

Potential COVID-19 (Coronavirus) Economic and Construction Impacts

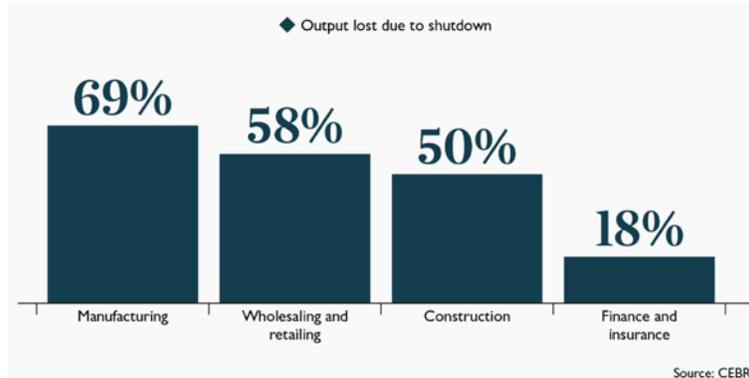
UK Economy

It is expected that the UK economy will contract sharply in 2020 H1. As the negative effects have occurred since the start of March, economic activity in 2020 Q2 is likely to suffer the largest impacts. The full impacts on the UK economy will, however, only be clear after it is known if the coronavirus is a temporary issue primarily affecting economic activity in the first half of 2020 before warmer weather reduces its impact that is represented by a 'V'-shaped or a 'tick' sharp recession and immediate but slower recovery, if the coronavirus continues to persist beyond the Summer with further waves of infections and only slow economic recovery that would be represented by a 'U'-shaped recession or whether infections fall away in Summer 2020 and then rise sharply again in Winter 2020 with a return of infections as with previous pandemics, leading to strict social distancing restrictions once again and slowing economy activity in Q4 before recovery in 2021, represented by a 'W'-shaped recession.

Until 16 March, the UK government's strategy was based on allowing coronavirus to spread at a rate slow enough not to overwhelm the NHS (flattening the curve) but fast enough that 60% population gets 'herd immunity' (mitigation). Government changed its strategy due to research from [Imperial College London](#) (16 March 2020) and moved to suppression, more in line with strategies in Italy, Spain and France. In the UK economy and construction scenarios the CPA is working on, the assumption made on 23 March was that restrictions would be in place for eight weeks, which means restrictions would be eased slowly from mid-May. The Prime Minister's statement on 10 May (with further detail expected in Parliament on 11 May) stated that the easing of social distancing restrictions will be gradual, reflecting the comparatively high number of infections and, in turn, a greater risk of a second wave of infections. He also stated that those who cannot work from home should try to return to work, avoiding public transport where possible, highlighting construction and manufacturing. But, with continued restrictions on services such as in-store retail, leisure and entertainment, there will remain an uneven effect across sectors of the economy. Assuming virus trends continue to improve, a further easing of restrictions such as those on retailers and schools would be expected within three weeks. Even as these restrictions are eased, the indications we have from government are that remaining restrictions will be eased gradually and some social distancing measures for work and travel may be in place for 6-12 months.

The earliest economic impacts of the [social distancing measures](#) on households and businesses were in the services sector, in particular, affecting conferences, in-store retail, tourism, airlines, restaurants, bars, concerts etc. culminating in the [government order to close entertainment, hospitality and indoor leisure premises from 20 March](#). Manufacturing sectors, particularly focused on export demand or requiring an international supply chains such the automotive sector have also been badly affected and manufacturers have been implemented or announced temporary shutdowns. Manufacturing sectors focused on domestic demand have also been adversely affected, especially where products are feeding into the services sectors that were forced to shut down. The largest impacts from government restrictions on the UK economy are expected to be due to schools closing from 20 March except for [key workers](#) due to the impact on working parents and their ability to work whilst simultaneously dealing with childcare and home-schooling.

Estimating the economic activity loss so far, given the lack of official data covering the period from March 2020, is clearly extremely challenging and an evolving area. The Centre for Economics and Business Research (CEBR) has looked at almost 100 detailed sectors and sub-sectors of the UK economy and attributed each a score based on whether economic activity was continuing as normal with most employees still in work, whether employees were working from home and were assumed to be economically active at 90% of normal level or whether workers were at home but were not able to work given the type of activity in the sector and sub-sector.



Their results at sector level are that the percentage of output lost during the period of social distancing restrictions will be 14% for agriculture, 60% in mining and quarrying, 69% in manufacturing, 10% in electricity and gas supply, zero in water and sewerage, 50% in construction, 58% in wholesale and retail, 39% in transport, 79% in accommodation and food services, 7% in information and communication, 18% in finance and insurance, 20% in real estate, 10% in professional and scientific activities, 46% in education and 81% in arts, entertainment and education. It is worth noting, however, that their 20% estimated fall in real estate activity appears highly optimistic, particularly given how volatile the sector tends to be. Although many real estate professionals are able to use technology to work from home and still show prospective customers new properties, the shutdown of the housing market and delay of transactions implies that the fall in real estate activity must be three or four times higher than CEBR have estimated. The 50% fall in construction activity for the period of the social distancing restrictions does not appear to be unreasonable given falls in house building (which accounts for 27% of total construction output) and improvement works on the housing stock, which accounts for around 10% of total construction and large infrastructure projects, which account for around 15% of total construction.

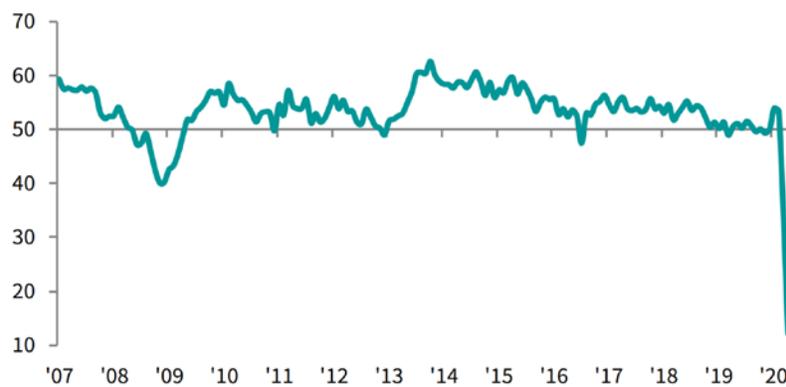
The most recent data covering UK economic activity are the IHS Markit/CIPS Purchasing Managers Indices (PMI), which are timely surveys of monthly activity across UK Manufacturing, Services and Construction. On 1 May IHS Markit/CIPS published the Manufacturing PMI for April whilst the PMI for Services was published on 5 May.

The Services PMI data for April indicated a record low 13.4 level compared with 34.5 in March and the previous low record low of 40.1 in November 2008. 79% of survey respondents reported a drop in business activity during April compared with the survey-record of 43% in March. Reduced volumes of activity in April were unsurprisingly attributed to business closures, shutdowns among clients or shrinking sales due to a slump in non-essential spending. 14% of survey respondents reported unchanged business activity since March, which was viewed as a successful outcome after enacting business continuity plans and home working. The April data also signalled survey-record declines in new work, backlogs and employment across the service sector.

The minority of firms reporting growth in new business during April mainly attributed it to online consumer spending, public sector contract awards and demand for services related to remote working. Some financial service providers also reported resilient volumes of new business. Adding to downward pressure on sales volumes, new business from abroad slumped in April, with transport, tourism and leisure companies often commenting on cancellations of all overseas bookings. Service sector firms also noted that international travel restrictions and business closures led to stoppages on new projects with clients outside the UK. 49% of respondents also indicated a decline in payroll numbers during April due to the use of the UK government job retention scheme. However, service providers also stated that redundancies also occurred due to cash flow constraints, which may lead to additional job cuts among those currently placed on furlough if support was not extended through the coming months.

Services Business Activity Index

sa, >50 = growth since previous month

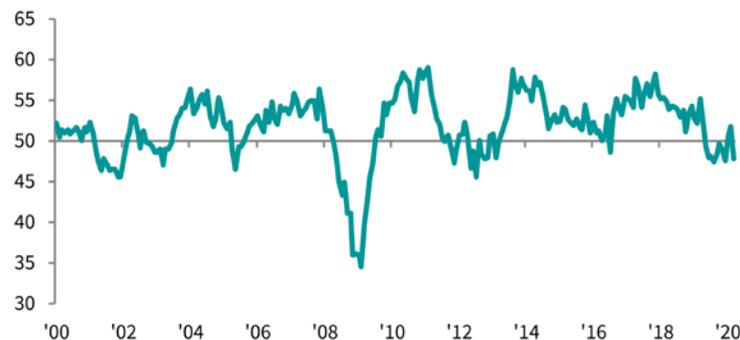


Sources: IHS Markit, CIPS

The IHS Markit/CIPS UK Manufacturing PMI for April fell to a record low of 32.6 in April (marginally lower than their flash estimate of 32.9 made three quarters of the way through the month and) down from 47.8 in March. Unsurprisingly, the sharp contractions in output, new orders, employment and new export business were across manufacturing sectors, with record declines in all major categories. The few cases where firms reported an increase in output or orders were from production or repurposing in food or medical sub-sectors. Vendor lead times lengthened to the greatest extent in the 28-year survey history reflecting logistical issues, border difficulties for overseas goods and delays to freight. Some manufacturers also experienced constraints due to closures or capacity shortages at suppliers.

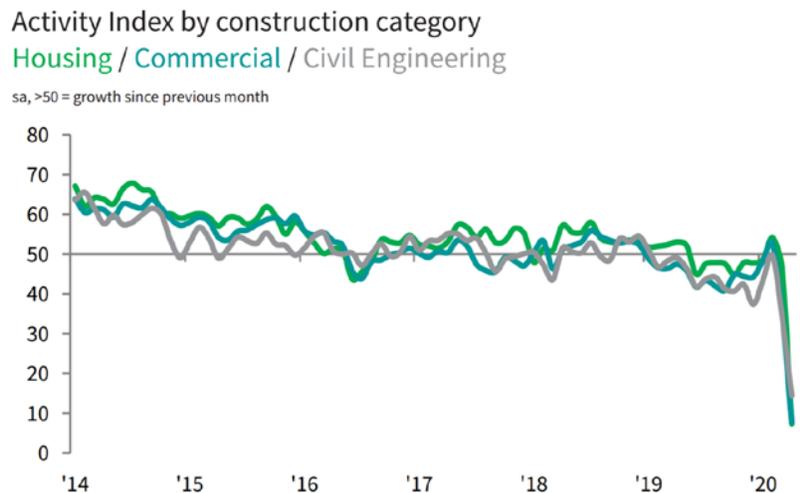
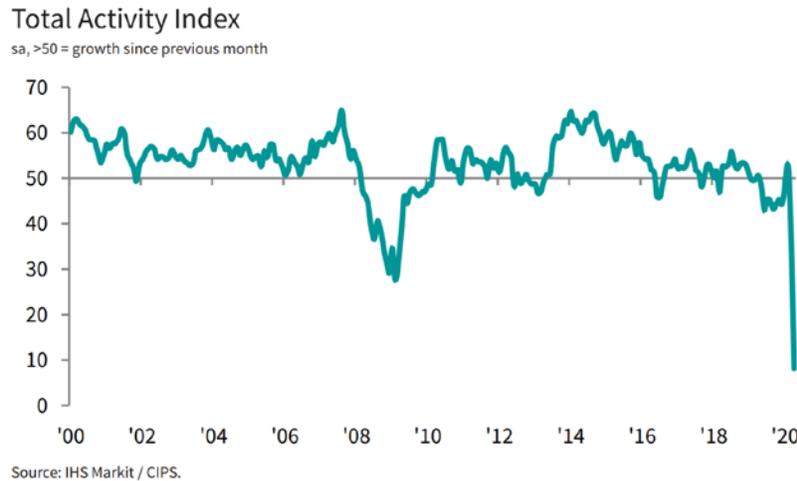
Manufacturing PMI

sa, >50 = improvement since previous month



Source: IHS Markit / CIPS.

The IHS Markit/CIPS UK Construction PMI for April was published on 6 May and registered 8.2 compared with 39.3 in March, its steepest fall on record, surpassing the April 2009 nadir. The IHS Markit/CIPS UK Construction PMI in April for house building was 7.3, commercial was 7.7 & civil engineering (infrastructure) was 14.6. All three sectors endured their sharpest falls on record.



House building was the worst affected sector given most house builders shut down after the lockdown was announced with only activity finishing off works (where developments were close to completion and making sites safe for closure. Most majors announced at the end of April they would gradually restart on site in May so April's house building PMI will be the nadir.

The PMI for commercial also fell as sites shut down after lockdown given social distancing restrictions. Main contractors initially announced in April that they would furlough around 40% of their workforce given stoppages on most sites but the indications are that some commercial sites have now restarted although this is only the case where contractors are able to adhere to site operating procedures and where the client wishes to continue on long-term projects given uncertain demand currently for new offices, retail, hotels & leisure.

The least affected sector in the IHS Markit/CIPS UK Construction PMI in April was civil engineering. Whilst many sites closed in April, some remained open as it is often easier to enact social distancing on large sites and there was also a partial offset due to a rise in roads repairs and improvements.

Policy Maker Responses

Bank of England – 11 March 2020:

- 1) Lowered interest rates to 0.25%
- 2) Near-term funding scheme allowing banks to borrow at similar rates to the Bank of England for up to 4 years with additional incentives to encourage lending to SMEs
- 3) Reduced the countercyclical buffer that UK banks need in reserve from 1% to 0%

Bank of England – 19 March 2020:

- 1) Lowered interest rates to 0.1%
- 2) Increase purchases of Government bonds by £200 billion

Expected Response: Reduce interest rates to 0.0% and raise Quantitative Easing (QE). However, interest rates cuts and improving lending facilities are unlikely to help small firms much given that a lack of funding for banks is not the key issue. Rather, it is a sharp fall in demand and banks are unlikely to extend lending to SMEs that are enduring a sharp fall in revenue that may last for 2-3 months at least.

Government – 11 March 2020:

- Extensions to statutory sick pay including refunds for two weeks per employee for firms with fewer than 250 employees
- Relief on (and for some firms eliminating) business rates for one year for small firms
- Increasing grant funding for small firms
- Expanding 'time to pay' to allow firms to delay tax payments
- Introduction of a Coronavirus Business Interruption Loan Scheme (CBILS) giving lenders guarantees of up to 80% on business loans up to £1.2 million for loans of 3%-5%

Government – 17 March 2020:

- £330 billion loan guarantees (not grants) for firms
- Grants of £25,000 for retail, hospitality and leisure businesses
- Delaying the introduction of IR35 for one year, until April 2021
- Three month mortgage holiday for homeowners

Government – 20 March 2020:

- Coronavirus Job Retention Scheme – HMRC can reimburse 80% of wages for 'furloughed' workers (and firms can top this up by 20%) up to £2,500 per month. 12 May: extended to the end of July in present form and extended to the end of October with employers contributing
- Deferring VAT payments for 2020 Q2
- Suspending the minimum income floor so self-employed person can access Universal Credit at a rate equivalent to Statutory Sick Pay for employees

Government – 26 March 2020:

- Scheme to help self-employed people: a grant worth 80% of their profits up to a cap of £2,500 per month. HMRC will use the average profits from tax returns in 2016-17, 2017-18 and 2018-19 to calculate the size of the grant for those who have profits of less than £50,000 p.a.. It will be available from the beginning of June initially for three months

Government – 3 April 2020:

- Coronavirus Large Business Interruption Loan Scheme (CLBILS): This is a scheme to help medium-sized firms that fell in between the gap of previous announced policies that helped either large firms or SMEs. Government provides a 80% guarantee so banks can make loans of up to £25 million to firms that have an annual turnover of between £45 million and £500 million

Government – 17 April 2020:

- Extension of the Coronavirus Job Retention Scheme until at least the end of June 2020: HMRC reimburses 80% of wages for ‘furloughed’ workers (firms can choose to top up by 20% to ensure no loss in wage) up to a cap of £2,500 per month for employees

Government – 27 April 2020:

- Bounce Back Loan scheme: Businesses will be able to borrow between £2,000 and £50,000 that will be interest free for the first 12 months, a fixed rate of 2.5% afterwards and are backed 100% by government. No repayments will be due during the first 12 months
- Coronavirus Business Interruption Loans Scheme viability tests: The viability tests for firms will be changed so banks merely need to assess whether a business was viable pre-COVID-19

Government – 13 May 2020:

- Trade Credit Insurance Guarantee: Government will temporarily guarantee business-to-business transactions supported by Trade Credit Insurance, provisionally until the end of 2020

The success of policies such as loans and grants will be dependent on how focused the policies are on firms in need and the speed of getting loans and grants through to firms. These issues occurred with loan guarantees in 2008 in the financial crisis but this is a quicker shock. The British Business Bank reported that Coronavirus Business Interruption Loan Scheme has lent £6.1 billion to 35,919 firms in the first seven weeks of the scheme. There is still concern that SMEs cannot access finance quickly enough under the scheme given revenue has fallen sharply, uncertainty over taking on a loan for an indefinite period given no guarantee when revenue will increase and also bank’s willingness to lend as it is only partially backed by government. The Bounce Back Loan scheme started on 4 May, is 100% backed by government and addresses the issue of SMEs getting finance quickly. The Chancellor stated firms would receive loans in 24 hours. The British Business Bank reported that, after the first six working days, 267,000 loans worth £8.4 billion had been made under the scheme and the ease of applications and approvals plus 100% government backing mean that Bounce Back Loan appear to be more successful than the CBILS at getting finance to SMEs. There are also concerns over furloughed workers. Workers must be on furlough for at least three weeks but firms need flexibility to bring workers back at the right time given uncertain demand and uncertainty over how to optimise operations whilst also working safely. Otherwise, this risks becoming a hindrance to recovery. In addition, it risks firms going into a 45 day consultation and unemployment after it ends if demand has not fully recovered. The Chancellor stated on 12 May the furlough scheme was unsustainable in the long term but a cliff-edge would trigger mass unemployment. He also stated it will now continue in its present form until the end of July but between August and the end of October employers will have to contribute to top it up to 80%. Around one-fifth of the UK workforce is on furlough at the state’s expense. The Office for Budget Responsibility estimated that the scheme would have cost £49 billion by the end of June and the Institute for Fiscal Studies estimates that extending it in its current form to the end of July will have cost the government £60 billion.

The assistance for self-employment covers 95% of those who earn income as self-employed workers and covers most construction trades but it is concerning that the scheme will not begin until June given the number of self-employed workers have already suffered a sharp drop in revenue already in March.

The government’s Trade Credit Insurance Guarantee will be vital for SMEs, in construction particularly, given the experience of the 2008/09 financial crisis when many insurers removed Trade Credit Insurance across construction regardless of the status of the company.

Impacts of Coronavirus on Demand and Supply by UK Sector

The negative impacts on the UK economy are likely to occur across most sectors. Demands on the health sector are increasing whilst supply restrictions and shortages of inputs have pushed up input costs although lower oil prices have helped to reduce energy and transportation costs.

	Demand	Input costs	Supply
Agriculture	-	+	-
Construction	-		-
Retail	+/-	-	-
Wholesale	-	+/-	-
Tourism & hospitality	-		-
Manufacturing	-	+/-	-
Transportation	-	+	-
Business services	-		-
Health	+		-

- = Negative effect
- + = "Positive" effect
- +/- = Both "positive" and negative effects

Resilience by UK Sector

Professional services are largely able to work from home but this is not an option for most workers in other sectors except for management level and above. Where staff are employed on temporary or zero-hours contracts, sectors can reduce their staffing costs whilst demand is falling but in many cases temporary employees are a small proportion of costs. Assuming that the impacts of the coronavirus are temporary, affecting primarily 2020 H1, once a recovery gets underway in 2020 H2, industrial production and wholesale trade may be able to catch up some lost ground and some non-essential retail trade that was postponed will return but a significant proportion of the activity may have just been pushed back. In addition, consumer confidence may take time to recover, especially for big-ticket items and as savings may have been used to sustain regular spending. In the construction and health sectors, supply capacity will limit how much of the pent-up demand can be met during recovery.

	Ability to work from home	Scope for rebound	Use of temporary employment contracts
Agriculture	-	-	
Construction	-	-	+
Retail	-	+	+
Wholesale	+	+	+
Tourism & hospitality	-	-	+
Manufacturing	-	+	
Transportation	-	+	+
Business services	+	+	
Health	-	-	

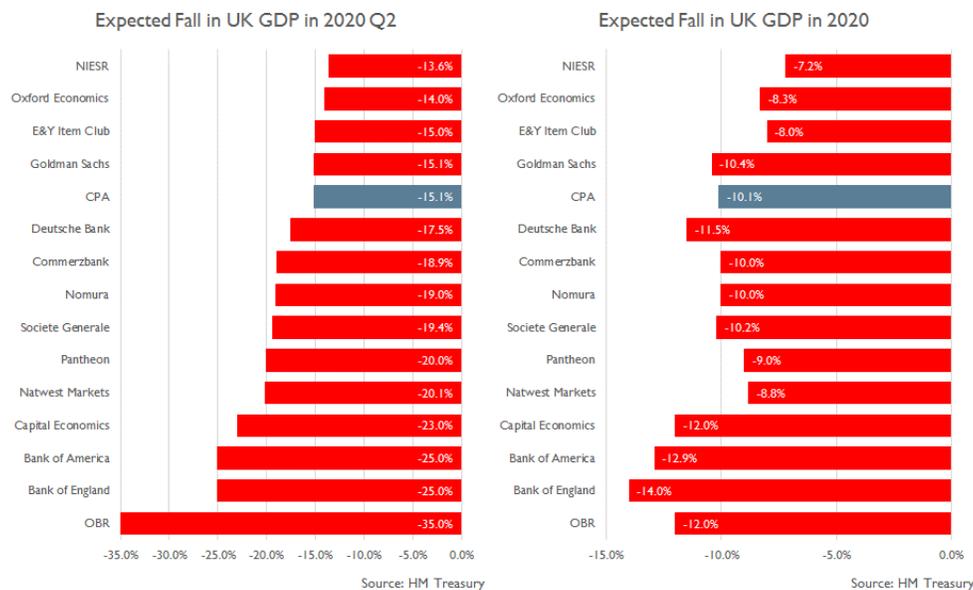
- = Little/no adjustment possible
- + = Adjustment possible

UK Forecasts

At the time of writing, macroeconomic forecasters still assume a ‘V’ shaped recession; a decline in economic activity during Q1 and, in particular, a sharp fall in activity during Q2 whilst economic activity recovers in the second half of 2020. On 13 May, the ONS published its initial estimate of UK GDP, which showed that UK GDP fell by 2.0% in 2020 Q1, the largest fall since 2008, and was 1.6% lower than one year earlier. The largest contributor to the fall was a 1.9% fall in services in Q1, the largest fall on record but there were also significant contractions in production and construction.

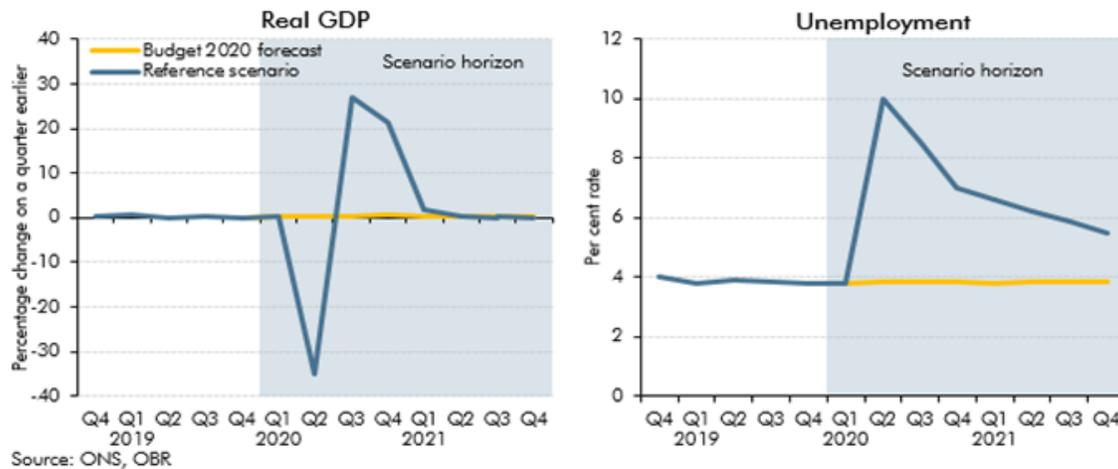
On 20 May, HM Treasury published recent UK GDP forecasts across City and non-City forecasters, which illustrate general downward revisions since last month. The main forecasts determined after social distancing restrictions are illustrated below in addition to the CPA’s main UK macroeconomic scenario.

Of the main City and non-City macroeconomic forecasters, the average (median) estimate for Q2 GDP is -19% compared with average last month of -14%. Forecasts range from the National Institute of Economic and Social Research forecast of -13.6%, the most optimistic estimate, to the Bank of America’s -25%, the most pessimistic forecast, which suggests that one quarter of UK economic activity will be lost. The most recent forecast is from Oxford Economics, published on 18 May, which revised down its UK GDP forecast for Q2 from -8.5% last month to -14%. It also revised down its UK GDP forecast for 2020 overall from -5.1% to -8.3%. It now anticipates UK GDP to grow by 7.8% in 2021 and recover to pre-coronavirus levels by 2021 Q4. The Office for Budget Responsibility’s coronavirus scenario is included in the chart and the Bank of England published its latest UK economic scenario on 7 May, which is also included. Over half of the macroeconomic forecasts for Q2 GDP are between -15% and -20% compared with last month when over half of the forecasts were between -13% and -15%.



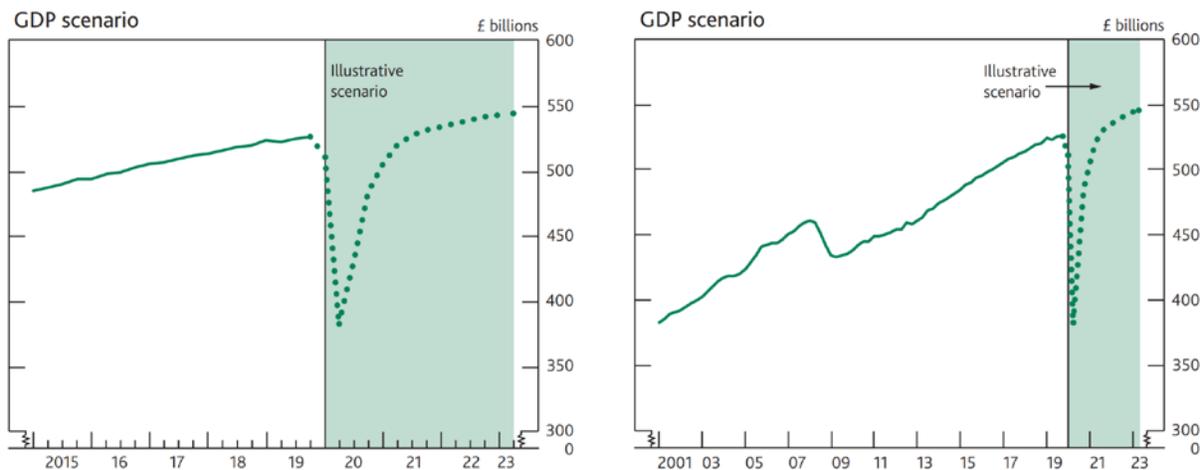
Overall for 2020, the most optimistic forecaster estimates UK GDP falling by 7.2% whilst the most pessimistic forecaster anticipates falling by 13%. The Bank of England and OBR coronavirus scenarios imply falls of -14% and -12% respectively in 2020 overall. The average (median) fall in GDP in 2020 10.2% compared with 7.4% last month whilst over half of the forecasters estimate UK GDP in 2020 falling by between 10% and 12% compared with last month when more than half of forecasters anticipated GDP falling between 6.5% and 10%.

The OBR Coronavirus Scenario estimates a considerably greater fall than most forecasters and assumes that the social distancing restrictions announced on March 23 last for three months. The OBR assumptions imply a drop in UK GDP of around 35% in Q2 and unemployment rising from below 4% to 10% during Q2.

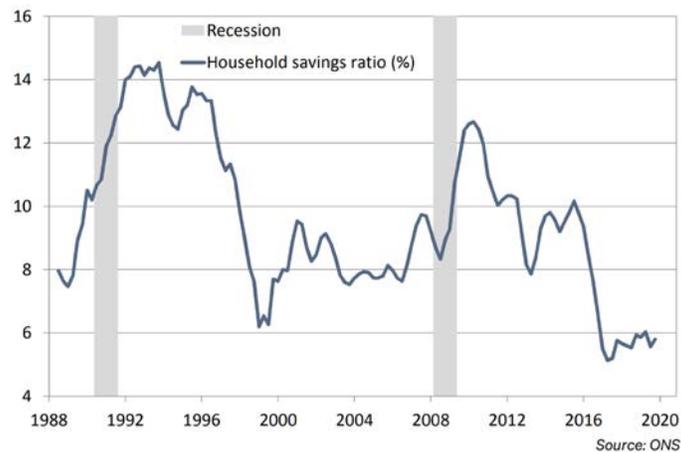


However, the OBR anticipates that UK GDP rises by 27% in Q3 & 21% in Q4 so that UK GDP returns to its pre-COVID-19 (coronavirus) level by Q4 in spite of higher unemployment and consequent lower household spending when the worst affected sector has been services, dependent on consumption.

The Bank of England Monetary Policy Report published on 7 May estimates that UK GDP contracted by 3% in Q1 and projects a further 25% fall for Q2. The Bank assumes that social distancing restrictions remain in place until June and are then lifted gradually over the next four months. The CPA is assuming that restrictions begin to ease in May. The CPA expects a similar 30% fall in economic activity during late March and April. However, the CPA assumption is that recovery starts one month earlier than the OBR/Bank of England. Any additional month of lockdowns may potentially depress quarterly GDP by approximately 10% and annual GDP by around 2.5%.



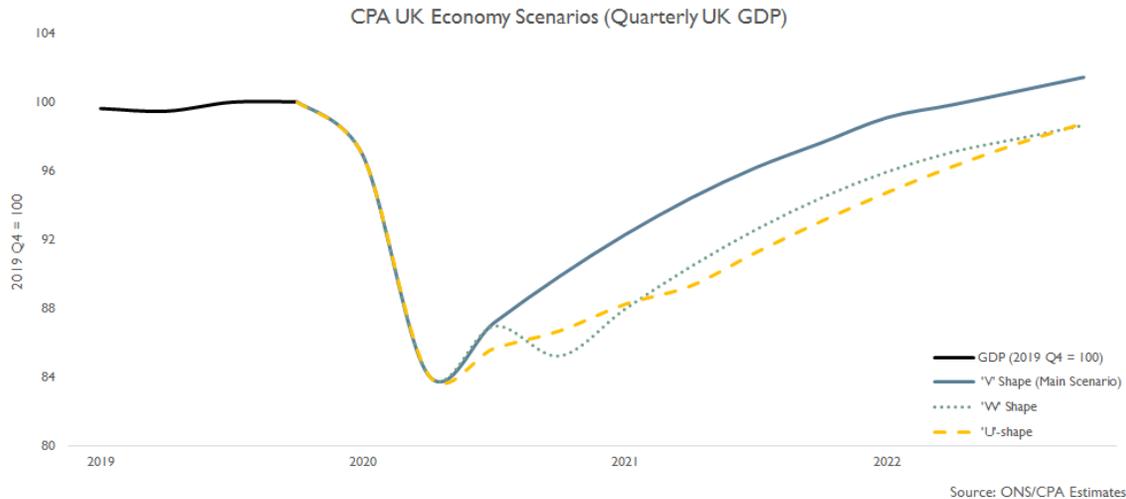
The profile of the OBR and Bank of England recoveries appear far too optimistic given that the rise in unemployment and reduction in wealth means that household spending is likely to take time to recover. In addition, capacity constraints from supply chains, particularly SMEs could also hinder recovery. The pace at which household spending recovers will determine the shape and speed of the economic recovery. Household spending accounts for around 70% of GDP in the UK. A key risk is that household saving rises considerably at the expense of saving even after the social distancing restrictions begin to ease, which would hinder the rate of recovery. The experience of past recessions has been that households tend to become highly risk averse in the next few years that given the rise in unemployment.



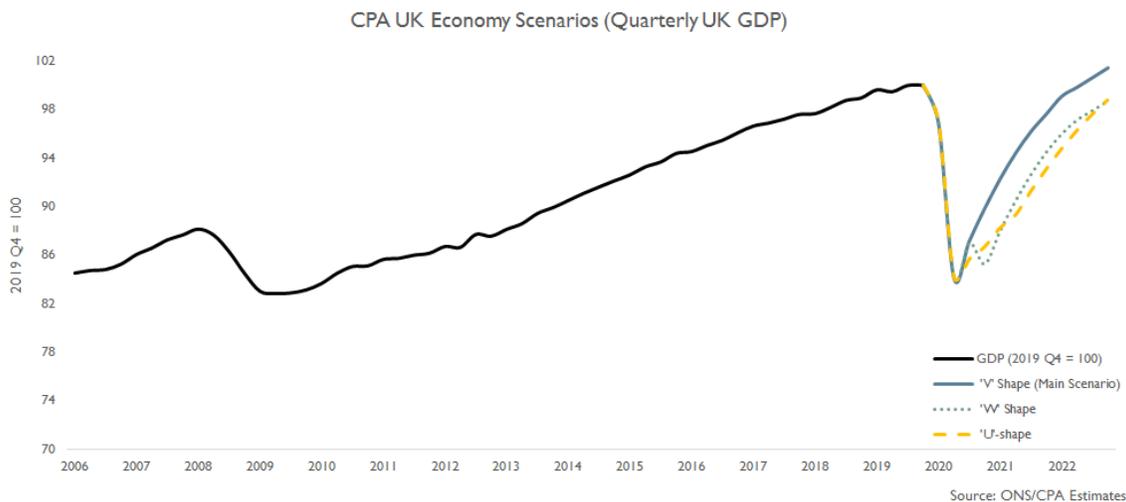
The CPA’s draft UK economic main scenario is based on the assumption of a ‘V-shaped’ or ‘tick-shaped’ recession with a sharp decline in March and Q2 but a slower recovery. It assumes that coronavirus effects start to dissipate in May and social distancing restrictions begin to be eased gradually from June, to enable economic recovery to begin in Q3. The main scenario implies that GDP may endure a fall of 2.1% in Q1 and a further 15.1% fall in GDP during Q2. This is the most optimistic of the CPA’s scenarios.

The easing of social distancing restrictions is likely to be gradual as government is initially likely to be risk averse so the third quarter of the year sees the start of recovery in areas of the economy that do not involve large gatherings of people or international travel. Recovery from the Q2 low base may be initially rapid in Q3 and early Q4, assisted by government stimulus, but is unlikely to be sufficient to offset the sharp falls in the first half of the year. Even the CPA’s most optimistic scenario, the main scenario, implies that UK GDP may fall by 10% in 2020 overall, a considerably larger decline than the 6% fall experienced during the financial crisis of 2008/09 and over a much shorter time period.

During the financial crisis, the UK economy experienced a 6% fall in five quarters whereas on this occasion the estimated 17% fall is expected in just three months. Economic activity should accelerate quickly from a low base in Q3 but towards the end of 2020, growth rates are expected to slow due to a shift of some workers from furloughing to unemployment, household risk aversion and a lack of finance and businesses that constrain spending and investment. In the medium-term, the scale of the coronavirus may have economic, financial and political effects long-term with government focusing on rebuilding services, manufacturing and the health service whilst private sector focuses on risk aversion, reducing costs and diversifying supply chains. GDP is only expected to return to levels seen before coronavirus impacts in 2022.

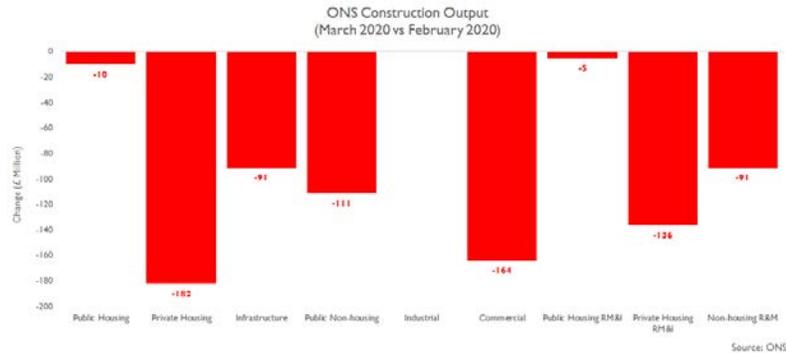


The draft 'W'-shaped scenario also assumes that recovery occurs in Q3 but economic activity falls in Q4 if social distancing restrictions are introduced once again if the coronavirus returns as a serious issue in Q4 either before a vaccine or if it returns in a different strain. In this scenario, activity in Q4 does not fall to levels seen in Q2 as a degree of learning from the experience of Q2 is assumed in terms of and a slightly higher level of business continuity. In the 'W'-shaped scenario, the consequent rise in unemployment, further falls in consumer confidence and spending and negative impacts on income and wealth mean that GDP only returns to pre-coronavirus levels in mid-2023, three quarters later than in the main scenario. The draft 'U'-shaped scenario assumes social distancing restrictions begin to be eased in May but at a slow rate and some restrictions still remain in place until March 2021. This scenario would be consistent with experience of countries hit by the Spanish flu global pandemic (1918-1920) and Ebola epidemic (2014-2016) in Africa during which successive waves of transmission led to repeated tightening and loosening of restrictions. In the 'U'-shaped scenario, government, firms and households are assumed to build in additional risk across all areas of big-ticket item long-term spending, planning and investment, leading to a slower recovery. This implies that GDP only returns to pre-coronavirus levels of GDP in 2023 Q2.

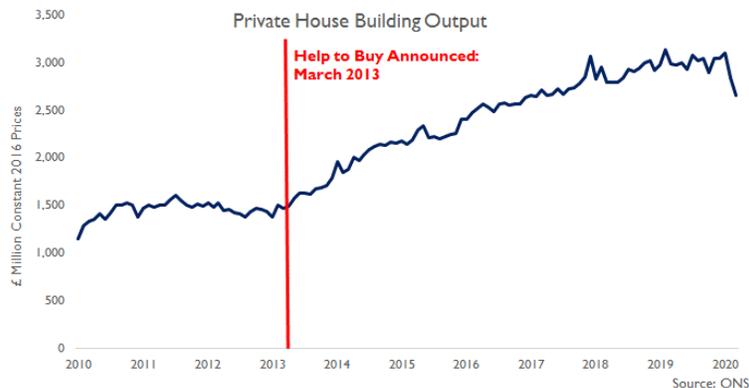


Construction

ONS construction output published on 13 May, show that construction output in March was 5.9% (£791 million) lower than February and 7.1% lower one year earlier. The largest falls were in private housing (£182 million), commercial (£164 million) and private housing rm&i (£136 million).



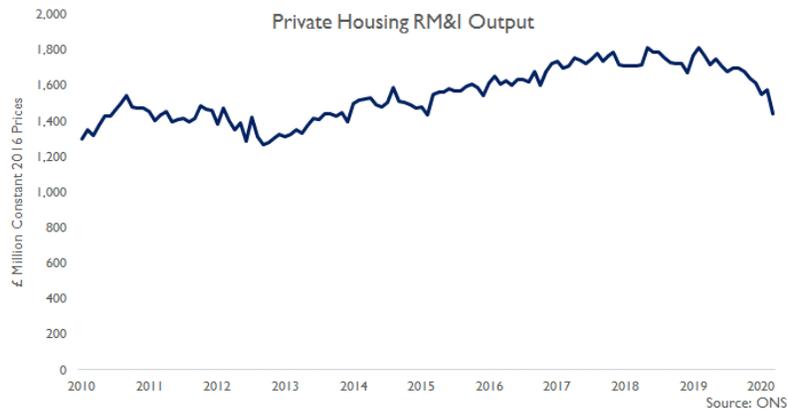
Private housing output in March was 6.4% lower than in February and 10.8% lower than a year ago and output will be worse in April when most of the month is affected. House builders announced shutting sites, show homes and sales offices after social distancing restrictions on 23 March so most of March was unaffected and activity in early and mid-March accelerated after rain-affected February.



Commercial output fell 7.1% in March 2020 compared to February, the third consecutive monthly decline and was 9.5% lower than a year ago as contractors temporarily closed many sites. It will clearly fall further in April but is unlikely to fall by as much as house building given main contractors have a greater incentive to stay on site to meet contractual arrangements.



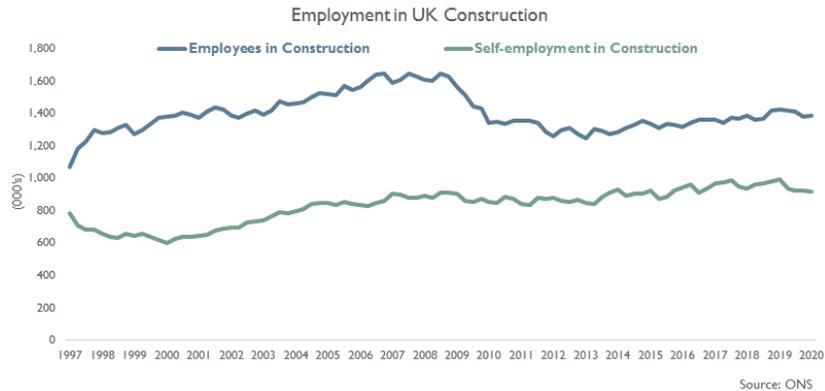
Private housing rm&i fell by 8.6% in March 2020 compared with February and was 18.6% lower than a year ago. Whilst basic repairs continued, non-essential maintenance was delayed but the largest impact has been on the improvements side, where work sharply fell after the social distancing restrictions as risk-averse consumers focused on essential spending rather than big-ticket item spending and saving as well as households' concern over social distancing and people working in their home. Again, this will fall further in April but the sector tends to be dominated by SME contractors that are highly reliant on cash flow so they will have a strong incentive to get back to rm&i work as soon as social distancing restrictions ease if the demand is there.



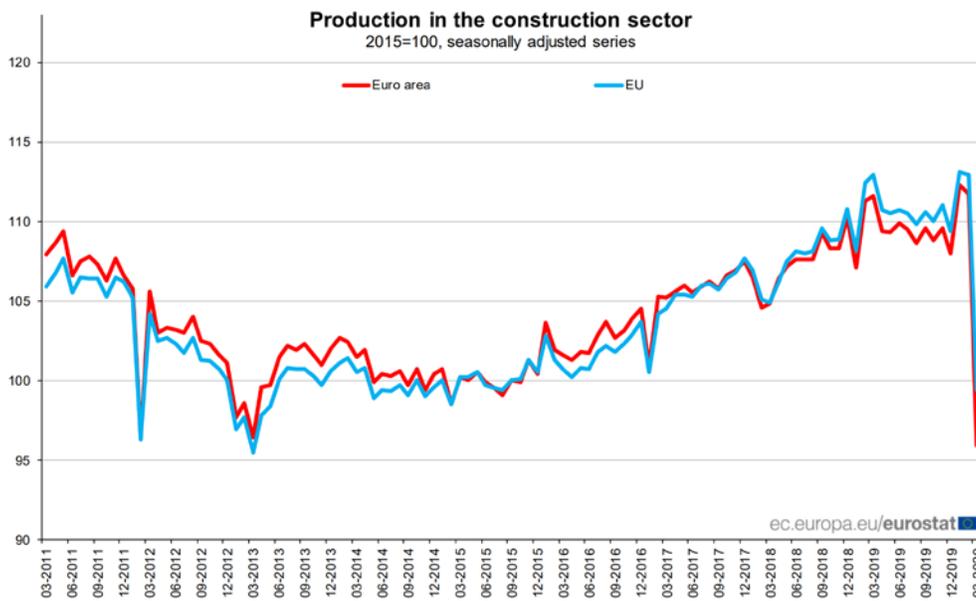
UK construction employment between January and March 2020 was 2.31 million according to the ONS. This is 0.2% higher than in 2019 Q4 but 4.5% lower than one year earlier. The declines in UK construction employment in the year to 2020 January-March were due to falls in every quarter of last year. The first quarter of 2020 did not see the full impact of COVID-19 and social distancing restrictions, which only came in after 23 March in construction as some sites continued throughout the social distancing restrictions and even in housing, which was the earliest to close sites after 23 March, there was still activity ensuring sites were safe for closure. It is too early to see the full impacts of the decline in construction activity since the social distancing restrictions on 23 March given that the downturn primarily affected April, during which many contractors were paid for work in previous months and also due to the impact of government policies put in place to temporarily sustain employment whilst there is a lack of demand such as furloughing, deferring VAT payments as well as the CBILS and Bounce Back Loan schemes. As a result, the full impacts on UK construction employment may only be in 2020 Q2 and Q3 after the initial decline in activity (and issues of delayed payment), the initial flurry of activity finishing previously halted projects and the end of furloughing



In UK construction during 2020 January-March, the number of employees rose 0.5% compared with 2019 Q4 but fell 2.7% compared with a year ago whilst self-employment fell by 0.2% compared with 2019 Q4 and 7.1% compared with a year ago, which may point towards the smallest contractors and sole traders being subject to the earliest impacts of the decline in activity.



In March 2020, construction output fell in the Euro Area fell by 14.1% compared with February and 15.4% compared with a year ago. In the EU, construction output in March fell by 12.0% compared with February and 13.4% compared with a year ago due to the impacts of COVID-19 (coronavirus). Unsurprisingly, given early COVID-19 impacts and social distancing restrictions, the largest construction output falls in March 2020 compared with February were in France (-40.2%) and Italy (-36.2%). Compared with a year ago, the largest falls were in also France (-41.2%) and Italy (-35.4%).



In the UK, initially following the social distancing restrictions from 23 March, there was confusion in the industry as to what activity may still occur. The Scottish First Minister stated on 23 March that 'building sites should close' and firms report that construction activity has slowed considerably in Scotland. The Mayor of London stated on 24 March that TfL and Crossrail have stopped construction activity except for basic maintenance and repairs. He also stated new work should not occur given that a significant proportion of workers will be travelling to work on crowded public transport. However, government has consistently stated that construction on site should continue 'where it is safe to do so'.

Many builders merchants remain closed whilst others are currently open with restrictions under Public Health England guidance including social distancing and many are restricting sales operations; reduced numbers of branches and only operating deliveries and/or click and collect. However, there has been a considerable acceleration in merchant reopenings over the past two weeks. The Builders Merchants Federation has [a list of the status](#) of the different merchants. As of 13 May, 23% of merchants were fully open, 72% were partially open and only 5% closed. It is worth noting as a reference point for major merchant impacts during social distancing restrictions that in Travis Perkins's [market update on 28 April](#), total revenue in the first three weeks of April was approximately one-third of the same period in 2019 on a comparable basis and it had furloughed half of its 30,000 staff.

Most house builders announced an intention to close sales offices, show homes and sites after the social distancing restrictions on 23 March yet Berkeley [stated](#) on 27 March some sites remain open whilst other sites will close. On 9 April, Redrow stated it furloughed over 1,800 staff, 80% of its workforce and secured a £300 million loan from the Bank of England's Covid Corporate Financing Facility but on 27 April it [reported](#) that it would mobilise sites from 11 May with a phased return from 18 May.

On 13 May, Robert Jenrick [announced](#) that show homes can reopen, provided social distancing can be implemented. It is expected that house builders back on site will be restarting halted developments but the start of new developments will be based on clear signs of a return of customer demand after social distancing restrictions are more widely eased so this may just be an initial flurry of work before another slowdown. Crest Nicholson [stated](#) on 13 May that it will start to remobilise activity in a phased and controlled manner from 18 May. On 16 April, Barratt [stated](#) it will furlough 85% of its 6,000 employees until at least the end of May. On 1 May, Barratt [reported](#) work will recommence from 11 May, initially to implement changes required under new working practices and then a phased return to construction on around 50% of sites except in Scotland. Initially, activity will be on sold plots at advanced stages. On 23 April, Taylor Wimpey [reported](#) it would restart on sites from the week of 4 May in England and Wales but sales centres, show homes and regional offices would remain closed until social distancing restrictions on non-essential retail are eased. Plus, sites in Scotland remain closed until Scottish Government guidance changes. On 13 May, Taylor Wimpey [reported](#) activity on over 90% of its sites in England and Wales whilst show homes and sales centres will reopen for pre-booked appointments from 22 May and the majority of staff would return from furlough at the end of May. Vistry [stated](#) on 23 April it would restart work on a significant number sites and 90% of joint ventures from 27th April with focus on homes 'where we have clear visibility of completion and hence cash realisation'. On 20 May, Vistry [updated](#) the stock market, stating that over 70% of normal production capacity has been restored due to social distancing and other safety measures, operating on 119 out of a total 172 housebuilding developments. It also has access to funding under the Bank of England Covid Corporate Financing Facility if required. On 24 April, Persimmon [reported](#) that whilst construction work had continued to complete homes in limited instances, it was planning a phased restart to work on site from 27 April. Persimmon [reported](#) on 14 May that 65% of production capacity had been restored by 4 May and that it will reopen sales offices in England on 15 May.

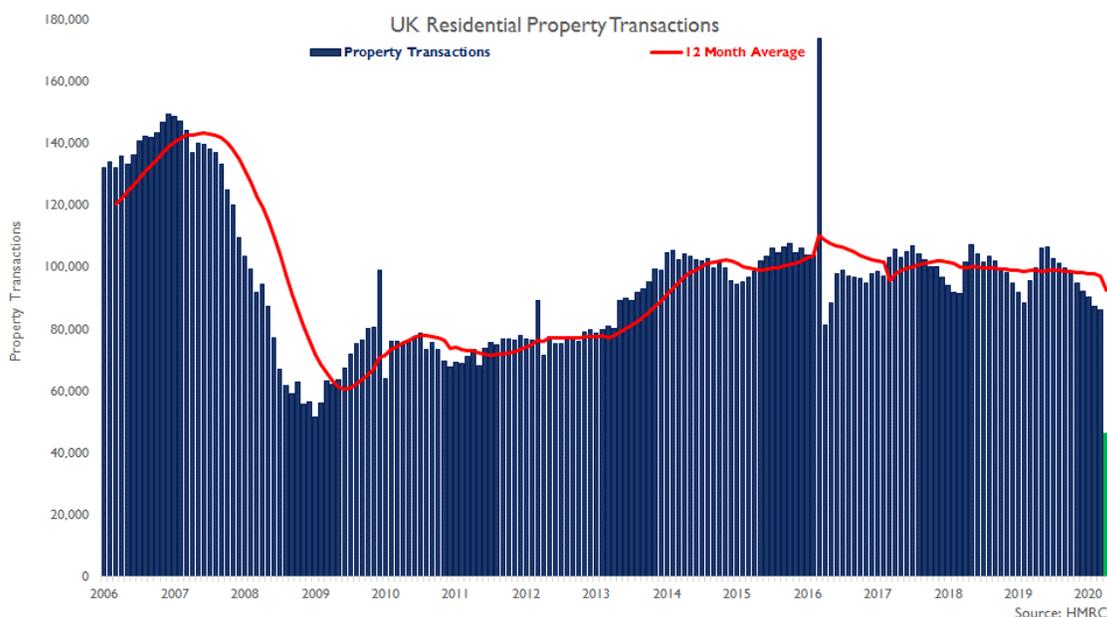
On 30 April, Bellway reported that it will resume some work, initially on a phased basis, from 4 May. On 24 April, Legal & General Capital announced that it had reopened its modular factory but its traditional building; Cala Homes, affordable, later living and build to rent businesses had paused as revenue has stopped since March. Countryside stated on 11 May that it was reopening sites on a limited and phased basis and that it had secured £300 million under the Bank of England Corporate Financing Facility that it can draw upon if needed. MJ Gleeson reported on 14 May it would reopen up to half of its sites for limited build activity by the end of the week and all sites will reopen by the end of June focusing on preparing site infrastructure and other ground-level works. It also stated it would begin to reopen sales offices this week and will have sales offices covering all sites open within two weeks.

Major house builders returning to sites primarily reflects activity on partially completed developments. There are two main concerns. Firstly, ensuring safe working on site means productivity may be on average 30%-40% lower (depending on the development), according to contractors that the CPA has spoken to, so activity is slower and costs more. Secondly, where the demand will come from after this initial work. Once social distancing restrictions ease from mid-May, they are likely to be eased slowly. Spending on big-ticket items is likely to be affected even in the medium-term given the unemployment rise, risk averse consumers and an increased saving.

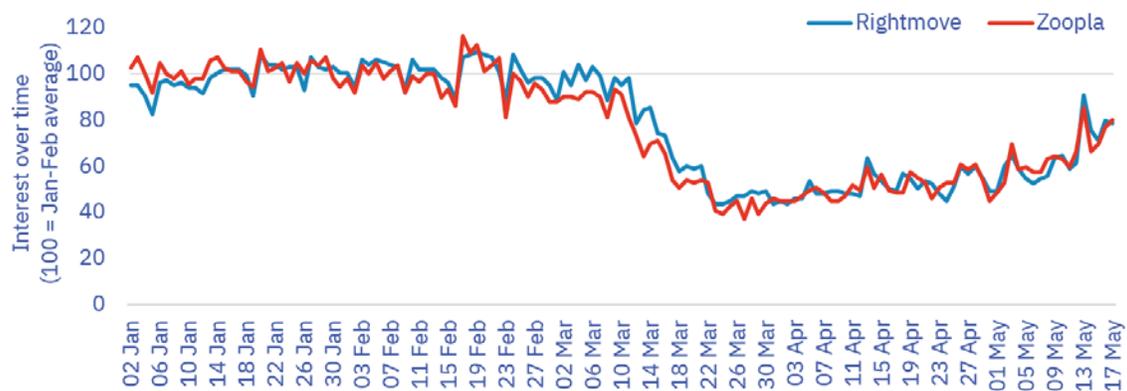
The lack of transactions may mean house prices (based on the price of transacted homes) may not fall sharply despite the sharp fall in demand due to insufficient transactions to determine price indices. The ONS stated on 6 May that after March's house price data is published in June it will temporarily suspend the house price index due to the lack of transactions in the market.

Analysing the state of the housing market is clearly difficult given that it has only just reopened and in the light of no official house price data other, timely data, are increasingly becoming important.

The HMRC data shows that residential property transactions in April 2020 were 46.1% lower than in March and 53.4% lower than one year earlier, lower than during the financial crisis but higher than expected given the 'frozen' state of the housing market in April. The transactions largely reflect reporting delays and that many of these would largely have been close to completion in March. In turn, this implies that May's property transactions data will also be historically low despite the easing of social distancing restrictions and reopening of the housing market.



A chart published by Built Place shows the level of search activity for the two main UK property portals. Search activity had started falling prior to the social distancing restrictions and in late March was approximately 60% below levels in January and February. There had been a gradual increase throughout late April and early May but the largest increases occurred with the reopening of the housing market. Activity during the weekend of 16-17 May was on average 80% of pre-coronavirus levels but it is difficult to know whether this is merely speculative searching and the extent to which it will translate to property transactions.



The UK housing market may only start to recover from June and potential purchasers and lenders may still be risk averse after the shock. It would be expected that the government extends the current Help to Buy beyond March 2021 to stimulate the housing market. Housing associations may also need additional policy help (dependent on the detail of the next Affordable Housing Programme) given housing associations’ rising dependence on private sales to help fund affordable housing provision.

The key problem with the sharp fall in housing demand will be for the supply chain. The top 10 UK house builders employ only one person for every three homes they build on average so activity and risk are sub-contracted out to SMEs that are reliant on cash flow and, in particular, the 41% of construction workers that are self-employed.

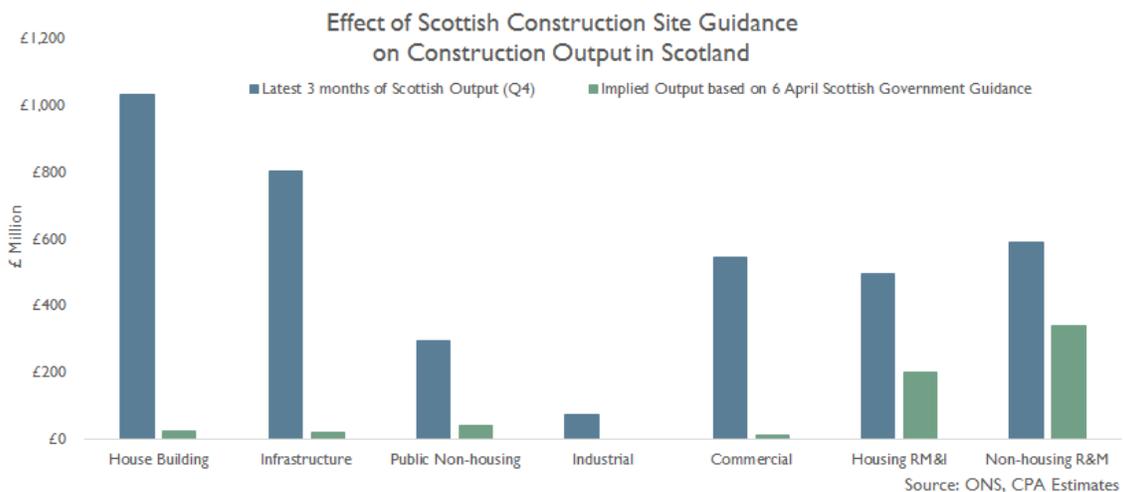
In March, 32 contractors fell into administration, the same as in February. Activity carried on in most of March and sub-contractors were getting paid for previous work. The initial rise in administrations is likely to be in April but largest rises are likely in May and June as sub-contractors and SMEs suffer from a fall in demand and main contractors pushing out payment terms as they deal with declines in activity.

SMEs will not only be affected by the shutdown in new housing but also housing rm&i. On 26 March, the Federation of Master Builders (FMB) survey of small builders reported 60% had ceased between 76% & 100% of their work. Of those, 80% are doing residential repair, renovation & maintenance work that may have issues of access to homes as owners may be concerned about social distancing issues.

It is worth noting that the variable with the strongest correlation with private housing rm&i, particularly the improvements element of rm&i, is new car registrations. Car registrations are a proxy variable and illustrate households' big-ticket item spending. In April 2020, new car registrations were 97% lower than a year ago due to social distancing restrictions according to the Society of Motor Manufacturers and Traders (SMMT). We expect the improvements element of private housing rm&i to show similar falls given issues of social distancing in the home. House building may show similar falls due to issues regarding inability to visit show homes & sales offices, which is similar to issues regarding inability to visiting car salesrooms. However, it is worth noting that major house builders have been improving their online offerings in recent years and, as a result, increased online activity may substitute for initial enquiries and first viewings as a preview to progressing sales when social distancing restrictions ease.

In terms of public housing rm&i, the key pre-coronavirus activity was remediation of ACM cladding. According to the Ministry of Housing, Communities and Local Government (MHCLG), only two high-rise residential and publicly-owned buildings in England completed works to remove and replace ACM cladding systems in March. The latest MHCLG publication states in April only five completed works and work was paused on 52 of 97 buildings. There remain 307 high-rise residential and publicly-owned buildings with cladding unlikely to meet building regulations yet to be remediated in England.

The Scottish First Minister's comments in March that sites should close and the Scottish Government guidance on 6 April implies that construction work should not go ahead except for health facilities, repurposing of existing facilities for coronavirus-related activities, essential repairs work on private buildings (but not routine maintenance) and the repair and maintenance of infrastructure (but not improvements). In practice, this implies that around 83% of activity may not occur and if this is applied for 3 months then it would lead to a loss of around £2.5 billion of activity in Scotland. The indications at this point are that over half of builders merchants in Scotland remain closed as of 7 May.



The Construction Industry Coronavirus (CICV) Forum survey of 377 companies across the supply chain in Scotland reported on 16 April that two-thirds of all firms that took part in the survey had furloughed staff, over one-third had shut completely, whilst more than one-quarter currently had staff and sub-contractors in self-isolation. Key survey results:

- 79% of respondents stated cashflow had stopped
- 68% of respondents had furloughed staff
- 37% of firms had closed
- 54% of firms were carrying out emergency work only
- 56% of firms had overdue invoices that were sent directly to public sector clients
- 55% of firms had overdue invoices that were sent directly to private sector clients
- 26% of firms had staff and sub-contractors who are currently self-isolating
- 33% of firms stated they are finding it difficult to source appropriate materials

In March, the CPA was anticipating that new work in London may be the next region affected given concerns raised by the Mayor. Interserve London stopped activity due to concerns over workers travelling on crowded public transport and Ardmore Group also suspended operations. On 1 April the Battersea Power Station Development Company stated that work has stopped and the indications were that work would not restart until mid-May but on 4 May, it stated that it had begun a gradual reopening of the site. Last year it had over 4,000 workers on site although it is unlikely that it will reach this figure during 2020 given social distancing issues. On 14 April, HS2 stated Network Rail restarted work at Euston station on 20 April and on 15 April government issued the formal Notice to Proceed on HS2.

Sir Robert MacAlpine stated on 25th March that most of its sites were closed or closing except where critical work such as building hospitals continues. On 22 April, Sir Robert MacAlpine restarted work on a small number of sites in a limited capacity despite announcing furloughing half of its 2,000 employees. On 2 April, Wates reported that it would be furloughing 1,000 employees, Morgan Sindall furloughed 1,000 employees and Laing O'Rourke announced staff wage cuts of between 20% and 30% on 1 April and stated 1,000 staff would be furloughed on 8 April. It also said it is trying to keep sites open but work on Tideway, Crossrail and Northern line extension is suspended. On 3 April, after shutting down its London sites, Mace stated furloughed 800 employees but on 6 April Mace announced that 'some of its UK sites' would reopen on 7 April. On 21 April Mace stated it expects 30 sites, one-third of its total number of sites, to open by 24 April. Lendlease stated on 2 April that its sites in London, including the £1 billion Google headquarters at the King's Cross redevelopment, are suspended "near term". On 23 April, Lendlease reported limited work at some sites is restarting but the Google headquarters project in King's Cross remains closed. BAM Construct stated on 3 April that it will reopen its 7 London sites on 6 April including the £200 million Facebook headquarters in the King's Cross redevelopment yet on 8 April it also announced it was furloughing 440 staff. On 8 April, Keltbray stated it was furloughing one-third of its employees and applying salary reductions for at least two months for staff earning above £50,000 per year. On 3 April, Henry Boot reported it had closed sales centres and paused construction except work vital to the NHS as well as furloughing employees. On 8 April, Willmott Dixon announced furloughing 800 of its 2,200 staff but 90% of its sites remain open. On 3 April, Multiplex announced it would furlough one-fifth of its employees and remaining staff have a 20% salary cut but on 16 April it restarted 'limited' works at 3 residential sites in London. On 20 April, Bouygues stated it will phase reopening of some sites and would operate at reduced capacity.

Construction activity has historically had a strong correlation with economic growth but tended to be three times more volatile. As a result, a 10% fall in UK GDP during 2020 would generally imply a fall of 30% in construction output. But, this contraction has been different to past recessions in that activity declined at a quicker rate and is expected to last for a shorter time whilst the greatest impacts are in sectors that have not stopped due to restrictions such as services whilst construction has been allowed to continue. However, even where construction activity is continuing or restarting, productivity has fallen. The indications CPA has from contractors is that on site productivity where SOP are adhered to has fallen by 30%-40% depending on the development but as SOP are recent, contractors may adjust to the SOP and reduce this productivity deficit. BuildUK reported on 30 April that productivity on construction and infrastructure sites is averaging 67% and only 56% on London construction sites. On 5 May, BAM stated that it was only operating at 55% productivity across the business.

The key productivity issues in the short-term will be on existing contracts who pays the additional cost given that given that projects will take longer and cost more. As a result there may be a significant rise in conflict between client and main contractors as well as between main contractors and sub-contracts if cost issues are forced down the supply chain. In the medium-term, on new contracts, the additional costs and time will be built into the cost and the client will have to pay but higher costs may then affect the financial viability of projects.

The key issue for construction is 86% of employment is in SMEs and 41% is self-employment so the majority of business models are based almost entirely on cash flow and few assets. This means a sharp fall in demand would lead to a sharp rise in unemployment, administrations and liquidations, particularly following on from the slowdown in construction activity at the end of 2019.

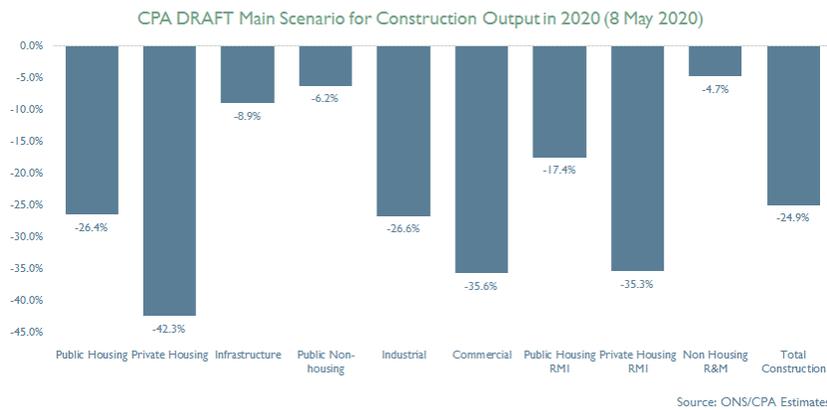
The indications that the CPA have so far is that approximately 60% of construction output in Great Britain was lost during April due to the social distancing restrictions (83% in Scotland); 85% of house building, 60% of non-residential new build, 60% of repairs, maintenance and improvements (the improvements part of rm&i) and 20% of non-residential r&m. BuildUK stated on 20 May that from their largest contracting members, 86% of major infrastructure and construction sites in England and Wales are open compared with 82% last week. They also reported that output has increased to 75% although in London it was 68% and in Scotland it was only 22%. Members with housing in their portfolios reported 67% of housing sites in England and Wales are open.

Anecdotally, there are strong indications that many main contractors have been demanding sub-contractors come to site or be in breach of contract whilst sub-contractors have concerns regarding returning to site given their duty of care for their employees. In addition, there are also indications that contractors have been retaining retentions and extending payment terms for the supply chain.

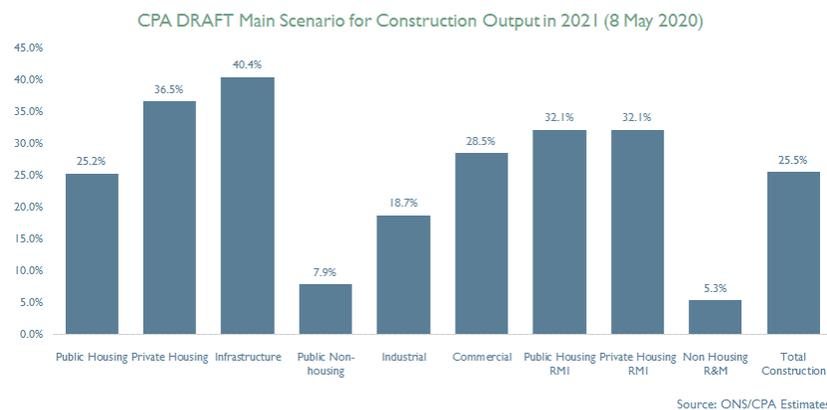
The negative impact of declining activity is likely to have been felt since the social distancing restrictions on 23 March but many smaller firms will still have been paid after that for previous work. The negative impacts of both declining activity and delayed payments on the activity since 23 March is likely to be felt by SMEs primarily in June and July. In addition, there are also concerns that, as in previous recessions, an increase in administrations and insolvencies may lead to difficulties in trade-credit insurance, meaning that firms would have to pay suppliers up front, leading to further cash flow issues for SMEs.

The full impacts on SMEs will only be clear once it is known how long the social distancing restrictions last and the speed at which they are eased as well as the willingness and ability of SMEs to restart. On 10 May, the government stated that those who cannot work from home should try to return to work, avoiding public transport where possible, specifically highlighting construction and manufacturing although there is little detail as to how this works in practice particularly on small housing rm&i projects given social distancing issues.

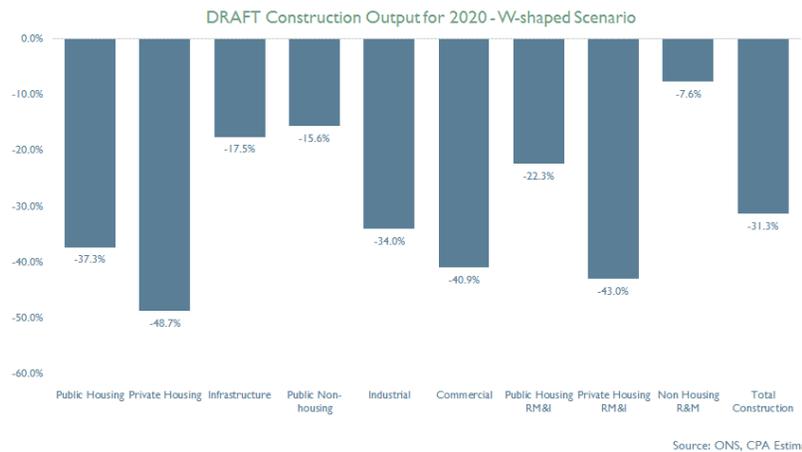
The CPA’s DRAFT Main Scenario is based on social distancing restrictions easing from mid-May enabling recovering in the UK economy and construction output from June. The CPA DRAFT Main Scenario anticipates construction output in 2020 falling by 25%. Even though the worst effects on construction activity are experienced at the end of March, April and May, activity in each month during the second half of 2020 is still likely to be lower than in the same month one year ago and, consequently, contributing to the decline in 2020’s overall fall. The largest falls in activity are in private housing (-42%), commercial (-36%) and private housing rm&i (-35%). The least affected sectors are anticipated to be non-housing r&m (-5%), public non-housing (-6%) and infrastructure (-9%). Public non-housing is likely to fall less sharply as falls in activity on defence, prisons sites is likely to be offset by increased activity on schools and hospitals. Infrastructure activity a greater ability to implement site operating procedures and social distancing on larger sites.



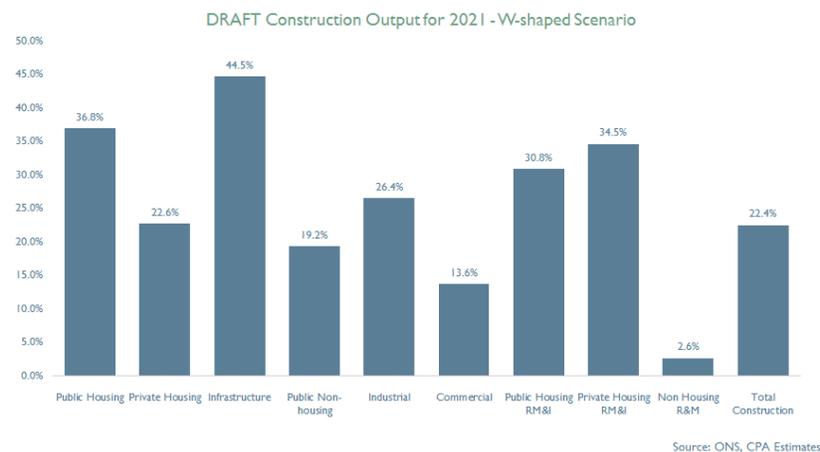
The CPA DRAFT Main Scenario anticipates construction output rising 26% overall in 2021. The largest growth rates are expected to be in infrastructure (+40%), private housing (+37%) and private housing rm&i (+32%). The percentage increases appear high but it is worth noting that this is compared with a low level of activity in 2020. Construction output growth, month on month, is expected to be gradual yet activity will still be considerably higher than in the same month one year earlier. Infrastructure activity in 2021 is expected to benefit from HS2 work following the notice to proceed. Private housing is expected to recover from a low base due to improving economic conditions and government stimulus through the extension of Help to Buy and incentives for affordable housing. Private housing rm&i activity is expected to gradually improve in line with the slow economic and housing market growth. It may also benefit as many risk-averse homeowners choose to stay and improve their existing properties rather than move given concern over the state of the housing market and the level of house prices.



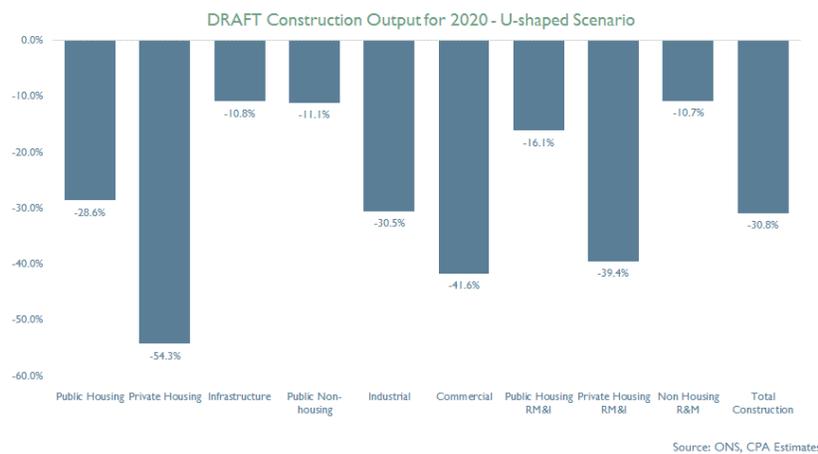
The CPA’s DRAFT W-shaped Scenario is based on social distancing restrictions easing from mid-May enabling recovery in the UK economy and construction output from June. Recovery occurs in Q3 but economic activity falls in Q4 when social distancing restrictions are introduced once again if the coronavirus returns as a serious issue in Q4 either before a vaccine or if it returns in a different strain. In this scenario, activity in Q4 does not fall to levels seen in Q2 as a degree of learning from the experience of Q2 is assumed in terms of and a slightly higher level of business continuity. Even still, total construction output is anticipated to fall by 31% in 2020 compared with 25% in the main scenario. The largest falls in activity are in private housing (-49%), private housing rm&i (-43%) and commercial (-41%). The biggest impacts of a slowdown in economic activity are expected to fall on households due to the rise in unemployment and falls in income, wealth and spending. The least affected sectors are anticipated to be non-housing r&m (-8%), public non-housing (-16%) and infrastructure (-18%).



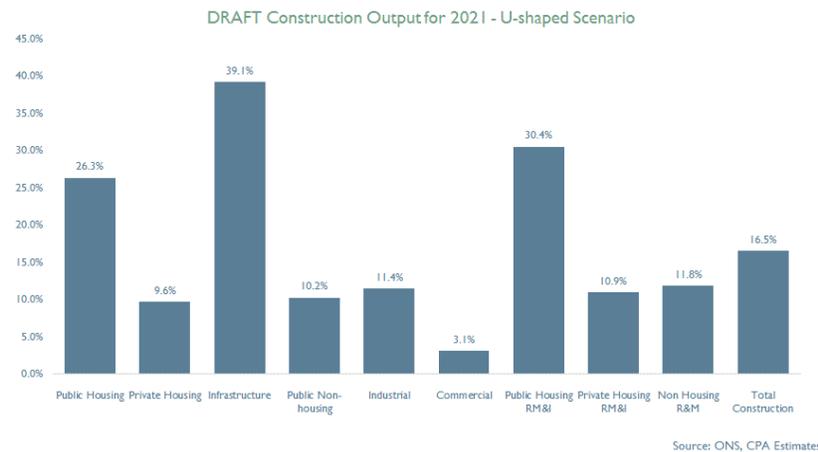
The CPA’s DRAFT W-shaped Scenario anticipates construction output rising 22% overall in 2021. The percentage increases across the industry remain high in spite of the slowdown in economic activity in Q4 and consequent rise in unemployment but the increases are from a lower base than in the main scenario. The largest growth rates are expected to be in infrastructure (+45%), public housing (+37%) and private housing rm&i (+35%). The slowdown in economic activity in 2020 Q4 would impact adversely on the housing market in 2021, dampening growth rates for both private new housing rm&i and new build. However, private housing rm&i is assumed to benefit more than new house building as many homeowners that may have previously considered moving to a new property, accept remaining in their existing home and focus on investing in improvements that add value.



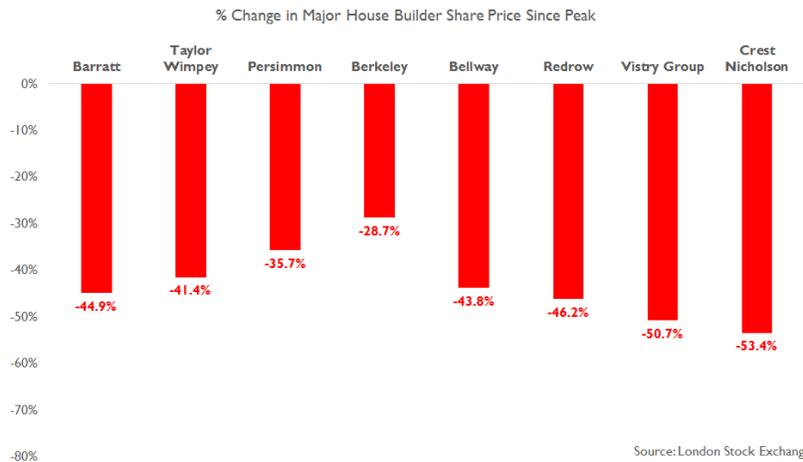
The CPA’s DRAFT U-shaped Scenario assumes social distancing restrictions begin to be eased in mid-May, which leads to a second wave, then the reintroduction of social distancing restrictions and entering into a cycle of easing and tightening restrictions until March 2021. In the U-shaped Scenario, government, investors, firms and households are assumed to build in additional risk across all areas of spending and investment, leading to a slower recovery. Increased learning from each experience of social distancing restrictions means that higher levels of business continuity during each period of restrictions. Despite this, total construction output is anticipated to fall by 31% in 2020 compared with 25% in the main scenario. The largest falls in activity are in private housing (-54%), commercial (-42%) and private housing rm&i (-39%). The biggest impacts of the very slow economic recovery are expected to fall on households and investors. In the former case, the rise in unemployment and falls in income, wealth and spending are anticipated to weigh on confidence and spending. For investors, returns on investment in offices and retail are assumed to be more uncertain. The least affected sectors are anticipated to be non-housing r&m, infrastructure and public non-housing, which are all expected to fall by 11%.



The CPA’s DRAFT U-shaped Scenario anticipates construction output rising 17% overall in 2021. The percentage increase is lower than both the V-shaped and W-shaped scenario as the persistence of social distancing restrictions and lower rates of economic growth are expected to lead to a more subdued recovery in business investment and household spending. This, consequently, is expected to lead to lower rates of recovery in construction activity. The largest growth rates are expected to be in infrastructure (+39%), public housing rm&i (+30%) and public housing (+26%) as government ends up as the key driver of construction growth as it attempts to stimulate economic activity.

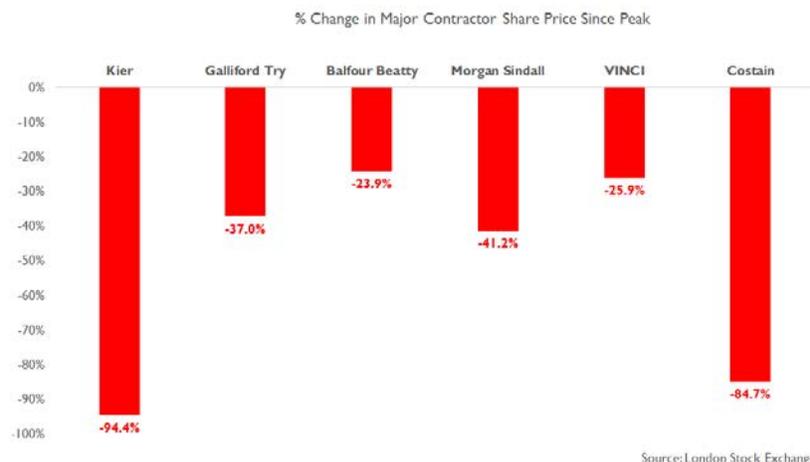


Concerns over impacts for firms have been reflected in share price falls across the supply chain. **Major house builder share prices have fallen 43% between peak and close of play on 20 May.** It is worth noting in the week in which most house builders closed sites, share prices rose, indicating markets had already priced in the shutting down of sites. Shares in Berkeley, which continued on some sites in the restrictions suffered the least share price falls. It is also worth noting that all major house builder share prices fell last week despite house builders increasingly reopening.



Major contractors have suffered sharp share price falls from peak. **The largest falls between peak and close of play on 20 May have been at firms that have internal issues, Kier (-94%) and Costain (-85%),** although it is worth noting that both Kier Infrastructure and Costain are on consortia that have HS2 work packages so benefit from government issuing the Notice to Proceed on 15 April and both share price have risen since 15 April. In particular, Costain’s share price rose by 65% on the day itself. Additionally, Costain announced a share issue on 7 May providing it with £100 million of funding, which may help its internal issues near-term although note that its share price fell 15% in the week after this.

Galliford Try stated on 31 March that it will be furloughing personnel and stopping activity on projects on which the CLC’s site operating procedures cannot be adhered to. Kier announced on 30 March that it intends to keep sites open but a cut in salaries and fees of between 7.5% and 25% for 3 months. Costain reported on 31 March that work will continue in areas that provide 50% of its revenue such as strategic highways, councils and water firms but Crossrail, HS2 Enabling Works and Thames Tideway contracts has been paused, accounting for 30% of its revenue. It also stated that it would reduce costs, defer capital expenditure, defer PAYE and VAT payments and furlough the affected workforce.



Construction Impacts: Supply Issues

Products: Some firms have reported difficulty getting materials and products. Even where production had largely stopped e.g. bricks, there were around 400 million bricks in stock in April and most manufacturers have now begun reopening so production may not be the sole issue. Currently, most house builders and main contractors are not reporting product supply issues although SMEs are reporting facing issues on heavyside products, used early in the construction process. If there are supply issues, it may be due to:

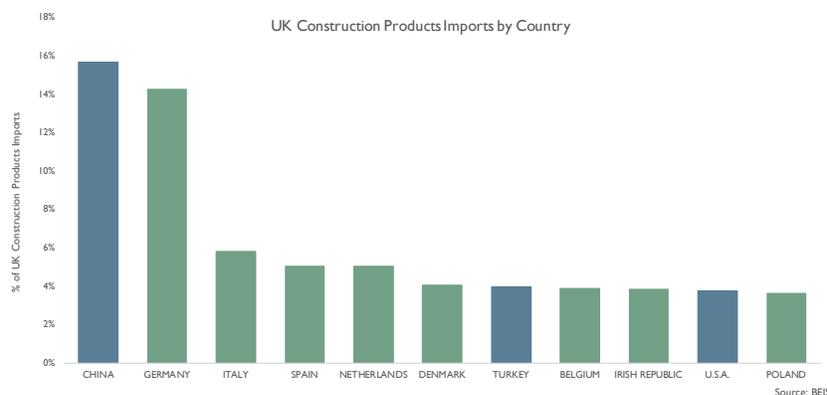
- SME purchases hindered as most merchants are either closed or, in the main, partially open for click and collect/delivery that SMEs are not used to whilst major house builders and main contractors are more used to this or are supplied directly from manufacturers
- SMEs may be working on projects at early stages so any potential supply of heavyside issues may impact upon them whilst major house builders and main contractors are focusing on finishing projects so any potential supply issues do not impact on their activity
- Main contractors may be enforcing social distancing measures on the supply chain that make it difficult to make large deliveries that require many people
- Some imported products may be an issue from China and key European countries

Only one-quarter of construction products used in UK construction are imported.

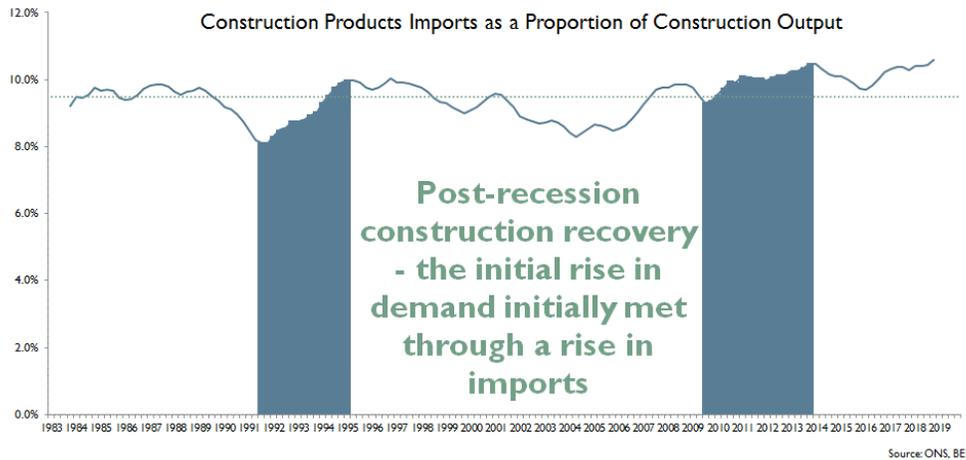
16% of these imports are directly from China but the indirect impacts will be greater as, firstly, many UK construction products imports go via Europe's largest port in Rotterdam (Netherlands is 5th in the chart) and, secondly, UK imports from other countries may also rely on China for materials.

The direct imports from China are primarily paints & varnishes, electrical wiring, HVAC, ironmongery, plywood & lino. Shipping (and admin) times from China are generally between 28 and 42 days so impacts on supply chains since February are likely to impact from the end of March. 6% of the UK's imports of construction products come from Italy and 5% of the UK's imports of construction products come from Spain. Impacts from delays due to production and export issues from EU countries may also have an impact from the second half of March after lockdowns in many countries.

Anecdotally, there have been reports of delays on imports of plywood from China, cladding and components from Europe; Italy, Spain and Denmark highlighted.



Even prior to the impacts of the coronavirus, over 50% of contractors were already reporting difficulties recruiting key trades, site managers, planners and engineers. A key issue when construction activity recovers is likely to be labour. Materials and products can generally be imported during periods of significant changes in demand and this has tended to occur following previous recessions and consequent factory closures. Materials and products imports as a proportion of construction output tend to fall during recessions as imports are not necessary given an excess of domestic production and price falls whilst the lack of domestic capacity means that imports are necessary in the initial stages of recovery before investment in domestic capacity to reopen mothballed and closed factories occurs.



Construction labour potentially raises major problems for the industry when it recovers, particularly in London where there is a particular reliance on non-UK labour. According to the HBF census of its member construction sites (see below), 56% of site labour in London is from outside the UK and 49% is from the EU. At this point it is difficult to ascertain whether skilled labour will be as willing to come over to the UK and, if not, what impact this would have on hindering recovery after the fall in demand, raising labour cost inflation and delaying project progress.

