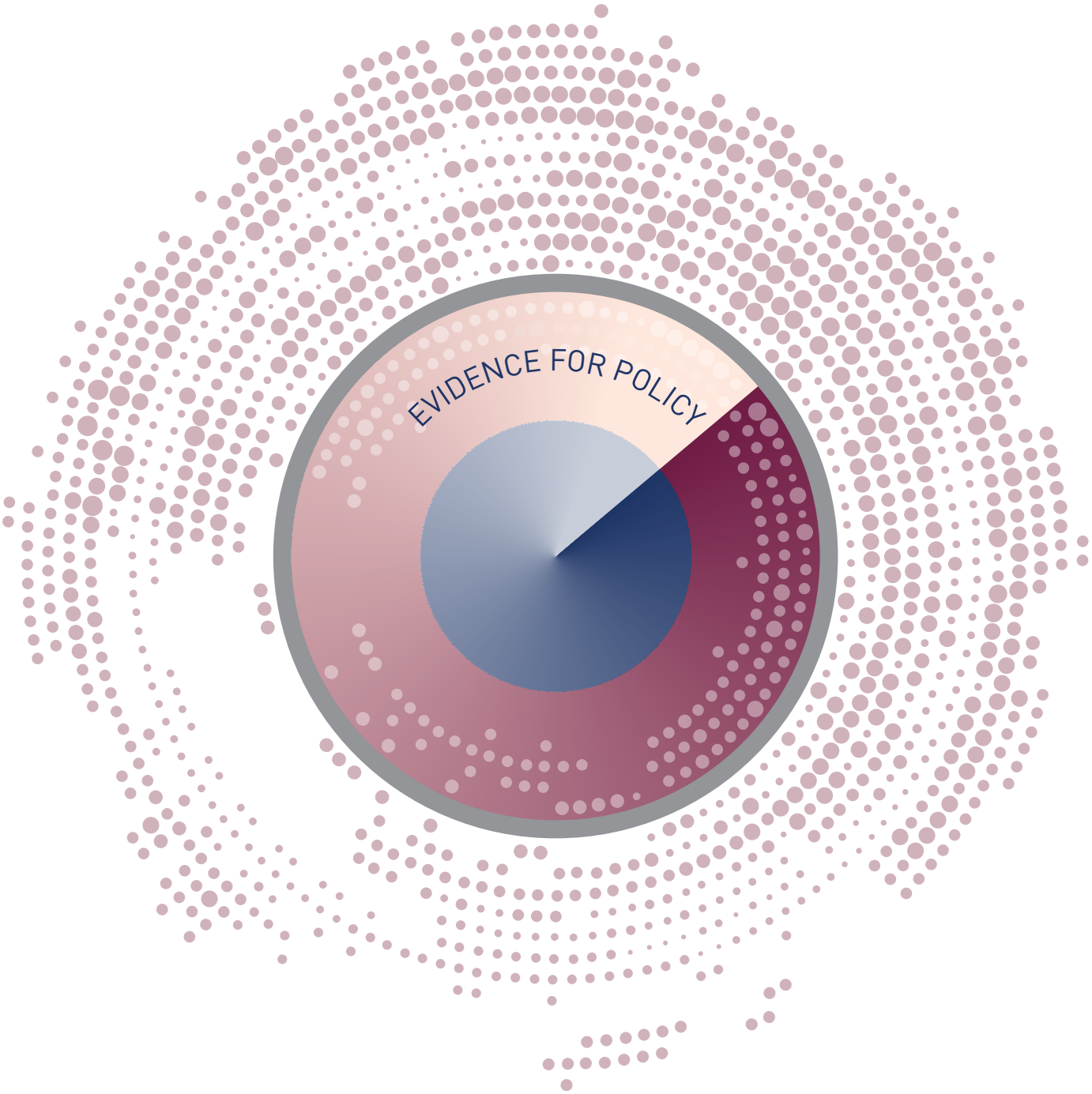
MACRO ECONOMIC FORECASTING MAY 2020

QUARTERLY ECONOMIC COMMENTARY

SUMMER 2020

KIERAN MCQUINN, CONOR O'TOOLE, MATTHEW ALLEN-COGHLAN AND CATHAL COFFEY



ESRI ECONOMIC & SOCIAL RESEARCH INSTITUTE

QUARTERLY ECONOMIC COMMENTARY

Kieran McQuinn

Conor O'Toole

Matthew Allen-Coghlan

Cathal Coffey

Summer 2020

The forecasts in this *Commentary* are based on data available by 18 May 2020

Draft completed on 20 May 2020

A subscription to the *Quarterly Economic Commentary* costs €327 per year, including VAT and postage.

ISBN 978-0-7070-0526-3
ISSN 0376-7191
DOI: https://doi.org/10.26504/qec2020sum

ABOUT THE ESRI

The Economic and Social Research Institute is an independent research institute working towards a vision of 'Informed policy for a better Ireland'. The ESRI seeks to support sustainable economic growth and social progress in Ireland by providing a robust knowledge base capable of providing effective solutions to public policy challenges.

The Institute was founded in 1960 by a group of senior civil servants, led by Dr T.K. Whitaker, who identified the need for independent and in-depth research to support the policymaking process in Ireland. Since then, the Institute has remained committed to independent research and its work is free of any expressed ideology or political position. The Institute publishes all research reaching the appropriate academic standard, irrespective of its findings or who funds the research.

The ESRI brings together leading experts from a variety of disciplines who work together to break new ground across a number of research initiatives. The expertise of its researchers is recognised in public life and researchers are represented on the boards and advisory committees of several national and international organisations.

ESRI researchers uphold the highest academic standards. The quality of the Institute's research output is guaranteed by a rigorous peer review process. Research is published only when it meets the required standards and practices. Research quality has also been assessed as part of two peer reviews of the Institute, in 2010 and 2016.

ESRI research findings are disseminated widely in books, journal articles and reports. Reports published by the ESRI are available to download, free of charge, from its website. ESRI staff members communicate research findings at regular conferences and seminars, which provide a platform for representatives from government, civil society and academia to discuss key findings from recently published studies and ongoing research.

The ESRI is a company limited by guarantee, answerable to its members and governed by a Council, comprising a minimum of 11 members and a maximum of 14 members, who represent a cross-section of ESRI members: academia, civil service, state agencies, businesses and civil society.

THE AUTHORS

The *Commentary* is edited by Kieran McQuinn and Conor O'Toole. Kieran McQuinn is Research Professor and Conor O'Toole is a Senior Research Officer at the Economic and Social Research Institute (ESRI). Matthew Allen-Coghlan and Cathal Coffey are Research Assistants at the ESRI.

The Quarterly Economic Commentary has been accepted for publication by the Institute, which does not itself take institutional policy positions. It has been peer reviewed by ESRI research colleagues prior to publication. The authors are solely responsible for the content and the views expressed.

TABLE OF CONTENTS

SCENARIO RESULTS SUMMARY TABLE

	2019	Baseline 2020	Severe 2020	Benign 2020
Output (Real Annual Growth %)				
Private Consumer Expenditure	3	-13	-20	-12
Public Net Current Expenditure	6	11	15	11
Investment	94	-28	-39	-18
Exports	11	-8	-10	-7
Imports	36	-12	-13	-10
Gross Domestic Product (GDP)	6	-12	-17	-9
Gross National Product (GNP)	3	-14	-19	-10
Labour Market				
Employment Levels (ILO basis ('000))	2,322	2,026	1,976	2,081
Unemployment Levels (ILO basis ('000))	121	427	477	371
Unemployment Rate (as % of Labour Force)	5	17	19	15
Public Finances				
General Government Balance (€bn)	1	-28		
General Government Balance (% of GDP)	0	-9		

The Irish Economy – Overview

As with most countries the Irish economy is now in the midst of a substantial downturn prompted both by COVID-19 itself and the necessary actions of the public authorities in the form of the administrative closures initiated in March 2020. On 1 May the Government published a roadmap for easing these restrictions over the coming months.

In this *Commentary*, we continue the practice of the previous approach taken to assess the impact of COVID-19 on the Irish economy. Namely, we adopt a scenario approach as opposed to a traditional forecast. We present three different scenario outcomes which take into consideration the Government Roadmap for reopening the economy and varying epidemiological developments for the rest of the year. These are:

a) a new normal 'Baseline' scenario which assumes continued physical distancing and containment measures to the end of 2020;

b) a second wave 'Severe' scenario in which the country is put into strict lockdown again in Q4; and

c) a pandemic suppression 'Benign' scenario which allows economic and social life to return to normal in Q4.

Overall, the results of our Baseline scenario indicate that the impact of COVID-19 on the Irish economy is likely to be much more extreme than was initially thought in the previous *Commentary*. Under this scenario, economic output would decline by 12.4 per cent in 2020. Consumption declines by 13.3 per cent while investment falls by over 27 per cent this year. The effect is also more significant for the traded sector with Irish exports of goods and services set to fall by over 8 per cent in this scenario.

Unemployment is now set to average 17.4 per cent for 2020 under this scenario with the fiscal accounts now facing a deficit of at least 9 per cent of GDP or €27.5 billion.

The Severe scenario which assumes that a second wave of the virus prompts another lockdown in the Autumn of 2020 would see economic output contract by 17 per cent for the present year.

The *Commentary* includes a number of Boxes which assess the implications of the pandemic on domestic public finances, bond yields, exports, the labour market, household income and savings.

The *Commentary* also contains a previously published Special Article which examines the most up-to-date data available on Emergency Department (ED) attendances in Irish public hospitals to observe if the number of attendances has changed since the onset of the COVID-19 pandemic. The article also examines if changes in ED attendances have occurred at similar rates across age groups, regions, and urgency of attendance since the onset of the COVID-19 pandemic.

The Domestic Economy

OUTPUT

Given the continued uncertainty concerning COVID-19 and the impact of the associated measures taken to contain the spread of the virus, we maintain the approach adopted in the previous *Commentary* of using scenario analysis to examine the likely future path of the Irish economy. In the present *Commentary* we conduct three different scenarios. These are as follows:

1. The new normal or Baseline scenario: This scenario follows the current timelines for the Government Roadmap. This assumes that the epidemiological phase of the crisis follows the current predictions with a social distancing recovery period following from 10 August. This recovery period persists throughout the remainder of Q3 and Q4 of 2020.
2. The second wave or Severe scenario: Following the implementation of the measures in the Government's roadmap, a second viral wave emerges in September 2020. This is assumed to result in a re-introduction of the strict lockdown measures. In this scenario, normal economic activity is assumed not to resume until early 2021. [1]
3. The pandemic suppression or Benign scenario: In this case, disease suppression is so effective that a full return to normal economic activity occurs within the final quarter of 2020. This scenario is in line with the scenario adopted in the previous *Commentary*.

Pre-COVID, normal circumstances only resume under the Benign scenario in 2020. Under both the Baseline and the Severe scenarios, there is no return to normal, pre-COVID conditions, in 2020. Both scenarios enter what we call a recovery period post-August 2020. In this case the easing of conditions follows the timelines in the Government Roadmap. However, under the baseline scenario we assume that social distancing is still being practised on a widescale basis with economic consequences for certain sectors of the economy. The outbreak of a second wave of the virus in the Severe scenario case prompts another lockdown to occur in Q4.

For the three scenarios we generate the implications for aggregate consumption, investment, imports and exports. However, we only present results for the public finances for the Baseline scenario due to the considerable uncertainty associated

[1] It may not require a second wave of the virus for a more severe scenario to occur. For example, a significant loss in consumer and business confidence, disruptions to supply chains, delayed recoveries for Ireland's trading partners, teething problems for firms in getting used to the new normal could all result in a more severe scenario than the baseline case.

with expenditure and revenue receipts over the year. We tailor the scenarios for each component of the economy (consumption, investment and exports).

Under the Baseline scenario, consumption now falls by over 13 per cent in 2020 with investment contracting by almost 28 per cent. Based on the results for consumption, imports decline by 12 per cent while the international downturn results in the external demand for Irish goods and services falling by over 8 per cent. Overall, this results in economic activity in the Irish economy being down by 12.4 per cent in 2020 compared with 2019.

DEMAND

Household sector consumption

Where are we now?

The COVID-19 pandemic represents a major shock to economic and social life which is unprecedented in modern times. Household expenditure is expected to fall dramatically in 2020 due to a combination of factors. These include regulatory restrictions on retail and shopping activities which prevent expenditure; adjustments to household incomes due to labour market shocks; uncertainly related effects which change precautionary savings and other behavioural responses. All of these factors are likely to lower household spending to well below pre-pandemic levels.

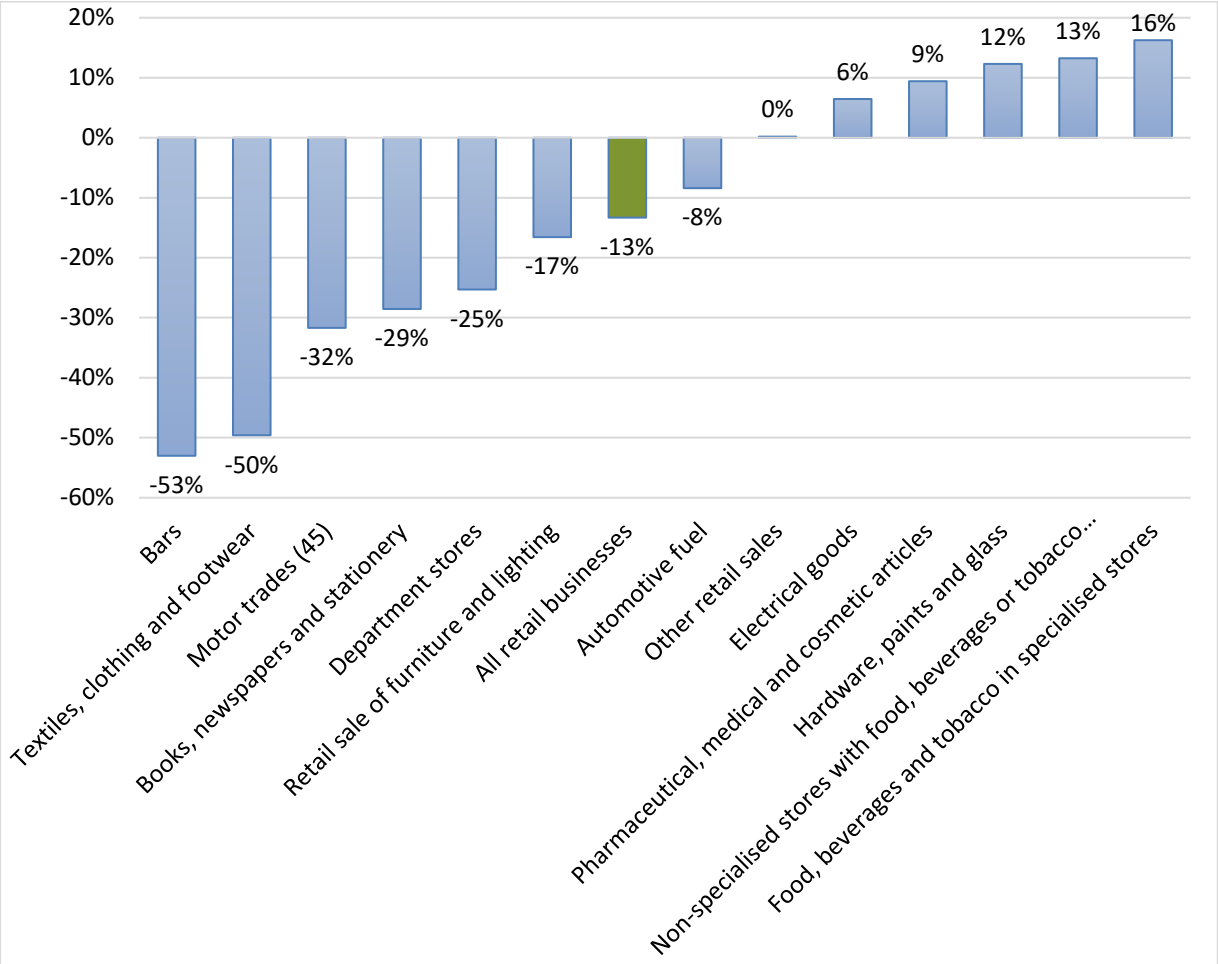
In terms of early quantifications of the magnitude of adjustment, emerging international evidence[2] and recent Irish statistics point to a sizable decline in household expenditure following the onset of the COVID-19 pandemic. Recent real-time data published by the CSO on retail sales shows dramatic falls in certain spending categories and moderate rises in others in March 2020. Figure 1 presents the change in retail sales by category as a percentage of the average January/February figures (volumes, seasonally adjusted). While overall retail sales expenditure is down 13 per cent in March relative to January/February, expenditure in bars and on clothing and footwear is down over 50 per cent. Expenditure on motor trade items and in department stores is down well over 25 per cent.

---

[2] Chen et al. (2020) explore changes in household spending in China; Baker et al. (2020) consider developments for the US and Cook et al. (2020) do a similar assessment for England and Wales. All studies show a considerable decline in spending but major heterogeneity depending on the expenditure type.
Baker, S., R. Farrokhnia, S. Meyer, M. Pagel and C. Yannelis (2020). 'How does household spending respond to an epidemic? Consumption during the 2020 COVID-19 pandemic', NBER Working Papers 26949, National Bureau of Economic Research, Inc.
Chen, H., W. Qian and Q. Wen (2020). 'The impact of the COVID-19 pandemic on consumption: Learning from high frequency transaction data', SSRN (6 April), https://ssrn.com/abstract=3568574.

However, expenditure on food and beverages is up by between 13 and 16 per cent for specialised and non-specialised stores. To contextualise these numbers, it must be noted that the widescale restrictions on economic and social life were only introduced in Ireland on 28 March. Limited, targeted restrictions such as closing schools and pubs had been introduced earlier in the month but the severe lockdown was not in place. This suggests that most of the adjustments across the non-pub items in the data available at this point may reflect behavioural change by households in light of the epidemic.

FIGURE 1 CHANGE IN RETAIL SALES: MARCH AS A PERCENTAGE OF JANUARY/FEBRUARY AVERAGE

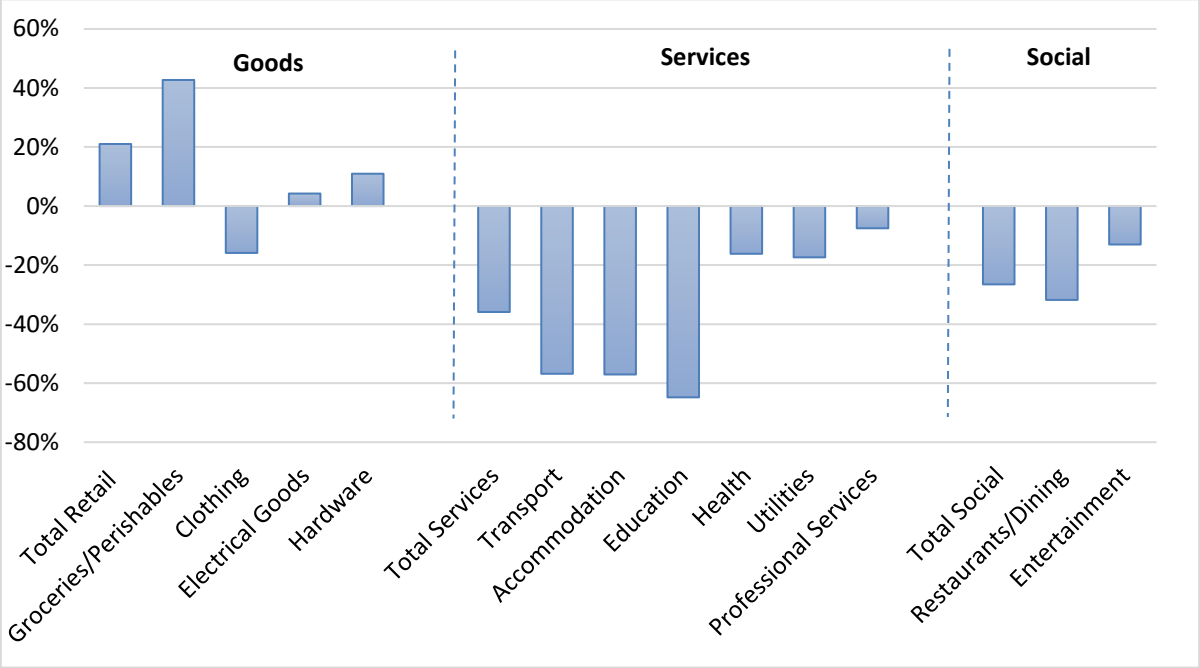


Source: Central Statistics Office, Retail Sales Volumes Data, Seasonally Adjusted.

Recent credit and debit card data have been published by the Central Bank of Ireland for March giving an insight into actual household behaviour. These data are highly informative as they contain information on services expenditure that is not captured in the retail sales data. Figure 2 clearly indicates a dramatic fall in expenditure on transport, accommodation, education and restaurants, all well in excess of 30 per cent on the average expenditure for these items in January and

February.[3] Overall, service expenditure is down 30 per cent over this period. While no detailed data are available, the aggregate statistics from the April credit and debit card data suggest a further decline of approximately 30 per cent in the value of transactions relative to the March figures.

FIGURE 2 CHANGE IN NEW SPENDING ON CREDIT AND DEBIT CARDS: MARCH AS A PERCENTAGE OF JANUARY/FEBRUARY AVERAGE



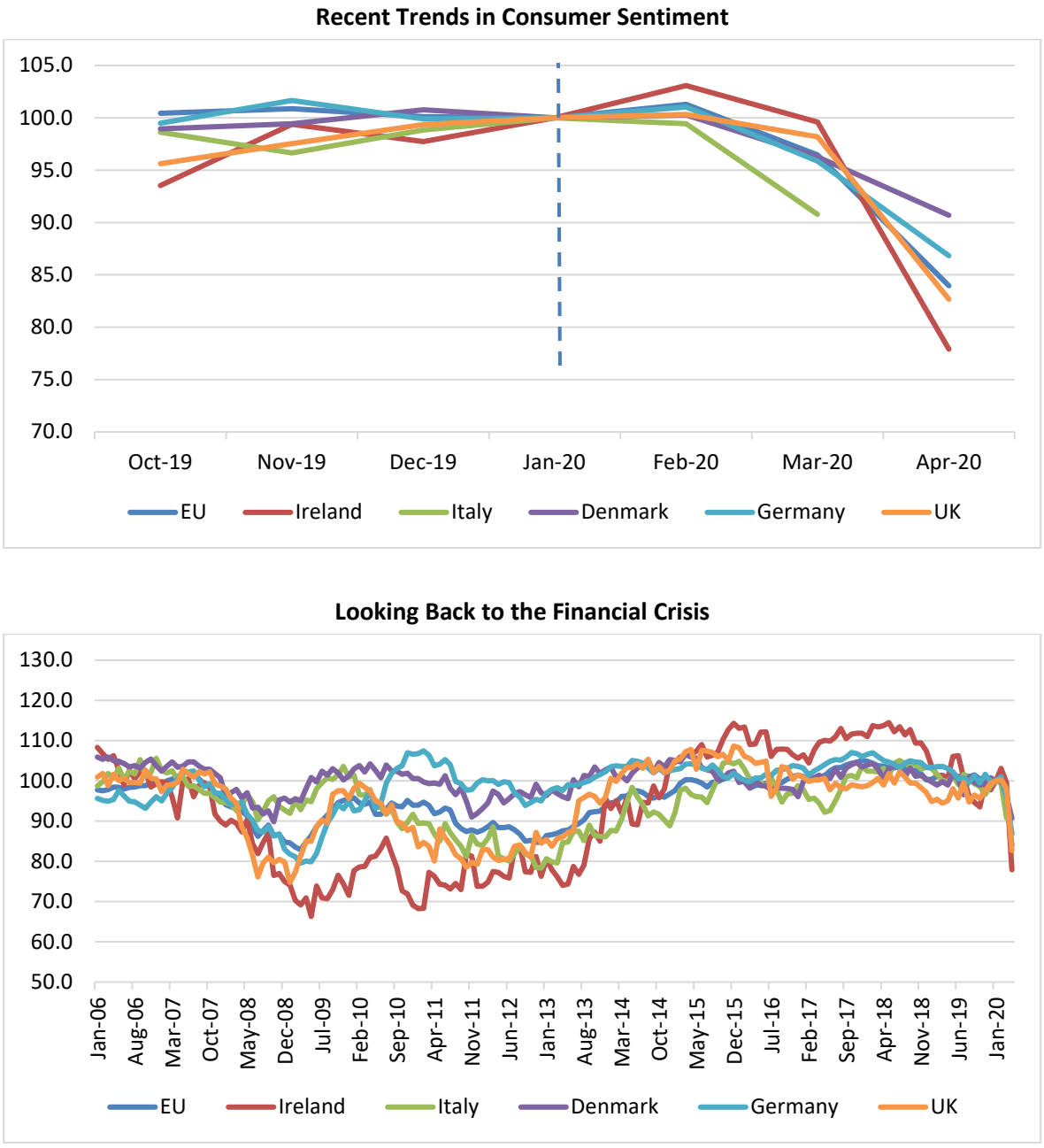
Source: Central Bank of Ireland, Credit and Debit Card Statistics, Table A.13.

A final, real-time leading indicator for consumption expenditure is consumer sentiment. This indicator has also shown a dramatic decline in recent weeks as the pandemic restrictions have become stricter, uncertainty has increased regarding the economic outlook, and labour market conditions have deteriorated significantly. Figure 3 presents recent trends in consumer sentiment for Ireland and selected other European countries drawing on the European Commission consumer sentiment data. It can be seen that for all countries presented (with the exception of Denmark) the consumer sentiment figures since the onset of the pandemic point to a dramatic decline that is more rapid than any single fluctuation seen since the series began in 2006. This period of course covers that of the financial crisis (panel B).

Taken together, these indicators provide clear evidence of a major fall in household spending for 2020, unprecedented in scale or speed.

[3] Please note differences between the CSO and CBI data can arise due to several reasons. This includes differences in the reporting population (such as online captured in the CBI data), differences in value and volumes as well as cash versus card sales coverage for the retail sales.

FIGURE 3 RECENT TRENDS IN CONSUMER SENTIMENT



Source: Central Statistics Office.

Looking forward: some scenarios for household consumption

To attempt to develop alternative pathways for household consumption for 2020, we present three scenarios in line with our general approach in this *Commentary*: a 'new normal' Baseline, a 'second wave' Severe case and a 'pandemic suppression' Benign scenario. All of these scenarios assume that the Government Roadmap for reopening the economy continues until August/September. The scenarios differ in terms of the degree of economic activity that is assumed to take place in Q4 2020.

To estimate an annual growth rate for 2020 under each of the scenarios, we use the estimated change in consumption under each scenario presented by Coffey et al. (2020).[4] They use microdata from the Household Budget Survey 2015/2016 and estimate how spending may develop across the same scenarios as presented in the QEC. They map changes across the year using a combination of existing data, international literature and judgement. The difference in consumption relative to 2019 from their study across the scenarios is presented in Table 1.

TABLE 1 COUNTERFACTUAL CONSUMPTION FIGURES BY SCENARIO (% CHANGE FROM 2019)

	Baseline	Severe	Benign
Food	-1	-4	-2
Drink and Tobacco	-18	-22	-14
Clothing and Footwear	-25	-41	-25
Housing	-2	-4	-2
Fuel and Light	0	0	0
Non-Durables	5	7	4
Durables	-16	-38	-16
Transport	-34	-48	-30
Miscellaneous	-16	-22	-14
Total	-13	-20	-12
Total (excluding housing and light)	-17	-25	-15

Source: Coffey et al., 2020

Under these scenarios, we therefore expect consumption to be between 12 and 20 per cent lower than the previous year. While the extent of the fall in consumption will be considerable this year, the extensive income supports that have been introduced for households to cushion the economic blow will in fact allow an increase in savings for many households. These dynamics are discussed in more detail in Box 1. In a sense, the increase in the savings rate may provide a considerable stimulus once restrictions are lifted and normal economic life continues. This may ensure that some of the consumption shock is temporary rather than permanent in nature. However, this dynamic is dependent on the extent to which the State can continue to support income levels through the rest of the year.

4 Coffey, C., K. Doorley, C. O'Toole and B. Roantree (2020). 'The effect of the COVID-19 pandemic on consumption and indirect tax in Ireland', ESRI *Budget Perspectives 2021* Paper 3.

BOX 1 THE EFFECTS OF GOVERNMENT POLICY ON PERSONAL SAVINGS

As discussed in Beirne et al., 2020, one of the features of this crisis is the exceptional level of support by the government sector for household finances in Ireland. As the research shows, quite a number of those affected are actually better off under the schemes, and for many of the other beneficiaries the state support replaces much of their after-tax income. As a result, the schemes are very expensive for the State.

TABLE A PERSONAL INCOME, CONSUMPTION AND SAVINGS, € BILLION

	2019	2020	%
Market Income	110.9	92.6	-16.5
Other Income	23.8	23.9	0.4
Taxes	-45.6	-37.2	-18.5
Welfare Payments	27.0	32.2	19.0
Disposable income	116.1	111.5	-3.9
Adjustments	1.8	1.7	-5.6
Consumption	105.5	92.4	-12.4
Personal savings	12.2	22.0	79.7
Savings Rate	10.5	19.7	

Source: CSO and QEC forecasts.

The result of the state support for aggregate personal income is shown in Table A. While market income is expected to be down by almost 17 per cent this year, disposable income will only fall by 4 per cent. The difference arises from the reduction in taxes on income of 19 per cent, together with the 19 per cent increase in the value of welfare payments. With consumption expected to fall by over 12 per cent, this means that households will substantially increase their savings – by around €10 billion – taking the savings rate to 20 per cent. This increase in savings represents 6 per cent of adjusted Gross National Income (GNI*).

Across much of the OECD area a similar pattern is developing. While there is a dramatic loss in market income in all countries, state support for households is expected to replace much of this loss in 2020. Exceptional falls in consumption mean that household savings will show a major increase.

Table B shows the latest forecasts for a range of European countries.[5] For all countries shown in the Table there is a big rise in private sector savings. With the exception of Ireland and the UK, the rise in private sector savings is between 70 per cent and 90 per cent of the reduction in government savings (government current revenue minus current expenditure). For the UK the forecast rise in private sector savings actually exceeds the reduction in government savings. In Ireland, private savings are forecast to account for just over half of government dissaving.

These forecasts suggest that governments across Europe are insulating households from the immediate effects of the crisis but, instead of spending these transfers on consumption

[5] The Figures for Ireland are from this QEC. The figures for the UK are from the NIESR Quarterly published on 1 May and the figures for the other countries are from the latest EU Commission forecasts available in the EU Commission AMECO database.

or investment, at an aggregate level the combined household and company sectors are saving.[6] When the likely fall in investment is taken into account, there is forecast to be little change in the current account of the Balance of Payments in individual countries, with government borrowing being largely counterbalanced by private savings.

TABLE B PERSONAL INCOME AND SAVINGS IN SOME EUROPEAN COUNTRIES, % OF GDP/GNI*

	Euro Zone	Germany	France	Spain	Italy	Netherlands	UK	Ireland
Source:	EU	EU	EU	EU	EU	EU	NIESR	QEC
Households	4.8	4.6	5.5	4.6	4.8	3.4	8.7	5
Company	1	2.5	-1	0.7	2	1.5	1	3.4
Government	-7.3	-8	-6.5	-7	-8.1	-7.1	-7.1	-15.3
Gross national savings	-1.5	-1	-2	-1.6	-1.4	-2.1	2.6	-6.9
Balance of Payments	0	-1.5	0	1.2	0.4	-1.2	3.2	
Total Savings	-1.5	0.6	-1.9	-2.8	-1.7	-0.9	-0.6	
Investment	-1.5	0.1	-1.5	-2.9	-1	-0.9	0	

Sources: EU, NIESR and QEC.
Note: Appropriate data for the Balance of Payments and investment are not available for Ireland.

In contrast to the financial crisis of 2008-2012, at the end of 2020 the household sector in Ireland, and elsewhere in Europe, is likely to have a stronger balance sheet than at the beginning of the year. This raises a question as to how households will react in 2021 and 2022 to this change.

There is a wide literature on household behaviour, with a range of different models explaining how much of household income is devoted to consumption in a particular year and how households choose the range of goods and services they buy with their income.

It is widely recognised that consumers take into account both current income and expectations of future income when choosing their current consumption. Consumers are also affected by uncertainty about their future income, so that they may save to prepare for future shocks. Thus, it is no surprise that consumers today are engaging in precautionary saving in case of permanent job loss. In this crisis consumers are also unable to buy certain goods and services, such as foreign travel and the services of pubs or restaurants. Finally, consumers with financial assets may also be facing losses in the value of those assets, which may lead them to increase their savings today. Understanding which of these factors is causing the rise in saving in the current crisis is important.

Because of the magnitude of the exceptional savings this year, the future disposition of this household saving could have a significant impact on the nature of the economic recovery. For example, if the additional savings made by Irish households in 2020 were all spent in 2021 on goods and services, instead of consumption rising by almost 10 per cent next year, as envisaged by the Department of Finance, it could rise by closer to 15 per cent.

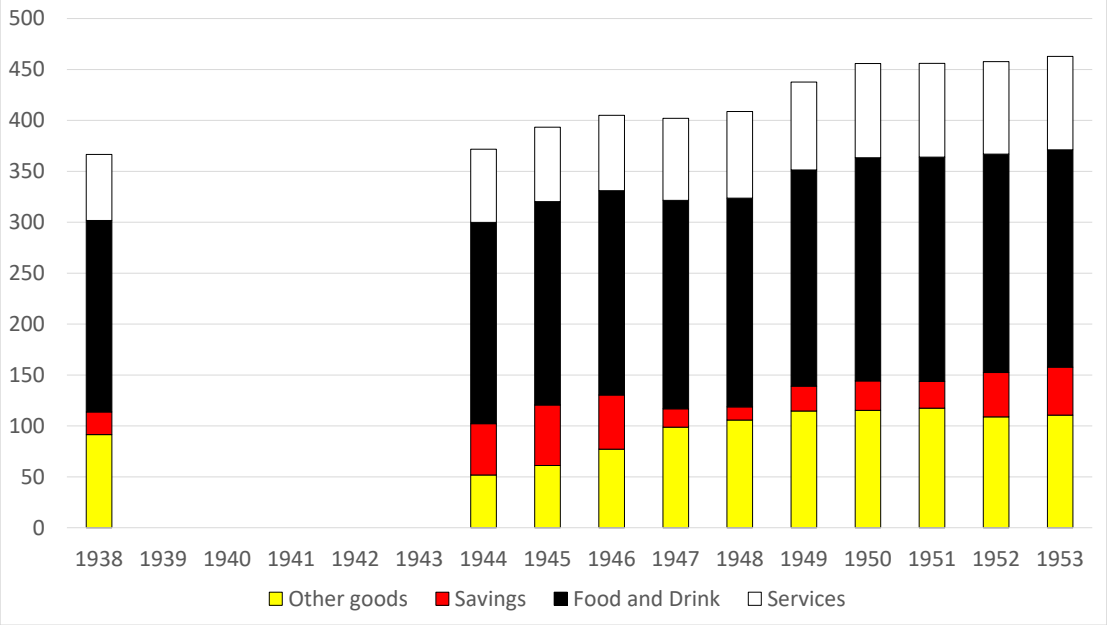
6 Obviously, there is a huge amount of heterogeneity across households and companies within individual countries.

Continuing uncertainty in 2021 could postpone such a consumer boom to 2022. Households, having been prevented from taking a holiday abroad in 2020, may choose to spend a significant part of the savings on holidaying in 2021 or 2022.

Thus, the position of consumers this year is most unusual: households have income that they cannot spend because of restrictions on movement. They are, in a sense, rationed in their spending on these goods and services. While households could spend their income on the unrestricted goods and services, they are clearly not doing so, but saving instead.

The last time consumers in Ireland found themselves in this position was during the Second World War. During the war years fuel and goods, other than food and drink, were unavailable because of an inability to import. Real incomes, especially of farmers, rose and consumers dramatically increased their savings. While the increased savings were clearly partly driven by uncertainty about the future, they were also a reflection of the limitation on the range of goods available.

FIGURE A CONSUMPTION AND SAVINGS AT CONSTANT PRICES, £ MILLION



Source: CSO, Tables of National Income and Expenditure, 1938 and 1944-1949.

Figure A shows how consumer behaviour changed during the war years and its aftermath. By 1944, consumption of 'other goods' was more than halved from the pre-war level of consumption in 1938. As shown in the Figure, instead of spending their income on food and services, which were available, they saved it. Through the war years the government sector balanced its budget and investment was also extremely low. The result was a large surplus on the current account of the Balance of Payments. When the war ended and the full range of goods became available, there was a boom in consumption of these goods, especially in 1947 and 1948. Instead of continuing to save, many households used their savings, built up over the war years, to buy previously unavailable items. As a result, the current account of the Balance of Payments had a large deficit in those years.

If household behaviour today were similar to that of the 1940s, the 'forced' saving by households could result in a consumer boom if and when the crisis is perceived as being fully over, possibly in 2022. This delayed stimulus, funded by government transfers to the household sector in 2020, could aid the recovery.

As the same story is being played out across the EU today, if EU households followed a similar pattern to those in Ireland, it could contribute to a more vigorous recovery than might otherwise be anticipated. However, even such an outcome would go nowhere near compensating for the huge loss of output in 2020 across the EU.

Finally, it is striking that much of the large borrowing in 2020 by European governments is balanced by savings by the private sector in each country – there is little change in the net foreign indebtedness of individual countries. This makes the borrowing much more sustainable than in the financial crisis of 2008-2012 when governments, such as that of Ireland, had to finance their deficits by borrowing abroad. Also, the potential stimulus in 2021 or 2022 from the spending of private savings could reduce the need for further fiscal action to stimulate the recovery.

References:

Beirne K., K. Doorley, M. Regan, B. Roantree and D. Tuda (2020). 'The potential costs and distributional effect of COVID-19 related unemployment in Ireland'. *Budget Perspectives 2021*, Paper 1, April. Economic and Social Research Institute (ESRI).

This Box was prepared by John FitzGerald.

TRADED SECTOR

Developments in exports

As authorities throughout the world put in place procedures to combat the spread of COVID-19, real-time data show a major economic decline that is unprecedented in speed and scale outside wartime. Many of Ireland's major trading partners have already experienced significant declines in output so far this year as restrictions on economic and social life have been introduced. In the EU, GDP declined by 3.5 per cent in Q1 relative to the previous quarter. This was reflected in the major economies of the Single Market where growth declined by 5.8, 5.2, 4.7 and 2.2 per cent in France, Spain, Italy and Germany respectively. In the UK, GDP growth for the quarter fell by 2.0 per cent compared to the previous quarter. While in the US, the country which has the largest confirmed number of deaths related to COVID-19, GDP fell by 4.8 per cent in Q1. Given that the lockdown measures across most of these countries were only implemented towards the end of Q1 and have now been in place for a sustained period of time through Q2, it is likely that the economic situation will be even more adverse in the second quarter.

These developments are likely to have a profound negative impact on the Irish traded sector and by extension the overall economy. In order to estimate the magnitude of this impact we draw heavily on analysis using the ESRI's macroeconomic model COSMO. In Box 2, Bergin and Rodriguez forecast the extent to which Irish exports will be impacted by the global crisis. Using estimates of world demand from the NiGEM model, they forecast Irish exports for 2020 under three scenarios. They determine that the shock to Irish exports will range between 4.7 and 9.6 per cent depending on the severity of the downturn for the international economy. We adjust these forecasts slightly for our own forecasts in order to take into account the differences in the timeline of our scenarios and those in the COSMO analysis. Consequently, we forecast exports to decline by 6.7, 8.2 and 9.7 per cent in the Benign, Baseline and Severe scenarios respectively.

BOX 2 EXPORT SCENARIOS FOLLOWING THE CORONAVIRUS OUTBREAK

As a small open economy, Ireland is very sensitive to the global economy and therefore to changes in trade and financial flows. Internationally, measures have been put in place that have essentially paused much normal economic activity and global output has fallen dramatically. The duration of the disruption is highly uncertain, and many countries are grappling with how to phase a return to more normal levels of economic activity in a way that prevents the virus from spreading. Many international assessments indicate that, if disease suppression is successful in the first half of 2020, there will be a rebound in the international economy in the second half of 2020 (see, for example, IMF, 2020; NIESR, 2020; Battistini, 2020) as the public health measures necessary to contain the spread of the COVID-19 virus are gradually relaxed. However, the extent and pace of any recovery in the international economy is highly uncertain. Broadly, most analysis rests on the assumptions that countries experiencing lockdowns will see them eased after around three months, with a gradual return to pre-lockdown levels of activity, that the pandemic wanes in the second half of the year and that there isn't a second wave of the virus when the lockdowns end.

As such, there is heightened uncertainty for the future path for Irish exports. In this Box, we explore a range of potential scenarios for the global economy and how this might impact the demand for Irish exports. Our broad approach is to generate alternative paths for the international economy drawing on, for example, recent scenario analysis using NiGEM, a global multi-country model with explicit trade linkages across countries, to assesses the possible international economic impact of the coronavirus outbreak. We then incorporate these international impacts into COSMO, the ESRI's model of the Irish economy. We compare the results to a 'no-pandemic' baseline scenario to gauge the impact on the changed international environment on Ireland. In addition to a Moderate Scenario, we also consider a Benign scenario where factors such as Ireland's sectoral export composition helps mitigate some of the international shock and a Severe scenario where issues such as long-lasting disruptions to supply chains results in an amplification of the international shock.

Moderate Scenario

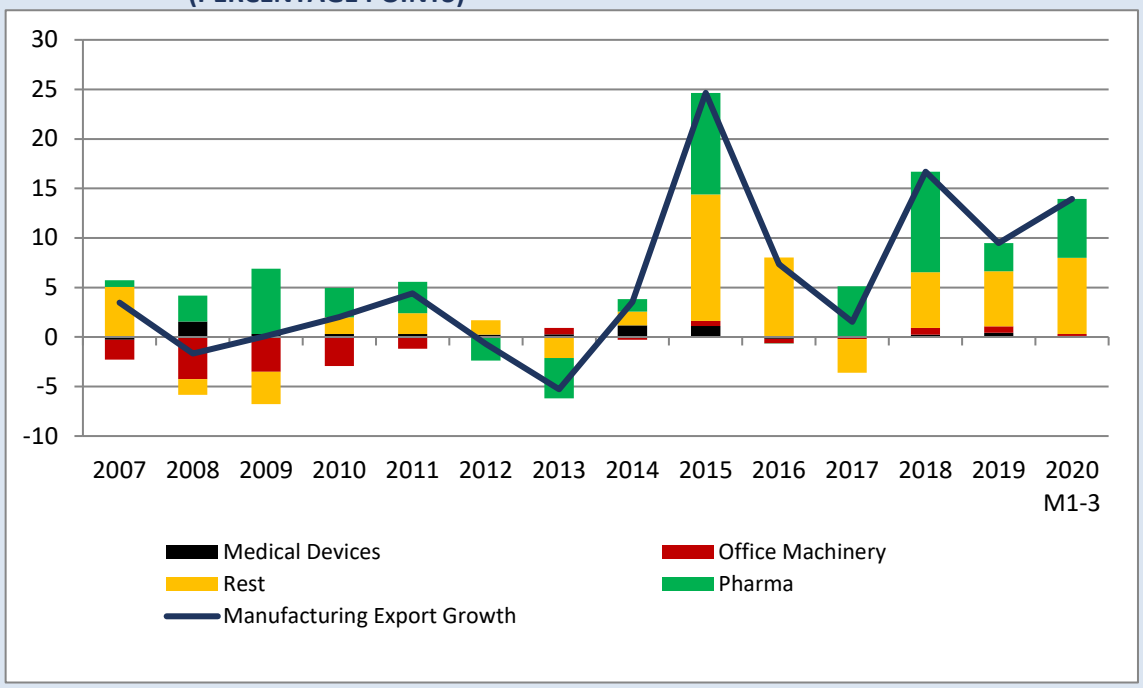
Our moderate scenario draws on recent global scenario analysis from NIESR (Hurst et al., 2020). They focus on the main channels through which the virus is impacting the global

economy, specifically reduced spending, an increase in business uncertainty, a reduction in hours of work due to illness, and a temporary lockdown of economies in the countries affected by the outbreak. They assume that internationally the crisis will peak in Q2 of 2020 and that the most severe economic impacts will be in the first three quarters of the year. The most important consequence of this scenario for Ireland is a reduction in the world demand for Irish exports of just under 20 per cent in the first two quarters of the year before global demand rebounds.

Benign Scenario

Research has shown that the export orientation of the economy and, in particular, the sectoral structure of Irish exports helped to alleviate the worst impacts of the financial crisis and was an important determinant in the subsequent recovery (see, for example, McQuinn and Varthalitis, 2018; Barry and Bergin, 2020). The most recent data available for the period of the COVID-19 restrictions suggest that the export sector of the economy has held up well in recent months. Figure B shows the contributions of various subsectors to manufacturing export growth. Over time, the contributions of pharmaceuticals and medical devices have generally been positive (although pharmaceuticals impacted negatively on export growth in 2012 and 2013 due to the expiry of a number of patents); in the first quarter of 2020 overall manufacturing export growth has been robust and pharmaceuticals contributed significantly to that growth.

FIGURE B SECTORAL CONTRIBUTIONS TO IRISH MANUFACTURING EXPORT GROWTH (PERCENTAGE POINTS)



Source: Central Statistics Office.

To incorporate the fact that the composition of Irish exports may result in exports suffering more limited negative effects than is the case in many other countries, we modify the shock to global demand for Irish exports from what was considered in the Moderate scenario. Relative to the Moderate scenario, we assume the same fall in Q1 but the

reduction in demand is halved in Q2 2020, and by Q3 it is back at their pre-crisis 'no-pandemic' projection. This alternative trajectory in the Benign scenario implies a reduction in world demand in 2020 of 6.1 per cent relative to a no-pandemic situation, compared to a 9.5 per cent reduction in the Moderate scenario.

Severe Scenario

It is also possible that, as a consequence of the global pandemic, supply chains could experience longer lasting disruptions, firms may decide to alter their supply chains, the economic effects may be more severe in some countries and they may recover at different speeds, globalisation may slow, and countries may decide to become more self-reliant in the production of certain goods and products. These types of factors, if they materialise, would have serious implications for the Irish export sector. To take account of this downside risk, we follow the alternative scenarios developed in ECB (2020). Their most negative scenario assumes a longer term strict lockdown with only limited success in containing the spread of the virus, thus dampening activity around the world for a longer period and leading to permanent losses. Applying this trajectory for external demand to Ireland implies an (annual) reduction in the world demand for Irish exports for 2020 of 16.6 per cent.

Results

In COSMO, changes to the demand for Irish exports affects the economy first through the traded sector. In comparison to a 'no-pandemic' Baseline, sectoral production in the Benign, Moderate and Severe scenarios is 4.2 per cent, 6.0 per cent and 8.7 per cent lower, respectively, for the year 2020; with exports down by 4.7 per cent, 6.7 per cent and 9.6 per cent, respectively, compared to the 'no-pandemic' Baseline scenario.

Conclusions

This Box presents model based scenarios describing how different paths for the international economy, arising from the effects of COVID-19, may impact the Irish economy. The future path of the Irish recovery depends on many different factors whose likelihood, importance and economic impact are themselves uncertain. This Box considers the importance of external factors. Other elements that will determine the future trajectory of the economy include: the duration of measures to contain the spread of the virus and whether they may have to be re-introduced at a later stage; the resilience of the productive structure to sustain a period of closure and/or disruptions to their supply chains; and the behavioural response of consumers and investors once activity resumes.

References

Barry, F. and A. Bergin (2020). 'Export Structure, FDI and the Rapidity of Ireland's Recovery from Crisis', *The Economic and Social Review*, 50(4): 707-724, Winter 2019.

Battistini, N. and G. Stoevsky (2020). 'Alternative scenarios for the impact of the COVID-19 pandemic on economic activity in the Euro Area', *ECB Economic Bulletin*, 1 May 2020.

Bergin, A., N. Conroy, A. Garcia-Rodriguez, D. Holland, N. McInerney, E. Morgenroth and D. Smith (2017). 'COSMO: A new COre Structural MOdel for Ireland', ESRI Working Paper No. 553.

Hurst, I., I. Liadze, B. Naisbitt and G. Young (2020). 'A preliminary assessment of the possible economic impact of the coronavirus outbreak: update', National Institute of Economic and Social Research, NiGEM Observations, No. 18, 27 March.

IMF (2020). *World Economic Outlook*, April.

McQuinn, K. and P. Varthalitis (2018). 'How openness to trade rescued the Irish economy', ESRI Working Paper no. 608.

NIESR (2020). *National Institute Economic Review,* No. 252, May 2020.

This Box was prepared by Adele Bergin and Abian Garcia Rodriguez.

Developments in imports

While the magnitude of the decline in exports will largely be determined by developments abroad, the size of the shock to imports is more likely to be related to domestic factors. As disposable income in the economy decreases, individuals will also decrease their levels of consumption. In an open economy like Ireland, where individuals buy goods and services from abroad, any decrease in consumption will inevitably lead to a fall in imports. Again, utilising the COSMO model, we find that a negative 1 per cent shock to consumption in a given year reduces imports in that year by 0.6 per cent. Imports are also correlated to business activity, with investment by domestic firms tied to imports of goods and services from abroad. As investment declines over the course of the year we also expect there to be a fall in imports related to inflows of capital goods. In addition to the traditional demand-side factors, imports will also be impacted by disruptions to the global supply chains caused by the pandemic. These disruptions will reduce the production capacity of foreign firms leading to a fall in the availability of goods and services for imports into Ireland. However, some import sectors are more likely to be impacted than others, with imports of cyclical goods such as Machinery and Equipment and consumer durables likely to be significantly impacted by the deteriorating economic situation. In the Baseline scenario imports are forecast to decline by 12.0 per cent in 2020. Under the Severe scenario, as consumption and investment deteriorate further, imports decrease by 13.2 per cent. Finally, in the Benign scenario imports decrease by 9.9 per cent for the year.

INVESTMENT

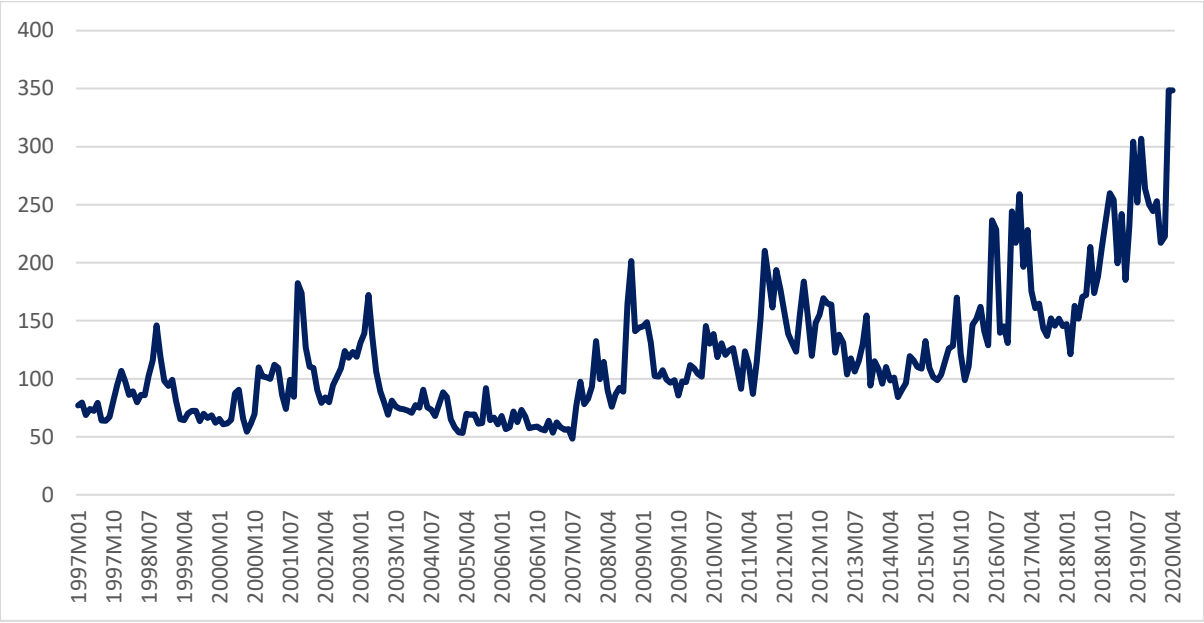
As with the other components of economic output, the magnitude of the decline in investment in 2020 will largely be dependent on the trajectory of COVID-19 and the policy response over the rest of the year. Underlying investment is particularly sensitive to changes in both the domestic and international economy, and

regardless of which of the three scenarios we look at, investment is set to fall substantially.

One of the primary reasons we are likely to see a fall in investment this year is due to the large number of businesses that will/already have shut down. In the CSO's Business Impact Questionnaire, which surveys businesses on how they are dealing with COVID-19, approximately 25 per cent of respondents reported that they have ceased trading during the lockdown period. This means that over the lockdown period one-in-four Irish businesses will engage in no capital expenditure. While the hope would be that many of these businesses may be able to resume activity as the government restrictions are gradually lifted, it is likely that at least some of these businesses will remain shut permanently.

Even for businesses that remain open, investment is likely to be curtailed significantly due to the large increase in uncertainty brought on by the pandemic. Previous analysis by O'Toole (2019) has shown that an increase in international uncertainty leads to a fall in investment in the domestic economy.[7] Due to the often irreversible nature of capital expenditure, when businesses are unsure about future economic conditions, they are unlikely to engage in large capital expenditure. Figure 4 shows that, globally, uncertainty is at an all-time high.

FIGURE 4 ECONOMIC POLICY UNCERTAINTY INDEX (INDEX)



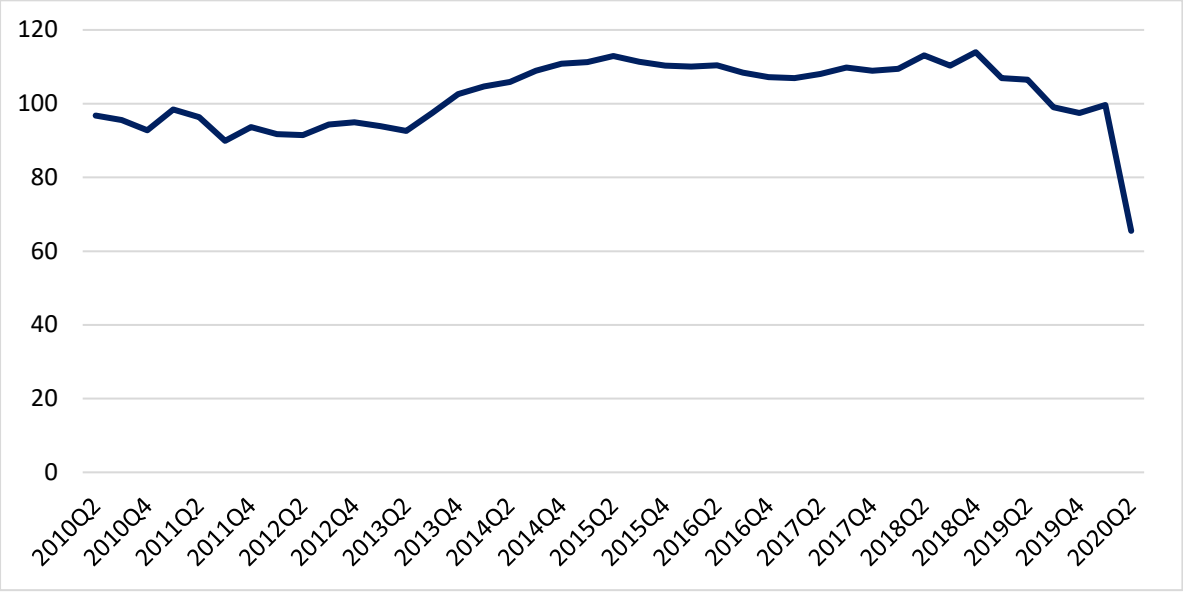
Source: Economic Policy Uncertainty.

7 O'Toole, C (2019). 'Global Uncertainty and The Impact on Irish Aggregate Investment', *Quarterly Economic Commentary*, Summer. ESRI

In the current situation uncertainty pertains not only to the medium/long term but also to the very near term, with even expert epidemiologists unsure about the spread of the virus over the coming weeks. In such an environment, businesses are highly unlikely to make large capital expenditures and may be unwilling to do so until a clear path out of the current pandemic becomes clear. One minor offsetting element may be expenditures on buildings, equipment and machinery that are required to implement social distancing guidelines. However, it is not expected that these items would offset the expected decline in investment in a significant manner.

Figure 5 shows the related but distinct indicator of economic sentiment. This indicator is derived from a monthly survey of Irish firms conducted by the European Commission and is a composite of five separate confidence indicators related to industrial, services, retail, consumers and construction. Even during the height of Brexit related uncertainty towards the latter half of 2019, the economic sentiment indicator held up reasonably well. However, the most recent data show that sentiment has collapsed and that many businesses are highly pessimistic about current and future economic conditions.

FIGURE 5 ECONOMIC SENTIMENT (INDEX)



Source: European Commission.

An additional issue that is unique to the current situation, that is likely to curtail investment this year, is the supply chain disruption brought about by the pandemic. As a result of the general trend towards increased globalisation over recent decades, many businesses rely on the importation of intermediary goods and services. Due to the lockdown measures imposed by authorities across the globe, the production capacity of companies that engage in international trade is

likely to be significantly reduced. This means that even if there are domestic businesses that are willing to make capital expenditure in the current environment their ability to do so may be limited.

Estimating investment expenditure pathways

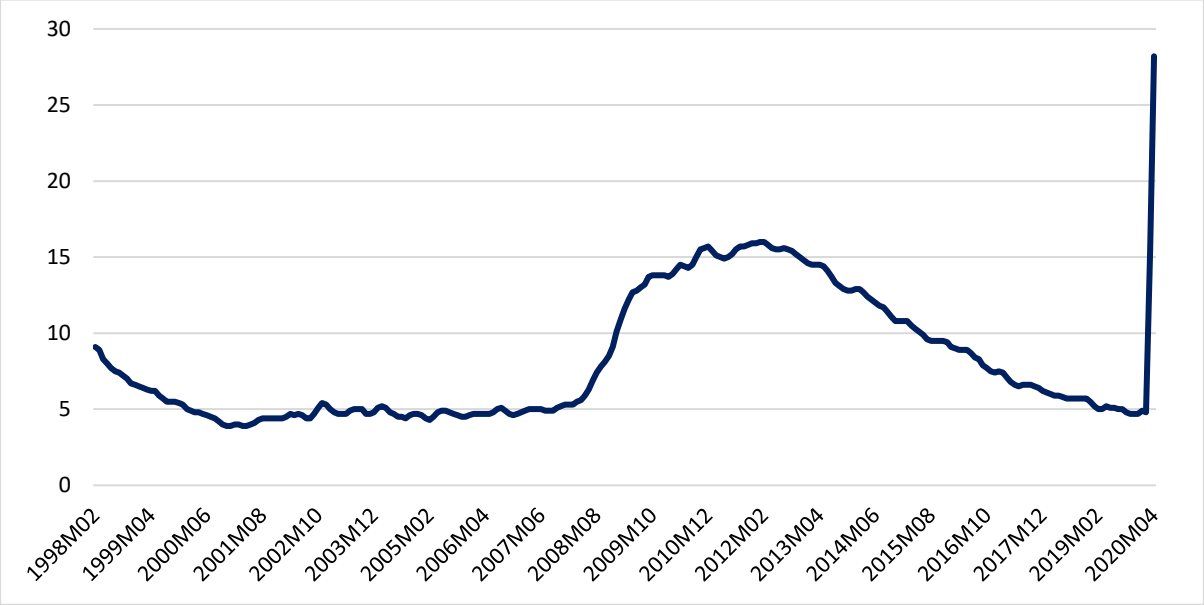
To provide pathways for investment across our scenarios, we undertake a component-by-component analysis. Modified Gross Fixed Capital Formation can be broken down into several sub-components, each likely to be impacted uniquely by the economic current situation. Regression analysis indicates that a 1 per cent decline in economic sentiment in a given quarter is associated with a 0.6 per cent decline in investment in Machinery and Equipment in the same period. This suggests that Machinery and Equipment investment is highly reactive to falling business confidence and is likely to decline significantly in the current environment. On the other hand, Building and Construction, which is the largest component of investment, has a weaker association with economic sentiment. This likely reflects the long-term nature of investment in construction which makes it less reactionary to the current economic situation.

In the Baseline case, where the economy opens gradually as per the government plan and enters a recovery period over the second half of the year, investment is forecast to fall by 27.6 per cent. In the more Severe scenario where the economy is put back into strict lockdown in Q4, investment is forecast to fall by 39.0 per cent in 2020. Even in the Benign scenario where the economy is operating normally by Q4, investment is forecast to fall by 18.4 per cent this year. Our forecast fall in investment is significantly worse than the previous *Commentary* in March, reflecting both the continually deteriorating situation and the reduced likelihood of a bounce back in the period following the lockdown. To put these figures in a historical context, the largest annual decline in real investment during the financial crisis was just under 17 per cent in 2009.

LABOUR MARKET

The impact of the COVID-19 downturn on the Irish labour market has been unprecedented. In April the unemployment rate in the country increased to 28.2 per cent, up from 15.5 per cent in March and 4.8 per cent in February. Figure 6 illustrates the substantial rise in unemployment, both in rapidity and scale.

FIGURE 6 UNEMPLOYMENT BY MONTH (%)



Source: Central Statistics Office.

The scale of the employment shock can be seen in the number of people either on the Live Register or availing of the Pandemic Unemployment Payment, which increased to over 815,000 in April. By comparison, in the same period the previous year there were just over 193,000 on the Live Register. On top of this, there were also over 425,000 people availing of the Wage Subsidy Scheme who do not show up in the unemployment figures.

In addition to the size of the employment shock, the distribution of job losses has also been uneven across sectors and demographics. Work by Byrne et al., 2020, shows that job losses have primarily been concentrated in Accommodation and Food Services with the Retail and Construction sectors also significantly impacted. In Box 3 in this *Commentary*, Roantree explores the distribution of job losses across various groups. This analysis looks at the difference in unemployment claims and employment between age groups, gender, and region of residence.

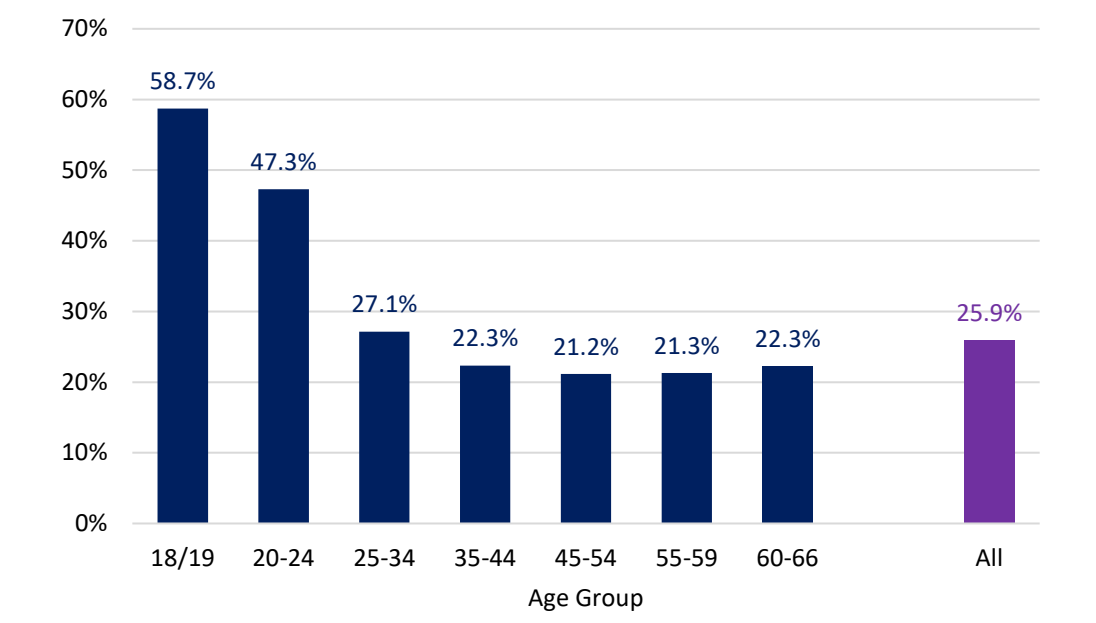
BOX 3 JOB LOSS DISTRIBUTION

The public health measures necessary to supress the spread of COVID-19 have resulted in many sectors of the Irish economy being entirely shut down or operating at much reduced capacity, leading to widespread job losses. This Box provides some characterisation of the extent and distribution of these job losses and temporary lay-offs.

Since 13 March 2020, anyone aged 18 to 66 who loses their job or is temporarily laid off due to the COVID-19 pandemic is entitled to receive a non-means tested payment called the Pandemic Unemployment Payment (PUP). Statistics published by the Central Statistics Office show that claims for this benefit reached a peak of 602,107 at the end of April before falling slightly to 589,638 by 10 May, the latest data available at the time of writing.[8]

Given there were an estimated 2,275,400 people aged 18-66 employed or self-employed in the last quarter of 2019, these figures suggest that just over a quarter of the workforce (25.9 per cent) have lost their job and are currently in receipt of the PUP.[9] Claims for the payment amongst younger workers represent a far greater share of employment than for other age categories. Figure C and Table C show that claims amount to 58.7 per cent of the number of 18-19 year olds, 47.3 per cent of the number of 20-24 year olds, and 27.1 per cent of the number of 25-34 year olds who were in work at the end of 2019, compared to just over a fifth (21.8 per cent) of those aged 35-66.

FIGURE C PANDEMIC UNEMPLOYMENT PAYMENT CLAIMS AS % OF EMPLOYMENT LEVEL IN Q4 2019



Source: Author's calculations using estimates of Q4 2019 employment from the CSO Labour Force Survey microdata and PUP claims from the 'Detailed COVID-19 Income Support and Live Register Tables' for the week ending 10/5/2020; Central Statistics Office.

8 'Detailed COVID-19 Income Support and Live Register Tables' produced by the CSO, accessed on 19/05/2020 at https://www.cso.ie/en/statistics/labourmarket/liveregister/detailedCOVID-19incomesupportandliveregistertables

9 While employment in the final quarter of the year may be subject to seasonal fluctuations, comparing PUP claims to average employment throughout 2019 increases this share slightly to 26.2 per cent.

Table C also shows that claims by men for the payment represent a higher share of employment (27.6 per cent) than for women (24.0 per cent), and for those living outside Dublin (24.3 per cent) – particularly in the Border region (29.5 per cent). While some of this variation is likely due to differences in the sectoral composition of employment by age, sex and region, the CSO notes that the sector of previous employment recorded in the administrative data PUP is drawn from does not align with those collected in the Labour Force Survey (LFS), making a similar comparison of sectoral job losses complicated. Byrne et al. (2020) show that such a comparison suggests that claims for the payment in certain sectors – notably the accommodation and food sector at 70.9 per cent – represent a much larger of share of employment than other sectors.[10]

However, the PUP is not the only welfare support available to those who have lost their job as a result of the COVID-19 pandemic. They may be entitled to claim (PRSI contribution linked) Jobseeker's Benefit and (means-tested) Jobseeker's Allowance, which are more generous than the PUP for those eligible to the maximum rate with adult and child dependants. Live Register figures from the CSO show that claims for these benefits have risen by 13,333 and 19,293 respectively between February and April, though this may include some workers who remain in employment but with reduced hours or earnings.[11] Indeed the CSO's recent special LFS module showed that almost half (48.9 per cent) of those who reported having their 'employment status or situation affected by COVID-19' said they had experienced a 'change in work hours', while 15 per cent said they 'had to take unpaid leave'.[12]

In addition, there were an estimated 65,000 people above the age of 66 who reported being in some form of paid work in the final quarter of 2019. Such workers are not entitled to make a claim for the PUP, Jobseeker's Allowance or – in most cases – Jobseeker's Benefit if they have lost employment, so will not be included in the above statistics.

As well as those who have lost their job or been temporarily laid off from work, a large number of jobs are being supported by the Government's Temporary Wage Subsidy Scheme (TWSS). This allows employers to claim a subsidy of up to €410 per week for eligible employees they retain on their payroll, with statistics from Revenue showing that more than 464,000 employees of 47,300 employers received at least one payment through the scheme between 26 March and 14 May. However, the numbers currently receiving the subsidy are somewhat lower than this figure as – to date – 9,700 have moved from the TWSS to non-TWSS supported employment, and 43,900 to welfare payments (including the PUP) or economic inactivity. Revenue statistics also show that 36 per cent of private sector employers have registered for the TWSS, with the overwhelming majority (86 per cent) receiving support also making some payment to employees on top of the subsidy.

The scale of job losses revealed by these figures is unprecedented, far exceeding that seen over the entirety of the financial crisis. While we are likely to see some recovery in the

---

10 Byrne, S., D. Coates, E. Keenan and T. McIndoe-Calder (2020). 'The Initial Labour Market Impact of COVID-19'. Central Bank of Ireland Economic Letter, No. 4, Vol. 2020. http://www.centralbank.ie/docs/default-source/publications/economic-letters/vol-2020-no-4-the-initial-labour-market-impact-of-COVID-19-(byrne-coates-keenan-mcindoe-calder).pdf?sfvrsn=4

11 CSO Table LRM01 'Persons on Live Register by Social Welfare Scheme, Age Group, Sex and Month'.

12 Tables 2c and 2d in CSO statistical release 'Employment and Life Effects of COVID-19', available at https://www.cso.ie/en/releasesandpublications/er/elec19/employmentandlifeeffectsofCOVID-19.

coming weeks as certain sectors of the economy reopen, employment in other sectors is likely to be constrained by the need to comply with public health measures and reduced demand. For example, just under 490,000 people worked in the wholesale and retail trade or accommodation and food service sectors in the final quarter of 2019, representing 20.7 per cent of total employment. These sectors are likely to face particular challenges in the months ahead, as will many employers who are currently only retaining workers on their payrolls with support from the TWSS, which is due to expire in its current form along with the PUP in June. As a result, the revised design of these benefits will be a key policy question in the months ahead, with important implications for the labour market and household incomes.

TABLE C PANDEMIC UNEMPLOYMENT PAYMENT CLAIMS AS % OF EMPLOYMENT

	(1)	(2)	(3)
	PUP claims at 10/5/2020	Aged 18-66 in work, Q4 2019	Col. 1/Col 2 (%)
Total	589,638	2,275,420	25.9%
Age:			
18/19	26,959	45,908	58.7%
20-24	93,309	197,259	47.3%
25-34	135,223	498,211	27.1%
35-44	141,610	634,202	22.3%
45-54	111,759	528,128	21.2%
55-59	43,591	204,893	21.3%
60-66	37,187	166,820	22.3%
Sex:			
Men	335,989	1,216,696	27.6%
Women	253,649	1,058,723	24.0%
Region of residence (NUTS3):			
Border	51,586	174,834	29.5%
West	55,192	210,292	26.2%
Mid-West	54,823	207,092	26.5%
South-East	52,211	186,379	28.0%
South-West	82,964	325,412	25.5%
Dublin	171,874	706,926	24.3%
Mid-East	85,828	335,452	25.6%
Midlands	33,292	129,034	25.8%

Source: Author's calculations using estimates of Q4 2019 employment from the CSO's Labour Force Survey microdata and figures from the 'Detailed COVID-19 Income Support and Live Register Tables' for the week ending 10/5/2020.

This Box was prepared by Barra Roantree.

The path for the labour market over the rest of the year will be dependent on the performance of the underlying economy and has been modelled in line with our three scenarios.

Under the Baseline scenario the unemployment rate is set to average 17.4 per cent for the year. Unemployment is likely to peak in Q2 during the strictest phase of the lockdown, averaging just over 24 per cent. As the restrictions are lifted and consumption and investment pick back up over the latter half of the year, the demand for labour will also increase resulting in the unemployment rate declining to just under 17 per cent in Q4.

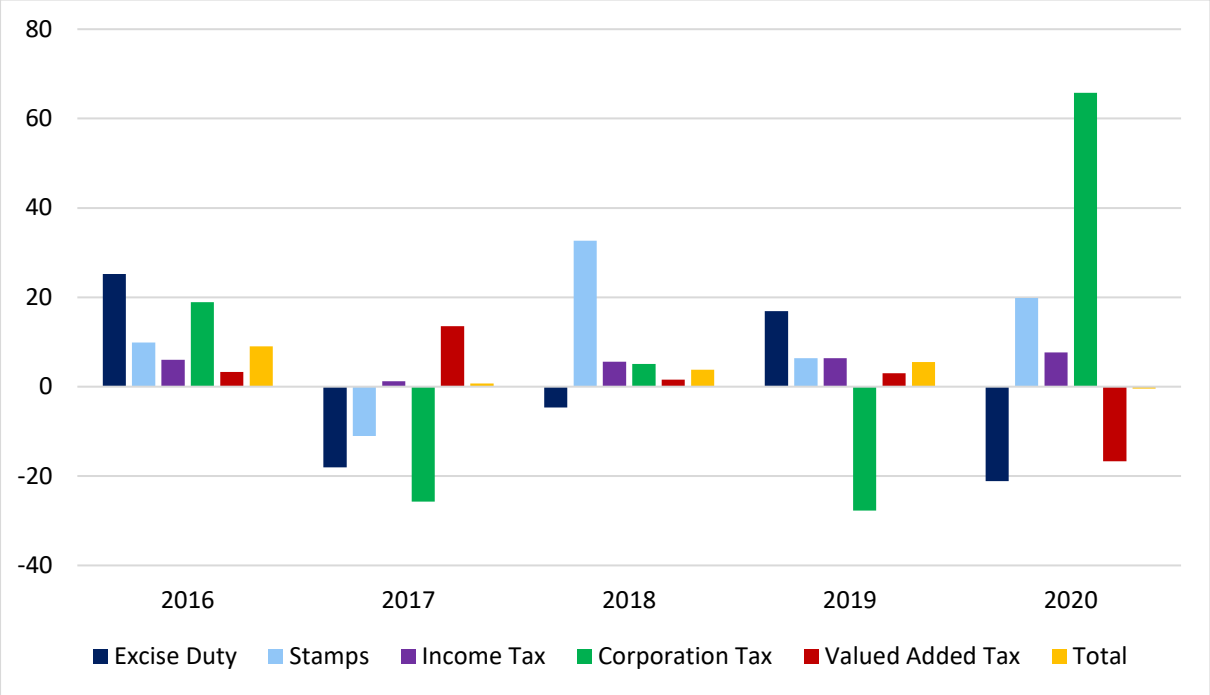
Under the Severe scenario the unemployment rate for the year will average 19.4 per cent. The most significant difference between the Severe scenario and Baseline scenario is the spike in unemployment in Q4. This is a result of the return to lockdown in Q4 which will cause unemployment to return to a similar rate as Q2.

In the Benign scenario there is a rapid improvement in the labour market over the latter half of the year, with the unemployment rate reaching 11.2 per cent in Q4 and averaging 15.2 per cent for the year.

PUBLIC FINANCES

Figure 7 plots the growth rates for the main taxation items for the period January to April, from 2016 to 2020. Most items registered significant growth in January and February before the impacts of COVID-19 started to impact in March and April.

FIGURE 7 ANNUAL CHANGES IN MAJOR TAX SUB-COMPONENTS (%): JANUARY – APRIL



Source: Authors' calculations.

For the year to date, income tax receipts are still registering growth of nearly 8 per cent with respect to the same period in 2019. Interestingly, pay related social insurance (PRSI) returns are up by over 10 per cent. However, both income tax receipts and PRSI returns are likely to register significant negative growth for the year, as the COVID-19 downturn fully impacts the domestic economy.

Corporation taxes also witnessed a significant increase for the first four months of the year with receipts in February of €460 million almost double what they are typically for this time of the year. However, it should be noted that this is usually a quiet time of the year for these returns with the amounts accounting for approximately 2 per cent of the annual amount.

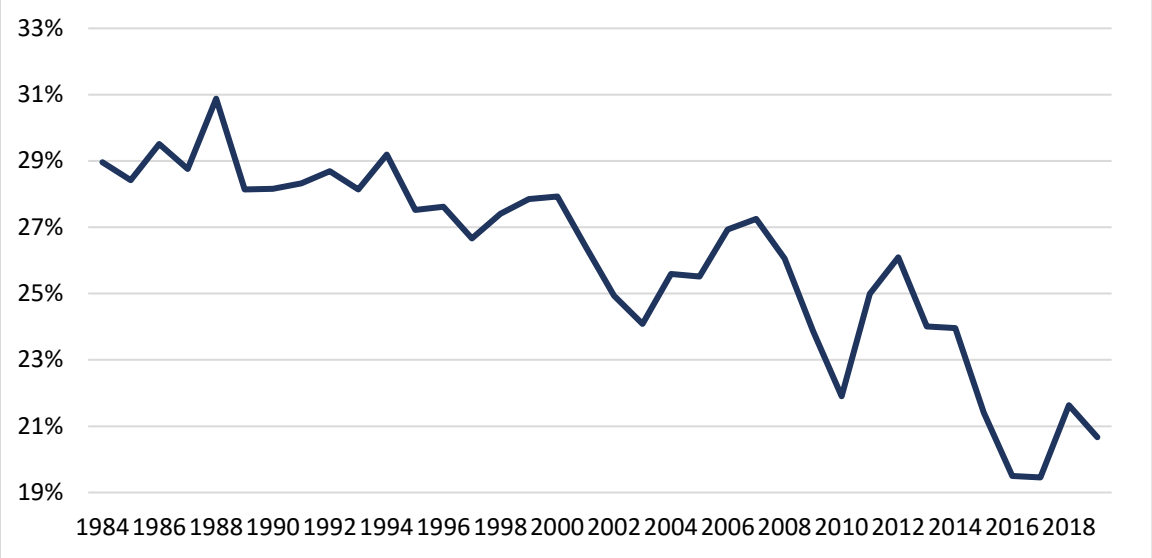
The full impacts of the COVID-19 related slowdown on the Irish public finances are particularly difficult to estimate. While the expenditure measures already implemented may be extended, the real difficulty lies in the potential impact of the slowdown on taxation receipts. The following Box outlines some of the challenges in attempting to estimate the impact on Government revenues.

BOX 4 HOW MUCH ARE GOVERNMENT TAXATION RECEIPTS LIKELY TO FALL DUE TO THE COVID-19 SLOWDOWN?

In order to assess the likely implications for the public finances in this Box we draw on previous research which examined the sensitivity of taxation revenue to underlying economic activity (Deli et al., 2017). By taking parameters which have quantified the relationship between economic activity and taxation receipts from the earlier study, we can nowcast the level of taxation receipts for the present year, by using our nowcast/ forecast of economic activity for 2020.

Figure D plots the ratio of these receipts to Irish GNP over the same period.

FIGURE D RATIO OF GOVERNMENT TAXATION RECEIPTS TO GNP (%): 1984 – 2019



Source: Author's calculations.

From the mid-1990s onwards with the emergence of the Celtic Tiger, the decline in total tax receipts as a percentage of output is evident.

In Table D we break out the annual declines in the main taxation aggregates over the post-Celtic Tiger period.

TABLE D ANNUAL CHANGE (%) IN SELECT TAXATION AGGREGATES: 2008-2010

	2008	2009	2010
Income tax	-3.0	-10.7	-4.8
VAT	-7.6	-23.0	-5.5
Corporation	-23.2	-26.1	0.6
Excise	-7.0	-14.6	-0.5
Total	-14.7	-21.0	-4.0

Source: Author's calculations.

Much of the decline in taxation receipts during this period can be traced back to the collapse in housing related activity (see Addison-Smyth and McQuinn (2010) and Addison-

Smyth and McQuinn (2016) for more on this). However, it is notable that receipts from corporation taxes also registered a substantial decline over the period. In 2010 corporation tax receipts were only just 61 per cent of the equivalent 2007 total. This highlights the impact of a global slowdown on Irish taxation receipts.

The empirical results from Deli et al., (2017) suggest an elasticity of approximately 1.1 for total taxation receipts with respect to underlying economic activity. That is a 10 per cent reduction in output levels results in total taxation receipts declining by 11 per cent. Therefore, given our forecast that output is set to contract by over 12 per cent in 2020, that would indicate that taxation receipts will decline from €59.3 billion in 2019 to just over €51 billion in 2020. In total, we expect that under our Baseline scenario, total taxation receipts will fall by 16 per cent in 2020.

However, these estimates do come with a significant degree of uncertainty. First of all, the nature of the COVID-19 pandemic is unique in that it involves an almost complete cessation in activity for specific sectors of the economy. Therefore, it may be the case that taxation receipts closely associated with this type of activity such as VAT and excise duty may register even larger decreases then what is envisaged in this exercise. Like all the scenarios examined in this *Commentary*, it is still unclear how the administrative measures are going to be relaxed in the coming weeks and months. This will have a direct impact on the level of economic activity and hence taxation receipts which will be generated. Even with the relaxing of the administrative measures, it is still not clear how consumers will modify their behaviour in response to the pandemic. Again, this will have a significant impact on the subsequent pick-up in economic activity.

A final degree of uncertainty concerns the likely outcome for corporation tax. Implicit in our estimate is that in 2020 corporation tax receipts will be down by 10 per cent compared with 2019. However, as is clearly evidenced from Table D, at the time of the international financial crisis of 2007/2008, corporation tax receipts fell dramatically by almost 40 per cent between 2007 and 2010. It is exceptionally difficult to estimate at this point in the year what the likely impact of the global slowdown will be on Irish corporation tax receipts.

References:

Addison-Smyth D. and K. McQuinn (2010). 'Quantifying revenue windfalls from the Irish housing market', *The Economic and Social Review*, Vol 41 (2), pp.201-223.

Addison-Smyth D. and K. McQuinn (2016). 'Assessing the sustainable nature of housing-related taxation receipts: The case of Ireland', *Journal of European Real Estate Research*, Article first published online: June: http://www.emeraldinsight.com/doi/pdfplus/10.1108/JERER-01-2016-0004.

Deli Y., D. Lambert, M. Lawless, K. McQuinn and E. Morgenroth (2017). 'How sensitive is Irish income tax revenue to underlying economic activity?', *The Economic and Social Review, Economic and Social Studies* Vol. 48(3), pp. 317-318.

This Box was prepared by Kieran McQuinn.

Under our Baseline outlook, and given our assumption about the impacts of COVID-19 on consumption, trade and the labour market, it is evident that certain tax headings such as income tax, VAT and PRSI receipts are likely to be adversely impacted for Q2 2020. Similarly, on the expenditure side, the Government has committed significant additional resources to addressing the outbreak of the virus. For our Baseline scenario, we assume that Government expenditure for the year is that outlined in the recent Stability Programme Update (SPU).[13] Given the expected decline in taxation receipts outlined in the Box and the increased expenditure, this would mean a deficit of €27 billion or 8 per cent of GDP is now likely in 2020. However, this figure may increase as the year unfolds. For example, we assume that the Pandemic Unemployment Payment (PUP) is discontinued after June of 2020 with the more standard welfare payments applying thereafter. Also, the expenditure figure does not contain any amount for a fiscal stimulus in the current year.

In terms of funding the sovereign debt, in April the National Treasury Management Agency (NTMA) announced a revised bond funding range of €20 billion to €24 billion for the full year 2020. This replaces the original bond funding range, announced in December 2019, of €10 billion to €14 billion. The revision is due to the worsening fiscal situation and, in particular, the increase of €14 billion in the Government's Exchequer Borrowing Requirement due to measures related to the COVID-19 pandemic.

The increase in the bond funding range is lower than the increase in the Exchequer Borrowing Requirement due to Ireland's strong cash position. The NTMA has already issued over €11 billion of bonds in 2020. This has been achieved through the launch of two new bonds maturing in 2027 and 2035 and an auction of bonds maturing in 2029. There are further bond auctions scheduled for May and June 2020. In another Box, McQuinn examines the impact of the deteriorating economic and fiscal situation on the borrowing costs for the Irish sovereign.

[13] See https://www.gov.ie/en/publication/43a6dd-stability-programme-update-2020/ for more details.

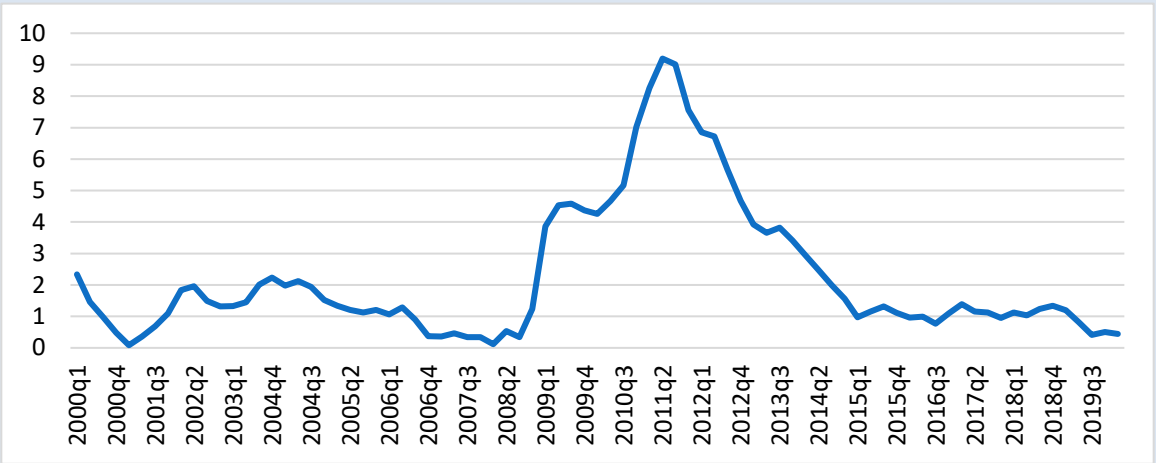
BOX 5 WHAT ARE THE SHORT-RUN IMPLICATIONS FOR THE SPREADS ON IRISH BOND YIELDS OF THE COVID-19 DOWNTURN?

As noted in the *Commentary*, like most economies, the impact of the COVID-19 downturn on the Irish economy has been substantial and swift with both economic activity and income levels set to decline quite significantly in 2020 compared with 2019 levels. It is also clear that the response of the Irish authorities to the downturn in terms of the additional welfare payments coupled with the likely decline in taxation revenues will result in a significant deterioration in key fiscal metrics such as the General Government Balance and the debt-to-GDP ratio.

Inevitably, given the deterioration in these key variables across a wide number of countries, increased attention will focus on the response of financial markets to these developments. If financial markets believe that individual countries will have difficulties in meeting their repayment obligations on their debt levels then, ceterus paribus, this will result in increased borrowing costs for the governments in question. One key indicator of financial market's reaction in this regard is the yield spread, which captures the financial market's view of the sovereign's ability to meet repayment obligations on its debt. The spread is usually measured as the spread of the Government bond over a risk-free interest rate. This spread should be informed principally by the Government debt position and the ability of the economy to service that debt.

De Grauwe and Ji (2012; 2013) use this as their guiding principle in modelling sovereign risk within the Euro Area, with the yield spread being modelled as a function of a number of fundamental variables. Any deviation of the observed spread from that determined by such factors serves as a measure of mis-pricing by the market: if the actual spread is less than the fundamental factors-determined value, the market is seen as unduly optimistic about the country's fiscal prospects and, likewise, if the difference is positive, it is too pessimistic. Cronin et al. (2019) build on the work by De Grauwe and Ji (2012; 2013) to specify and estimate a model for the spreads on Irish bond yields. In this Box, we update the model and use the results to estimate the impact of a deterioration in key fiscal and economic variables on Irish bond spreads. Figure E plots the spread on Irish bond yields from 2000 to 2019. From the chart it is clear that the spread on Irish bonds increased sharply between 2008 and 2011.

FIGURE E ACTUAL SPREADS (%) ON IRISH BOND YIELDS: Q1 2000 – Q1 2020



Source: European Central Bank.

This reflected the exposure of the Irish State to the difficulties in the domestic banking sector particularly after the enactment of the bank guarantee in 2008. Therefore, in an Irish context, given the role played by the troubles of the financial sector and its relationship with national fiscal policy, the De Grauwe and Ji (2012; 2013) model is augmented by Cronin et al. (2019) to include financial sector variables. The model is specified as follows:

$$Spread_t = \alpha_0 + \alpha_1 Debt_t + \alpha_2 Income_t + \alpha_3 (Bank_t * DV) \qquad (1)$$

where the spread is the average within-the-quarter daily yield spread of the Irish sovereign ten-year bond over the EONIA rate; debt is the General Government debt-to-GNI* ratio; Income is real household disposable income (included to capture the ability of the economy to support the fiscal position); Bank is a banking exposure variable; DV is a dummy variable whose value is zero from Q1 2000 to Q3 2008 and whose value is one from Q4 2008 to Q4 2019. The updated model is estimated over the period Q1 2000 to Q4 2019 and the results are summarised in Table E.

TABLE E IRISH SOVEREIGN BOND SPREADS ESTIMATION RESULTS: Q1 2000 – Q4 2019

Variable	Coefficient	T-Stat
Constant	6.161	5.457
Debt	0.0081	2.539
Income	-0.00028	-4.988
Bank * DV	0.469	11.644
R^2	0.74	

Source: Author's calculations.
Note: N = 80.

The coefficients have the expected sign with both debt and banking having positive signs (higher debt and banking burdens raise the spread) and the income variable has a negative coefficient (i.e. higher income indicates a greater ability of the economy to support the sovereign, hence reducing default risk and, consequently, the fitted spread). The goodness-of-fit measure is 0.74.

We now use the results from the re-estimated model to assess the impact of the COVID-19 deterioration in the Irish economy and public finances on the fundamentals-determined bond spread. We generate an estimate of what the bond spread would be like in Q2 2020 based on certain forecast paths for the independent variables in (1). For the banking variable, we assume there is no change from its Q1 2020 level. For disposable income we forecast there is a 4 per cent fall in Q2. We forecast that GNI falls by 10 per cent in the same period, while the national debt is expected to increase by €7 billion for Q2. The difference between the expected decline in income and economic output is due to the relatively comprehensive nature of the support packages provided by the Irish State. As noted by Beirne et al. (2020), the measures announced by the Government, notably the

flat-rate Pandemic Unemployment Payment of €350 per week, reduce the number of households exposed to significant income losses by about a third.

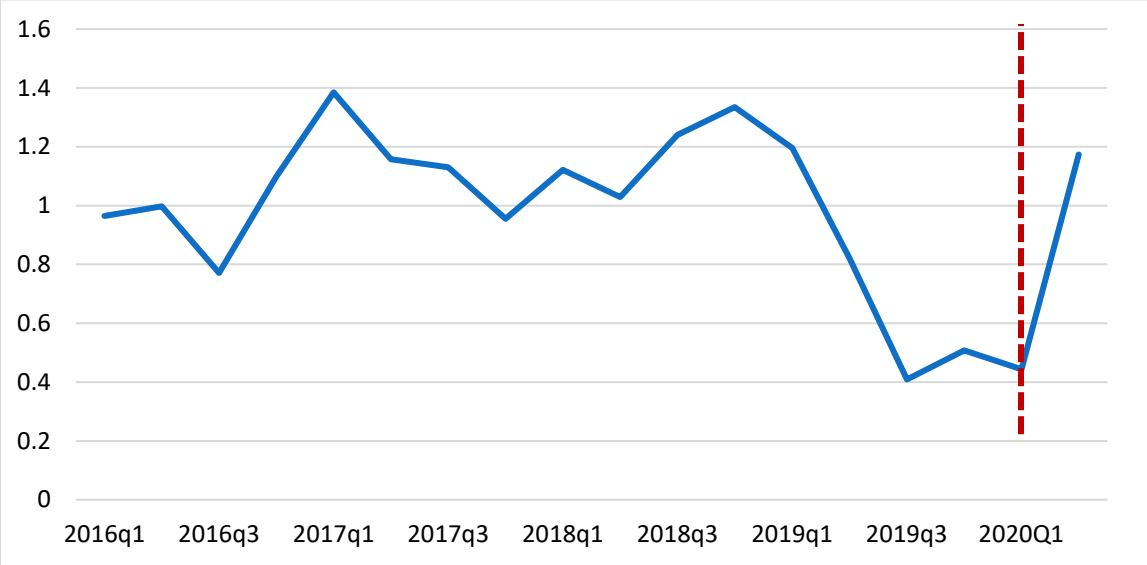
TABLE F SIMULATION RESULTS

Actual Bond Spread Q1 2020	Simulated Bond Spread Q2 2020
0.443	1.173

Source: Author's calculations.

The effect of the shock is to increase the spread on Irish bonds from its current level in Q1 2020 of 0.443 to 1.173. The biggest impact is the change in the income variable, followed by the assumed decline in GNI. This is placed in a recent historical context in Figure F.

FIGURE F ACTUAL AND SIMULATED SPREADS (%) ON IRISH BOND YIELDS: Q1 2016 – Q2 2020



Source: Author's calculations.

The impact of the shock is to cause the spread to increase back up to 2018 levels. Clearly, if economic and fiscal conditions continue to decline through 2020, the simulation would indicate that the spread would continue to increase.

To date European institutions, including the European Central Bank have announced a number of measures aimed at maintaining borrowing costs for individual countries at the low levels which prevailed before the current crisis. The actions of European institutions and financial market perceptions of sovereign risks will cause a difference between what the fundamentals might suggest would happen to a country's bond spread and what actually transpires.

References:

Beirne K., K. Doorley, M. Regan, B. Roantree and D. Tuda (2020). 'The potential costs and distributional effect of COVID-19 related unemployment in Ireland', *Budget Perspectives 2021*, Paper 1, April, Economic and Social Research Institute (ESRI).

Cronin D., P. Dunne P. and K. McQuinn (2019). 'Have Irish Sovereign Bonds Decoupled from the Euro Area Periphery, and Why?', *The Economic and Social Review*, Vol. 50 (3), pp.529-556.

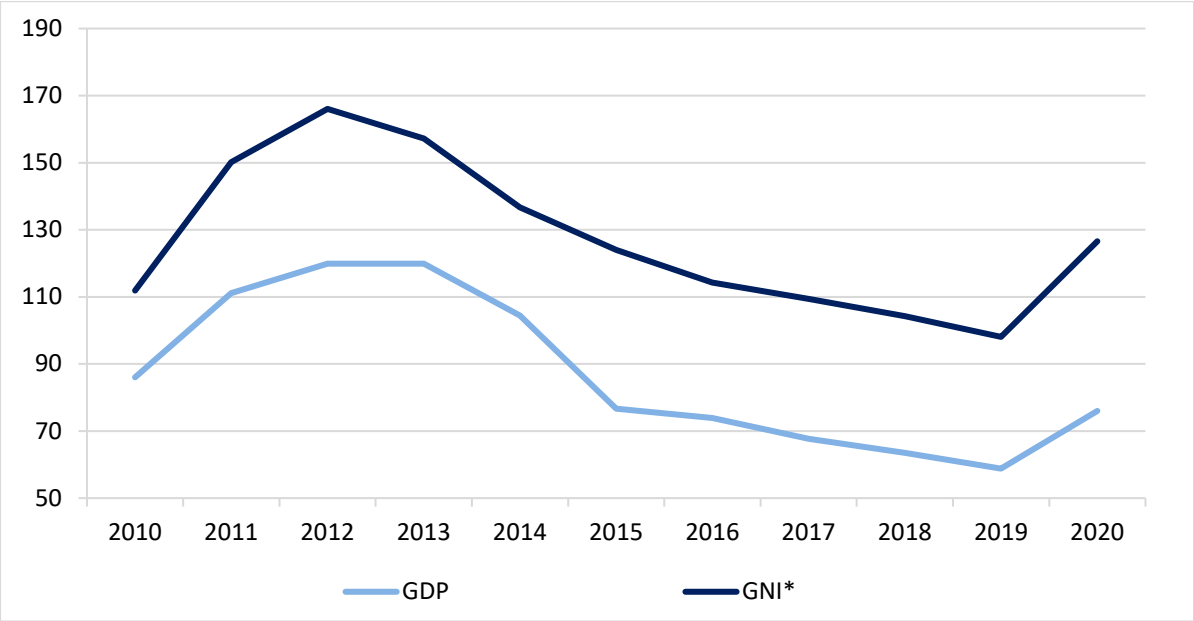
De Grauwe, P. and Y. Ji (2012). 'Mispricing of Sovereign Risk and Macroeconomic Stability in the Eurozone', *Journal of Common Market Studies*, Vol. 50, No. 6, pp. 866-880.

De Grauwe, P. and Y. Ji (2013). 'Self-fulfilling Crises in the Eurozone: An Empirical Test', *Journal of International Money and Finance*, Vol. 34, pp. 15-36.

This Box was prepared by Kieran McQuinn.

We summarise the resulting implications for our forecasts of the debt-to-output ratios in Figure 8. By the end of 2020, we believe the debt-to-GDP ratio will be back up to 76 per cent while debt-to-GNI* will have increased to almost below 127 per cent.

FIGURE 8 DEBT-TO-GDP AND GNI*RATIOS (%)



Source: Authors' Calculations

General Assessment

The Irish economy like most of its counterparts across Europe and the western world is in the middle of an extraordinary decline unlike anything ever witnessed before. As domestic authorities continue to deploy measures to curb the spread of the COVID-19 virus, the administrative closures initially announced by the Irish Government on 13 March have only started to be eased. On 1 May, the Government outlined a five-phase roadmap for lifting the COVID-19 restrictions. While necessary from the point of view of public health, the gradual lifting of restrictions as opposed to a complete lifting will have implications for the initial scale of the economic shock, and for the speed with which the domestic economy recovers.

In this *Commentary* we update our assessment of the economic impact of COVID-19 on the economy for the present year. Our policy of analysing the impact through the use of scenario analysis in the Spring *Commentary* rather than a standard forecast is repeated in the present *Commentary*. Given the uncertainty around the potential duration of the administrative measures, we present three different scenarios – a Benign (pandemic suppression), Baseline and Severe case. These three scenarios are necessary given the continued uncertainty concerning the spread of COVID-19 and possible additional containment measures that may have to be put in place.

All three scenarios are based on the timelines in the Government Roadmap for reopening the domestic economy with varying economic and epidemiological development paths for the rest of the year. The scenarios are as follows:

1) 'a new normal' Baseline which assumes physical and social distancing continue until the end of 2020;
2) 'a second wave' Severe scenario of strict lockdowns in October; and
3) a 'pandemic suppression' Benign scenario that allows a return to normal economic activity in Quarter 4.

In our Baseline, which we consider our most likely scenario, economic activity in 2020 is set to decline by over 12 per cent. Unemployment will reach 17 per cent for 2020 and the public finances will deteriorate such that a deficit of 8 per cent of GDP or €27 billion is now likely to be recorded for the year. This latter figure may increase depending on the fiscal response of the Government over the latter half of the year.

Under our Severe scenario, we assume that a second wave of the virus results in another 12-week lockdown commencing in October 2020. This results in another significant decline in consumption and investment in the domestic economy. We also accompany these developments with a more severe external shock to the economy. Under such a scenario, economic output declines by over 17 per cent in the current year.

Finally, in our Benign scenario, we assume that the economy returns to normal by Q4. Under this scenario output is forecast to decline by over 8 per cent. This is akin to the scenario we outlined in our Spring QEC and is also accompanied by a more benign outlook for the international economy.

In the *Commentary* we examine a number of COVID-19 related issues in some detail. A detailed breakdown of job losses in the economy due to COVID-19 is provided in Box A by Roantree. In particular, the Box notes that in terms of those in receipt of the Pandemic Unemployment Payment (PUP), younger workers appear to constitute a higher proportion of recipients as do those previously employed in the accommodation and food sectors. The Box raises important issues concerning the impact of these payments on the recovery of the economy. For example, if these payments were reduced or withdrawn, what would the impact on consumption be? Also, given that some of these payments are greater than the standard job-seeking allowance, what implications would the continuation of the payments have for re-employment possibilities when the economy starts to recover?

In terms of assessing the impact of the global slowdown on the domestic economy, the *Commentary* draws heavily on analysis that is conducted using COSMO, the macro-econometric model of the Irish economy. In a Box to the *Commentary* Bergin and Garcia-Rodriguez use COSMO to examine the impact of a number of global scenarios on Irish exports. The Box indicates that the external demand for Irish goods and services is likely to face significant declines in the present year.

A Special Article to this *Commentary* by Brick, Walsh, Keegan and Lyons examines the most up-to-date data available on Emergency Department (ED) attendances in Irish public hospitals, to observe if the number of attendances has changed since the onset of the COVID-19 pandemic and the introduction of the associated delay measures by the Government. While there are a number of reasons for reducing demand for ED care, Brick et al. argue it is peoples' behaviour which is likely to be the main factor. They argue that further public information campaigns may be required to encourage and reassure people with symptoms to contact their GP or attend an ED.

While to date many of the supports have been targeted at supporting incomes and providing emergency lending and other supports to firms, in terms of the recovery path of the Irish economy, a fiscal stimulus to kick start economic activity is warranted in the second half of the present year, as the administrative measures are eased. Notwithstanding the strong and resilient nature of growth in the Irish economy prior to the COVID-19 shock, the economy is still likely to be very fragile in the short to medium term. However, given the small open nature of the domestic economy, such a stimulus would have to be carefully considered. In another Box to this *Commentary* FitzGerald highlights the significant increase in personal savings amongst Irish households which is likely to occur due both to the nature of the slowdown, and the response of the authorities in terms of the welfare transfers, which have been implemented. FitzGerald estimates that the Irish savings rate could double to almost 20 per cent in 2020. Furthermore, he notes that spending of these private savings could constitute a considerable stimulus for the domestic economy in 2021 or 2022. This analysis does rely on household income levels being maintained at current levels, which will be challenging the longer the pandemic-related downturn goes on.

One of the most complicated aspects of the Government's policy response will be how to support firms, both large enterprises and SMEs as the domestic economy reopens. If restrictions such as physical distancing remain in place, many businesses may struggle to return in a viable form. While it too early to know which, and how many, firms this will apply to, difficult choices will have to be made in terms of enterprise supports. Not all firms will be able to survive. To date many policies have expanded offerings of debt and lending facilitation measures (such as credit guarantees). To maximise the chances of survival, and ensure indebtedness remains low, where feasible policy could aim at expanding grants and other solutions that would provide direct cash injections to firms. While the existing wage subsidy scheme is the most important of these type to date, further COVID-19 specific examples may include investment grants to help transform businesses for social distancing etc.

In the short to medium term, the Government could increase investment in a number of different areas as a means of stimulating the domestic economy. Certain significant infrastructural projects could be advanced and projects which target environmental sustainability and climate goals could also be prioritised. Another area which should be considered is a significant increase in the provision of social and affordable housing. This would simultaneously meet the objective of stimulating economic activity, while also addressing a key economic and social policy issue. Actual housing supply has consistently fallen short of the underlying structural demand for housing in the Irish economy, with Corrigan et al. (2019), amongst others, highlighting the lack of affordable housing particularly in the

greater Dublin area.[14] Furthermore, recent research by Allen-Coghlan and McQuinn (2020)[15] which assesses the implication of the COVID-19 downturn on the residential housing market, argues that over the longer term the bigger impact of COVID-19 may be on the supply side of the Irish market as the construction sector is likely to be impacted for the rest of 2020. This will exacerbate the ongoing imbalance between housing supply and the structural demand for housing. While previously, the concern may have been that such a policy might lead to 'overheating' pressures given the strong pace of growth in the Irish economy, this concern is, clearly, no longer applicable.

Clearly the fiscal costs of the crisis are substantial. Our analysis would suggest under the baseline scenario, the deficit is set to increase to at least 9 per cent of GDP or €27 billion in monetary terms. Therefore, in order for a housing related stimulus to be sustainable from a public finances perspective, it is imperative that EU institutions continue to keep sovereign borrowing costs as low as possible for as long as possible. While Eurogroup finance ministers have agreed to mobilise the European Stability Mechanism (ESM) to support member states by providing additional funds to the ESM to lend to member states facing a crisis at concessional rates, it is still unclear whether, for example, ESM funding can be used to support economic measures beyond health care costs. Additionally, there is also no formal agreement about alternative sources of EU funding such as euro or 'Corona Bonds'. Whelan (2020)[16] has outlined some of the challenges the ECB is likely to incur if it were to provide a significant stimulus. Nonetheless, clear and specific guidance from European institutions concerning the fiscal strategies available to member state countries is essential over the coming months. The recent Franco-German proposal for the development of a recovery plan providing direct budgetary support to affected areas and regions is a step in the right direction and, by using grants rather than loan finance, would appear to be targeted correctly.

Declining house prices as well as major increases in unemployment are clear indicators of pending issues in relation to mortgage arrears. To date the income supports, as well as repayment breaks, have likely allowed many borrowers to cushion the economic shock. However, if support payments are tapered and payment breaks expire, this will inevitably lead to higher arrears which will require some form of modification or management. Ensuring these dynamics do not hamper the bank lending channel will be important in any recovery phase. Financial

---

14 Corrigan, E., D. Foley, K. McQuinn, R. Slaymaker and C. O'Toole (2019), 'Exploring affordability in the Irish housing market', *The Economic and Social Review* .

15 Allen-Coghlan M. and K. McQuinn (2020). 'Property prices and COVID-19 related administrative closures: What are the implications?'. Economic and Social Research Institute (ESRI) Working Paper 661. Available online at: https://www.esri.ie/system/files/publications/WP661_0.pdf

16 Whelan K. (2020). 'The ECB's Mandate and Legal Constraints', EU Commission Monetary Dialogue Papers June. Available online at: https://www.europarl.europa.eu/cmsdata/207502/Whelan_FINAL%20online.pdf

stability considerations will become increasingly important as the depth and duration of the COVID-19 crisis prolongs.

Special Article

COVID-19 AND EMERGENCY DEPARTMENT ATTENDANCES IN IRISH PUBLIC HOSPITALS

Aoife Brick, Brendan Walsh, Conor Keegan and Seán Lyons[1,2]

ABSTRACT

On 29 February 2020 the first confirmed case of COVID-19 was announced in the Republic of Ireland. In subsequent weeks, progressively more restrictive control measures were introduced in an attempt to 'flatten the curve' and specifically to relieve pressure on emergency and critical care services. Using the most up to date data available on emergency department (ED) attendances in acute public hospitals, this analysis examines the impact on the numbers and types of attendances since the onset of COVID-19. Our analysis shows that there were on average 45.4 per cent fewer ED attendances per day in the week ending 31 March compared to the week ending 1 March. In addition, the reduction in ED attendances appears to be more prevalent in younger age groups. We also show that the proportion of ED attendances across triage categories, used to assess urgency of treatment, remained stable with no substantive changes in the overall proportion of very urgent/immediate attendances. Public information campaigns must encourage people to contact GPs and attend EDs if they require emergency care, and healthcare facilities must ensure that it is safe to do so.

INTRODUCTION

On 29 February 2020 the first confirmed case of COVID-19 was announced in the Republic of Ireland. Since then, progressively restrictive control measures have been introduced in an effort to prevent further spread of the disease (or 'flatten the curve') and ease pressure on hospital resources. On 13 March all schools, colleges and childcare facilities closed, and on 28 March guidance was issued from the Government for the public to stay at home in all but a specified set of circumstances, and all but essential services were closed (NPHET, 2020). On 1 May the Government published a roadmap for reopening society and business (Government of Ireland, 2020). There will be a gradual lifting of COVID-19

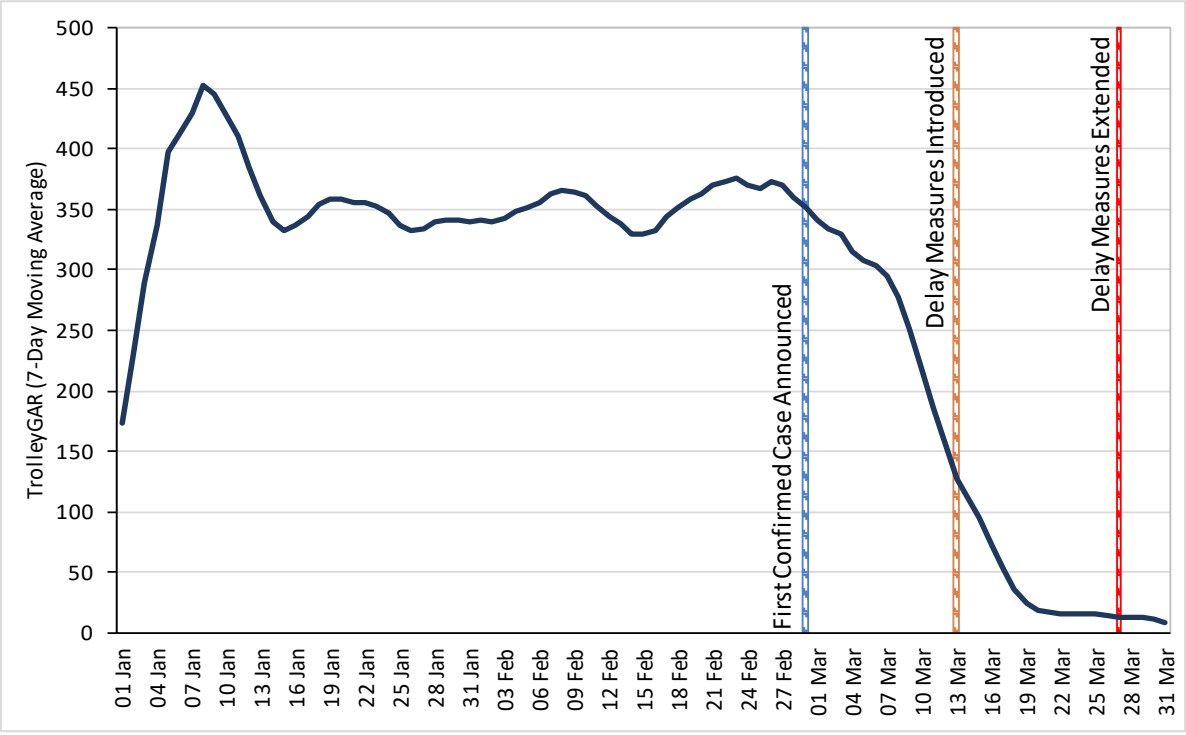
[1] Aoife Brick, Brendan Walsh, and Conor Keegan are Research Officers at the Economic and Social Research Institute and Adjunct Assistant Professors at Trinity College Dublin. Seán Lyons is an Associate Research Professor at the Economic and Social Research Institute and Adjunct Associate Professor at Trinity College Dublin.

[2] This research was conducted under the Department of Health funded ESRI Research Programme in Healthcare Reform. The authors would like to thank the HSE for providing the data necessary for the analysis, and the Department of Health and Sheelah Connolly for comments on an earlier draft of the paper. The views presented in this Article are those of the authors alone and do not represent the views of the HSE, Department of Health, or the Economic and Social Research Institute.

restrictions across five phases beginning on 18 May and on a three-week review process.

Attempts to 'flatten the curve' are partly intended to ameliorate COVID-19 demand pressure on the acute hospital sector, specifically emergency and critical care services. Similar to other countries, Ireland has rapidly implemented substantial changes to its health system to prepare for the prospect of significantly increased demand. In addition, demand for emergency care not related to COVID-19 also appears to have declined rapidly. The net effect of these changes has been a dramatic reduction in emergency department (ED) capacity utilisation.[3] For example, for many years Irish EDs have had large numbers of patients on trolleys in EDs, waiting for long periods for a bed in a ward. Within two weeks of the announcement of the first case of COVID-19 in the Republic of Ireland, this form of queuing had essentially stopped (see Figure 1). The additional capacity created by the cancellation of non-urgent elective activity undoubtedly contributed to the reduction.

FIGURE 1 TROLLEYS OCCUPIED IN EMERGENCY DEPARTMENTS, JANUARY – MARCH 2020



Source: HSE TrolleyGAR, https://www.hse.ie/eng/services/campaigns/trolleygar.html
Note: Number of patients awaiting admissions to an inpatient hospital bed at 8am. Presented as a seven-day moving average.

The need to manage the flow of hospital admissions is further necessitated due to acute care bed capacity being amongst the lowest in the OECD. At the outset of COVID-19 in Ireland, critical care beds in the public hospital system numbered just

[3] Anyone with suspected COVID-19 symptoms was requested to self-isolate and phone their GP. They were told not to go to a GP surgery, pharmacy, or hospital (https://www.gov.ie/en/publication/472f64-covid-19-coronavirus-guidance-and-advice/#symptoms – last accessed 5 May 2020).

248 (HSE, 2019) for its 4.9 million population. However, capacity was increased, and as of 13 April the total stock of critical care beds stood at 500 (excluding additional surge capacity) (HSE, 2020).[4] This includes capacity made available by the private hospital system; on 24 March private hospitals and the Government agreed that during this crisis such facilities would operate essentially as public hospitals (Department of the Taoiseach, 2020). This agreement, signed on 30 March, provided over 2,000 acute beds and 47 critical care beds in addition to ventilators and laboratories for testing (Thomas et al., 2020). In addition to increasing capacity, a substantial proportion of elective hospital care was cancelled or postponed to free-up further workforce and bed capacity for patients presenting with COVID-19.

COVID-19 is having significant impacts on peoples' willingness and ability to access timely healthcare. Serious concerns have been raised by clinicians that patients are foregoing necessary healthcare. In response to reports of non-COVID related attendances to hospital EDs reducing considerably, Chief Medical Officer at the Department of Health, Dr Tony Holohan, stated on 2 April:

> *While protecting yourself from COVID-19 is a priority, no one should ignore signs that they may need medical attention for other ailments such as lumps, chest pain or other concerns. Please do not ignore any symptom outside of COVID-19. The hospitals are there for all ailments, not just COVID-19* (NPHET, 2020).

For countries such as China, Iran and Italy that saw the earliest severe consequences of COVID-19, there is little evidence available to date of the full extent of impacts on ED services. A recent paper examining data from five hospitals in Italy has shown a considerable reduction (up to 88 per cent) in visits to paediatric EDs in March 2020 compared with the same month in 2019 (Lazzerini et al., 2020). More substantial data are emerging from other countries, including England and Scotland, which show large decreases in ED attendances since the onset of the pandemic. Data from NHS England for March 2020 showed a drop in ED attendances of 29.4 per cent on the same month in 2019 (NHS England, 2020). While in Scotland there has been a corresponding drop of approximately one-third in ED attendances (Public Health Scotland, 2020).

This paper examines the most up-to-date data available on ED attendances in Irish public hospitals, to observe if the number of attendances has changed since the onset of the COVID-19 pandemic, and/or the introduction of the associated delay measures by the Government. The paper also investigates whether changes in ED attendances have occurred at similar rates across age-groups. Finally, based on the triage status of ED patients, we examine the extent of differences in the urgency of attendance since the onset of the COVID-19 pandemic.

---

4 Of these 500 beds, 415 were open and staffed (HSE, 2020).

PATIENT EXPERIENCE TIME DATA

The data employed for the analysis are from the Patient Experience Time (PET) database managed by the Business Information Unit at the Health Service Executive. This administrative patient level dataset contains records for all ED attendances across the 30 EDs in Irish public hospitals (see Appendix Table A.1). The data cover all attendances from 1 January 2019 to 31 March 2020. The data do not include attendances at minor injury clinics, Acute Medical/Surgical Assessment Units (AMAU/ASAU), presentations to specialist public hospital EDs (e.g. maternity hospitals) or EDs in private hospitals.

As a consequence of missing information for some attendances, 1.4 per cent of attendances have been excluded from the analysis (Appendix Table A.2). The main reason for exclusion was the apparent misclassification of AMAU/ASAU attendances.[5] Approximately 40 per cent of the excluded cases were from a single hospital.

PET gathers information on hospital of attendance, age, sex, date of attendance, ED referral status, and discharge destination. PET has also begun to gather information on attendances' triage status. PET uses the Manchester Triage System to assign clinical priority to patients based on presenting signs and symptoms (HSE Emergency Medicine Programme, 2018). A score between one and five is given to each attendance with one being the most severe indicating immediate care required and five indicating not urgent. The Manchester Triage System score is a new variable in the PET dataset and as such some hospitals are not yet reporting it. Additionally, some hospitals have a high number of attendances where triage was 'not classified'.[6] After exclusions, approximately 63 per cent of ED attendances in both February and March 2020 remain for analysis of triage. We observe broad agreement in the overall proportions of patients in each triage category compared to a recent European study (Zachariasse et al., 2017).

While PET data may include patients attending with COVID-19 it does not yet report information on a specific reason, or diagnosis, for each attendance.

---

5 Any attendance with a discharge destination of 'Referred to AMAU' or 'Referred to ASAU' has been excluded. We have crossed checked with HIPE data for 2019 which record all discharges from AMAU/ASAU, and hospitals with some of the largest AMAUs have no record in the PET data of referrals to AMAU/ASAU. In addition, all attendances in one hospital with a PET of ≤5 minutes and a discharge destination of 'admitted to ward' have been excluded as they appear to be misclassification of activity other than ED attendances.

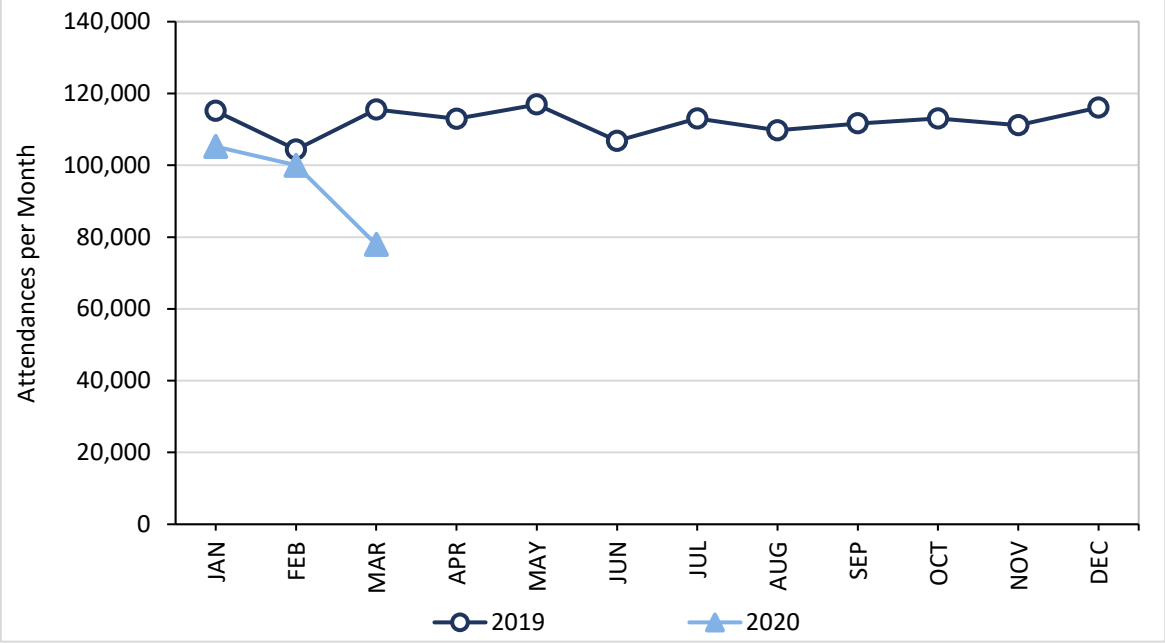
6 While the PET file has data on triage for a selection of hospitals in 2019 some larger hospitals did not report until January 2020. For this reason, our analysis focuses on February and March 2020 when the largest number of hospitals (16 hospitals) were reporting.

FINDINGS

3.1 Attendances

Figure 2 illustrates the total number of attendances in Irish public hospital EDs between 1 January 2019 and 31 March 2020. In January and February year-on-year decreases in the number of attendances were observed, 8.6 per cent and 4.2 per cent respectively (6.7 per cent excluding 29 February). The number of attendances in March 2020 (n=77,932) was 32.5 per cent less than in March 2019 (n=115,497). There is some variation in these figures from year to year (see Appendix Figure A.1); however the sizeable further reduction in March 2020 is likely to be associated with the initial response to the COVID-19 pandemic.

FIGURE 2 ED ATTENDANCES JANUARY 2019 – MARCH 2020

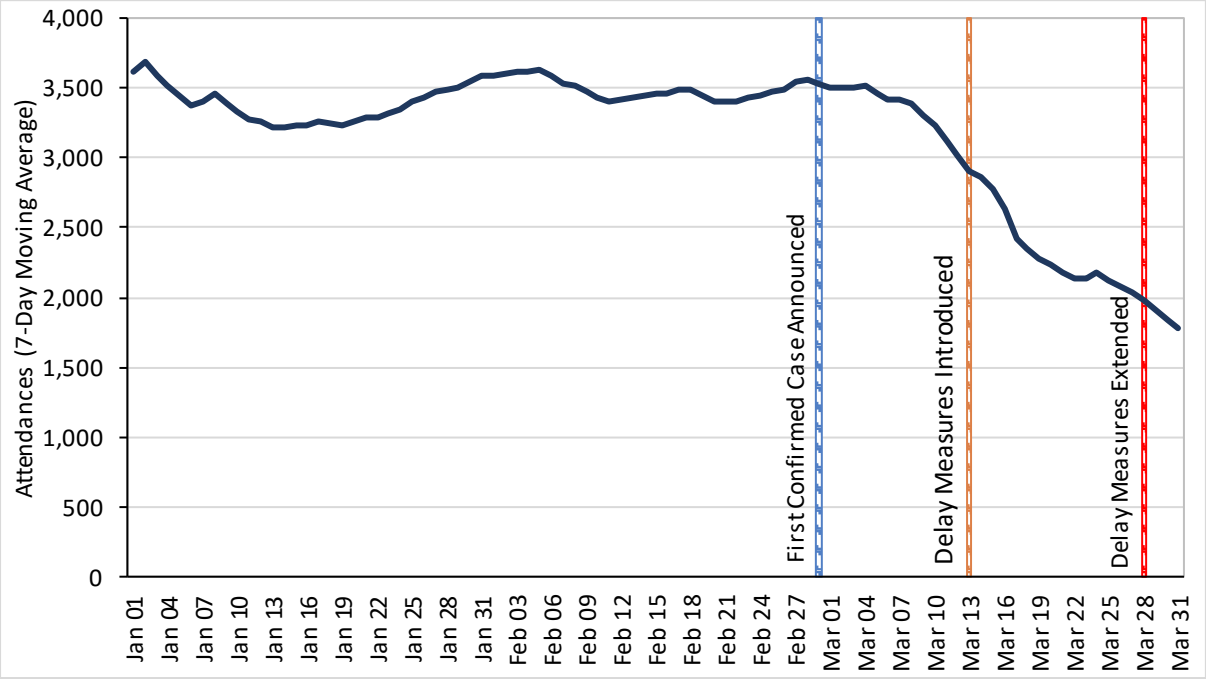


Source: HSE Patient Experience Time Database.

Although Figure 2 shows a noticeable reduction in ED attendances in March 2020, delay measures were only introduced in mid-March. To help illustrate the time profile of the decline over shorter time periods, Figure 3 presents a seven-day moving average of daily ED attendances from 1 January to 31 March across the 30 EDs. The data are presented as a seven-day average to smooth fluctuations in attendances that happen at weekends in the normal course of events, and to provide for a more interpretable trend over time. Between 1 January and 29 February, the number of attendances averaged between 3,200 and 3,700 per day. The average number of daily attendances in the week ending 1 March was 3,503 compared to 1,912 in the week ending 31 March, a decrease of 45.4 per cent.

Figure 3 indicates that the number of attendances began to decrease approximately one week before the first delay measures were introduced and a few days after the first confirmed case was announced.[7]

FIGURE 3 ED ATTENDANCES 01 JANUARY 2020 – 31 MARCH 2020



Source: HSE Patient Experience Time Database.

3.2 Referral patterns

The main pathways to the ED in Ireland are through a General Practitioner (GP) referral (surgery or out-of-hours), or a self-referral, with self-referral being the predominant route. In Q1 of 2019, 36.0 per cent of attendances were referred by a GP (Table 1) with a further 51.9 per cent self-referring. In Q1 2020, there was a decrease in the proportion of GP referrals to 33.6 per cent and an increase in the proportion of self-referrals to 55.6 per cent. Looking at March in particular, the introduction of COVID-19 delay measures appears to be associated with a reduction in the number of attendances across all referral sources; a reduction in the proportion of attendances referred by a GP from 35.1 per cent to 30.2 per cent; and an increase in self-referrals from 54.6 per cent to 58.9 per cent between March 2019 and March 2020. This may be indicative of lower GP use in March 2020, though no information is available to examine this directly.

[7] Similar trends can be seen across regions of hospitalisation (see Appendix Figure A.2).

TABLE 1 TOTAL ATTENDANCES BY SOURCE OF REFERRAL, Q1 2019/20

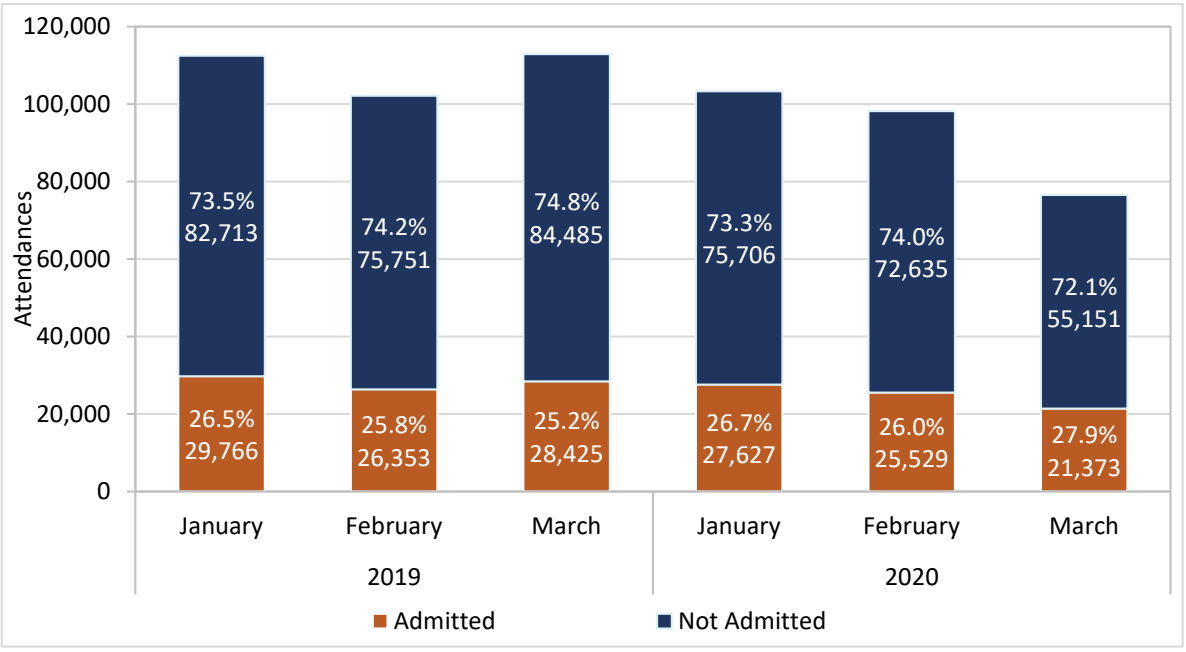
	2019						2020					
	GP Referral		Self-Referral		Other		GP Referral		Self-Referral		Other	
	N	%	N	%	N	%	N	%	N	%	N	%
January	40,898		54,353		17,165		36,275		55,287		11,046	
February	37,411	36.7	53,945	52.9	10,574	10.4	33,635	34.5	53,316	54.7	10,454	10.7
March	39,687		61,769		11,621		22,892		44,632		8,292	
Q1 Total	**117,996**	**36.0**	**170,067**	**51.9**	**39,360**	**12.0**	**92,802**	**33.6**	**153,235**	**55.6**	**29,792**	**10.8**

Source: HSE Patient Experience Time Database.
Note: Totals across tables/figures may vary due to missing values for particular variables.

3.3 Admissions to hospital

Figure 4 shows that in general just over one in every four of those attending at EDs are subsequently admitted to the hospital. The numbers admitted to hospital and not admitted (the majority are discharged home) both saw reductions in March 2020. Figure 4 shows that the number of patients admitted from EDs in March 2020 was 25 per cent lower than the number admitted from EDs in March 2019, and 16 per cent lower than were admitted from EDs in February 2020. Admitted patients did compose a slightly larger proportion (27.9 per cent) of ED attendances in March 2020 than earlier months.

FIGURE 4 ED ATTENDANCES BY ADMISSION STATUS, Q1 2019/2020

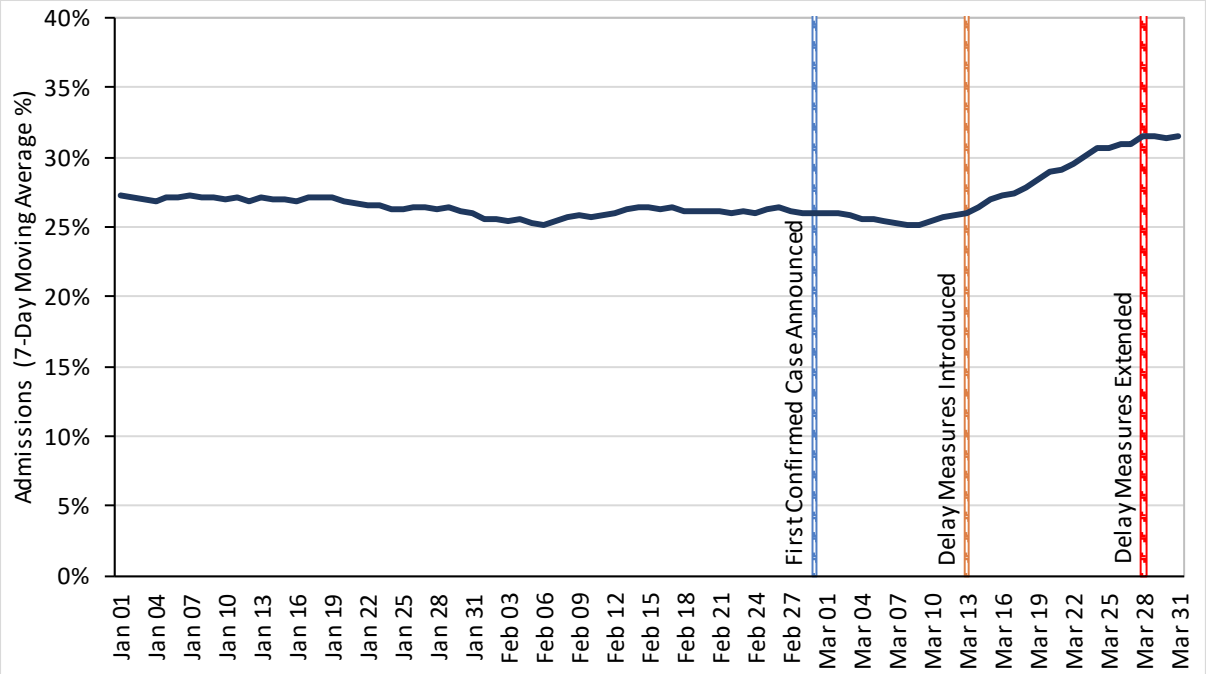


Source: HSE Patient Experience Time Database.
Note: Totals across tables/figures may vary due to missing values for particular variables.

Figure 5 shows that the rise in the proportion of ED attendances admitted to hospital was concentrated in the last two weeks of March. This increase began in a more modest way immediately prior to the introduction of the first delay measures and increased thereafter. This increase may, in part, be driven by

COVID-19 admissions; however a total of just over 600 COVID-19 positive patients (HSE, 2020) had been admitted to hospital as of 31 March, so COVID-19 is unlikely to be the main driver behind this increase.

FIGURE 5 ADMISSIONS AS A PROPORTION OF TOTAL ED ATTENDANCES, 01 JANUARY 2020 – 31 MARCH 2020

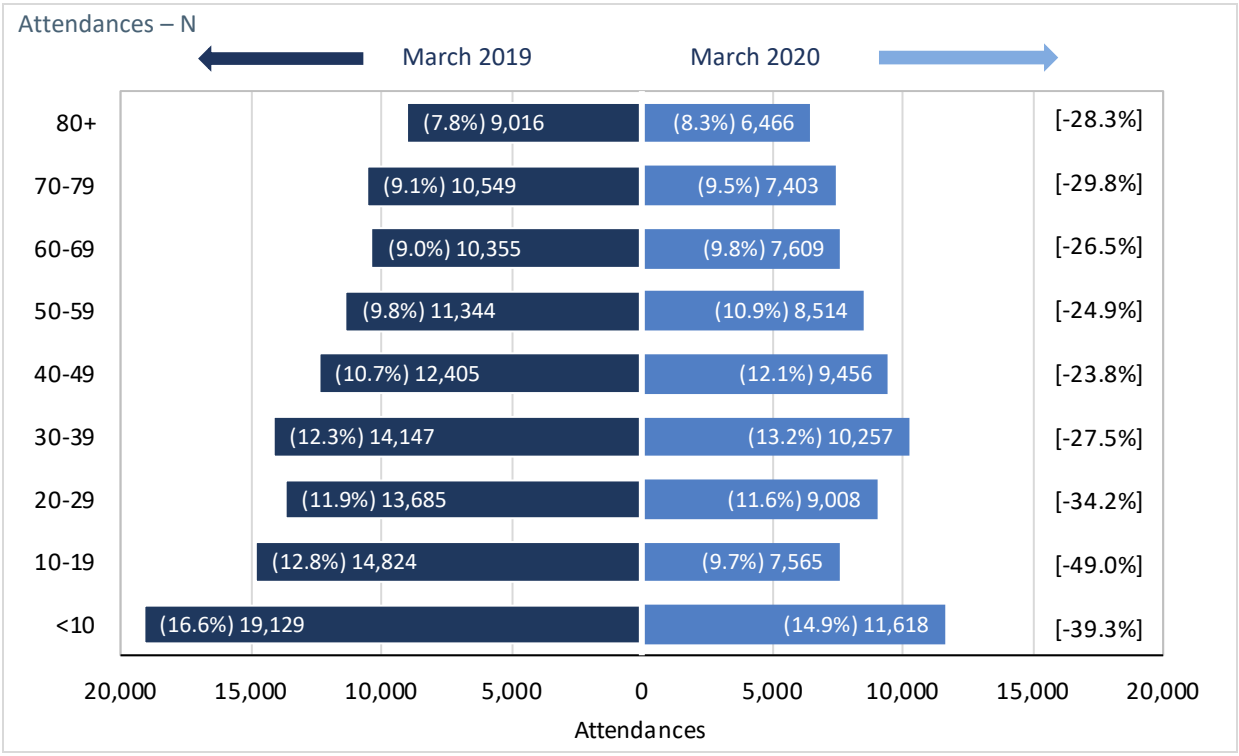


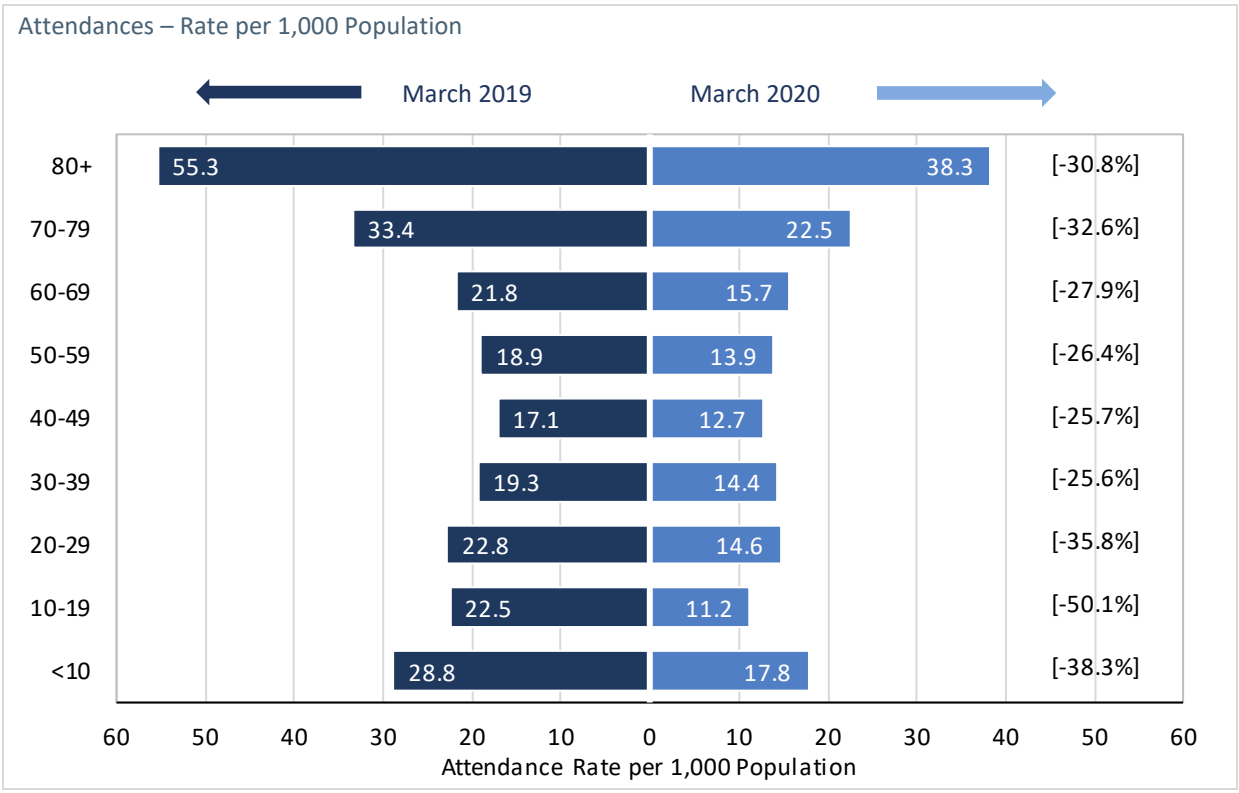
Source: HSE Patient Experience Time Database.
Note: Presented as a seven-day moving average.

3.4 Age profile

The reduction in the number of ED attendances was not evenly distributed across age groups. The largest reductions were seen in the three youngest age groups (Figure 6) with 36 per cent to 50 per cent reductions in attendances per 1,000 population between March 2019 and March 2020.

FIGURE 6 ED ATTENDANCES BY AGE GROUP, N AND RATE PER 1,000 POPULATION, MARCH 2019/2020



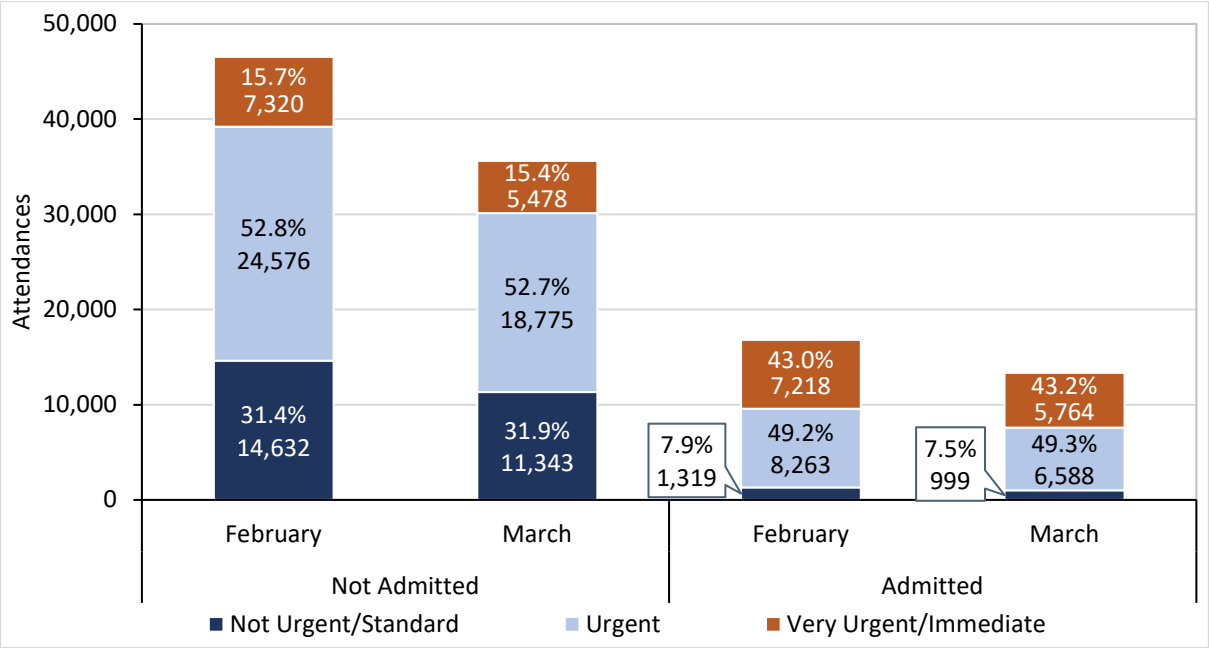


Source: HSE Patient Experience Time Database.
Notes: Totals across tables/figures may vary due to missing values for age. Percentage change in square brackets. Population calculations based on ESRI population estimates for 2019 and 2020.

3.5 Triage

With a large decrease in the number of attendances between February and March 2020 we might expect that the average level of severity was increasing over the period; that is, only the sickest patients were attending the ED. Figure 7 shows that while the number of attendances per month decreased substantially, the proportion of patients within the aggregated triage categories actually remained stable.

FIGURE 7 ED ATTENDANCES BY TRIAGE CATEGORY, FEBRUARY – MARCH 2020



Source: HSE Patient Experience Time Database.
Note: Totals across tables/figures may vary due to missing values for particular variables.

Table 2 shows the proportion of admitted and not admitted attendances in the first and last two weeks of March 2020 with a triage category of 'very urgent/ immediate' by age group. This shows that older patients tend to present more acutely unwell with a higher proportion in the 'very urgent/immediate' triage category.

There has been little change in the proportion of 'very urgent/immediate' attendances in the not admitted group for all age categories, with the exception of the 80 years and older group where the proportion decreased by almost 5 percentage points. For those who were admitted there was an increase in the proportion in the 'very urgent/immediate' category for almost all age groups.

TABLE 2 PROPORTION OF VERY URGENT/IMMEDIATE ATTENDANCES BY ADMISSION STATUS AND AGE GROUP, MARCH 2020

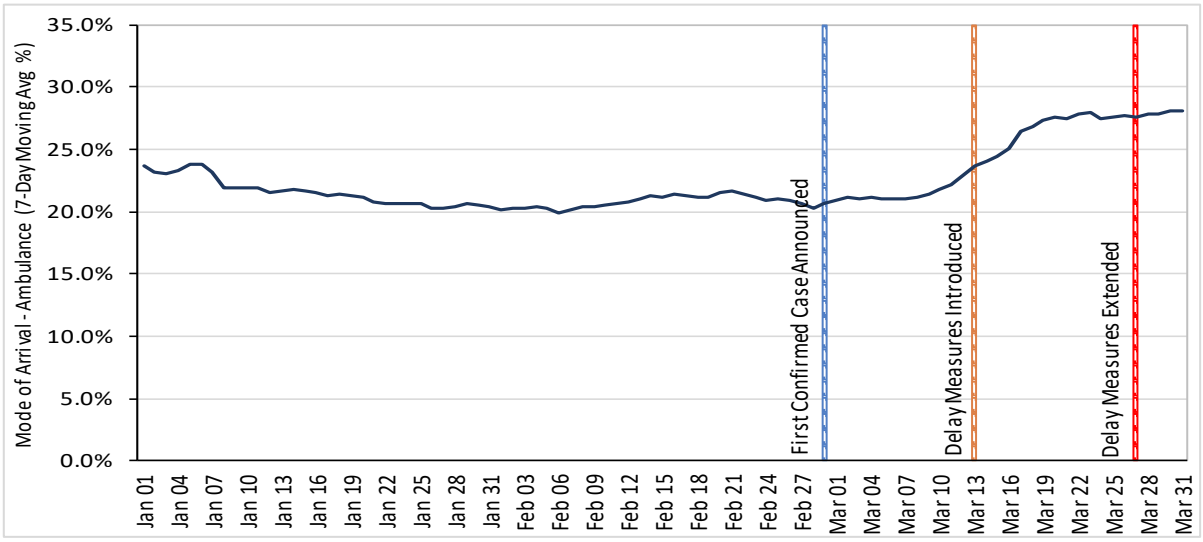
	Not Admitted		Admitted		Total	
	Mar 1-15	Mar 16-31	Mar 1-15	Mar 16-31	Mar 1-15	Mar 16-31
<10 years	15.4	14.6	43.6	42.6	19.9	18.6
10-19 Years	14.6	15.0	37.9	41.5	18.2	20.5
20-29 Years	14.1	14.7	35.3	37.2	17.2	18.6
30-39 Years	15.0	14.9	34.6	37.1	18.6	19.2
40-49 Years	14.6	15.3	37.3	39.9	19.8	20.8
50-59 Years	16.2	16.6	44.8	41.0	24.6	24.2
60-69 Years	16.4	17.0	47.5	46.0	28.5	28.9
70-79 Years	16.5	16.9	45.1	47.6	30.8	33.4
80+ Years	19.9	15.3	45.4	49.6	34.9	37.0
Total	**15.4**	**15.4**	**42.6**	**44.0**	**22.5**	**23.6**

Source: HSE Patient Experience Time Database.
Note: Totals across tables/figures may vary due to missing values for particular variables.

3.6 Mode of arrival

Figure 8 shows a seven-day moving average of the proportion of attendances to arrive at the ED via ambulance from 1 January 2020 to 31 March 2020. It shows that the proportion arriving by ambulance was around 24 per cent in the first few days of January but fell to around 20-21 per cent until 27 February. From 1 March the proportion has increased steadily to an average of just under 30 per cent. There were several days in the last two weeks of March where over one-third of attendances arrived via ambulance. Ambulance arrivals of this magnitude were last seen during Storm Emma at the beginning of March 2018 (see Appendix Figure A.3).

FIGURE 8 PROPORTION OF ATTENDANCES ARRIVING VIA AMBULANCE, 01 JANUARY 2020 – 31 MARCH 2020



Source: HSE Patient Experience Time Database.
Notes: Presented as a seven-day moving average. Three large hospitals currently have a large number of missing values for the admission source variable and have been excluded from the figure. This removes approximately 9 per cent of attendances between 1 January and 31 March 2020.

CONCLUSIONS

The number of ED attendances has noticeably declined since the onset of the COVID-19 pandemic. ED attendances almost halved during March. Attendances have decreased across all age groups and have fallen consistently across triage categories – even the most urgent ones.

There are several possible reasons that might be contributing to the decline in attendance and admissions to EDs. First, some patients requiring urgent medical care may have been deterred from attending the ED for fear of acquiring COVID-19. Second, and related to this first explanation, some individuals may not have attended GPs to obtain a referral to the hospital, or some GPs may have become less likely to refer patients to hospital. Such behavioural explanations probably explain at least part of the reduction; one piece of evidence supporting this view is that ED attendances began to decline about one week before the first delay measures were introduced. Reductions observed are similar to those seen in the UK (NHS England, 2020). For a more in-depth exploration of this aspect of the reduction, data on numbers of patients and types of cases presenting at GP practices would be required, as well as the proportion referred onwards to hospital. These data were not available for analysis.

A third possible reason for the decline is that the probability of injury or illness may have fallen as a result of reduced travel, sport, and social contact. Evidence from the Royal College of General Practitioners (RCGP) in England has shown that less social contact has reduced GP attendances for respiratory infections by more than half between beginning and mid-March, and the reduction occurred prior to the UK 'lockdown' (Jefferson and Heneghan, 2020). Reduced frequency and duration of social interactions may also reduce the spread of respiratory and gastrointestinal diseases, and thereby some ED attendances, particularly amongst children. Lower sports participation may also be reducing injury rates, especially amongst children and young adults. Declines in driving could have reduced traffic accidents. Here too, disentangling the relative contributions of various demand-side factors to the reductions in average admissions would require additional data (on the mix of ED hospital admissions associated with non-COVID infectious diseases, trauma etc.). Such data should eventually be available from the Hospital In-Patient Enquiry (HIPE) database.

While some hospitalised COVID-19 patients are no doubt captured in these data, it is not possible to separate them out as no diagnosis information is available in the data. However, as of 31 March, just over 600 COVID-19 confirmed patients were hospitalised (HSE, 2020). This implies that even if each patient were admitted through ED, the broad conclusions presented here would not be affected. The absence of individuals with less severe COVID-19 symptoms, who might at other times have attended an ED with these symptoms but who are now self-isolating at home, is also unlikely to explain the large reduction in attendances in March.

COVID-19 affects all age groups, however the older population have much higher mortality rates. As a consequence of this, the 27 March guidelines advised cocooning for vulnerable populations and those aged 70 years and older. We do find slightly larger reductions in attendance rates for those aged 70 years and older compared to younger adults. However, across all age groups, children saw the largest percentage reductions in ED attendance rates.

This analysis has examined the initial impacts of the COVID-19 crisis on ED attendance using data to the end of March 2020. However, it is possible that patterns of ED attendance may have continued to change in recent weeks as the COVID-19 crisis has intensified. We understand that there has been some recovery in ED attendances in April, with further recovery likely in May as restrictions are eased, but we do not have the data to show the scale of any reversal as yet.

While there may be a number of reasons for reducing demand for ED care, peoples' behaviour is likely to be the main factor. Further public information campaigns may be required to encourage and reassure people with symptoms to contact their GP or attend an ED where appropriate. Further work on the stabilisation and hopefully recovery in the number of ED attendances will be possible in future as newer data become available.

REFERENCES

Department of the Taoiseach (2020). 'Speech of An Taoiseach, Leo Varadkar TD, Post Cabinet Statement', Tuesday 24 March 2020. Dublin.

Government of Ireland (2020). *Roadmap for Reopening Society & Business*. Dublin.

HSE (2019). *National Adult Critical Care Capacity and Activity Census Report 2019.* https://www.hse.ie/eng/about/who/cspd/ncps/critical-care/critical-care-capacity-planning/national-adult-critical-care-capacity-census-2019-report.pdf.

HSE (2020). *COVID-19 Daily Operations Update: Acute Hospitals Performance Management and Improvement Unit*, – 2000hrs 13 Monday April 2020. https://www.hse.ie/eng/services/news/newsfeatures/covid19-updates/covid-19-daily-operations-update-20-00-13-april-2020.pdf.

HSE (2018). 'Emergency Medicine Programme. Emergency Medicine Infographic'. https://www.hse.ie/eng/services/publications/clinical-strategy-and-programmes/infographic-emergency-medicine.pdf.

Jefferson T. and C. Heneghan (2010). 'What does RCGP surveillance tell us about COVID-19 in the community?'. https://www.cebm.net/covid-19/what-does-rcgp-surveillance-tell-us-about-covid-19-in-the-community.

Lazzerini M., E. Barbi, A. Apicella, F. Marchetti and G.T. Cardinale (2020). 'Delayed access or provision of care in Italy resulting from fear of COVID-19', *The Lancet Child & Adolescent Health*. 2020; 4(e10-e1).

NHS England (2020). 'A&E Attendances and Emergency Admissions March 2020 Statistical Commentary'. https://www.england.nhs.uk/statistics/wp-content/uploads/sites/2/2020/04/Statistical-commentary-March-2020-jf8hj.pdf.

NPHET (2020). 'Statement from the National Public Health Emergency Team – Thursday 2 April'. https://www.gov.ie/en/press-release/8f3039-statement-from-the-national-public-health-emergency-team-thursday-ap/.

Public Health Scotland (2020). 'NHS Performs – weekly update of emergency department activity and waiting time statistics – Week ending 12 April 2020'. https://beta.isdscotland.org/find-publications-and-data/health-services/hospital-care/nhs-performs-weekly-update-of-emergency-department-activity-and-waiting-time-statistics.

Thomas S., C. Darker, A. Nolan, S. Barry, K. Kelleher and S. Burke (2020). 'Ireland's Response to the Coronavirus Pandemic'. https://www.cambridge.org/core/blog/2020/04/06/irelands-response-to-the-coronavirus-pandemic.

Zachariasse J.M., N. Seiger, P.P. Rood, C.F. Alves, P. Freitas, F.J. Smit, et al. (2017). 'Validity of the Manchester Triage System in emergency care: A prospective observational study'. PLoS One. 2017;12(2):e0170811. 10.1371/journal.pone.0170811

APPENDIX

TABLE A.1 PUBLIC HOSPITAL EMERGENCY DEPARTMENTS BY HOSPITAL GROUP

Children's Hospital Group	Dublin Midlands Hospitals Group
CHI at Crumlin	MRH Portlaoise
CHI at Tallaght	MRH Tullamore
CHI at Temple St	Naas General Hospital
	St. James's Hospital
	Tallaght University Hospital
Ireland East Hospitals Group	**South/South West Hospitals Group**
Mater Misericordiae University Hospital	Cork University Hospital
MRH Mullingar	Mercy University Hospital
Our Lady's Hospital, Navan	South Tipperary General Hospital
St. Luke's General Hospital, Kilkenny	UH Kerry
St. Michael's Hospital[a]	UH Waterford
St. Vincent's University Hospital	
Wexford General Hospital	
RCSI Hospitals Group	**Saolta Hospital Group**
Beaumont Hospital	Galway University Hospitals
Cavan General Hospital	Letterkenny University Hospital
Connolly Hospital	Mayo University Hospital
Our Lady of Lourdes Hospital	Portiuncula University Hospital
	Sligo University Hospital
University of Limerick Hospitals Group	
UH Limerick	

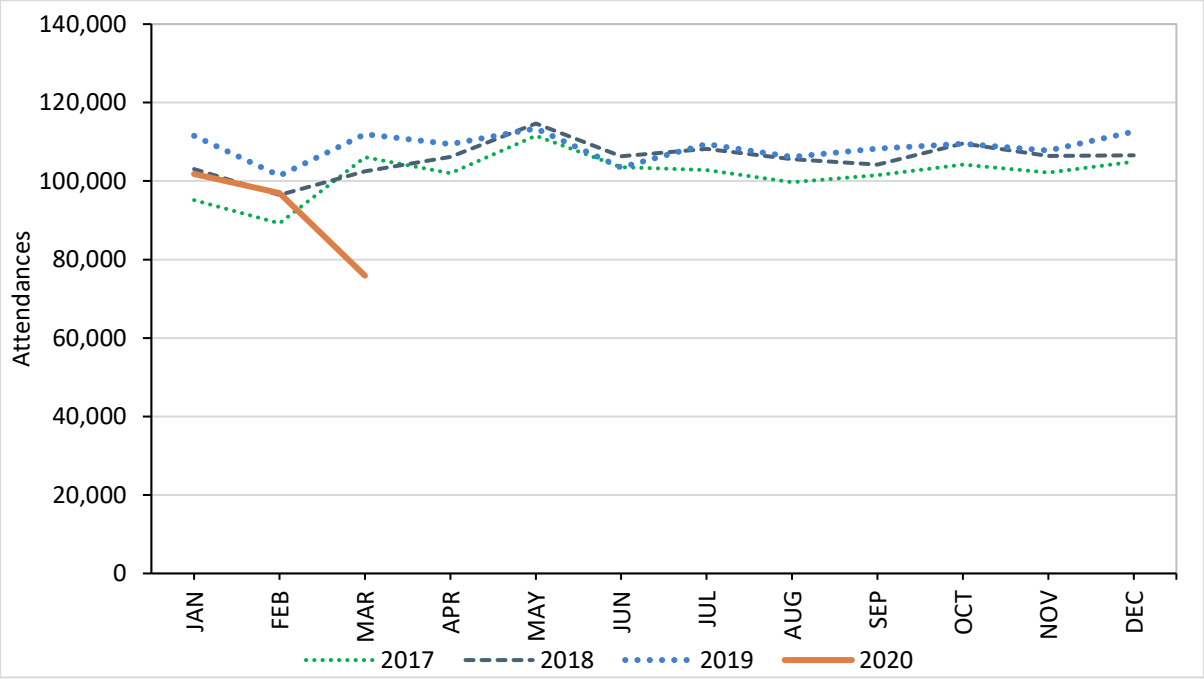
Notes: a Open 08:00 to 20:00 seven days per week.

TABLE A.2 ANALYSIS INCLUSIONS AND EXCLUSIONS, Q1 2019/2020

	2019			2020		
	Include	Exclude	Total	Include	Exclude	Total
	N	N (%)	N	N	N (%)	N
January	115,092	1,866 (1.6%)	116,958	105,201	1,543 (1.4%)	106,744
February	104,366	1,468 (1.4%)	105,834	99,989	1,206 (1.2%)	101,195
March	115,497	1,519 (1.3%)	117,016	77,932	1,205 (1.5%)	79,137
April	112,937	1,572 (1.4%)	114,509			
May	116,898	1,565 (1.3%)	118,463			
June	106,754	1,198 (1.1%)	107,952			
July	113,020	1,677 (1.5%)	114,697			
August	109,715	1,293 (1.2%)	111,008			
September	111,654	1,449 (1.3%)	113,103			
October	113,006	1,464 (1.3%)	114,470			
November	111,161	1,282 (1.1%)	112,443			
December	116,057	1,213 (1.0%)	117,270			
Total	**1,346,157**	**17,566 (1.3%)**	**1,363,723**	**283,122**	**3,954 (1.4%)**	**287,076**

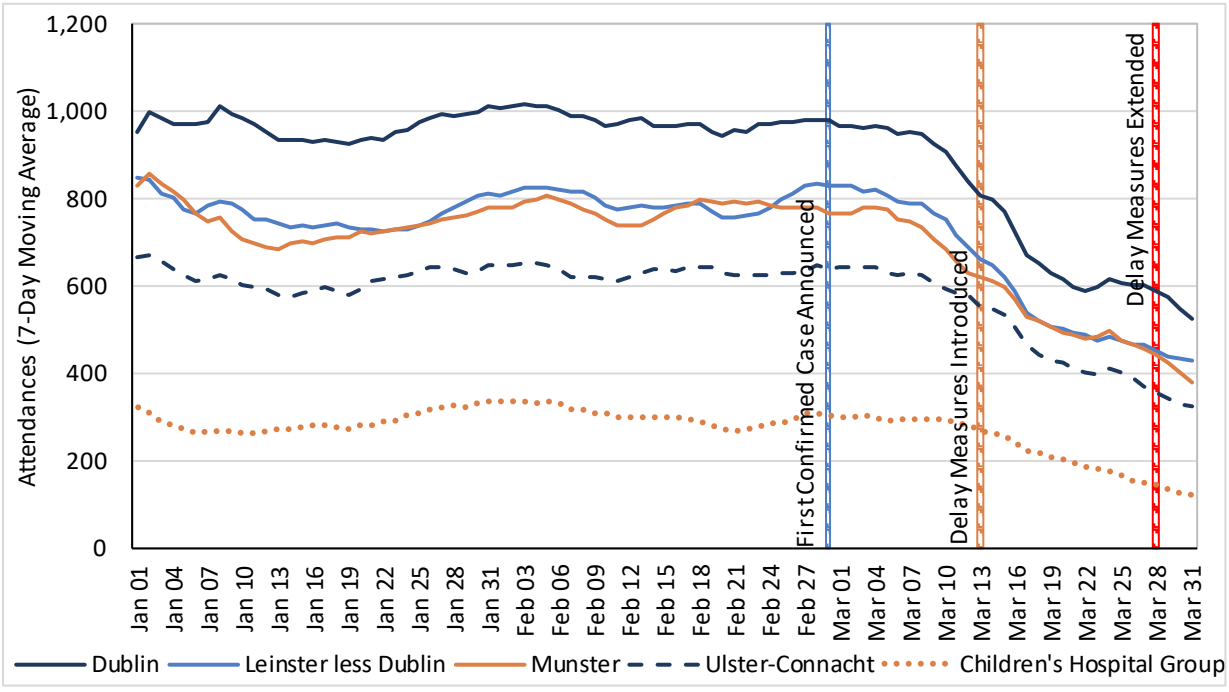
Source: HSE Patient Experience Time Database.

FIGURE A.1 ED ATTENDANCES JANUARY 2017 – MARCH 2020



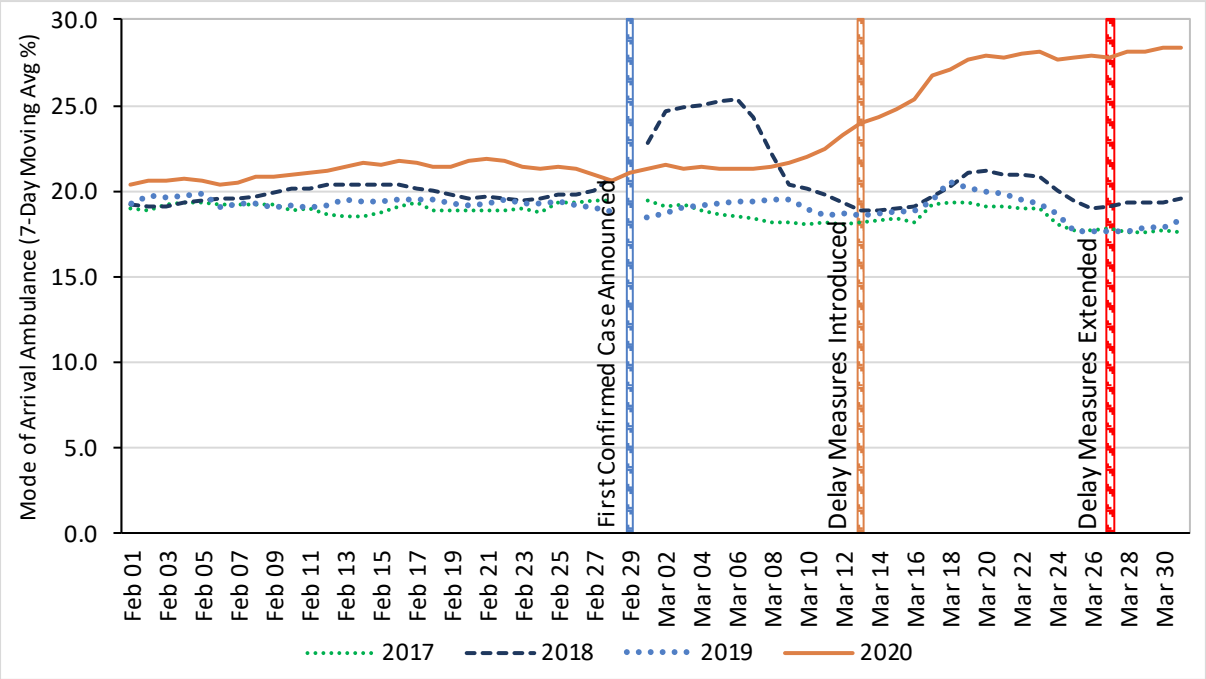
Source: HSE Patient Experience Time Database.
Note: Totals across figures/tables may vary due to missing values for particular variables. Two hospitals are excluded from the analysis in this figure to provide a consistent trend as they only began reporting to the PET in 2019.

FIGURE A.2 ED ATTENDANCES BY REGION OF HOSPITALISATION, DAILY, Q1 2020



Source: HSE Patient Experience Time Database.
Note: Totals across figures/tables may vary due to missing values for particular variables. Presented as a seven-day moving average.

FIGURE A.3 PROPORTION OF ATTENDANCES ARRIVING VIA AMBULANCE, DAILY, FEBRUARY AND MARCH 2017 – 2020



Source: HSE Patient Experience Time Database.

Note: Totals across figures/tables may vary due to missing values for particular variables. Presented as a seven-day moving average. Three large hospitals currently have a large number of missing values for the admission source variable and have been excluded from the figure. Two hospitals are excluded from the analysis in this figure to provide a consistent trend as they only began reporting to the PET in 2019.

Whitaker Square,
Sir John Rogerson's Quay,
Dublin 2
Telephone **+353 1 863 2000**
Email **admin@esri.ie**
Web **www.esri.ie**
Twitter **@ESRIDublin**
ISSN 0376-7191
ISBN 978-0-7070-0526-3

ESRI ECONOMIC & SOCIAL RESEARCH INSTITUTE