Office for National Statistics

Article

Economic modelling of forced saving during the coronavirus (COVID-19) pandemic

The impact of the coronavirus (COVID-19) pandemic on the UK household saving ratio. Including an estimate of forced saving because of the suppression of consumption opportunities between Quarter 1 (Jan to Mar) 2020 and Quarter 4 (Oct to Dec) 2021.

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1 . Main points

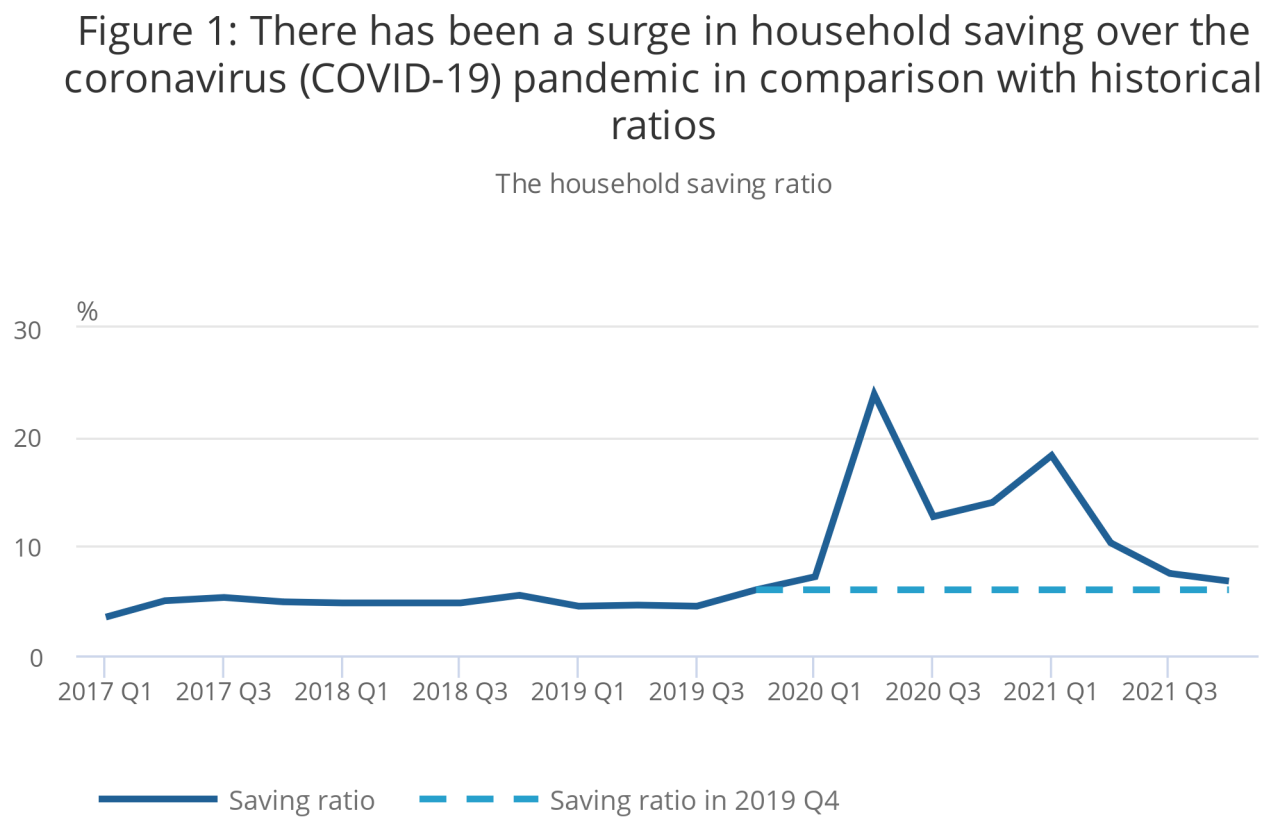
- Household saving in the UK as a proportion of household resources increased significantly during the coronavirus (COVID-19) pandemic, peaking at a record 23.9% in Quarter 2 (Apr to June) 2020.
- The sharp rise in household saving coincided with government-imposed restrictions on social contact and economic activities resulting in significantly reduced household spending.
- Using an econometric model of the household saving ratio, it is estimated that approximately three-quarters of the increase in household saving during the pandemic was the result of forced saving; this amounts to over £140 billion, or around 10% of annual household disposable income.

2 . Overview

During the coronavirus (COVID-19) pandemic, there has been a surge in household saving (Figure 1). The household saving ratio, which is the proportion of household resources that are not consumed, was 6.0% in Quarter 4 (Oct to Dec) 2019. In Quarter 2 (Apr to June) 2020, it peaked at a record 23.9% and remained elevated during the pandemic period before falling close to the pre-coronavirus ratio at 6.8% in Quarter 4 2021.

Figure 1: There has been a surge in household saving over the coronavirus (COVID-19) pandemic in comparison with historical ratios

The household saving ratio



Source: Office for National Statistics – Quarterly sector accounts, UK

The purpose of saving is to increase future resources available for consumption and protect against unexpected changes in income. The pandemic introduced another reason – saving forced through the inability to consume following government restrictions on physical movement and social interaction.

Previous analysis published by the Office for National Statistics has highlighted the impact of unprecedented public health measures during the pandemic on household spending on goods and services. Reduced spending in restaurants, hotels and transport were the main drivers of the overall fall in spending since the start of the coronavirus pandemic. Analysis of data on business turnover also found that "high-contact" industries were more adversely impacted by the coronavirus restrictions that were in place. These are industries more reliant on physical interaction including wholesale and retail; transportation and storage; accommodation and food services; arts, entertainment and recreation; and other services.

This article sets out to account for the relative contributions of each of these three factors, the intertemporal motive, the precautionary motive and forced savings in explaining the large increase in the household saving ratio. The reason for the increase in saving may indicate the extent to which a future unwinding of the savings accumulated during the pandemic will support demand through the recovery.

3 . Modelling the change in the saving ratio through the pandemic

Modelling approach

The suppression of consumption opportunities in the coronavirus (COVID-19) pandemic resulted in a sharp increase in the saving ratio above the pre-coronavirus ratio of 6%. However, there are reasons to believe that the saving ratio may have changed to reflect other saving motives and not just because of forced behaviour. Two other important motives for saving are:

- intertemporal – the desire to use savings to move consumption across time in response to changes in income expectations, wealth and credit conditions
- precautionary – the desire to maintain a given level of savings to act as a buffer against an uncertain future

For example, the fall in spending at restaurants during the pandemic may also have reflected lower expectations of future income and increased uncertainty; not taking account of these motives would result in overestimating the extent to which the increase in saving was forced.

To apportion changes in the saving ratio between these three different motives will require the estimation of an empirical model of the saving ratio. We follow recent analysis by the European Central Bank, who estimated a model of the saving ratio for a panel of eurozone countries between 2003 and 2019. This predicted what the eurozone saving ratio would have been during 2020 because of changes in factors that affect the intertemporal and precautionary motives to save. The difference between this prediction and the actual saving ratio was then attributed to forced saving.

They found that gross saving in the eurozone was 12 percentage points higher in Quarter 2 (Apr to June) 2020 than in Quarter 4 (Oct to Dec) 2019 and this can be attributed to:

- a 0.5 percentage point fall because of factors affecting the intertemporal motive
- a 1.5 percentage point increase because of a stronger precautionary motive
- an 11 percentage point increase in forced saving reflecting the residual between the actual change in the saving ratio and that accounted for by the preceding two motives

Modelling results

Our estimated model of the UK household saving ratio is presented in Table 1. The full list of explanatory variables we tested and their respective sources are listed in Section 5: Explanatory variables.

Table 1: Econometric model of the UK household saving ratio, Quarter 1 1996 to Quarter 4 2019
Dependent variable: household saving ratio

Variable	Coefficient	t-statistic	Significance
Constant	2.562	1.387	0.169
Unemployment rate (t)	1.016	8.852	0.000***
Change in household real gross disposable income per capita (t+1)	-0.435	-3.893	0.000***
Real overdraft interest rate (t)	0.151	2.169	0.033**
Ratio of household total wealth to gross disposable income (t-1)	-0.544	-2.616	0.010***

Source: Office for National Statistics estimates

Notes:

1. (t) denotes a coincident variable, that is enters the regression with the same quarter as the dependent variable.

2. (t+1) denotes a leading variable, that is enters the regression with a one-quarter lead relative to the dependent variable.

3. (t-1) denotes a lagging variable, that is enters the regression with a one-quarter lag relative to the dependent variable.

4. ** Denotes the coefficient is statistically significant at the 5% probability level.

5. *** Denotes the coefficient is statistically significant at the 1% probability level.

The regression model in Table 1 includes three factors that account for the intertemporal saving motive:

- expectations of the change in real household income – the forward expectations factor is approximated by including this as a lead variable (that is, t+1); the variable has a negative coefficient, implying higher expectations of future income result in a lower current saving ratio

- real overdraft interest rate – this has a positive sign indicating that an increase in the real costs of borrowing results in an increase in the current saving ratio

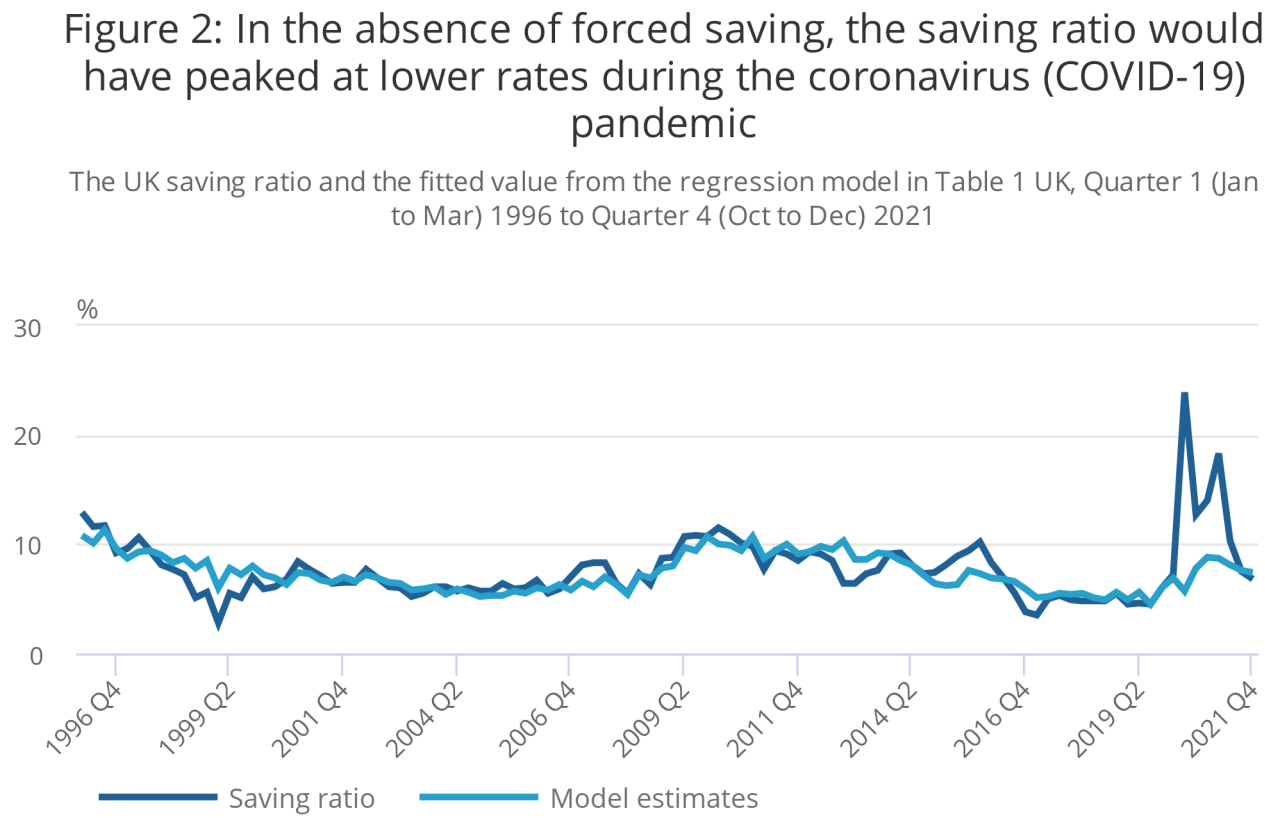
- ratio of total wealth to disposable income – total wealth is the sum of net-financial and non-financial wealth; as expected, this variable lagged one quarter (t–1) has a negative coefficient so as the wealth to income ratio increases the saving ratio declines

There is only one factor that can account for the precautionary saving motive, which is the unemployment rate. This enters the regression with a positive sign, suggesting that higher unemployment acts as a proxy for greater uncertainty resulting in a higher saving ratio. It is noted that higher unemployment may also suggest lower income expectations. However, following analysis of precautionary saving during the global financial crisis undertaken by the International Monetary Fund, this effect is compensated for by also including the forward change in disposable income in the regression model.

Figure 2 shows the model's fitted values and the actual values of the household saving ratio over the sample period Quarter 1 (Jan to Mar) 1996 to Quarter 4 (Oct to Dec) 2019. The model is then extrapolated over the pandemic period Quarter 1 2020 to Quarter 4 2021 to show the implied saving ratio in the absence of any forced saving. The model predicts, that in the absence of forced saving, the saving ratio would have peaked at just below 9% in Quarter 3 (July to Sept) 2020, significantly lower than the recorded rates during the pandemic.

Figure 2: In the absence of forced saving, the saving ratio would have peaked at lower rates during the coronavirus (COVID-19) pandemic

The UK saving ratio and the fitted value from the regression model in Table 1 UK, Quarter 1 (Jan to Mar) 1996 to Quarter 4 (Oct to Dec) 2021



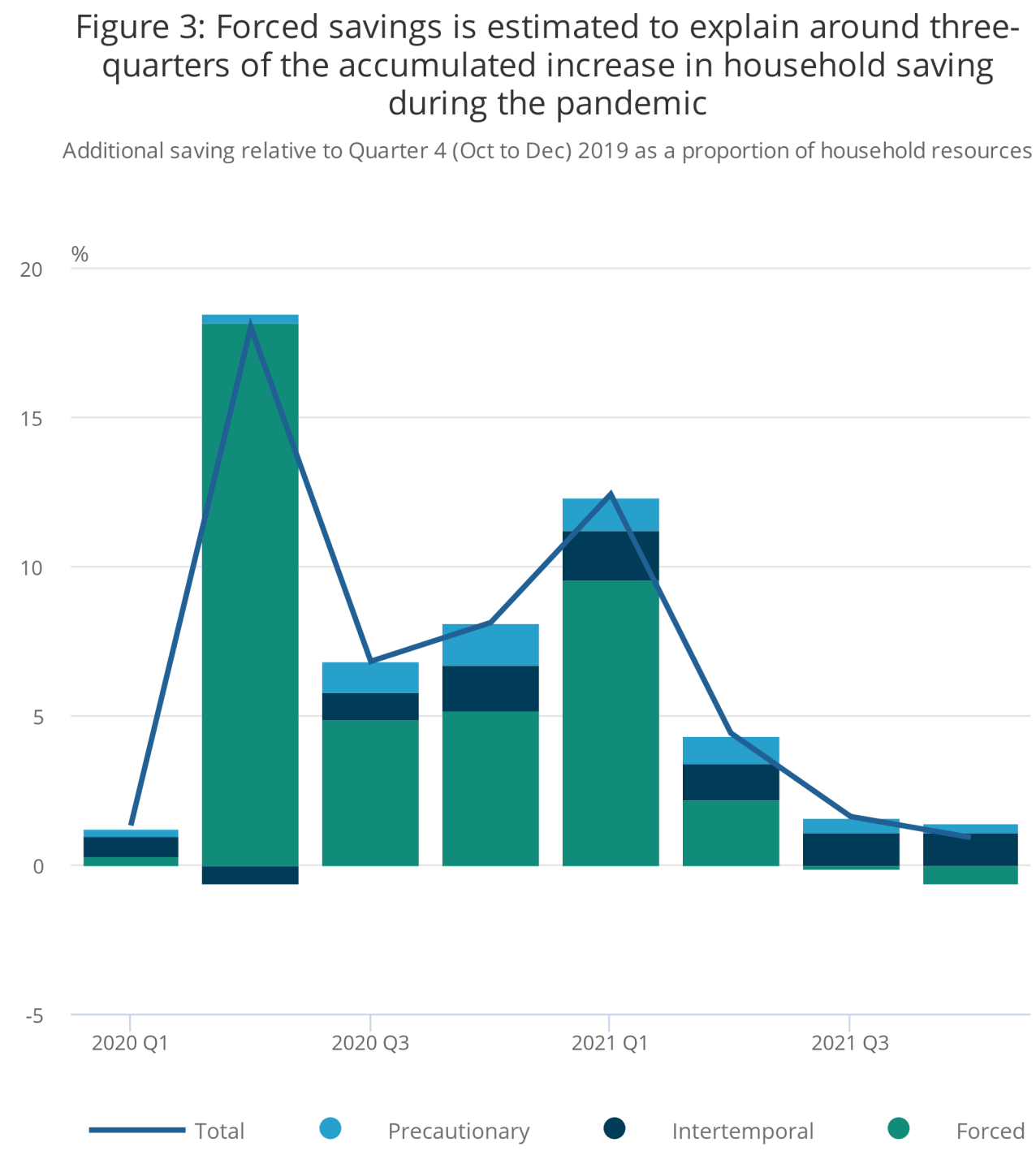
Source: Office for National Statistics - Quarterly sector accounts, UK

Estimates of forced saving

The estimated parameters from the regression model reported in Table 1 can then be used to apportion the change in the actual saving ratio during the pandemic period relative to the rate in Quarter 4 2019 between the three saving motives (Figure 3).

Figure 3: Forced savings is estimated to explain around three-quarters of the accumulated increase in household saving during the pandemic

Additional saving relative to Quarter 4 (Oct to Dec) 2019 as a proportion of household resources



Source: Office for National Statistics - Quarterly sector accounts, UK

From Figure 3, it can be estimated that the total accumulated increase in household saving relative to the level in Quarter 4 2019 was £195.9 billion. Of this, the forced saving component accounted for £144.9 billion, equal to 74% of the accumulated increase in household saving during the pandemic. This is approximately 10% of annual household disposable income. It can also be seen that the forced component turned negative in the second half of 2021 coinciding with the opening up of the UK economy and the successful vaccine rollout.

4 . Effects of the changes

The increase in saving during the coronavirus (COVID-19) pandemic accounted for by the other non-forced motives was found to be relatively small:

Intertemporal motive

Several of the factors that determine this motive happened to be offsetting during the pandemic period. For example, a significant increase in UK house prices would be expected to lower the saving ratio. However, there was also a very large increase in the interest rates charged on overdrafts (and other forms of unsecured consumer credit), which would be expected to increase the saving ratio. This factor is now the main driver of a higher saving ratio relative to before the pandemic.

Precautionary motive

The negative impact of the pandemic on the labour market has been largely contained by unprecedented government backing of job retention schemes. The rise in unemployment has been muted relative to the contraction in the economy and turned out to be far lower than many forecasters feared at the beginning of the pandemic, and subsequently as the furlough scheme was unwound in late 2021.

Because these motives for additional saving do not appear to be strong, it implies the household sector is neither looking to transfer significant consumption from the present to the future nor hold a higher buffer of savings to guard against uncertainty. This could imply that the household sector may look to unwind the accumulated saving relatively quickly, and the saving ratio has fallen in recent quarters as forced saving behaviour has gone into reverse.

On the other hand, the scope for sizeable pent-up demand may be restrained, mainly because the missed consumption opportunities during the pandemic were largely in services such as hotels and holidays where the potential to catch up is limited.

Another important factor is how the increase in saving is distributed across households. Higher-income households typically have a lower propensity to consume from additional resources than lower income households. Analysis of the NMG Household Survey, which gathers data on household finances and expectations, by researchers from the Bank of England, found that 42% of high-income households reported an increase in saving compared with only 22% of low-income households.

Finally, the accumulation of saving may also be used to reduce debts or purchase financial assets rather than fund an increase in household consumption. Data on consumer credit flows published by the Bank of England have recorded net credit paydowns. This is also consistent with the sharp rise in overdraft and consumer credit interest rates mentioned previously.

5 . Explanatory variables

List of explanatory variables for the econometric modelling of the UK household saving ratio and their respective data sources.

Variable and source

Income, wealth, and expectations

- Household real disposable income per capita: Office for National Statistics (ONS) UK Economic Accounts
- GfK consumer confidence: Organisation for Economic Co-operation and Development (OECD) Statbase
- Household net financial wealth: ONS UK Economic Accounts, data was seasonally adjusted using X13-ARIMA
- Household non-financial wealth: ONS non-financial balance sheets; annual data interpolated to quarterly data using average house price index
- Average UK house prices: Land Registry

Interest rates, credit conditions and consumer prices

- Bank of England base rate: Bank of England Bankstats
- Overdraft rate: Bank of England Bankstats
- Credit card rate: Bank of England Bankstats
- CPI inflation rate: ONS Consumer Prices Index
- Household consumption deflator: ONS UK Economic Accounts

Other

- Old-age dependency ratio (65 years and over): ONS Labour Market Statistics

Uncertainty

- Unemployment rate (16 years and over): ONS Labour Market Statistics
- VIX Index: Chicago Board Options Exchange
- Forecaster disagreement: HM Treasury Independent Forecasts for the UK Economy – calculated as the standard deviation of gross domestic product (GDP) forecasts
- Economic Policy Uncertainty Index: www.policyuncertainty.com
- GDP volatility: ONS UK Economic Accounts, volatility estimation derived from GARCH (1,1) model for UK GDP

6 . Glossary

Household saving ratio

Households’ saving as a percentage of total available households’ resources.

Forced saving

Saving resulting from the inability to consume because of government restrictions on physical movement and social interaction during the coronavirus (COVID-19) pandemic.

Intertemporal saving

Saving used to transfer resources across time to fund future consumption.

Precautionary saving

Saving used as a buffer to protect against unexpected changes in resources.

7 . Data sources and quality

Impact of the coronavirus (COVID-19) pandemic on national accounts data

National accounts data from Quarter 1 (Jan to Mar) 2020 are subject to more uncertainty than usual because of the challenges faced by the Office for National Statistics in collecting the data under government-imposed public health restrictions.

8 . Future developments

The coronavirus (COVID-19) pandemic has led to significant changes in UK household saving, driven by public health restrictions and wider behavioural changes. As these restrictions are eased, it remains uncertain how the household sector may use the savings accumulated during the pandemic – whether to continue to hold as a buffer against future uncertainty, the repayment of debt, or to support higher future consumer expenditure. This may depend on how the increase in saving during the pandemic has been distributed across all households.

The rapid acceleration in consumer price inflation during 2022 also presents new challenges to UK households faced with a sharp increase in the cost of living and falling real incomes. The Office for National Statistics (ONS) will continue to provide insights on new developments in the household saving ratio and on the extent to which we observe any structural changes.

9 . Related links

Consumer trends, UK: October to December 2021
Bulletin | Released 31 March 2022
Household final consumption expenditure (HHFCE) for the UK, as a measure of economic growth. Includes all spending on goods and services by members of UK households.

Quarterly sector accounts, UK: October to December 2021
Bulletin | Released 31 March 2022
Detailed estimates of quarterly sector accounts that can be found in the UK Economic Accounts (UKEA).

Effects of the coronavirus (COVID-19) pandemic on "high-contact" industries
Article | Released 6 May 2022
Insights into the impacts of the coronavirus (COVID-19) pandemic on industries dependent on in-person contact. Using business turnover estimates from HM Revenue and Customs Value Added Tax (VAT) data, our analysis finds wide-ranging impacts "between" and "within" high-contact service industries.

Coronavirus (COVID-19) and its effects on household consumption, UK: January 2020 to December 2021
Article | Released 6 April 2022
The impact of the coronavirus (COVID-19) pandemic on UK household expenditure. Including new analysis of credit card transaction data on household spending patterns in December 2021.