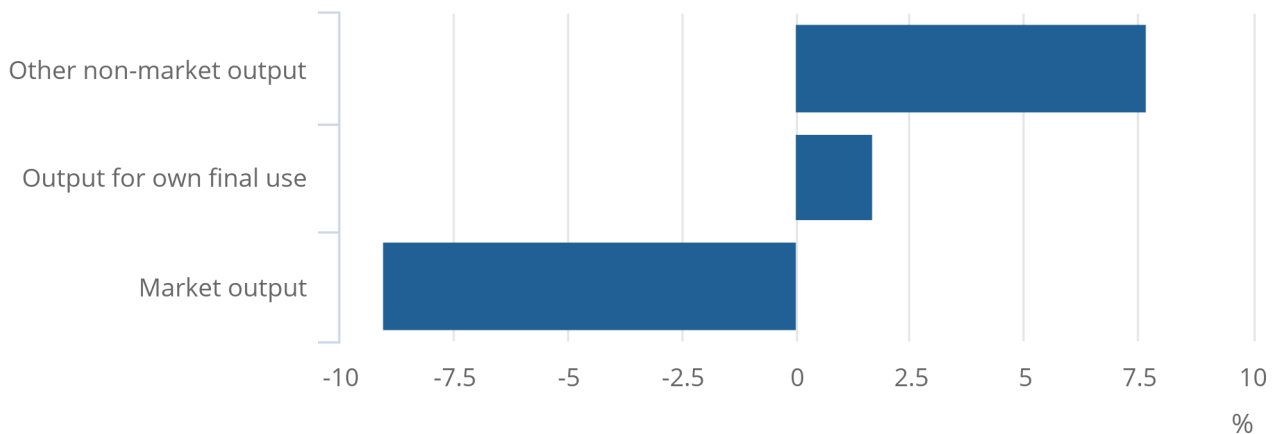
Figure 1b shows the change in the composition of current price domestic output between 2019 and 2020, which saw a decrease in market output of 9.0%. Non-market output increased by 5.3% in current prices, which is comprised of output for final use (up 1.7%) and other non-market output (up 7.7%). The increase was primarily driven by higher nominal spending on human health activities (up 23.5%).

**Figure 1b: There were changes in the composition of domestic output, which saw a decrease in market output and an increase in non-market output in 2020**

Change in the composition of domestic output at basic prices, percentage change in market output, output for own use, and other non-market output, current price, 2019 to 2020, UK

Figure 1b: There were changes in the composition of domestic output, which saw a decrease in market output and an increase in non-market output in 2020

Change in the composition of domestic output at basic prices, percentage change in market output, output for own use, and other non-market output, current price, 2019 to 2020, UK



Source: Office for National Statistics - Input-Output Supply and Use Tables

## 5 . Gross value added (GVA)

Estimates of gross value added (GVA) can differ considerably, dependent on whether they are measured in terms of current prices or volume measures, as shown in our [Impact of Blue Book 2022 changes on gross domestic product article](#).

Total GVA at basic prices declined by 4.8% in 2020 in current price terms. A large part of this decline can be explained by the distribution, transport, hotels, and restaurant industry, which experienced a decrease in GVA of 14.8%. Within this industry, the largest declines were rail transport activities where value added was close to zero, water transport activities (50.5%) and warehousing and support services for transportation (61.2%), having been severely affected by the impact of lockdowns and travel restrictions. There was also a decline in accommodation (53.0%) and food and beverage service activities (33.0%).

Other services experienced the largest reduction in GVA, falling 17.2% between 2019 and 2020. This was driven by falls in sports activities and amusement and recreational activities (down 26.3%), creative arts and entertainment activities (down 26.2%), because of restrictions on these activities implemented during the coronavirus (COVID-19) pandemic.

The construction sector experienced a reduction in GVA of 14.5% and the production sector a decline of 7.0%, with crude petroleum and natural gas extraction (down 37.1%) driving the decline within production. In contrast, current price GVA increased slightly in the agriculture sector.

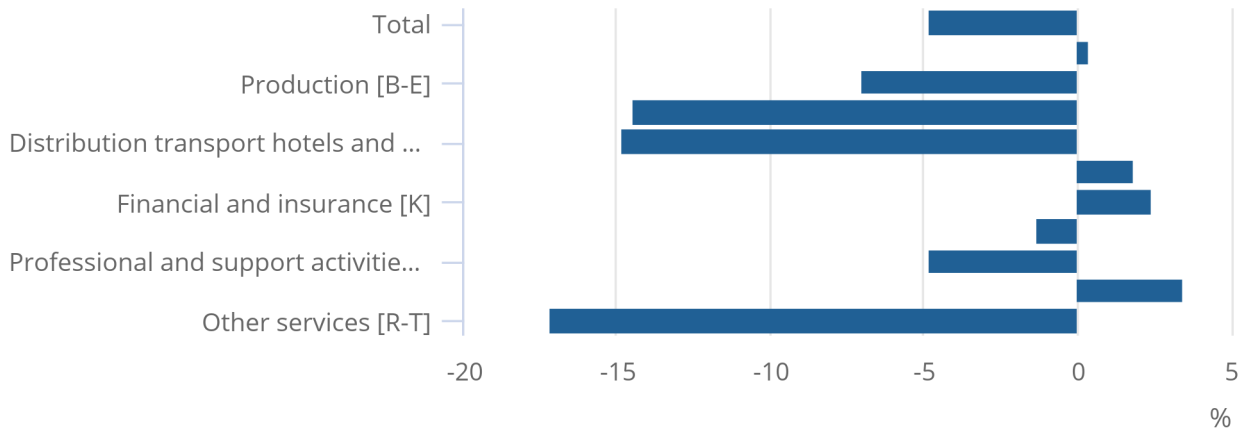
GVA produced by the government, health, and education sector increased by 3.4% in 2020. This can largely be explained by the sharp increase in spending on human health activities because of the coronavirus pandemic. Between 2019 and 2020, the GVA of human health activities increased by 6.3%, and the GVA of residential care and social work activities by 3.8%. The increase in public administration and defence (3.4%) also played a role, while education contributed to a lesser extent.

**Figure 2a: The other services industrial sector saw the largest decline in gross value added (GVA) of any sector between 2019 and 2020**

Change in GVA at basic prices, percentage change, by industry, current price, 2019 to 2020, UK

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Change in GVA at basic prices, percentage change, by industry, current price, 2019 to 2020, UK



Source: Office for National Statistics - Input-Output Supply and Use Tables

GVA can also be analysed in terms of the income generated by economic activity. These are:

- compensation of employees (wages and other staff costs)
- gross operating surplus (conceptually similar to profit)
- mixed income (the income of the self-employed)
- taxes paid less subsidies received on production

Total compensation of employees rose by 0.4% between 2019 and 2020. The industrial sector with the largest increase was the government, health and education (5.3%). Within this, human health activities saw the largest rise (9.3%), reflecting the increase in staff costs resulting from the coronavirus pandemic.

Taxes less subsidies on production moved from positive £26.9 billion in 2019 to negative £73.8 billion in 2020, indicating a large net subsidy on economic production in 2020. These subsidies on production include the Coronavirus Job Retention Scheme (CJRS, also known as the furlough scheme) and the Self-Employment Income Support Scheme (SEISS). In 2020, all industrial sectors, except for finance and insurance services, were net recipients of subsidies on production. In 2019, only the agriculture, information and communication, and real estate industries received a net subsidy.

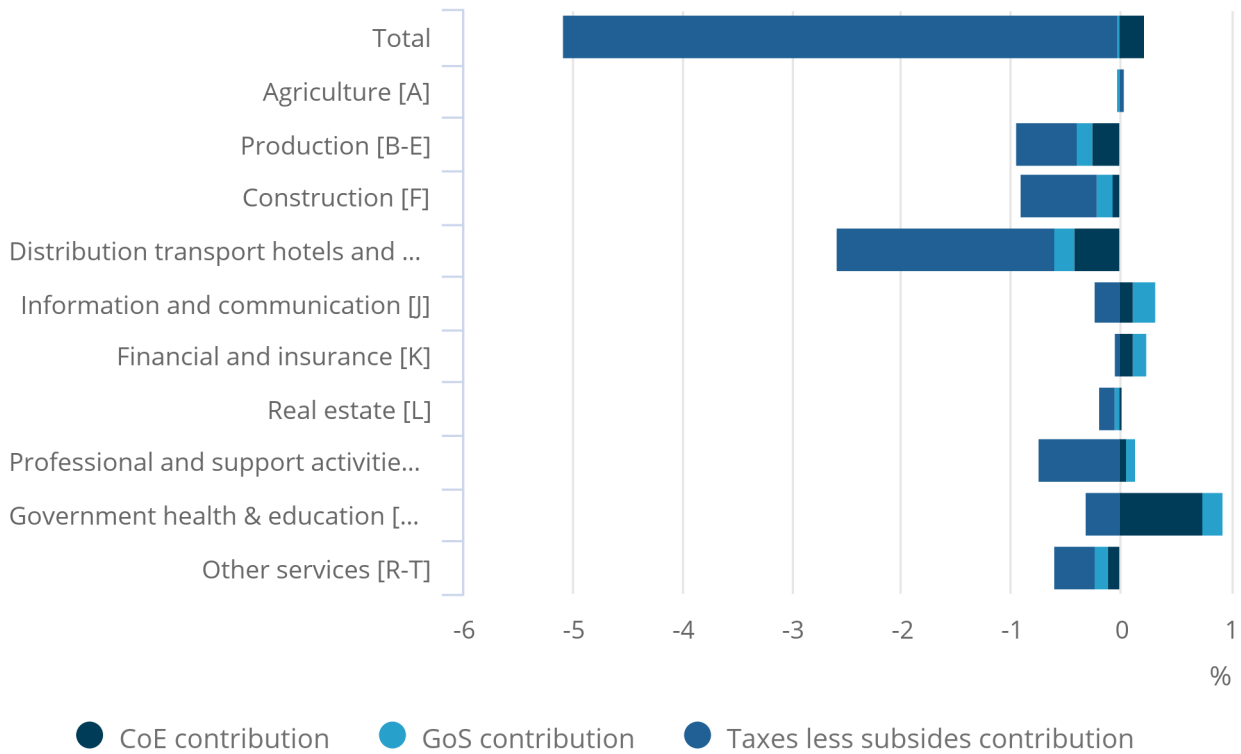


**Figure 2b: There were changes in the composition of gross value added (GVA) by income, which saw sharp decreases in taxes less subsidies on production between 2019 and 2020**

Change in GVA by income, % contribution by component, current price, 2019 to 2020, UK

Figure 2b: There were changes in the composition of gross value added (GVA) by income, which saw sharp decreases in taxes less subsidies on production between 2019 and 2020

Change in GVA by income, % contribution by component, current price, 2019 to 2020, UK



Source: Office for National Statistics - Input-Output Supply and Use Tables

Notes:

1. Gross operating surplus includes mixed income.

## 6 . Final demand

Between 2019 and 2020, final demand in current prices experienced a fall of 8.6%. All components of spending experienced a decline, except general government final consumption expenditure (GGFCE) where there was an increase in spending on health in particular (Figure 3a). There was a 12.5% fall in household final consumption expenditure, specifically reduced spending in restaurants and hotels, and on travel and transport, reflecting the closures and restrictions on activities implemented during the coronavirus (COVID-19) pandemic.

Exports of goods fell by 15.5% from 2019 to 2020. The production industry was the main driver of this change, with exports down 15.1% on the previous year. This was driven by exports of motor vehicles (down 28.0%), and aircraft and spacecraft (down 28.9%), which were severely affected by the restrictions on transport and travel as well as supply chain issues which started to emerge during the coronavirus pandemic. Exports of products of crude petroleum and natural gas extraction (down 30.8%) and manufactured coke and refined petroleum products (down 44.9%) also fell during this period.

Exports of services experienced a decline of 7.9%, driven by the distribution, transport hotels and restaurants industry, where exports fell by 48.6% in 2020. Exports of air transport services (down 74.6%), accommodation (down 66.1%), and food and beverage service activities (down 71.8%), were the main drivers of this decline. Conversely, there was an increase in exports of some services in 2020, including financial and insurance services (up 4.4%), and information and communication services (up 4.1%), the latter driven by an increase in exports of information service activities of 32.5%. This reflected the increase in remote working and communication activities in 2020.

Gross fixed capital formation (GFCF) fell 9.3% in 2020 compared with the previous year, reflecting a decrease in economic activity within the construction industry (where GFCF was down 13.5%) during the coronavirus pandemic.

In 2020, non-profit institutions serving households (NPISH) final consumption expenditure experienced a decline of 7.6%. The main contributor to this change was consumption of education (down 12.6%), reflecting the move to remote learning in education. It is likely that the decline was also affected by the pause in sports and recreational education. However, there was an increase of residential care and social work activities (up 3.5%), which can be attributed to a need for care during the coronavirus pandemic.

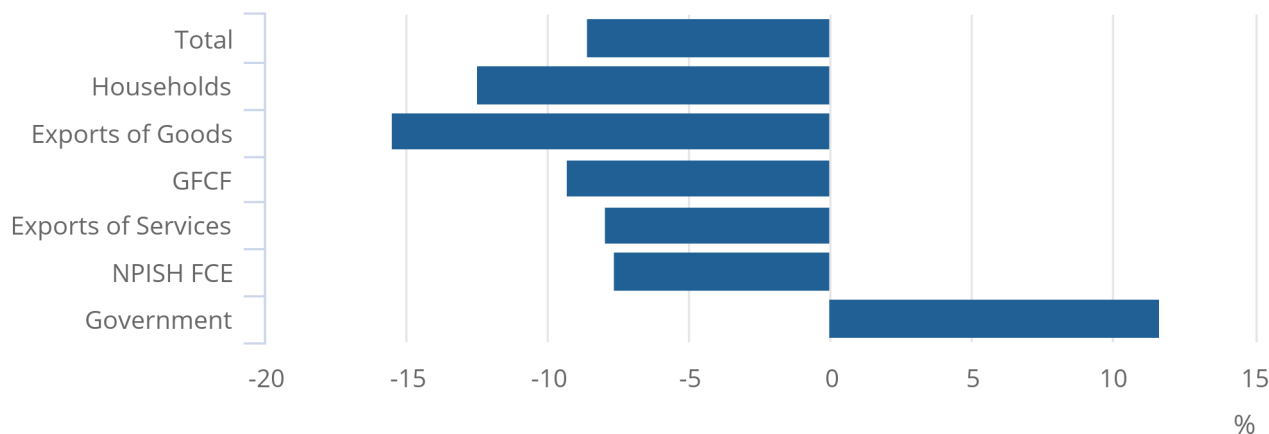
GGFCE in current prices was the only component of final demand to increase between 2019 and 2020, experiencing a rise of 11.6%. This reflected higher spending on human health activities (up 23.2%) and residential care and social work activities (up 8.9%).

**Figure 3a: Between 2019 and 2020, all components of final demand fell, apart from government final consumption expenditure**

Main components of final demand, percentage change, current price, 2019 to 2020, ranked by contribution to change in final demand, UK

Figure 3a: Between 2019 and 2020, all components of final demand fell, apart from government final consumption expenditure

Main components of final demand, percentage change, current price, 2019 to 2020, ranked by contribution to change in final demand, UK



Source: Office for National Statistics - Input-Output Supply and Use Tables

Notes:

1. Changes in inventories and valuables have been excluded because of their low £million values compared with the other components of final demand.

In terms of final demand for products, the distribution, transport, hotels and restaurants sector experienced the largest decline (negative 44.0%), followed by the other services industry (negative 22.8%). Even though final demand for production products fell by a smaller amount (negative 10.7%), its large share of the total means it makes a significant contribution to the fall in final demand.

The large size of the production industry has led it to have a significant impact on overall final demand.

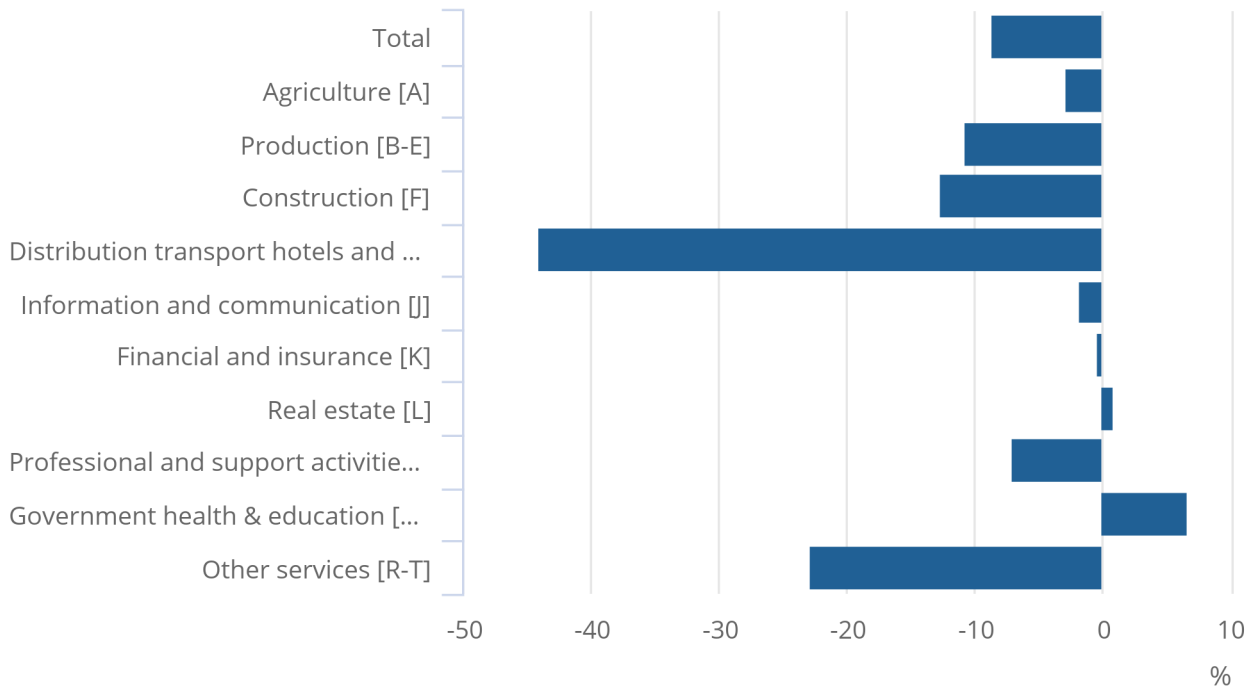
Government, health, and education was the only industry to experience an increase in final demand from 2019 to 2020, driven by products of human health services because of the coronavirus pandemic response.

**Figure 3b: Distribution, transport, hotels and restaurants experienced the largest reduction in final demand between 2019 and 2020**

Change in final demand by product group, % change, current price, 2019 to 2020, UK

Figure 3b: Distribution, transport, hotels and restaurants experienced the largest reduction in final demand between 2019 and 2020

Change in final demand by product group, % change, current price, 2019 to 2020, UK



Source: Office for National Statistics (ONS) Office for National Statistics - Input-Output Supply and Use Tables

## 7 . Intermediate consumption

Intermediate consumption refers to the goods and services that are consumed as part of the production process. Recent analysis in our [Impact of Blue Book 2022 changes on gross domestic product article](#) shows the importance of intermediate consumption, including the ratio of intermediate consumption to output, in measuring current price and volume estimates of gross value added (GVA).

Total intermediate consumption fell 7.5% in 2020. Figure 4 shows that most industries experienced an annual decline in their intermediate consumption of goods and services. The production industry was the largest contributor to the decline, where its intermediate consumption declined by 9.3%. This was driven by reduced intermediate consumption by the coke and refined petroleum industry (down 38.5%) and the motor vehicles, trailers, and semi-trailers manufacturing industry (down 18.9%). The intermediate consumption of the basic pharmaceutical products and preparations manufacturing industry grew by 14.1% because of the coronavirus (COVID-19) pandemic. However, this was not enough to offset falls in intermediate consumption by the rest of the production industries.

The professional and support activities industry experienced a decline of 12.7% in 2020. Between 2019 and 2020, there was a fall in the intermediate consumption of:

- travel agency, tour operator and other reservation service and related services (down 67.7%)
- office administration, office support and other business support activities (down 35.3%)
- rental and leasing activities (down 27.3%)

This reflects the office closures, reductions in employment and related activity, and restrictions on travel which were implemented during the coronavirus pandemic.

The other services sector showed the greatest decline in total intermediate consumption (negative 23.7%), which was led by falls of 38.0% in consumption of creative, arts and entertainment industries, 29.1% in other personal service activities and 25.0% in activities of membership organisations. This industry did not have a large impact on the decline in intermediate consumption from 2019 to 2020 because of its small size.

The construction industry showed a large decline in its intermediate consumption of 11.6%. Distribution, transport, hotels and restaurants also displayed a large change (negative 12.9%), which was driven by a decrease in air transport (down 68.6%) and food and beverage service activities (down 34.0%). However, intermediate consumption by courier activities increased by 19.9% from 2019 to 2020, which can be explained by an increase in deliveries during the coronavirus pandemic, because of retail closures and an increase in online shopping.

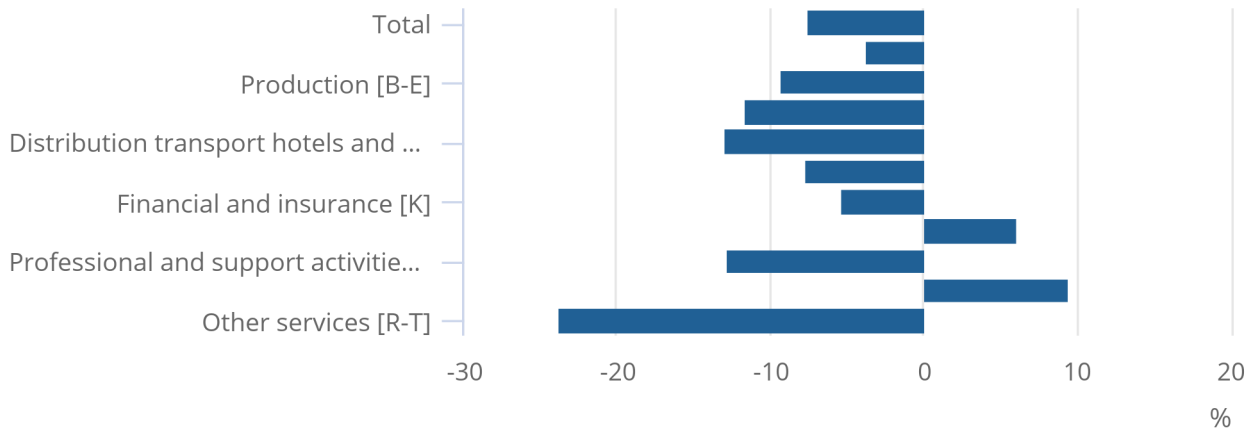
The government, health, and education sector experienced increased intermediate consumption in 2020 (up 9.4%). This is predominantly because of the human health activities industry, which grew by 35.4% because of the impacts of the coronavirus pandemic. This was strong enough to offset falls in intermediate consumption within activities of residential care and social work, and education, both of which fell by 4.9% and 6.8% respectively. Intermediate consumption in the real estate sector grew by 6.0% from 2019 to 2020, driven by owner-occupiers' housing (up 21.6%).

**Figure 4: Between 2019 and 2020, total intermediate consumption fell in all sectors, apart from real estate and government, health and education**

Change in intermediate consumption by sector, purchasers' prices, percentage change, current price, 2019 to 2020, UK

**Figure 4: Between 2019 and 2020, total intermediate consumption fell in all sectors, apart from real estate and government, health and education**

Change in intermediate consumption by sector, purchasers' prices, percentage change, current price, 2019 to 2020, UK



Source: Office for National Statistics - Input-Output Supply and Use Tables

At the total economy level, the ratio of intermediate consumption to output fell from 0.48 in 2019 to 0.47 in 2020 (a decrease of 1.5%). At the sector level, the percentage change in the ratio of intermediate consumption to output ranged from a decrease of 5.3% (information and communication) to an increase of 5.7% (real estate) (Table 1).

Table 1: For all sectors the ratio of intermediate consumption to total output experienced a relatively small change between 2019 and 2020

Ratio of total intermediate consumption at purchasers' prices to total output at basic prices and percentage change in ratio, 2019 to 2020, UK

	A	B-E	F	G-I	J	K	L	M-N	O-Q	R-T
<b>2019</b>	0.61	0.64	0.63	0.47	0.45	0.50	0.22	0.45	0.37	0.36
<b>2020</b>	0.60	0.63	0.64	0.48	0.43	0.48	0.23	0.43	0.38	0.34
<b>% change</b>	-1.6%	-0.9%	1.2%	1.1%	-5.3%	-4.0%	5.7%	-4.8%	3.6%	-5.2%

Source: Office for National Statistics - Input-Output Supply and Use Tables

However, within these industrial sectors, there have been some notable movements in the ratio of intermediate inputs to output at the industry level (Figure 5). This reflects the differing impact of the coronavirus pandemic, with some industries experiencing decreased output but ongoing costs during 2020. For example, within the government, health and education sector, human health activities experienced a 15.0% increase in the ratio of intermediate consumption to output.

Of the 105 industries, 89 experienced a change of plus or minus 10% or less over this period. The average change in the ratio of intermediate consumption to output was 0.2%.

Within the distribution, transport, hotels and restaurants sector, the ratio increased considerably for rail transport services (56.5%), and for water transport services (23.5%). This reflects the limitations on these activities because services were running with few passengers because of coronavirus pandemic-related restrictions. Also, within this sector, the ratio grew by 18.8% for accommodation in 2020. Remediation activities and other waste management services experienced increased intermediate consumption to output (up 20.6%). This industry had a relatively small impact on the high-level change in the ratio of intermediate consumption to output.

The real estate sector saw the largest increase in the ratio, up 5.7% from 2019 to 2020, which can be explained by the ratio increase for owner-occupiers' housing (up 19.3%).

Within the production sector, the industry to experience the largest fall in the ratio was the repair and maintenance of ships and boats (down 34.7%). The professional and support activities sector includes three of the top five largest ratio decreases:



- travel agency, tour operator, and other reservation services fell by 25.4%
- office administrative, office support and other business support activities fell by 21.9%
- rental and leasing activities fell by 17.0%

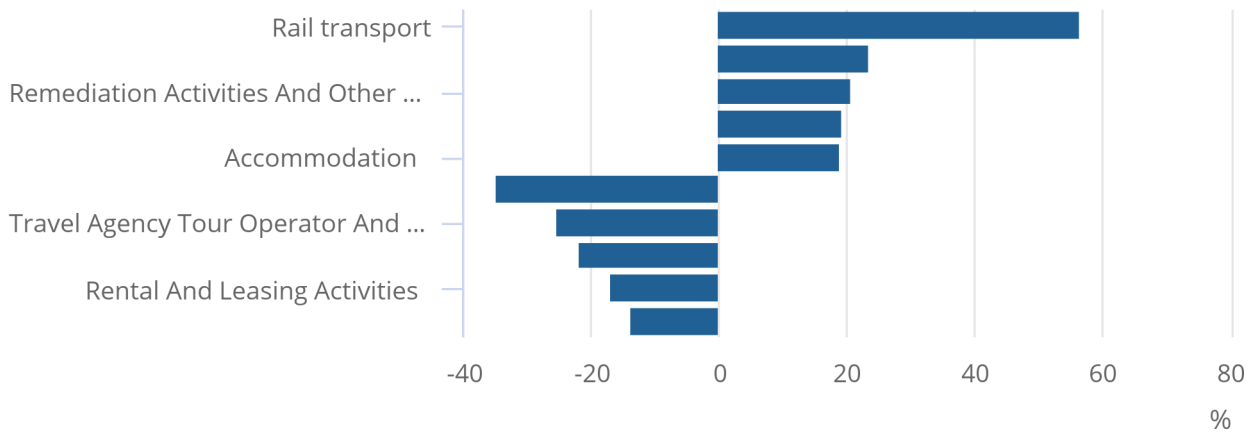
Within the other services sector, other personal service activities experienced a decrease in ratio of 13.7%. This reflects the curtailment of personal services such as hairdressing and beauty therapy.

**Figure 5: Rail transport services saw the largest increases, and repair and maintenance of ships and boats saw the largest falls in ratio**

Top five largest increases and decreases in the ratio of intermediate consumption to output, current price, 2019 to 2020, UK

Figure 5: Rail transport services saw the largest increases, and repair and maintenance of ships and boats saw the largest falls in ratio

Top five largest increases and decreases in the ratio of intermediate consumption to output, current price, 2019 to 2020, UK



Source: Office for National Statistics - Input-Output Supply and Use Tables

## 8 . Impact of coronavirus (COVID-19) using Input-Output Supply and Use Tables data

[Input-output supply and use tables](#)

Dataset | Released 31 October 2022

Estimates of industry inputs and outputs, product supply and use, and gross value added (GVA) for the UK consistent with the UK National Accounts in Blue Book 2022.

## 9 . Data sources and quality

The Supply and Use Tables (SUTs), and the analysis in this article, are in current prices, and not volume measures. Changes can differ considerably depending on whether they are measured in nominal (current price) or real (volume measures) terms. Volume measures in SUT will be published shortly (date to be announced).

## 10 . Future developments

The publication of the UK's Input-Output Supply and Use Tables (I-O SUTs) has provided a new basis for analysing the impact of the coronavirus (COVID-19) pandemic on the UK economy. This includes changes in the supply of goods, the composition of domestic output, changes in gross value added, final demand, and intermediate consumption.

We will continue to analyse the UK economy through the UK I-O SUTs. Volume measures in SUT will be published shortly (date to be announced).

## 11 . Related links

### [Impact of Blue Book 2022 Changes on Gross Domestic Product](#)

Article | Released 22 August 2022

Impact of methodological and data improvements on current price and chain volume measure of quarterly gross domestic product (GDP), 1997 to 2020. Includes indicative annual impacts on the services, production, and construction sectors.

### [UK National Accounts, The Blue Book: 2022](#)

Compendium | Released 31 October 2022

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

### [UK Balance of Payments, The Pink Book: 2022](#)

Bulletin | Released 31 October 2022

Balances between inward and outward transactions, providing a net flow of transactions between UK residents and the rest of the world and reports on how that flow is funded.

## 12 . Cite this article

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