



An Experimental Statistics Publication for Scotland

ECONOMY AND LABOUR MARKET

GDP Monthly Estimate, Scotland

April 2021

26 May 2021

Gross Domestic Product (GDP) statistics measure 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 onshore GDP is estimated to have increased by 2.0% in April, as the stay at home restriction in place since the beginning of the year was lifted and consumer-facing services began to re-open.

Output remains 3.7% below pre-pandemic levels in February 2020, but has increased to 1.1% above the previous high point in October before restrictions were tightened over the autumn and winter months.

In April, overall output in the services sector grew by 2.6%, driven by the phased easing of restrictions for accommodation and food services, non-essential retail and other consumer-facing services during the month, as well as the return to in-school learning for all secondary school pupils.

Output in the production sector increased by 0.8% overall, with an increase of 3.8% in manufacturing offset by falls in the other three subsectors. Output in the construction sector is estimated to have decreased by 2.0%.

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.

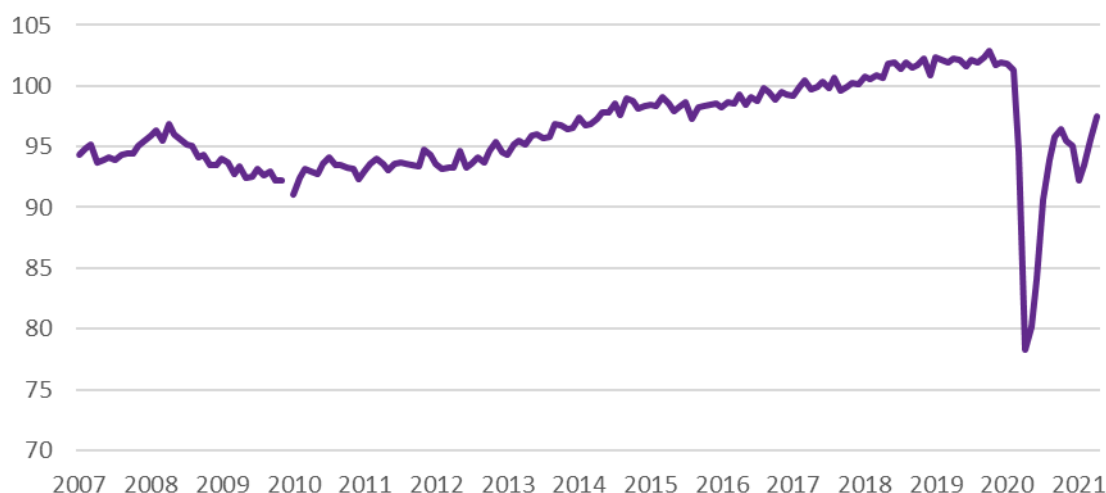
Estimates of monthly GDP growth are inherently more volatile than quarterly or annual growth. In normal times it would be sensible to concentrate on the smoother rolling quarterly growth rate (latest three months compared to previous three months). However, at this time, results in this release are mostly presented in terms of monthly growth rates, or the cumulative change compared to pre-pandemic levels in February 2020.

All results are seasonally adjusted and presented in real terms (adjusted to remove inflation), and relate to Scotland's onshore economy (which does not include offshore oil and gas extraction).

GDP increased by 2.0% in April, but remains 3.7% below pre-pandemic levels

Scotland's onshore GDP (which does not include offshore oil and gas extraction) is estimated to have increased by 2.0% in April, with growth across many sectors of the economy. This is the third consecutive monthly increase in GDP, after output reached its recent lowest point in January when the second lockdown period was extended across mainland Scotland. In April, output remains 3.7% below the level in February 2020, prior to the direct impacts of the COVID-19 pandemic, but is now 1.1% higher than the previous high point in October before restrictions began to be applied in the autumn.

Monthly GDP Index, January 2007 to April 2021
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 by ONS](#) on 11 June with an estimated increase of 2.3% in April.

Since June 2020 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.

Output grew in the production and services sectors in April, but fell in construction

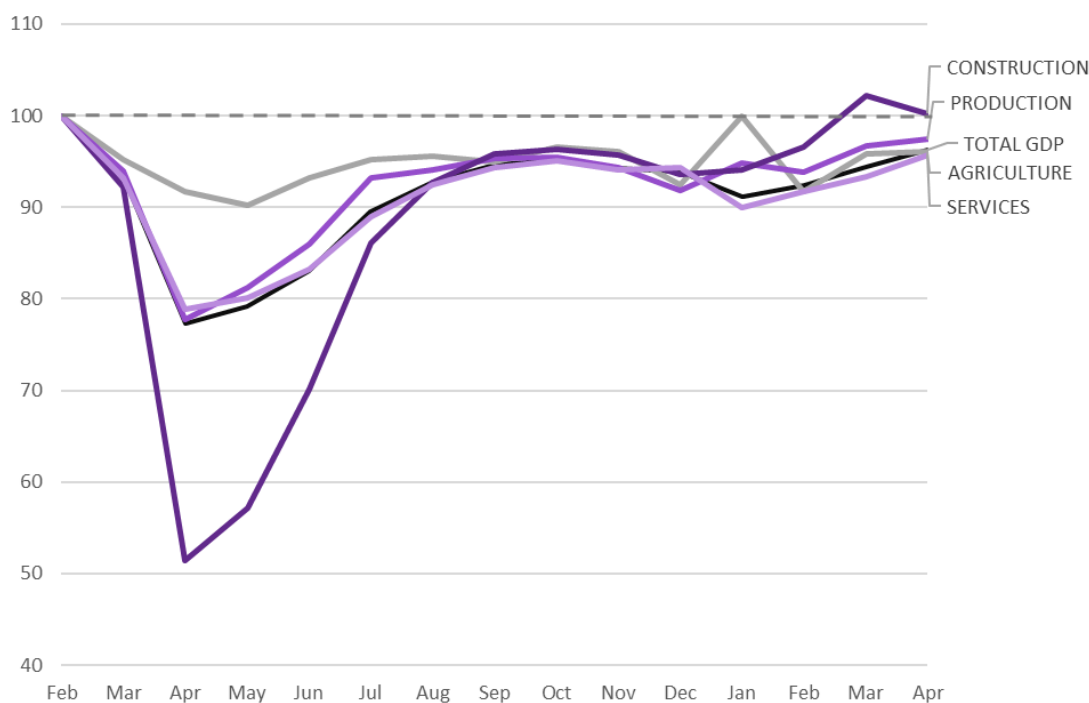
In April, overall output in the services sector grew by 2.6%, driven by the easing of restrictions across large parts of the economy. The largest contribution to monthly growth was from the accommodation and food services subsector, where output is provisionally estimated to have increased by 44.1% compared to March, following the lifting of the stay at home restriction on 2 April and the changes on 26 April when mainland Scotland moved to Level 3 restrictions. However, output remains 45.7% below pre-pandemic levels, with ongoing restrictions on the sector still applying past the end of April. The next largest contributions to growth were from the retail, wholesale and motor trades subsector and the other services subsector, which were both also boosted by phased re-openings on 5 April and 26 April. There was also a significant boost from education due to all secondary pupils returning to in-school learning, following the phased return of primary pupil in February and March. The ONS has recently published [updated information on the treatment of education output for UK GDP](#), which is the approach followed in these estimates as well.

Output in the production sector increased by 0.8% overall, with an increase of 3.8% in manufacturing offset by falls in the other three subsectors. Output in the construction sector is estimated to have decreased by 2.0% following a strong March, in line with the UK as a whole.

The Scottish Government has used similar methods to ONS to ensure comparisons can be made within the UK, but ONS also note that [differences in the methods for estimating the output of health and education services](#) across different countries mean GDP may be less internationally comparable during the COVID-19 pandemic and recovery than usual, so should be made with increased caution.

GDP Monthly Estimates: February 2020 to April 2021

Index in volume terms (February 2020 = 100) by SIC 2007 main industry sector



Agriculture, Forestry & Fishing

Output in the agriculture, forestry and fishing sector is estimated to have increased by 0.2% in April, following a series of volatile upward and downward movements over recent months. Compared to February 2020, total output in the sector is estimated to be down by 3.9%.

The largest component to monthly changes in this sector has been from data on fish landings, which can be volatile from month to month even after adjusting for regular seasonal variations. Agriculture and Forestry output is usually estimated based on lagged data or smooth forecasts from annual data, but has been provisionally adjusted to reflect reported reductions in production and demand for some products during 2020. These estimates will be revised when the usual data sources become available.

Production

In the production sector, output is estimated to have increased by 0.8% overall in April, with increasing output in manufacturing offset by falls in the other three subsectors. Overall production output is estimated to be 2.6% below the level of February 2020, with large reductions in the mining and quarrying and electricity and gas supply subsectors.

The largest part of the production sector is manufacturing, where output is estimated to have increased by 3.8% in April, and is now estimated to be 3.8% above the level of February 2020. However, within the manufacturing sector there are wide variations between the trends seen in different industries, and the estimates can be quite volatile.

In the other production subsectors, output in the electricity and gas supply sector fluctuates from month to month, even after accounting for regular seasonal variations, but has remained subdued over the year due to reduced supply and demand and maintenance at large power stations. The water and waste management sector has fluctuated closer to pre-pandemic levels, while output in mining and quarrying sector remains below February 2020 levels mostly 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 even after accounting for regular seasonal variations.

Construction

In the construction sector, total output is estimated to have decreased by 2.0% in April, broadly in line with the UK as a whole. Despite the fall in April, construction output is still estimated to be back above the pre-pandemic level of February 2020, after growing by 2.6% in quarter 1 of 2021.

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 2.6% in April. Compared to February 2020, total output in the sector remains down by 4.3%, mostly due to ongoing restrictions in some consumer-facing sectors, but has recovered to 0.7% above the previous high point in October before restrictions began to be re-introduced.

Within services, there is a wide variation between industries. Since October, the largest falls have been in the consumer facing services which have been restricted by regional protection levels and during the second lockdown. In January, there was also the additional drop in output from the education sector, with most school pupils learning from home before a phased return between February and April. After the stay at home order and travel restrictions were lifted during April, and many types of business were permitted to reopen on 5 and 26 April, there was strong growth in the retail and wholesale, accommodation and food and other services sectors. However, when taken over the month as a whole output still remains down by more than 40% compared to pre-pandemic levels in the sectors which have been most effected by ongoing restrictions.

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 2020, 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 only back to the start of 2021, and have been updated to be consistent with the GDP First Quarterly Estimate for 2021 Quarter 1, published on 16 June. Although there are no revision to quarterly results before this, the monthly path within each quarter can be revised.

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.

For monthly GDP, a faster method was developed and used in releases up to February 2021, estimating growth for each industry using a dynamic panel of companies which are surveyed in consecutive months. From March 2021, stratified ratio estimates have also been used for the monthly GDP estimates based on the MBS and RSI. This methodology and the detection and treatment of outliers remains in development, and users may notice that historic estimates (2010-2019) include relatively high levels of month to month noise while these systems are being improved. All 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.

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