

## CORONAVIRUS AND THE NORTHERN IRELAND ECONOMY

ASSESSMENT AS OF 10 MARCH 2020

ANALYTICAL SERVICES DIVISION: DEPARTMENT FOR THE ECONOMY

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### Summary

- The outbreak of coronavirus disease (COVID-19) was first reported from Wuhan, China, on 31 December 2019. As of 10 March 2020, 16 people in Northern Ireland have been diagnosed as suffering from coronavirus.
  - The UK remains in the "containment" stage of its response to the coronavirus following an emergency COBRA meeting (9 March 2020). Given that it has only been a number of weeks since the outbreak, it is too early to be certain on the virus' impact on the Northern Ireland economy.
  - The degree of adverse economic impact on Northern Ireland would be a function of:
    1. The outbreak's severity (i.e. numbers of people infected);
    2. The length of the outbreak before its resolution (and whether consumers, businesses and investors change their behaviour for a protracted period);
    3. Whether the outbreak in neighbouring countries/regions worsens or continues on for a long time and this has knock-on impacts on Northern Ireland in terms of travel and trade. Impact will largely depend on severity level.
  - To date, travel has been one of the first activities impacted, along with social and sporting events and hospitality. However, at the moment, the message from Government is that Northern Ireland is still open for business.
  - If the UK moves from "containment" stage to "delay" stage of its response it will see a 'ratcheting up' of the economic impact, due to widespread associated disruption.
  - Prior to the outbreak economic growth for 2020 was only expected to be relatively moderate for Northern Ireland and the UK as a whole. Growth is expected to be downgraded, potentially materially so, as the virus has an impact; however, some pent-up demand may be recovered later as the situation return to normal.
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### Background

The outbreak of coronavirus disease (COVID-19) was first reported from Wuhan, China, on 31 December 2019.<sup>1</sup> As of 10 March 2020, 16 people in Northern Ireland have been diagnosed as suffering from Coronavirus and hundreds UK-wide (see Annex A). These figures tend to change on a daily / hourly basis.

**This paper is focussed solely on economic impacts** drawing on the information produced elsewhere by Government and others to make any economic assessment. In doing it looks into the current and potential Global, European, UK and NI economic impact of coronavirus. Given that it has only been a number of weeks since the outbreak, it is too early to be unequivocal on the virus' impact on the Northern Ireland economy, and it is important to stress there is no single number that credibly captures or foresees the economic impact.

Assessing economic impacts can be difficult ordinarily, but especially problematic in these fluid situations, primarily due to the following reasons:

- The virus trajectory is not unknown;

- The effectiveness of containment efforts are not fully known;
- Consumers' and firms' reactions are not fully known (i.e. behavioural effects);<sup>2</sup>
- A 'bounce-back' or 'rebound' of output may materialise when the outbreak is over.

## Global Impact

Within their risk analysis, the Economist Intelligence Unit (EIU) has identified the biggest risks to the global economy. The EIU considers the Coronavirus to have a negative effect on global economic output (moderate risk, very high impact).

The top EIU risks are outlined below.<sup>3</sup> Note that risk scores are correct as of 13 February 2020. Risk ratings may change subsequently as more information becomes available to EIU.

**Negative scenario 1 —The US-China trade war splits the global trade system**

*Very high risk; High impact; Risk intensity = 20*

**Negative scenario 2 —Gulf tensions lead to a spike in global oil prices**

*High risk; High impact; Risk intensity = 16*

**Negative scenario 3 —The coronavirus continues to spread unabated throughout the first half of 2020**

*Moderate risk; Very high impact; Risk intensity = 15*

**Negative scenario 4 —The US-China trade war destabilises the global financial system**

*Moderate risk; Very high impact; Risk intensity = 15*

**Negative scenario 5 —Elevated US dollar-denominated debt burdens turn the next global downturn into a recession**

*Moderate risk; High impact; Risk intensity = 12*

The unprecedented quarantine measures taken to halt the spread of a novel coronavirus originating in Wuhan, a city of 11.3m people in China's central Hubei province, will adversely affect the global economy<sup>4</sup>. Economists expect the economic impact of the recent coronavirus outbreak to surpass the economic impact of the SARS outbreak in 2002-03; which was estimated as costing approximately 0.1% of global GDP at the time. There has already been substantial disruption to global supply chains caused by factory shutdowns in China; with expectations of further disruption to the UK as Covid-19 spreads into Europe and North America.<sup>5</sup>

## European Impact

The economic effects are already starting to be felt in both business and consumer sectors, with supply chains coming under pressure in Europe in the automotive, electronics and other industrial sectors; and European airlines including British Airways, Air France, Iberian Airways and Lufthansa cancelling flights to and from China.<sup>6</sup>

According to the EIU, with manufacturing sentiment now likely to waver again and the slowdown in China dampening global demand more broadly, a further contraction in euro zone industrial output in the first quarter of 2020 is expected. Tourist inflows to the EU from China have risen strongly in recent years—tripling over the past decade—and major destinations are already feeling their absence. That said, they remain a small share of the total, at 2.4% in France, the top destination (Italy, Germany and the UK are also popular).<sup>7</sup>

## United Kingdom / Northern Ireland Impact

The UK economy has been remarkably resilient since the 2008 recession, weathering a number of events (such as the 2010 ash-cloud, budgetary restraint in public finances, Scottish Independence vote and EU Exit vote). A number of firms have ceased trading, including Thomas Cook (2019), ToysRus (2018), BHS (2016), Phones4U (2014) and Blockbuster (2013) etc, but employment overall continued to rise.

In Northern Ireland specifically, a number of large employers have closed down over the last few years (Michelin <sup>8</sup>, JTI Gallaghers <sup>9</sup> etc); however, unemployment overall has steadily decreased, albeit with detrimental localised impacts. Output has fared less well of late however, with the latest figures of both ONS GVA figures and NISRA's Northern Ireland Economic Composite Index (NICEI) signalling a quite poor performance output-wise in the past year or two. <sup>10</sup> **The latest output figures for Northern Ireland would suggest that the coronavirus outbreak therefore comes at a time of slow growth for Northern Ireland** (Annex B provides further information).

The table below shows a number of growth forecasts for Northern Ireland from various sources (PWC, EY and UUEPC), and they all projected weak to moderate growth for the next year. It should be noted that these estimates were made prior to the current outbreak of coronavirus (COVID-19) being first reported from Wuhan, China, on 31 December 2019. <sup>11</sup>

### Estimates of Output Growth for 2020 <sup>12</sup>

	UK	NI
PWC <sup>13</sup>	1.0%	0.8%
EY <sup>14</sup>	1.3%	1.1%
UUEPC <sup>15</sup>	1.6%	1.2%

The OECD have downwardly revised their UK growth projections for the UK in their Interim Economic Outlook Forecasts document (released March 2020). They reduced UK growth for 2020 by 0.2 percentage points and by 0.4 percentage points for 2021 compared to their November 2019 forecasts. Both 2020 and 2021 are expected to see UK growth of only 0.8%. It should be noted these projections were based on information available up to 28 February 2020.<sup>16</sup>

According to BEIS, the coronavirus is expected to have a significant short-term negative impact on the UK economy, with potentially severe impact on some sectors. Academic studies find that some of the largest impacts on GDP occur when people cut back on social activities in response to an outbreak.<sup>17</sup> In the case of a UK outbreak, an early HM Treasury analysis estimates that the level of GDP could be between 0.6% and 1.3% lower by 2021, compared to current expectations.<sup>18</sup> These are based on the assumed SAGE reasonable worst case scenario (described in more detail below) and are not considered to be UKG forecasts.

At the time of writing HM Government's reasonable worst case scenario planning assumptions are that *"during the peak weeks of the outbreak (a period of 3 - 4 weeks), we can expect up to 20% of staff to be absent. It is important to note that these absence rates are additional to absence for other reasons."* <sup>19</sup> **If that 20% fall were representative of output (for that**

**duration and without significant bounce-back later in the year) then that would suggest a potential ‘wipe-out’ of any annual growth for 2020. It should be stressed again that these are based on HM Government’s reasonable worst case scenario planning assumptions figures and are not forecasts.**

In considering all available information, we can “triangulate” around a number of these estimates and can infer that a flat-lining of the Northern Ireland economy could plausibly occur in 2020. Some pent-up demand may be released later in the year if the situation resolves itself by then and consumer confidence returns, as which tended to occur after previous outbreaks (see Annex C). However, as we are dealing in significant unknowns there is also the real possibility that outcomes could be involve material negative growth for this year.

The exact overall economic impact on Northern Ireland will be difficult to quantify, but is likely to be a function of:

1. The outbreak’s severity (i.e. numbers of people infected);
2. The length of the outbreak before its resolution (and whether people change their behaviour for a protracted period);
3. Whether the outbreak in neighbouring countries/regions worsens or continues on for a long time and this has knock-on impacts on Northern Ireland in terms of travel and trade. Impact will largely depend on severity level.

In terms of timing of the impacst, the Department for the Economy have taken information from Cabinet Office on the reasonable worst case scenario planning assumptions and designed the following estimated timeline of the outbreak (it should be noted that this is a developing issue and Cabinet Office may revise these estimates once more is known about the virus and its effects). If the reasonable worst case scenario plays out, then this may indicate that a recovery should be expected around September 2020 (although this is obviously uncertain).

#### UK Government’s Estimated Timeline of Outbreak (Official Sensitive) <sup>20</sup>



*DfE representation of Cabinet Office information on reasonable worst case scenario [Official Sensitive]*

#### Impacts Observed to Date

In terms of observed impacts to date, the UK Government’s response plan to the coronavirus is based on four stages – containment, delay, mitigation and research (See Annex D). The current economic impact observed to date (albeit often anecdotal at this stage) is consistent with the effects of the containment phase and they are becoming increasingly apparent (including in the UK, ROI and NI). These include widespread reports of impacts in terms of flights, bookings, cancellations, inbound and outbound business and tourist travel impacts. These are largely demand side impacts and are largely being observed in Tourism, Travel and

Hospitality types industries. While not triggered as yet, the “Delay Phase” of current UKG plans involves “population distancing strategies” (e.g. encouraging homework, cancelling events, considering closing schools), which, if implemented, would potentially involve something of a step change in economic impacts. These include heightened Labour Supply impacts, probably across most or all sectors in NI, with it being most severe for those industries that are unable to operate alternative or flexible workforce approaches.

There are indications that we are also seeing, in some cases, economic impacts more consistent with the delay phase, such as isolated cases of closing a small number of schools and limiting some large gatherings. However, following a COBRA meeting on 9 March 2020, the UK remains in the “containment” stage of its response to the coronavirus but preparations are being made for the “delay” stage.

Given timing and the limited data available (at this moment in time) a detailed picture of the sectoral impact observed to date is not yet available. However, some anecdotal or reported evidence of early sectoral / localised impacts have been collated and presented in Annex E.

### **How the Virus Could Impact Economically**

The recent outbreak of coronavirus has the potential to impact all of Northern Ireland society (through disruption) and provide the potential for a temporary “shock” to the economy. Broadly speaking the economic impacts of coronavirus will occur in three main ways (some of these are interrelated):

- **Supply Chain Impacts**
- **Customer Demand**
- **Labour Impact**

#### *Supply Chain Impacts*

The first way is through supply chain connections, and disruptions to those. That could be related to the exports of components or final goods, or the import of components or final goods. Overall UK trade is more exposed to China now that it was at the time of the SARS outbreak and for Northern Ireland specifically, a recent paper by the Department for the Economy highlights a high level of interdependence between NI businesses and those in Europe and the Rest of the World for intermediate goods.<sup>21</sup>

#### *Customer Demand*

This has been the most commonly observed type of impact to date, with widespread reports of reductions in air travel movements, tourism and the cancellation of events such as the St Patrick’s Day festival in Belfast. Major visitor attractions in Northern Ireland are already reporting an alarming drop off in attendance, in particular amongst out-of-state visitors, while some sporting events may be postponed, or receive lower numbers of fans. Anecdotal evidence suggests that forward bookings for travel and accommodation (for summer 2020) are down on levels in previous years. If travel abroad is restricted, it may encourage Northern Ireland residents to visit tourist sites at home when confidence returns.

Social consumption activities, e.g. eating out at restaurants, attending sporting events or eating out are likely to take a substantial hit if people respond to fears of contracting the virus

by staying at home. Consumer confidence may be dented and discretionary spending on small and big ticket items may be affected as a result.

### *Labour Impact*

The spread of coronavirus throughout Northern Ireland could also lead to a negative supply-side shock to the labour market, either as workers with the virus are forced to miss work through sick leave; or as healthy workers choose to stay away from work to avoid contracting the disease. The impact on the labour market is expected to vary across sectors and employers; with disruption expected to be greatest in areas where the ability to work from home is not possible. The UK Government's action plan suggests the possibility that up to a fifth of workers could be absent during peaks in an outbreak.<sup>22</sup>

Moreover, it is envisaged that if triggered by Government, the closure of schools will have an additional impact on the labour market, with a number of employees taking time off in response to childcare responsibilities. Labour intensive industries are more likely to be affected by this disruption to the workforce. Empirical evidence from Keogh-Brown, Wren-Lewis et al. (2009) suggests that the percentage impact on GDP of a mild (severe) outbreak would be 0.2% (1.5%) in the year after the outbreak; looking only at the 'direct' impact of the disease. This more than doubles to 1.4% (3.2%) if schools are closed for a full quarter around the disease outbreak. Combining a full quarter's school closure with four weeks of healthy workers avoiding work to avoid infection, the impact on GDP for the first year as a whole is 2.2% (4.5%).<sup>23</sup>

### **Conclusion**

It should be noted that this paper is an initial economic assessment and may be revised as more information becomes available. That initial assessment suggests that the economic impacts of the coronavirus outbreak are already occurring. Those impacts are expected to become more significant, prevalent and more observable if and when a move is made to the "Delay Phase". Many of the economic effects are expected to be temporary, but that duration of that temporary period will be obviously be determined by public health needs and Government action. Overall, with the evidence available to us currently, **it may well be the case that the modest growth projected for NI in 2020 will now be wiped out, and it is not implausible to envisage economic scenarios that could ultimately see negative growth for the year.**

## Background Notes

This paper provides the latest available figures on Northern Ireland's economic output. It should be noted that NISRA acknowledge that the trends presented by the NICEI and other NISRA sources such as the NI Annual Business Inquiry (ABI) do not align with the new experimental annual Regional GDP figures for NI published by the ONS in December 2019. This is due to methodological differences. At a high level, the NISRA statistics are produced on a bottom up basis whereas the ONS figures are produced on a top down basis whereby UK level GVA and GDP figures are apportioned to regions using various apportionment methods. NISRA are engaging with ONS to better understand the differences and the drivers behind their figures.<sup>24</sup>

It should be noted that there is a moderate time-lag (14-16 weeks) in Northern Ireland between NICEI figures on output and the period they represent. For example, NICEI estimates for the first and second quarters of 2020 won't be available until the second half of this year. It should also be noted that NICEI data itself, whilst prepared in line with best practice, is categorised as 'experimental'.

### NISRA's Release Schedule for the NICEI

Release Date	2020												2021											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NICEI Quarterly Estimate	Q3 2019			Q4 2019			Q1 2020			Q2 2020			Q3 2020			Q4 2020			Q1 2021			Q2 2021		

This paper seeks to set out potential economic impact from the spread of coronavirus on the Northern Ireland economy and the possible areas affected. However, it is important to stress:

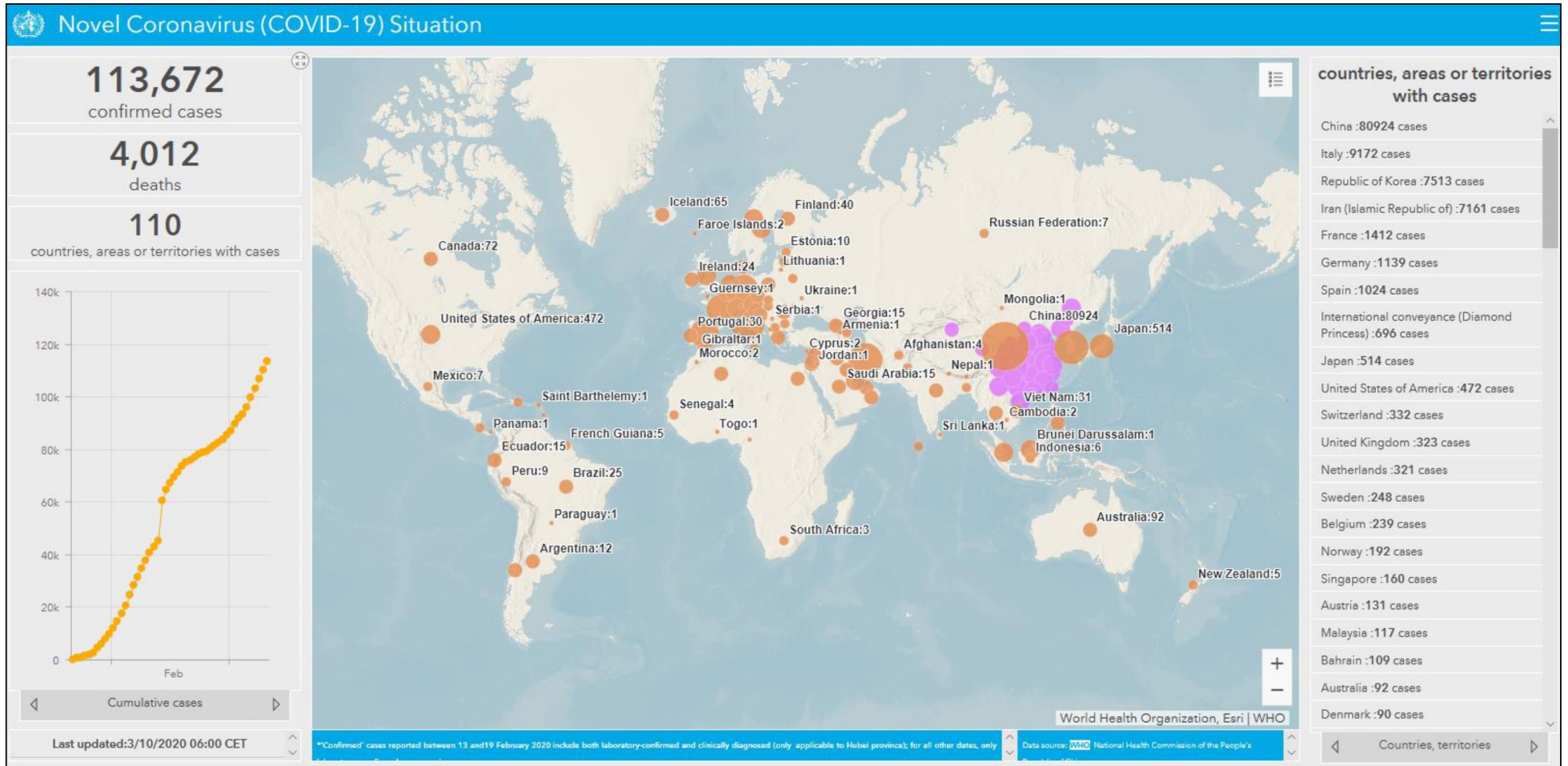
- This is an emerging / developing issue and we have incomplete data. We do not currently have access to many 'real time' indicators which would allow a tracking of the macro economic impact in data. Indeed, some leading indicators such as PMI may not perfectly align with official GDP data at times (which itself tends to get revised upwards and downwards months down the line).<sup>25</sup>
- Much of the information of the possible current economic impact is anecdotal or speculative, and may not always exactly reflect the full picture.
- The virus' economic impact will largely be a function of the severity of the outbreak in each respective country, the success of containment efforts, behavioural responses by consumers and the shape of subsequent recovery. Each country / region is unique.
- Economic output can be lumpy during the year. Any reduction in consumption (due to bad weather etc) can see a bounce-back as pent-up demand gets released once the situation resolves.
- This paper has focused primarily on economic transactions and output. However, jobs, wages, house / other asset prices etc, are all important economic considerations and these which may or may not be less affected. For example, the rise in unemployment following the 2008 recession was arguably less pronounced than the fall in output.<sup>26</sup>

- Due to the level of uncertainty, this paper deliberately does not directly quantify the economic loss for Northern Ireland. Forecasts (including consensus) can either be complacent (for example credit crunch, Northern Rock etc) or unnecessarily pessimistic (i.e. the contention that budget restraint would lead to a double or triple-dip recession after 2010). It is difficult to judge the economic impact of any event. It is also difficult to pre-judge the timing and duration of any resulting outcome.

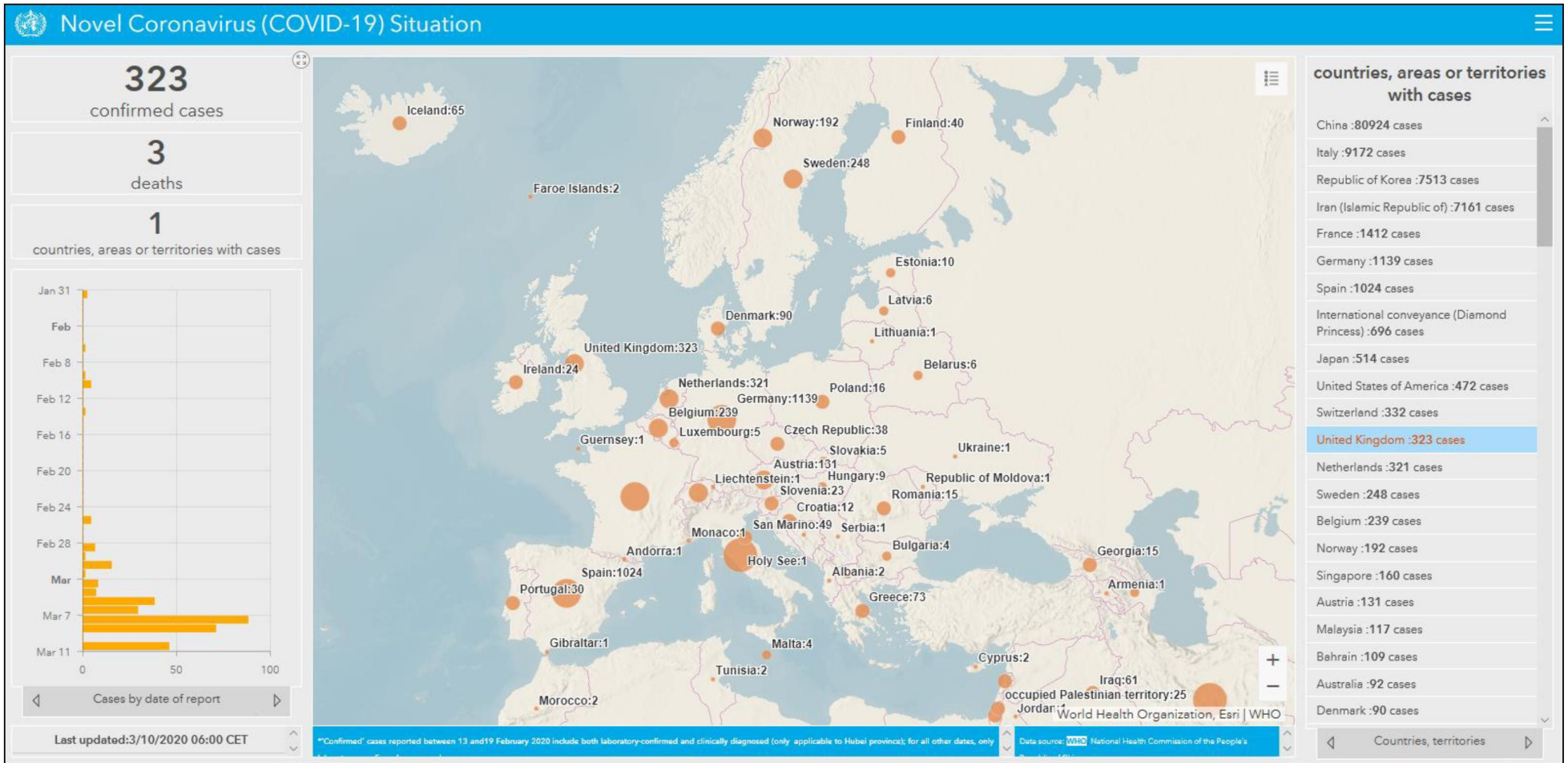
On a final note, if negative consequences are discernible from the economic data, various mitigating / counter-measures (including monetary and fiscal policies) can be introduced by national and local government to attempt to dampen the impact. It is also worth noting the UK economy has been markedly resilient since 2009 and the labour market has improved most strikingly (throughout a number of headwinds). Nevertheless, it is good practice to be in a state of preparedness.



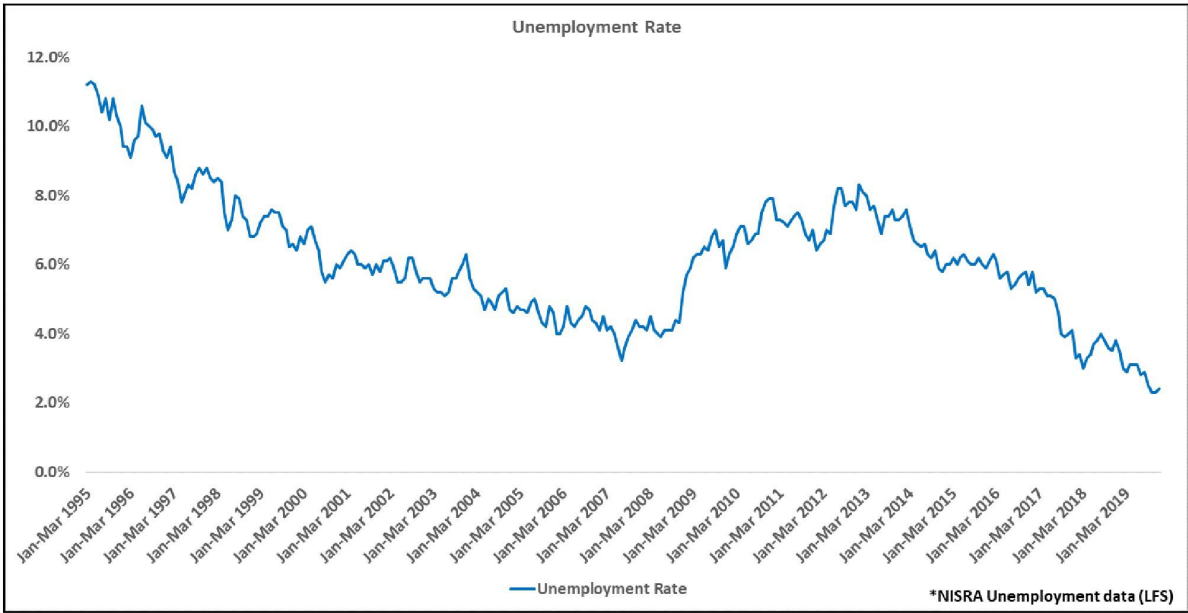
### ANNEX A - Confirmed Cases of Coronavirus by Country<sup>27</sup>



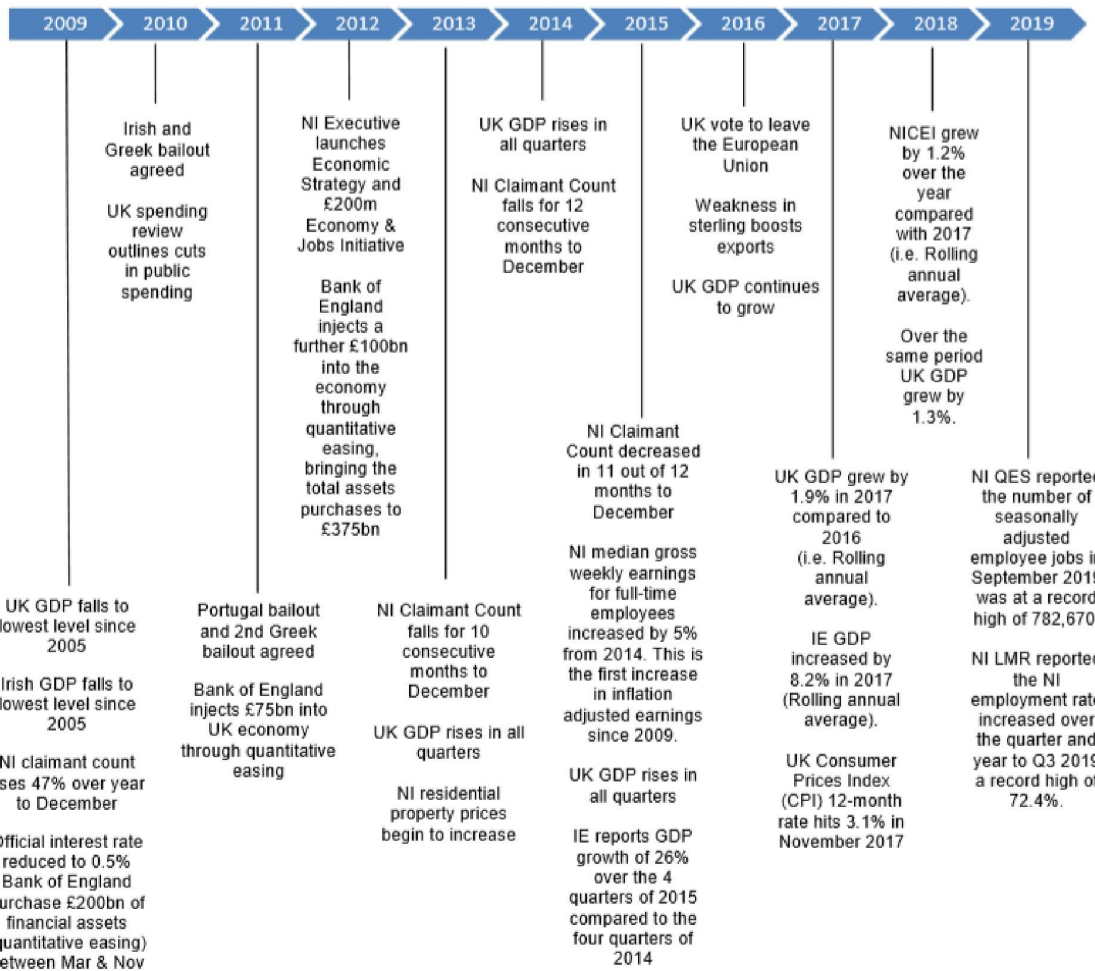
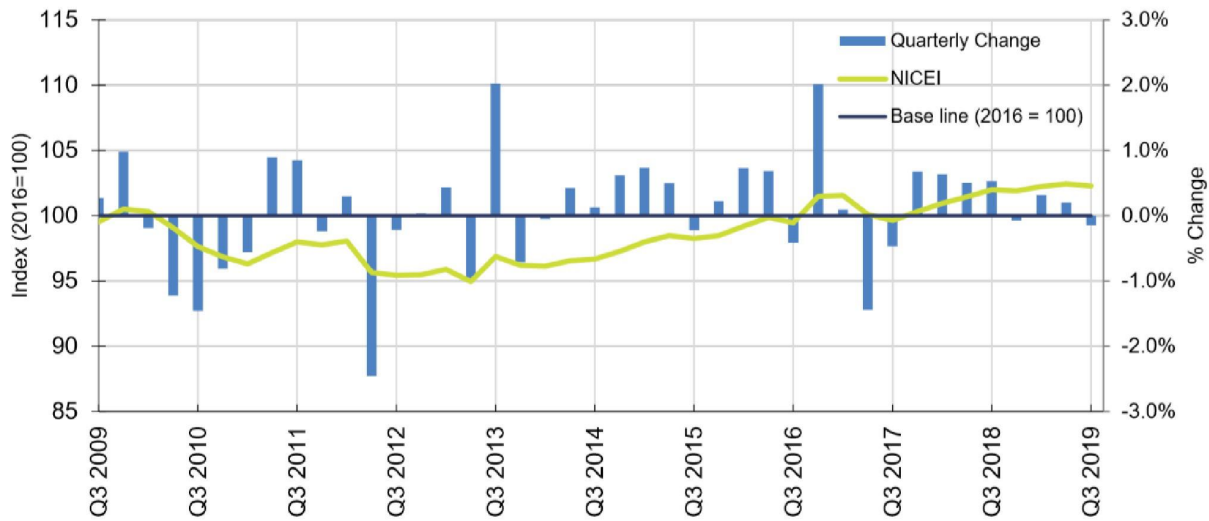
### Confirmed Cases of Coronavirus in the UK <sup>28</sup>



### ANNEX B – Latest Economic Data for Northern Ireland



Performance of the NI Composite Economic Index (NICEI) 2009-2019 <sup>29</sup>



ONS GDP ESTIMATES <sup>30</sup>Table 1: Summary of gross domestic product statistics for the NUTS1 countries and regions, 2018<sup>1 2</sup>

NUTS1 Regions	Population <sup>3</sup>	Total GDP (£ million) <sup>4</sup>	GDP per head (£) <sup>1 4 6</sup>	Annual growth in 'real' GDP (%) <sup>5</sup>	Annual growth in 'real' GDP per head (%) <sup>5 6</sup>
<b>UK</b>	66,435,550	2,140,278	31,976	1.4	0.8
<b>England</b>	55,977,178	1,839,264	32,857	1.4	0.8
<b>North East</b>	2,657,909	62,644	23,569	0.9	0.4
<b>North West</b>	7,292,093	207,452	28,449	1.4	0.9
<b>Yorkshire and The Humber</b>	5,479,615	141,698	25,859	1.2	0.6
<b>East Midlands</b>	4,804,149	124,647	25,946	1.1	0.4
<b>West Midlands</b>	5,900,757	159,832	27,087	2.0	1.3
<b>East of England</b>	6,201,214	186,462	30,069	1.7	1.2
<b>London</b>	8,908,081	487,145	54,686	2.0	1.1
<b>South East</b>	9,133,625	311,300	34,083	0.6	0.0
<b>South West</b>	5,599,735	158,084	28,231	0.9	0.1
<b>Wales</b>	3,138,631	74,906	23,866	1.3	0.9
<b>Scotland</b>	5,438,100	161,295	29,660	0.9	0.7
<b>Northern Ireland</b>	1,881,641	48,887	25,981	-0.5	-1.1
<b>Extra-Regio<sup>7</sup></b>	n/a	15,927	n/a	7.1	n/a

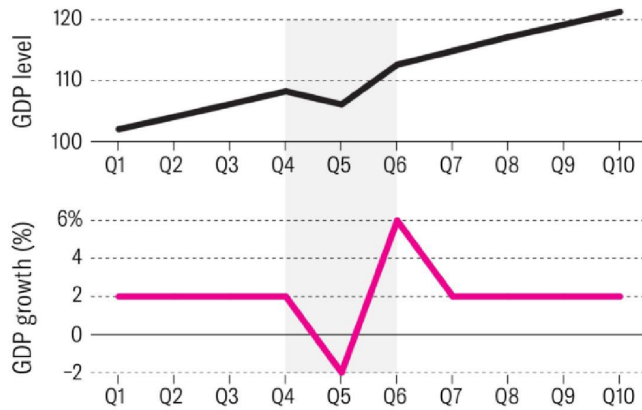
Source: Office for National Statistics - Regional economic activity by gross domestic product, UK: 1998 to 2018

ANNEX C

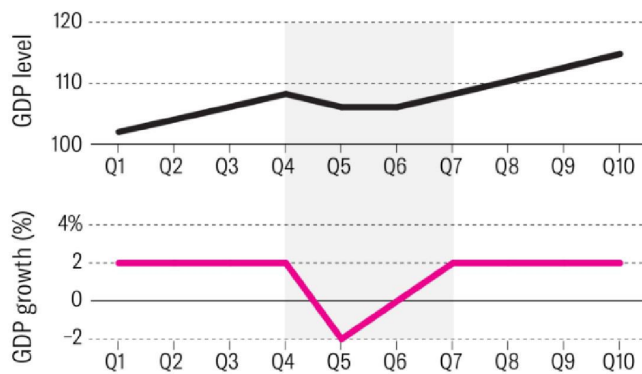
### Economic Shock: 3 Scenarios

A V-shaped scenario depicts a classic economic shock, where growth eventually rebounds. In a U-shaped scenario, there is some permanent loss of output after the initial shock. In an L-shaped scenario signals real structural damage, with a significant impact on growth.

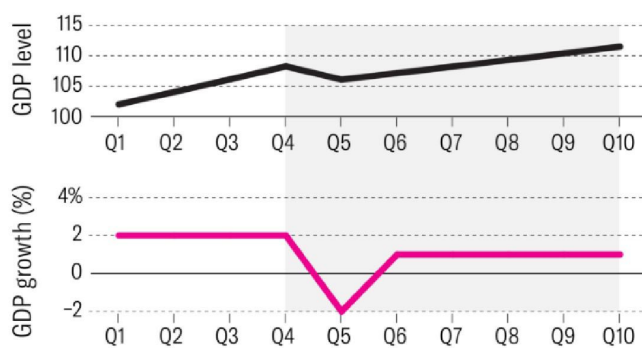
#### “V” scenario (likely)



#### “U” scenario (plausible)



#### “L” scenario (unlikely)

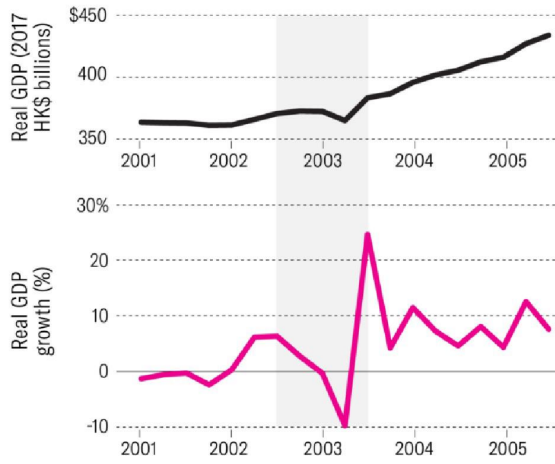


Source: BCG Center for Macroeconomics analysis

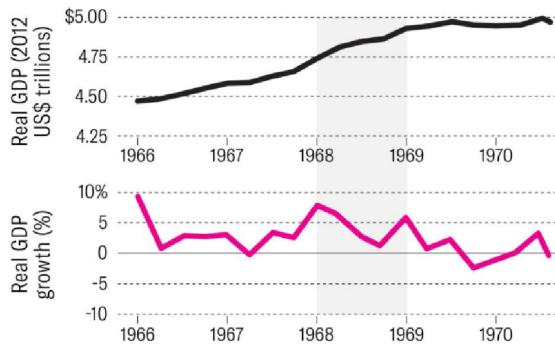


### Prior Epidemics Were All V-Shaped

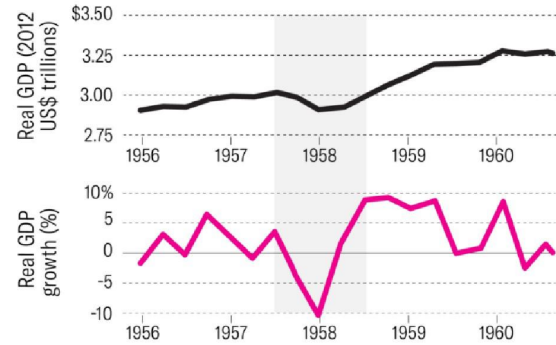
2002 Hong Kong SARS – 286 global deaths



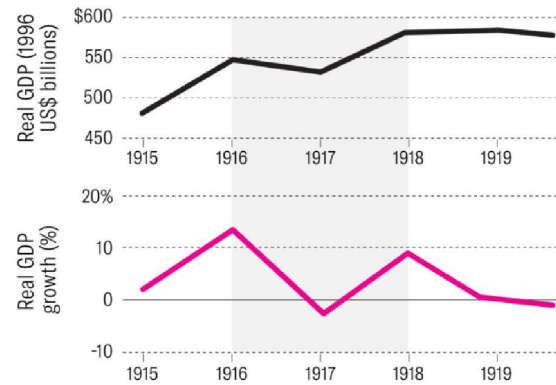
1968 H3N2 (“Hong Kong”) flu – 100,000 U.S. deaths



1958 H2N2 (“Asian”) flu – 116,000 U.S. deaths



1918 Spanish flu – 675,000 U.S. deaths



Note: Real GDP growth is quarterly except for 1918, when it's yearly.  
 Source: U.S. Census Bureau, BEA, CDC, Census and Statistics Department (Hong Kong), BCG Center for Macroeconomics analysis

ANNEX D

### Government phased response to coronavirus

**Containment phase**

**Aim - Prevent disease taking hold as long as possible**



Trace and isolate first cases and close contacts



Establish expert team and ensure supply of key medicines

**Delay phase**

**Aim - Slow spread of virus, with the following options:**



Close schools



Encourage home working



Limit large gatherings

**Mitigation phase**

**Aim - Ensure treatment for worst cases and minimise impact on society, with the following options:**



Delay non-urgent care and employ retired medical staff



Instruct emergency services to cover critical functions only

**Research - ongoing**



Research to better understand the virus



Pool international knowledge

Source: UK government. Public Health England





## ANNEX E - Anecdotal Evidence on Sectoral / Localised Impact

Sector	Event	Figures / Impact
Airline	Fall in flight demand	International arrivals are forecast to decline -1.5% in 2020, well below their global GDP forecast of +2.3% for the first time since the global financial crisis. (Figures from Oxford Economics). Potentially, any lower levels of inbound tourism may be offset somewhat by NI residents taking a 'staycation'.
Airline	Flybe collapse (UK-wide)	Flybe went into administration on 5 March 2020. They operated 14 routes from Belfast City Airport - about 80% of its scheduled flights. Loganair may take some of these routes however.
Airports	Impact of Flybe collapse on Belfast City Airport	A trade union has said some baggage handlers and check-in staff are facing a temporary lay-off from Belfast City Airport. The staff are among 150 workers at the airport employed by Swissport, the air services firm. It is understood that cleaners are also affected by the lay-off plan. <sup>33</sup>
Hotels	Forward bookings down	Booking.com forward bookings are down 80%. Visits to Ireland.com are "collapsing" and Tourism Ireland have postponed all marketing activity so as to retain as much budget as possible for the recovery phase. Last week, the Northern Ireland Tourism Alliance (NITA) estimated that around 1% of all hotel bookings have been cancelled, mainly reservations from the Asian market, which makes up around 2% of the NI tourism industry. <sup>34</sup>
Sporting	Amateur Level Football in NI	The Mid Ulster Football League said as a precaution the clubs' fixtures had been postponed for two weeks and they have also been asked to cancel training.
Sporting	International Playoff	Ticket sales for Northern Ireland's Euro 2020 play-off away to Bosnia-Herzegovina have been postponed. <sup>35</sup>
Events & Hospitality	Six Nations Rugby	France vs Ireland is the latest Six Nations fixture to be postponed because of concerns over the coronavirus outbreak. The decision follows earlier postponed fixtures. Even though these matches were not held in Northern Ireland, pubs here would have shown these matches and attracted customers.
Events & Hospitality	St Patrick's Day Festival in Belfast	Belfast City Council in Northern Ireland voted to cancel the city's parade for 2020. This will have a knock-on impact on the hospitality sector. <sup>36</sup>
Education	School Closure	On 9 March 2020 two County Armagh schools closed for around a week to receive a 'deep-clean'. <sup>37</sup> May have knock-on impact on people attending work.
Banking	Temporary Office Closure	A call centre in Belfast was closed temporarily after a case of the virus was detected. It is understood about 1,000 people work in the building. Colleagues based in the Belfast Gasworks building have been asked to self-isolate, work from home or work from a contingency site depending on which team or part of the building they work in. <sup>38</sup>
Games Development	Cancellation of Game Developer's Conference (GDC) in San Francisco	A contingent from Northern Ireland was planning to attend GDC this year to represent the region as part of a Northern Ireland Screen trade mission. Local firms that were planning to attend had also booked dozens of meetings with US-based publishers to pitch for project funding, which are now cancelled or being rescheduled as remote meetings. <sup>39</sup>
Invest NI	Chinese recovery	Businesses from Northern Ireland could be presented with new opportunities in China after the coronavirus outbreak, Invest NI have said. <sup>40</sup>

## Endnotes / Sources

- <sup>1</sup> <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- <sup>2</sup> <https://hbr.org/2020/03/what-coronavirus-could-mean-for-the-global-economy?ab=hero-main-text>
- <sup>3</sup> Economist Intelligence Unit (EIU) - World Risk Alert (13 February 2020)
- <sup>4</sup> Economist Intelligence Unit (EIU) - The Impact of the Coronavirus on the European Economy (17 February 2020)
- <sup>5</sup> Lee and McKibben (2004). BEIS Paper - The Macroeconomic Impact of the Coronavirus Outbreak (Updated 03 March 2020) [Official Sensitive].
- <sup>6</sup> Economist Intelligence Unit (EIU) - The Impact of the Coronavirus on the European Economy (17 February 2020)
- <sup>7</sup> Economist Intelligence Unit (EIU) - The Impact of the Coronavirus on the European Economy (17 February 2020)
- <sup>8</sup> <https://ballymenadaily.com/uncategorized/emotional-day-as-last-workers-leave-michelin-tyre-factory-in-ballymena/>
- <sup>9</sup> <https://www.bbc.co.uk/news/uk-northern-ireland-50853709>
- <sup>10</sup> <https://www.nisra.gov.uk/publications/nicei-publication-and-tables-q3-2019>
- <sup>11</sup> <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- <sup>12</sup> UUEPC's forecast for economic growth in Northern Ireland in 2020 (GVA) was 1.2% (from Aug 2019 Outlook).
- <sup>13</sup> <https://www.pwc.co.uk/who-we-are/regional-sites/northern-ireland/press-releases/UKEO-1119.html>
- <sup>14</sup> [https://www.ev.com/en\\_ie/transactions/economic-eye-summer-forecast-2019-](https://www.ev.com/en_ie/transactions/economic-eye-summer-forecast-2019-)
- <sup>15</sup> UUEPC provide forecasts for Gross Value Added (GVA).  
[https://www.ulster.ac.uk/\\_data/assets/pdf\\_file/0003/416667/UUEPC-Summer-2019-Economic-Outlook.pdf](https://www.ulster.ac.uk/_data/assets/pdf_file/0003/416667/UUEPC-Summer-2019-Economic-Outlook.pdf)
- <sup>16</sup> <https://www.oecd-ilibrary.org/docserver/7969896b-en.pdf?expires=1583846345&id=id&accname=guest&checksum=01D0CC77190D8194D9D6704CA04C6AE9>
- <sup>17</sup> BEIS Paper - The Macroeconomic Impact of the Coronavirus Outbreak (Updated 03 March 2020) [Official Sensitive].
- <sup>18</sup> BEIS Paper - The Macroeconomic Impact of the Coronavirus Outbreak (Updated 03 March 2020) [Official Sensitive].
- <sup>19</sup> Letter from Cabinet Office to Heads of Departments – 5 March 2020 [Official Sensitive]
- <sup>20</sup> Letter from Cabinet Office to Heads of Departments – 5 March 2020 [Official Sensitive]
- <sup>21</sup> <https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Research-Bulletin-19-11-Supply-Chain-Analysis.pdf>
- <sup>22</sup> Taken from BEIS Paper on The Macroeconomic Impact of the Coronavirus Outbreak (Updated 03/03/2020) [Official Sensitive].
- <sup>23</sup> Taken from BEIS Paper on The Macroeconomic Impact of the Coronavirus Outbreak (Updated 03/03/2020) [Official Sensitive].
- <sup>24</sup> <https://www.nisra.gov.uk/system/files/statistics/NI-Composite-Economic-Index-Statistical-Bulletin-Q3-2019.pdf>
- <sup>25</sup> <https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/compendium/economicreview/october2019/comparingonsseconomicdatawithihsmarkitandcips purchasingmanagersindexsurveys>
- <sup>26</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/344439/The\\_Labour\\_Market\\_Story\\_The\\_UK\\_Following\\_Recession.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/344439/The_Labour_Market_Story_The_UK_Following_Recession.pdf)
- <sup>27</sup> <https://experience.arcgis.com/experience/685d0ace521648f8a5beee1b9125cd>
- <sup>28</sup> <https://experience.arcgis.com/experience/685d0ace521648f8a5beee1b9125cd>
- <sup>29</sup> <https://www.nisra.gov.uk/system/files/statistics/NI-Composite-Economic-Index-Statistical-Bulletin-Q3-2019.pdf>
- <sup>30</sup> <https://www.ons.gov.uk/economy/grossdomesticproductgdp/bulletins/regionaleconomicactivitybygrossdomesticproductuk/1998to2018>
- <sup>31</sup> What Coronavirus Could Mean for the Global Economy by Philipp Carlsson-Szlezak , Martin Reeves and Paul Swartz (Harvard Business Review)  
<https://hbr.org/2020/03/what-coronavirus-could-mean-for-the-global-economy?ab=hero-main-text>
- <sup>32</sup> What Coronavirus Could Mean for the Global Economy by Philipp Carlsson-Szlezak , Martin Reeves and Paul Swartz (Harvard Business Review)  
<https://hbr.org/2020/03/what-coronavirus-could-mean-for-the-global-economy?ab=hero-main-text>
- <sup>33</sup> <https://www.bbc.co.uk/news/uk-northern-ireland-51809048>

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<sup>34</sup> <https://www.belfasttelegraph.co.uk/news/health/coronavirus/coronavirus-hotel-tells-of-100-bed-nights-cancelled-as-ni-faces-1m-slump-in-tourism-revenue-39015636.html>

<sup>35</sup> <https://www.bbc.co.uk/sport/football/51816896>

<sup>36</sup> <https://www.bbc.co.uk/news/world-europe-51806551>

<sup>37</sup> <https://www.bbc.co.uk/news/uk-northern-ireland-51807264>

<sup>38</sup> <https://www.bbc.co.uk/news/uk-northern-ireland-51814586>

<sup>39</sup> <https://syncni.com/article/3844/ni-game-development-industry-impacted-by-coronavirus>

<sup>40</sup> <https://www.bbc.co.uk/news/uk-northern-ireland-51773177>