

An Experimental Statistics Publication for Scotland

## ECONOMY AND LABOUR MARKET

# GDP Monthly Estimate, Scotland

December 2020

24 February 2021

Gross Domestic Product (GDP) measures the output of the economy in Scotland. These monthly estimates have been developed to help track the economic impact of the COVID-19 pandemic. These are designated as **experimental official statistics**. This means that they are still in development but have been released to enable their use at an early stage. All results are provisional and subject to relatively high levels of uncertainty.

### Main Findings

Scotland's GDP is provisionally estimated to have fallen by 0.3% in December, as restrictions on economic activity continued at the start of the month and were later extended across Scotland after Christmas. The latest result follows a revised fall of 1.5% in November. Output remains 7.2% below the level in February, prior to the direct impacts of the COVID-19 pandemic.

In December there was growth of 0.3% overall in the services sector, but further falls in the subsectors which are directly impacted by the restrictions in Protection Levels 1 to 4 during November and December.

Output in the production sector decreased by 1.8% overall in December, with falls in three of the four subsectors. This includes the first fall in manufacturing output since April, with a drop of 2.4%. Construction sector output is also estimated to have fallen by 2.4%, which is also the first fall since April for this sector.

Using the experimental monthly statistics for Quarter 4 as a whole (October to December), GDP is provisionally estimated to have increased by 1.6% compared to Quarter 3, slowing significantly from the 15.8% increase in Quarter 3. In annual terms, comparing 2020 as a whole to 2019, GDP is provisionally estimated to have fallen by 10.6%.

The Quarterly GDP First Estimate for Quarter 3 (national statistics) will be published on 17 March. The results for October to December, and 2020 as a whole, will be revised when more detailed and comprehensive data are available at that time.

# GDP Monthly Estimate, Scotland: December 2020

## Important Information About This Release

These results are provisional and likely to be revised in the coming months as data sources are updated and methods are further improved.

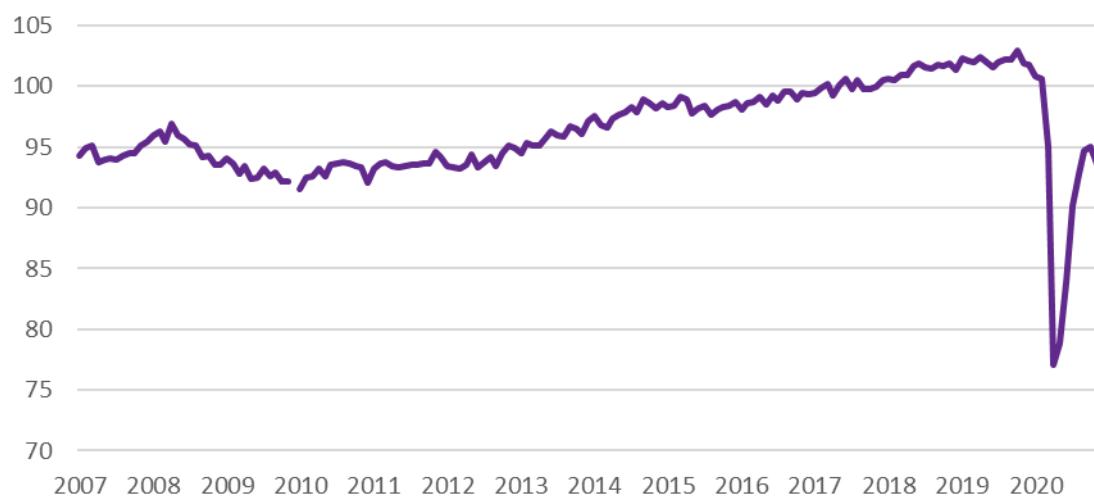
Estimates of monthly GDP growth are inherently more volatile than quarterly or annual growth. In normal times it would be sensible to concentrate on the smoother rolling quarterly growth rate (latest three months compared to previous three months). However, due to the exceptional economic circumstances at this time, results in this release are mostly presented in terms of monthly growth rates, or the cumulative change compared to pre-pandemic levels in February.

## Scotland's GDP fell by 0.3% in December, and remains 7.2% below February

Scotland's onshore GDP (which does not include offshore oil and gas extraction) is provisionally estimated to have fallen by 0.3% in December, as restrictions on economic activity continued at the start of the month and were later extended across Scotland after Christmas. This is the second month of falling output, following the revised contraction of 1.5% in November. Output remains 7.2% below the level in February, prior to the direct impacts of the COVID-19 pandemic.

### Monthly GDP Index, January 2007 to December 2020

Chained volume measure, 2017=100



#### Notes:

- (1) Monthly estimates begin in 2010. Results for 2007-2009 are an illustrative path based on quarterly GDP.
- (2) Users are advised to be mindful that the axis on this chart does not start at zero.

Since the start of the Covid-19 pandemic the path of Scotland's GDP has been broadly similar to the pattern seen across the UK as a whole, [most recently updated for December by ONS on 12 February](#). After increasing for six months following the first lockdown, November saw GDP fall by an estimated 2.3% across the UK as a whole, with restrictions on economic activity in place across all four nations to varying degrees. In December, UK GDP increased by 1.2%, with a period of eased restrictions across England and Wales early in the month followed by tighter restrictions across all four nations later in the month.

# GDP Monthly Estimate, Scotland: December 2020

Since June there have been differences between parts of the UK in the way in which initial restrictions were eased and new protection measures introduced, including the use of regional measures within Scotland. Accounting for these different measures and the timing of their application has presented a challenge for processing some of the business survey data used for GDP, especially where firms operate across different parts of the UK. For this reason, there are particularly high levels of statistical uncertainty in some of the estimates at this time, particularly in industries such as accommodation and food services where policy has varied widely across the UK. Users should be aware that revisions are likely to be made as more data become available over the coming months and quarters.

## Quarterly GDP is provisionally estimated to have grown by 1.6% in Quarter 4

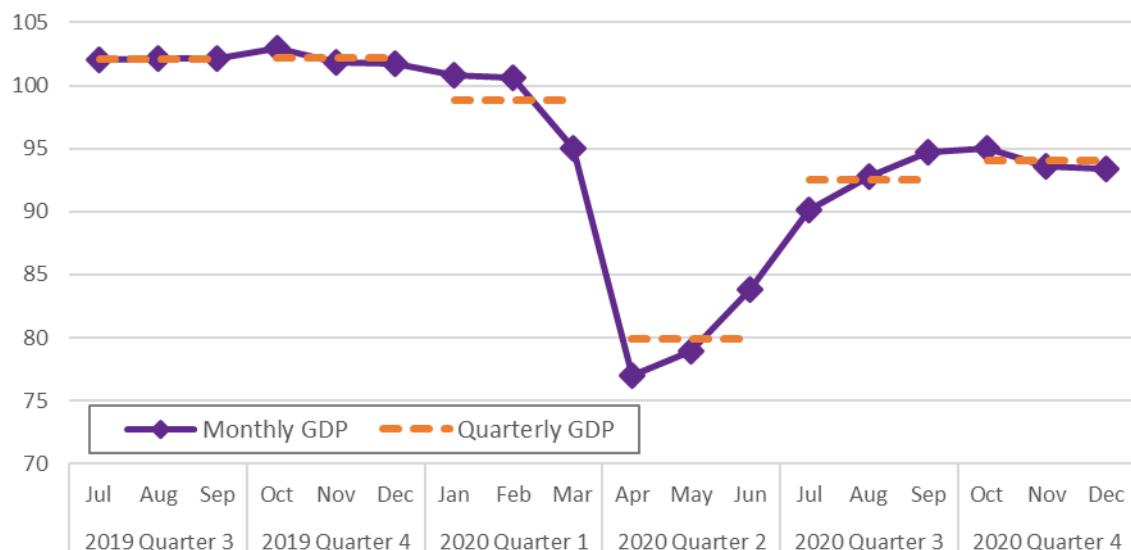
On a quarterly basis, comparing the whole of Quarter 4 (October–December) to Quarter 3 (July–September), GDP is provisionally estimated to have increased by 1.6%. This follows growth of 15.8% in Quarter 3 and contractions of 19.1% in Quarter 2 and 3.3% in Quarter 1.

In annual terms, comparing 2020 as a whole to 2019, GDP is provisionally estimated to have fallen by 10.6%.

As also seen in the monthly measure of GDP, there have been widespread variations in the performance of different sectors during Quarter 4. While there were increases in total for each of the production, construction and services sectors, several subsectors have fallen back relative to Quarter 3, particularly the parts of services which have been directly affected by the restrictions in the local protection levels during November and December.

### Comparison of Quarterly and Monthly GDP

Chained volume measure, 2017=100



#### Notes:

(1) Users are advised to be mindful that the axis on this chart does not start at zero.

The results for quarterly GDP presented in this release are based on the monthly estimates and are experimental statistics. The Quarterly GDP First Estimate (national statistics) will be published on 17 March, and the results for all months in October to December and across 2020 could be revised at that time when the more detailed and comprehensive data are available.

# GDP Monthly Estimate, Scotland: December 2020

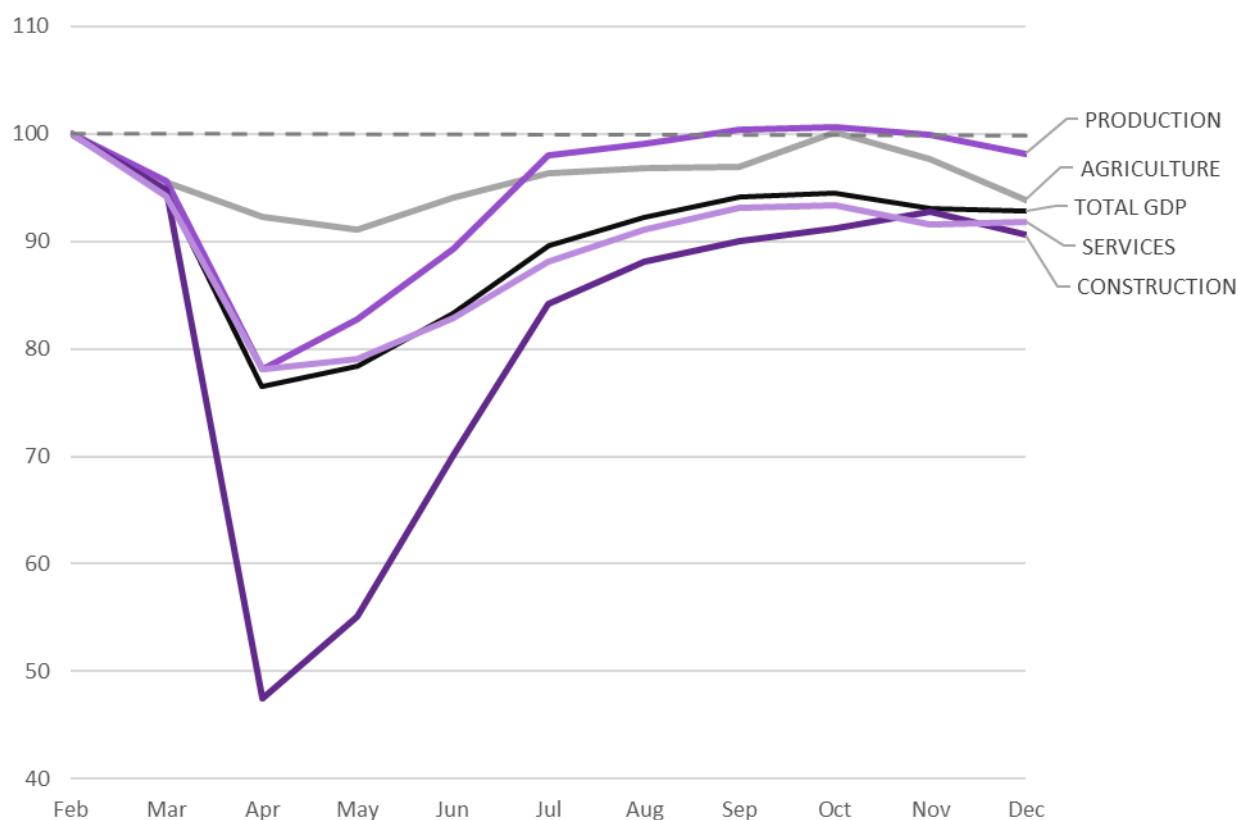
## Output increased in most parts of services, but continued to fall in many sectors

In December, output increased by 0.3% over all in the services sector, which accounts for three quarters of the economy. Within services, there were falls in five of the fourteen subsectors, including further falls in output from the industries which are directly affected by the restrictions on activity in protection levels 1 to 4. In particular, the accommodation and food services sector was subject to reduced opening hours or closures in all parts of Scotland throughout nearly all of November and December. As well as this, businesses in the retail and wholesale, other personal services, and arts, culture and recreation subsectors were also required to close or restrict trade in the 11 Local Authorities which moved into Level 4 between 20 November and 11 December, and when most of Scotland moved into Level 4 on 26 December.

Output in the production sector decreased by 1.8% overall in December, with falls in the mining and quarrying, manufacturing, and electricity and gas subsectors. The fall of 2.4% in manufacturing output is the first decrease since April. Construction sector output is also estimated to have fallen by 2.4%, which is also the first fall since April for this sector.

### GDP Monthly Estimates: February to December 2020

Index in volume terms (February = 100) by SIC 2007 main industry sector



## Agriculture, Forestry & Fishing

Output in the agriculture, forestry and fishing sector is estimated to have fallen by 3.9% in December. Compared to February, total output in the sector is down by 6.1%.

The largest component to monthly changes in this sector has been from data on fish landings. Agriculture and Forestry output is usually estimated based on smooth forecasts from annual data, but has been adjusted to reflect reported reductions in production and demand for some products during the lockdown phase.

## Production

In the production sector, output is estimated to have decreased by 1.8% in December, with falling output in three of the four main subsectors. Overall production output is estimated to have fallen back to a level 1.8% lower than seen in February.

The largest part of the production sector is manufacturing, where output is estimated to have decreased by 2.4% in December, which is the first drop in monthly output since April. Despite the drop in the latest month, output is estimated to be 2.8% higher than in February. However, within the manufacturing sector there are wide variations between the trends seen in different industries. The widest difference is between manufacture of transport equipment (estimated to be 10.4% below pre-Covid levels) and textiles (37.9% above February), although there is relatively high uncertainty in the monthly estimates for smaller sectors such as these, and the estimates can be quite volatile. The largest of the published manufacturing industries is the food and beverage products sector, where output is estimated to be 5.3% above pre-pandemic levels, although still 5.9% down on 12 months ago after falling in the months prior to the pandemic.

In the other production subsectors, output in the electricity and gas supply and water and waste management sectors have fluctuated close to pre-pandemic levels, while output in mining and quarrying sector remain below February levels due to reduced demand for mining support services.

Most of the results for the production sector are estimated using monthly business survey data, or other monthly data sources such as electricity supply and demand. For many of the industries within the Production sector, results can be quite volatile from month to month.

## Construction

In the construction sector, total output is estimated to have decreased by 2.4% in December, broadly in line with the UK as a whole. Construction output remains 9.4% down from February.

There is particular uncertainty in the estimates for construction sector output in Scotland at this time due to there being very limited short-term regional data on output in the industry. At present, monthly output is estimated based on the results for Great Britain as a whole adjusted using data on the relative differences in uptake of the [Coronavirus Job Retention Scheme](#) and some data available from the Business Impact of Coronavirus Survey (BICS). These results will remain under review and be updated when any other relevant data becomes available.

## Services

Overall output in the services sector is estimated to have increased by 0.3% in December. Compared to February, total output in the sector remains down by 8.2%.

Within services, there is a wide variation between industries, although since February output remains subdued in most subsectors. In November and December the largest falls, and biggest contribution to the totals, was from the accommodation and food services industry where output is estimated to have fallen by 25.4% and then a further 6.7%, and remains around 60% below pre-pandemic levels. There were restrictions ranging from reduced opening hours in protection level 1 through to nearly full closure of the sector in the parts of Scotland placed in level 4. Other industries were also directly impacted during the period from 20 November to 11 December when 11 Local Authority areas were placed into level 4, and from 26 December onward when most of Scotland moved to this level. Output in the retail and wholesale sector fell by 3.6% in November and 4.0% in December, with output in the non-food retail part of the industry more than 30% below pre-pandemic levels. In the other services sector, which includes close contact personal services such as hairdressers, output is estimated to have fallen by 25.0% in November and 4.1% in December, to a level nearly 44% lower than in February. The arts, culture and recreation sector, which includes sports facilities, is estimated to have seen a fall of 16.0% in November and 1.5% in December, and output in this sector is also more than 40% below pre-pandemic levels.

While some industries have recovered relatively close to their level of output in February, other sectors remain considerably below normal levels of output, reflecting the ongoing disruption to normal business activity and reduced demand from consumers, as well as the introduction of new restrictions on customer-facing businesses in the autumn.

Estimates for much of the services sector are based on monthly business survey data, including the retail sales inquiry, or other monthly data sources including passenger transport information. Since June, specific adjustments and checks have been required to account for the different timings of re-opening in Scotland compared to England and Wales, and the subsequent new restrictions introduced across parts of the UK from October onwards. The methodologies used for these adjustments remain under review and will be updated and extended as other industries fall into scope and more data become available.

Estimates for Public Administration & Defence, Education and Health are mostly based on annual data sources which are normally forecast smoothly for Quarterly GDP. Specific adjustments have been developed to reflect the impact of COVID-19 on the provision of some public services, such as lower levels of education activity due to school closures. For the reductions in routine health service activity, provisional adjustments have been made which are broadly in line with the estimates of monthly GDP for the UK as a whole, and will be reviewed and revised over time as more data becomes available. There was a particular methodology challenge for the education sector in accounting for the school holiday period in monthly seasonally adjusted terms, because of the shift from schools operating with most pupils at home before the holidays and then returning to normal after the holidays. Initial estimates have been made which spread the level shift of this re-opening smoothly over the course of the holidays. By September school education had returned close to normal levels, with reported absence rates only slightly lower than average attendance figures from previous years.

## Revisions

Revisions to previous estimates are detailed in Table R1 on the downloadable tables.

Quarterly results in this release have been open for revision back to 2016 Quarter 1, in line with the latest GDP Quarterly National Accounts for 2020 Q3 published on 17 February, and all monthly estimates have been updated to be consistent with these figures.

## About These Statistics

Gross Domestic Product (GDP) is the broadest summary measure of economic activity, covering the activities of households, businesses and government as both producers and consumers.

Changes in GDP for the whole economy are estimated using the output of each industry. Monthly estimates have been developed as a faster indicator of the changes in output to help monitor the economic impact of the COVID-19 pandemic and policies in place to curtail its spread. These are intended to assist with analysis of the economy, including short term modelling and forecasting.

## Data Sources

The Scottish Government produces estimates of quarterly GDP growth for Scotland using data sources and methods which are very similar to those used by ONS for the UK as a whole.

A large proportion of the data used for quarterly GDP is built up from monthly information. We have developed new methods and systems to use these data for monthly estimates. At the same time, we are continuing to seek out additional data and information which help to provide better monthly estimates for the parts of the economy covered by other data sources.

We are grateful to the data suppliers across other Government departments, the ONS, and businesses which have been able to supply us with timely monthly data in addition to the regular quarterly data we receive.

Information on the data sources and methods used for quarterly GDP can be found [here](#). Information relating to the ongoing development of monthly GDP will be added in due course.

## Methodology

Around 45% of GDP by weight is based on the Monthly Business Survey and Retail Sales Inquiry. These surveys collect turnover data from all large businesses and a sample of smaller firms across the manufacturing and services sectors.

For quarterly GDP, estimates for each industry are produced using stratified ratio estimation. This approach requires extensive data processing and quality assurance checks which take several weeks to complete each quarter. This cannot feasibly be replicated on a monthly basis.

For monthly GDP, a faster method has been developed to provisionally estimate growth for each industry using a dynamic panel of companies which are surveyed in consecutive months. The methodology for this panel approach, for example to adjust the results so that smaller companies are appropriately weighted, remains in development and will be improved over time. Estimates are constrained to the more robust quarterly results for previous periods.

Around 7% of GDP by weight is based on other data sources which are specific to Scotland, such as volumes of output by industry or electricity generation. Most of these sources have already been

supplied to us as monthly data, or have been supplemented by additional monthly information during the development of monthly GDP.

Around 30% of GDP by weight is usually based on quarterly forecasts from annual data sources for Scotland. This includes the activities of much of the public sector, such as civil service, education and health services, as well as other industries including agriculture, and the imputed rental of owner-occupiers.

The output of these industries is normally assumed to move smoothly over time, with little variation from trend, and it would be a trivial process to interpolate a monthly path instead of quarterly. However, at this time of widespread economic disruption, the forecasts for these industries must be reviewed for quarterly GDP as well as monthly. For example, adjustments are needed to account for changes in the provision of education via remote learning. Provisional adjustments have been made which are consistent with the approach adopted by ONS for the UK and explained [here](#), with similar adjustments made for consistency in health and other sectors.

Around 18% of GDP by weight is based on estimates which are derived as shares of UK output, using indicator data such as Scottish employment shares, or are simply modelled to grow in line with the same industry across the UK as a whole. For example, this includes industries such as financial services, where quarterly output in Scotland is estimated using an employment based regional model run by the Bank of England for ONS.

At present, where the data used to take a share of UK output are not available for the latest months, many of these industries are forecast to grow in line with the UK as a whole, consistent with the latest UK monthly GDP release.

For all industries where estimates are not based directly on monthly data for Scotland, we are continuing to investigate potential sources of new data or information which can be used to ensure that estimates of short term output are as accurate as possible. Updates will be applied when possible in future releases.

## Accuracy and Reliability

In all economic statistics there is a trade-off between timeliness and accuracy. Early estimates are always provisional and are revised over time as more complete data become available.

It is not possible to assess the accuracy of monthly GDP growth rates because there are no “true” values to compare them with. However, the accuracy of the rolling quarterly growth rate (latest three months compared to previous three months) can be compared to the corresponding quarterly GDP growth rate to indicate how reliable the short term measures are over a horizon of three months – the farthest out that the monthly measures go without being constrained to Quarterly GDP.

Analysis of the estimates over the last five years (20 quarters to 2020 Q1) indicates that there has been an average absolute revision of around 0.2 percentage points between the provisional quarterly growth rate in monthly GDP and the corresponding estimate from quarterly GDP, with revisions slightly more likely to be down than up (-0.05%).

Under the current circumstances, with unprecedented changes in output, and data collection issues including falling sample sizes and response rates, it is likely that this margin of error will be higher over the course of the pandemic, and that measures of quarterly and annual GDP could also be revised considerably over time.

In normal times, these levels of revision might be considered too high to make the trade-off between timeliness and accuracy worthwhile. However, during the current economic crisis, and based on the forecast level of disruption which is expected to occur, we judge that there is public value in producing these estimates to help with the analysis, modelling and forecasting of output in Scotland.

## An Experimental Statistics Publication for Scotland

Experimental statistics are a subset of newly developed or innovative official statistics undergoing evaluation. They are published to involve users and stakeholders in the assessment of their suitability and quality at an early stage.

The Office for Statistics Regulation publishes guidance on experimental statistics [here](#).

The Scottish Government is developing these estimates on an ongoing basis, and is grateful to the ONS, BEIS, and other departments and businesses which have assisted in the identification or delivery of earlier data sources which enable the timely production of monthly GDP.

We welcome any feedback on the development of these statistics, using the contact details below.

### Correspondence and enquiries

For enquiries about this publication, please contact:

John Dowens,  
National Accounts Unit,  
Office of the Chief Economic Adviser

e-mail: [john.dowens@gov.scot](mailto:john.dowens@gov.scot)  
or [economic.statistics@gov.scot](mailto:economic.statistics@gov.scot)

For general enquiries about Scottish Government statistics please contact:

Office of the Chief Statistician, Telephone: 0131 244 0442,  
e-mail: [statistics.enquiries@gov.scot](mailto:statistics.enquiries@gov.scot)

### Complaints and suggestions

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