# QUARTERLY ECONOMIC COMMENTARY

## AUTUMN 2020

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

EVIDENCE FOR POLICY
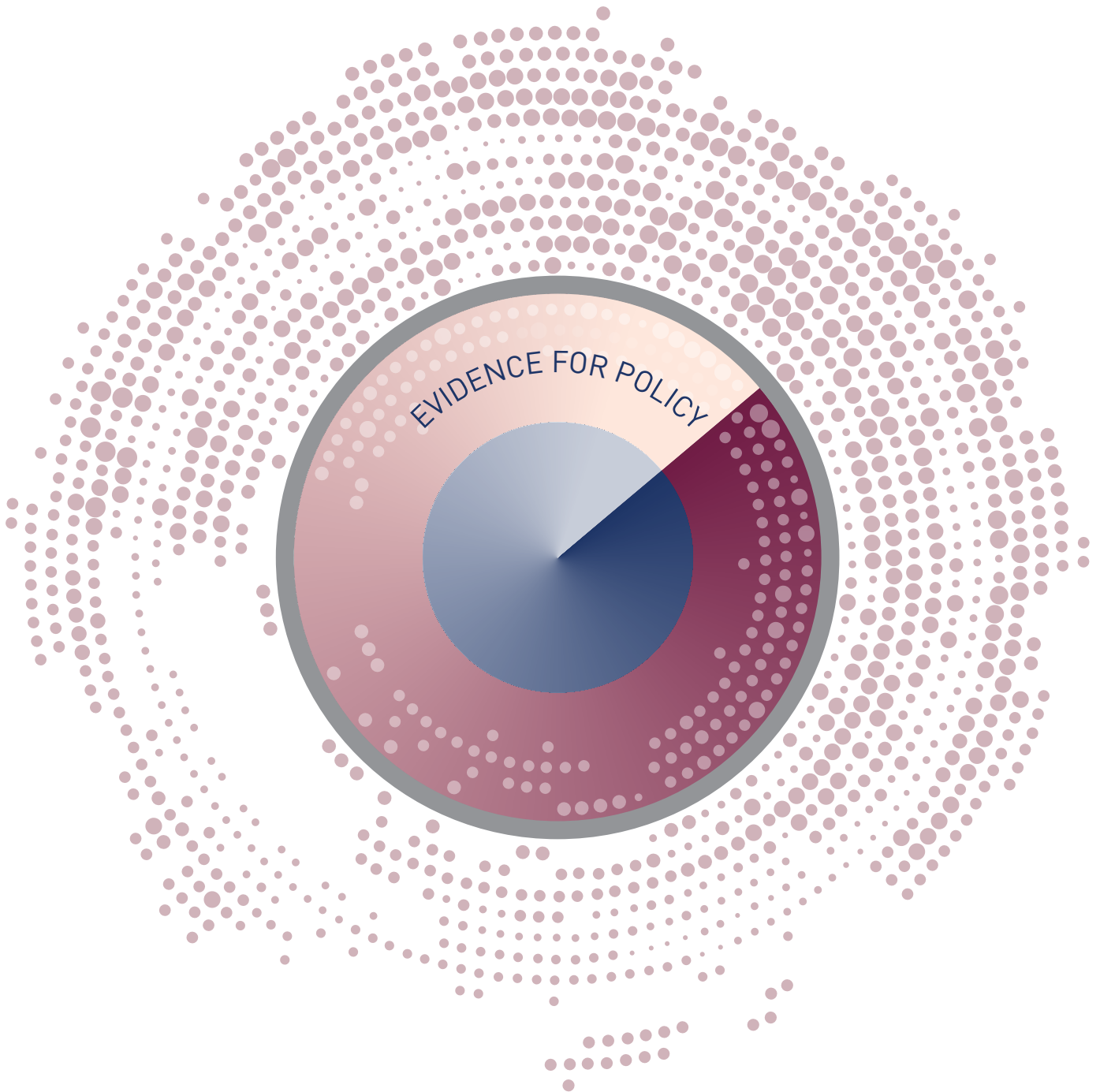
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Kieran McQuinn

Conor O'Toole

Matthew Allen-Coghlan

Cathal Coffey

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The forecasts in this *Commentary* are based on data available by 23 September 2020

Draft completed on 28 September 2020

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## 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.

*Research Notes* are short papers on focused research issues. They are subject to refereeing prior to publication.

*Special Articles* are published in the *QEC* in order to foster high-quality debate on various aspects of the Irish economy and Irish economic policy. They are subject to refereeing prior to publication.

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|---|---|---|---|
| **Output (Real Annual Growth %)** | | | |
| **Private Consumer Expenditure** | 3.2 | -9.2 | 5.0 |
| **Public Net Current Expenditure** | 6.3 | 10.0 | 2.5 |
| **Investment** | 74.8 | -17 | 8.0 |
| **Exports** | 10.5 | 1.7 | 6.1 |
| **Imports** | 32.4 | -6.1 | 6.5 |
| **Gross Domestic Product (GDP)** | 5.6 | -1.8 | 6.3 |
| **Gross National Product (GNP)** | 3.4 | -2.3 | 5.2 |
| | | | |
| **Labour Market** | | | |
| **Employment Levels ('000)** | 2,322 | 2,013 | 2,239 |
| **Unemployment Levels ('000)** | 121 | 405 | 246 |
| **Unemployment Rate (as % of Labour Force)** | 5.0 | 16.8 | 9.9 |
| | | | |
| **Public Finances** | | | |
| **General Government Balance (€bn)** | 1.3 | -25.4 | -15.0 |
| **General Government Balance (% of GDP)** | 0.4 | -7.3 | -3.9 |

## The Irish Economy – Overview

The Irish economy is continuing to struggle with the impacts of COVID-19. As of September 2020, the adjusted unemployment rate was 14.7 per cent compared with 4.9 per cent in February. It is clear that there has been a significant amount of variation across the economy in terms of the impact of the pandemic. While domestic-focused sectors and those operating in arts, entertainment, accommodation and hospitality have suffered severely, certain exporting sectors (in particular medicinal and pharmaceutical activities) have continued to grow in Q2 2020 even during the lockdown.

Based on the relatively strong export performance, we believe the headline GDP figure will now only decline by 1.8 per cent in 2020. However, consumption and investment are likely to witness declines of 9.2 and 17 per cent, respectively, with the unemployment rate set to be over 12.5 per cent by the end of the year.

As well as the ongoing issues due to COVID-19, the Irish economy may also be the subject of additional contractionary pressures in 2021 because of a Disorderly No-Deal Brexit. In the *Commentary* Bergin and Garcia-Rodriguez examine the potential combination of an adverse Brexit outcome and the ongoing pressures due to COVID-19.

Overall, our assessment is that in the absence of a trade agreement between the EU and the UK, the Irish economy will grow by just 3.3 per cent in 2021. If such an agreement is in place, the domestic economy could grow nearly twice as rapidly at 6.3 per cent.

The *Commentary* also publishes a number of Special Articles which deal with both the impact of COVID-19 on the Irish economy and housing sector, as well as the proposal of new indicators of economic welfare which are not as susceptible to distortions from the multinational sector as traditional, headline indicators. A Research Note is also published which examines the impact that the pandemic has had on Irish exports

## The Domestic Economy

### OUTPUT

*Key Points*

- *Overall, Irish GDP is set to contract by 1.8 per cent in 2020 and grow by approximately 6.3 per cent in 2021 under our Baseline scenario;*

- *If a Disorderly No-Deal outcome occurs between the EU and the UK then output growth in 2021 will slow to 3.3 per cent.*

*Forecast scenarios*

The Irish economy is set to face two significant challenges over the next 12 to 18 months; these are ongoing economic disruption stemming from the impact of COVID-19 and the possibility of a Disorderly No-Deal Brexit between the European Union and the United Kingdom. Accordingly, in this *Commentary*, we evaluate the likely future path for the Irish economy between now and the end of 2021 in the following manner:

- For 2020, we construct one forecast, which assumes that the current COVID-19 conditions will continue until the end of the year. This means that the current set of restrictions will be in place for that period;

- For 2021, our Baseline forecast has two main assumptions. First, it assumes that COVID-19 related restrictions escalate and deescalate in different regions throughout the year. Second, it assumes that a free trade arrangement is agreed between the EU and the UK such that a Disorderly No-Deal Brexit is avoided. However, given the very real risk that a Disorderly No-Deal Brexit will occur, we also provide a second GDP scenario for 2021 assuming a WTO style relationship exists between the EU and the UK as a result. For the second scenario, we draw heavily upon the work of Daly and Lawless (2020) and Box 1 in the *Commentary* by Bergin and Garcia-Rodriguez.

For 2020, our forecasts indicate that the Irish economy will contract by just 1.8 per cent. This is a much better outcome for the year than had been envisaged in earlier *Commentaries*. Such an outcome is mainly due to the performance of the export sector, where there was a significant increase in pharmaceutical and medical related exports during the year. The relatively strong GDP numbers also mask the extensive economic disruption that has occurred across many sectors and is evident in the labour market and consumption data. In a *Research Note* in this *Commentary*, O'Toole (2020) notes that despite the GDP decline being relatively benign compared to other countries, the fall in household spending has been one

of the largest in the EU, while the disruption to many domestic sectors such as arts, accommodation, hospitality, and even the construction sector during the lockdown was high by European standards. In this regard, even with the better than expected GDP figures, the severity of the shock to household expenditure and domestic investment activity is closely in line with our previous considerations.

For 2021, under our Baseline forecast we expect the Irish economy to recover quite strongly despite the ongoing presence of the COVID-19 restrictions. Consumption and investment are expected to grow in a robust manner while net trade is also expected to contribute to growth in 2021. However, both exports and imports are set to grow on a more modest scale than in recent years as the global economy is still set to experience reduced growth rates in the coming year. Overall, this results in an increase in Irish GDP of 6.3 per cent in 2021.

Under our alternative scenario, where no deal is reached between the UK and the EU and as a result a WTO arrangement occurs, there is a significant short-term impact on the Irish economy. As outlined in Box 1 by Bergin and Garcia-Rodriguez, the impact of a Disorderly No-Deal Brexit has significant negative implications for the domestic economy, which tend to accumulate over the longer term. In the *Commentary*, we have taken these estimates and worked out what the impact of disorderly Brexit will be in the shorter term. A similar analysis was conducted in Economides and McQuinn (2019).[1] Our analysis indicates that Irish GDP will now only grow by 3.3 per cent in 2021 in the event of no deal being reached between the UK and the EU.

Note that in the following Box, the impacts of both COVID-19 and Brexit on headline economic variables is with respect to a no-pandemic baseline growth rate for 2020. The Box also considers a number of COVID-19 scenarios other than those examined in the *Commentary*.

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[1]    Box 1 'A reassessment of the impacts of different Brexit type scenarios on the short-term forecast of the Irish economy', in *Quarterly Economic Commentary* Spring 2019, Economic and Social Research Institute.

**BOX 1        EXPLORING THE IMPACTS OF COVID-19, A HARD BREXIT AND RECOVERY PATHS FOR THE ECONOMY**

The COVID-19 public health crisis has precipitated a massive global and domestic economic shock. The economic outlook is extremely uncertain and depends critically on the development of the pandemic, the stringency of continued and/or new containment measures, the success of such measures in controlling the spread of the virus and the possibility of an effective vaccine. The economic impact of the pandemic and the associated public health measures is most noticeable in the labour market which has gone from a situation of essentially full employment at the beginning of the year to recording an unprecedented unemployment rate of over 30 per cent in April (when Pandemic Unemployment Payment recipients are classified as unemployed). More recently, the relaxation of the strict public health measures and the gradual opening up of the economy has seen this rate almost halve in August. It is also clear that the impact of the pandemic is very unevenly distributed across sectors. The Quarterly National Accounts (QNA) for the second quarter (when the strictest measures were in place) show that output in the non-traded sector (which is more reliant on domestic demand) fell by a massive 26.4 per cent compared to a fall of just 4.4 per cent in traded sector output, highlighting the dual speed nature of the economy. Some leading indicators of activity point to a rebound in the economy in the second half of the year but the strength and timing of any recovery is highly uncertain.

In this Box, we explore a range of alternative scenarios for the Irish economy using our structural macro-econometric model COSMO. Our approach is to replicate the initial shock in H1 2020 in COSMO and to examine a series of alternative adjustment paths for the economy over the short to medium term. The pandemic is affecting the economy through a number of channels, mainly through lower consumption and employment, temporary closures and restrictions in some sectors, and lower growth in the international economy that affects global demand for Irish exports in some sectors. There is very limited research to draw on to calibrate potential adjustment paths, and there are a significant number of unknown factors, so we consider a range of COVID-19 scenarios that aim to capture more benign to more negative outcomes. We explore three main scenarios, labelled *Recovery*, *Delayed Recovery* and *2nd Wave*; the scenarios differ in terms of the timing of the recovery, whether there is some permanent loss in output and whether there is another resurgence of the virus. We also investigate another threat facing the economy, the possibility of a No-Deal Brexit where the UK leaves the EU in January 2021 without a free trade agreement in place. The international modelling work generally characterises the pandemic as a temporary shock with severe short-run impacts that may have medium-term consequences; while Brexit is probably best described as a long-run permanent shock that has highly uncertain short-run impacts.

*Scenarios*

For each scenario, our counterfactual is a no-pandemic baseline which assumes a Free Trade Agreement (FTA) between the UK and EU being in place by the beginning of 2021. Each of the alternative scenarios can be compared to this no-pandemic baseline to provide estimates of the potential impact of the COVID-19 shocks. The main assumptions underpinning each scenario are as follows:

- In each scenario, we use H1 data from the Quarterly National Accounts and Labour Force Survey to calibrate the shocks to output and employment in the non-traded sector and personal consumption. In the *Recovery* scenario, there is some rebound in non-traded output and employment in Q3 2020 (an improvement of approximately 20 per cent over the Q2 levels) and output and employment return to no-pandemic baseline levels by Q4 2023. We offset the initial shocks to consumption in H2 and let the model determine the path for consumption thereafter. In the *Delayed Recovery* scenario, continued uncertainty and/or the continuation of new public health measures results in the pace of the recovery being weaker. In this scenario, the offset to the consumption shock is prolonged until the end of 2021. Furthermore, we assume output and employment in the non-traded sector return to 95 per cent of no-pandemic baseline levels by Q4 2024. This scar, or permanent loss of output and employment, is difficult to calibrate but recent research suggests there could be some permanent losses in output. In the *2nd Wave* scenario, we assume a second wave of the virus in Q4 2020, the economic impact of which is equivalent to three-quarters of the shock observed in Q2 2020. We assume that the timing of the recovery is in line with the *Recovery* scenario but we incorporate the same scar as in the *Delayed Recovery* scenario. It is possible in the *2nd Wave* scenario that the scar or permanent loss to output could be larger if consumers and firms significantly adjust their behaviour (e.g. firms may continue to delay investment decisions, consumers may engage in more precautionary savings) in anticipation of further public health restrictions.

- In COSMO, lower output will indirectly lead to lower investment. However, due to the uncertainty facing firms we also directly shock investment in the traded and non-traded sectors so that investment falls by around 30 per cent in Q2 2020. We assume that much of this represents delayed investment decisions and offset or neutralise around two-thirds of the shock in 2021. We apply the same shock to each scenario.

- The global nature of the pandemic will affect Ireland through a change in external conditions. We incorporate NIESR's analysis (Hurst et al., 2020)[2] which examines the international impact of the virus using their global model NiGEM. Their international shock includes reduced consumer spending, an increase in business uncertainty, a reduction in hours of work due to illness, and a temporary lockdown of economies. Recent data show that the export sector has held up pretty well in H1 and it appears that the sectoral structure of Irish exports is helping to alleviate the worst impacts of the pandemic. As a result, we scale back (to 75 per cent) the world demand shock in the *Recovery* and *2nd Wave* scenarios. In the *Delayed Recovery* scenario, we assume a protracted recovery in world demand where it returns to the no-pandemic baseline by Q4 2022.

- Each scenario includes the government support measures in terms of transfers/ income supports, extra government spending in health and other business and household support programmes. The high level of government intervention will

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[2]     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.

dampen the negative impact of the crisis and arguably increase the likelihood of a more rapid recovery in the economy.

- Finally, migration has traditionally been one of the mechanisms through which the Irish labour market has adjusted to shocks. However, given the nature of the public health shock it is reasonable to assume that this mechanism may be closed off because of uncertainty, lower confidence, travel restrictions etc. In each scenario, we assume there is no net migration in 2020 and thereafter it is set equal to the no-pandemic baseline levels, implying that migration will not act as an adjustment mechanism for the labour market as it has done in the past.

*Scenario Results*

Figure A shows the level of GDP in the no-pandemic baseline and the three scenarios (LHS) and the percentage deviation from no-pandemic baseline of GDP for each scenario (RHS). The negative economic impacts peak in Q2 of 2020 and the economy rebounds thereafter but at different speeds in each scenario. Compared to the no-pandemic baseline, our results suggest a strong reduction in output in 2020 of around 7 per cent in the *Recovery* scenario, 8 per cent in the *2ⁿᵈ Wave* scenario and 9.5 per cent in the *Delayed Recovery* scenario.[3] In the *Recovery* scenario, output remains below no-pandemic baseline until the middle of 2023 and surpasses the no-pandemic baseline slightly over the medium term as downward pressure on wages helps to improve competitiveness. In the *2nd Wave* and *Delayed Recovery* scenarios, the permanent loss of output in the non-traded sector means that although output largely recovers it remains below the no-pandemic baseline over the medium term.

**FIGURE A    COVID-19, IMPACT ON GDP**
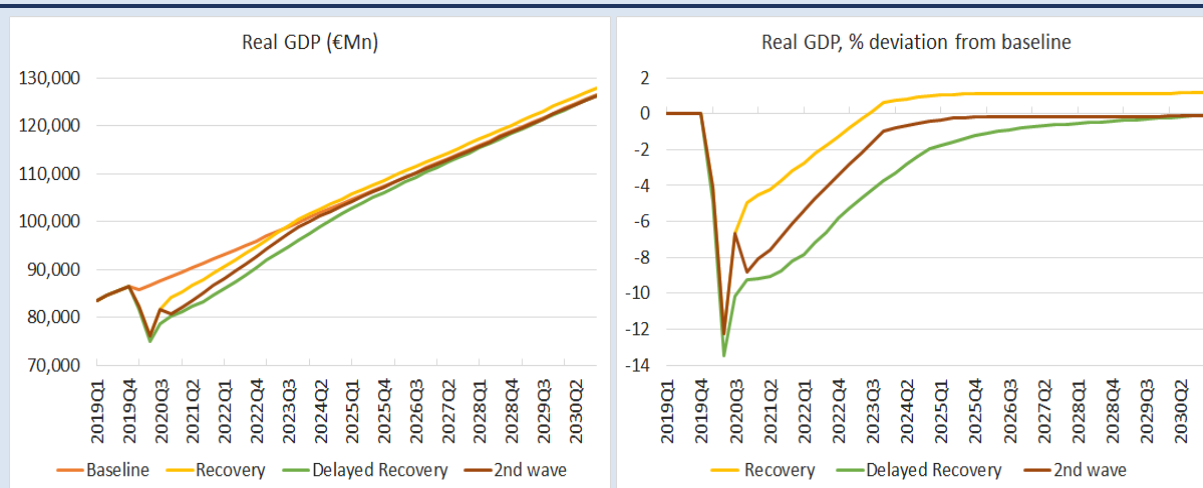


*Source:*          Authors' calculations.

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[3]    These scenario results are presented relative to a no-pandemic baseline, thus they capture both the kinds of fall in activity discussed elsewhere in the *Quarterly Economic Commentary* and also the loss in activity associated with the fact that prior to the pandemic the economy had been expected to grow at a benign pace over the short to medium term.

Table A shows the main results for key aggregates for each scenario. The shocks to consumption and employment have more severe effects for non-traded output than traded output. In each scenario, the shock to the international economy is more muted than the domestic shocks so the ultimate impacts on exports and traded sector output are relatively weaker, indicating the traded sector is helping to lessen the negative effects of the pandemic. Our results indicate that the large shocks to employment will take some time to unwind, and even with a relatively strong recovery, employment remains below no-pandemic baseline until the middle of 2023, 2024 and 2026 in the *Recovery, 2nd Wave* and *Delayed Recovery* scenarios respectively, while the unemployment rate returns to no-pandemic baseline a few quarters after. Although the pandemic has a considerable negative impact on output in the short run, it is important to stress that the economy will grow over the medium term; in each of the three scenarios the implied growth rate over the 2023-2030 period is around 4 per cent per annum.

**TABLE A    IMPACT OF THE DIFFERENT COVID-19 SCENARIOS, DEVIATION FROM NO-PANDEMIC BASELINE**

| | Recovery Scenario | | | | Delayed Recovery | | | | 2nd Wave | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **2020** | **2021** | **2022** | **23-30** | **2020** | **2021** | **2022** | **23-30** | **2020** | **2021** | **2022** | **23-30** |
| **Percentage deviation from no-pandemic Baseline level:** | | | | | | | | | | | | |
| GDP | -7.0 | -3.9 | -2.0 | 0.9 | -9.5 | -8.8 | -6.8 | -1.4 | -8.0 | -7.2 | -4.4 | -0.4 |
| GVA, Traded sector | -4.5 | -2.0 | -0.8 | 0.6 | -8.5 | -9.3 | -7.0 | -0.6 | -4.5 | -2.0 | -0.7 | 0.8 |
| GVA, Non-traded sector | -16.0 | -10.9 | -6.3 | -0.2 | -16.1 | -12.9 | -10.6 | -5.5 | -18.2 | -18.8 | -13.0 | -5.3 |
| Consumption | -8.9 | -4.1 | -4.2 | 3.5 | -12.8 | -10.0 | -9.1 | 0.5 | -13.8 | -18.3 | -12.0 | 2.3 |
| Employment | -16.0 | -9.9 | -4.8 | 2.2 | -17.2 | -15.1 | -11.2 | -0.9 | -17.2 | -14.6 | -8.6 | 0.1 |
| Exports | -5.0 | -2.3 | -0.9 | 0.6 | -9.5 | -10.5 | -8.0 | -0.8 | -5.0 | -2.3 | -0.9 | 0.9 |
| **Deviation from no-pandemic Baseline:** | | | | | | | | | | | | |
| Unemployment rate | 11.0 | 6.5 | 3.3 | -1.4 | 11.9 | 10.3 | 7.8 | 0.8 | 11.9 | 10.0 | 5.9 | 0.0 |
| General government balance, % GDP | -6.6 | -2.4 | -1.6 | -0.4 | -7.4 | -3.6 | -2.9 | -1.3 | -7.2 | -4.0 | -2.6 | -0.9 |

*Source:*        Authors' calculations.

The recovery from the pandemic will also be influenced by the outcome of Brexit. Our no-pandemic baseline assumes a FTA agreement being in place and here we consider the impact of a No-Deal outcome. We leverage previous research,[4] which found a No-Deal Brexit could lead to a 5 per cent loss in output after ten years compared to a situation where the UK stayed in the EU. In terms of interacting the two shocks, we draw on Daly

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[4]    Bergin A., P. Economides A. Garcia-Rodriguez and G. Murphy (2019). 'Ireland and Brexit: Modelling the impact of Deal and No-Deal scenarios', *Quarterly Economic Commentary*, Special Article, Spring.

and Lawless (2020)[5] which finds there is limited overlap in the sectors exposed to the different shocks, suggesting that potential interaction effects do not magnify the impacts of adding the Brexit shock to that of COVID-19. We consider two No-Deal outcomes with similar long-run impacts, but which differ in the adjustment to this long-run relationship. The adjustment to this long run occurs in a smooth or orderly fashion in the No-Deal scenario but there are additional negative effects in the short run in the Disorderly No-Deal scenario, driven by factors such as disruption at ports and airports in terms of dealing with new Customs requirements. The results from layering on the No-Deal Brexit scenarios to the *Recovery* scenario are shown in Figure B. The graph shows a No-Deal Brexit will cause long-term economic loss, close to 1.7 per cent after ten years relative to the no-pandemic baseline (which assumes a FTA agreement), while a disorderly exit would also lead to significant short-term losses.

**FIGURE B    COVID-19 AND NO-DEAL BREXIT: IMPACT ON GDP**
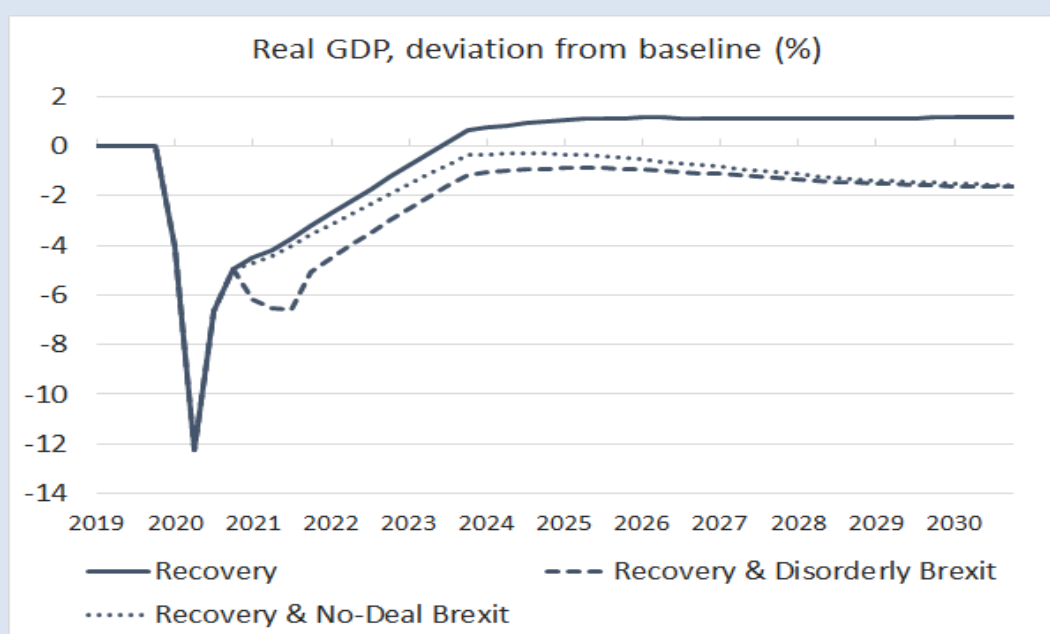


*Source:*          Authors' calculations.

*Conclusions*

The ongoing COVID-19 pandemic and the necessary public health measures introduced to mitigate its effects led to significant economic losses during the first half of 2020. Anticipating how and when the economy will recover from this shock is extremely difficult due to the unprecedented nature of the situation and there is a significant number of unknown factors.

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5        Daly, L. and M. Lawless (2020). 'Examination of the Sectoral Overlap of COVID-19 and Brexit Shocks', ESRI Working Paper, No. 677.
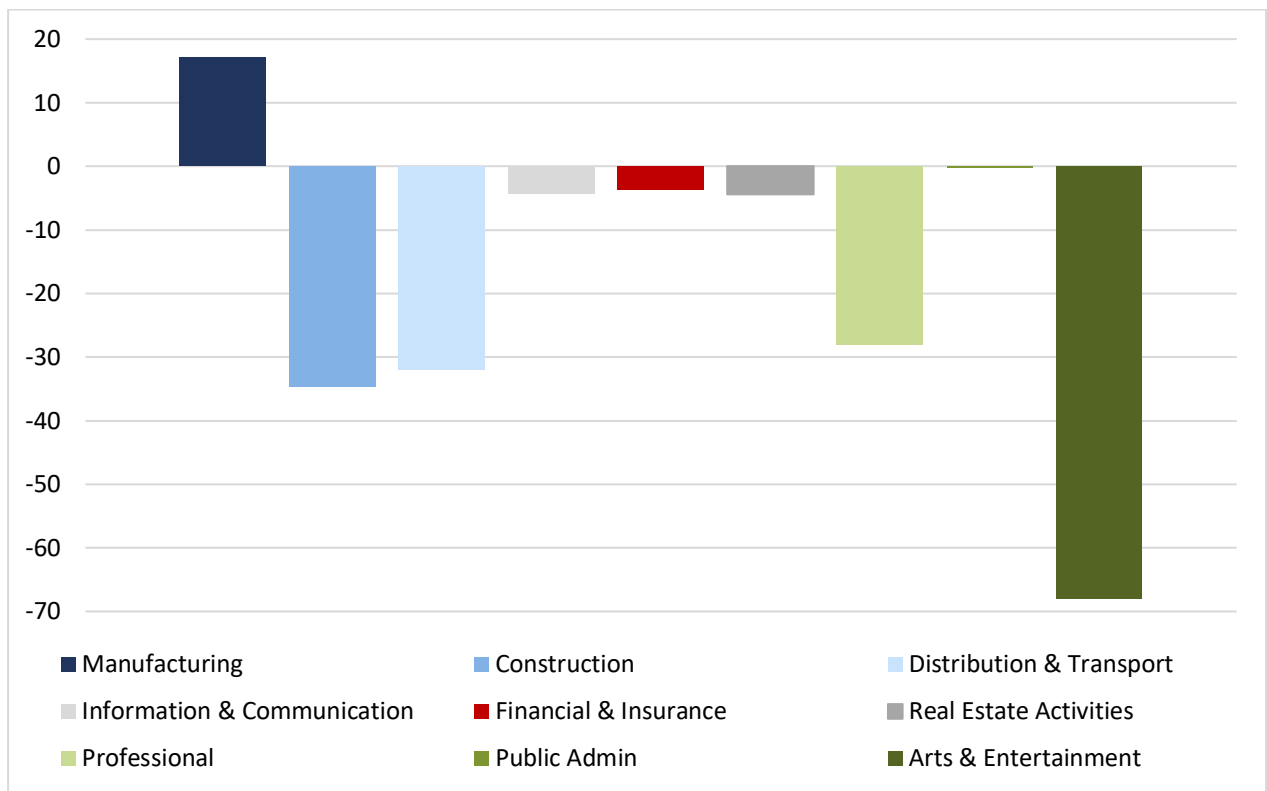
In this Box, we generate three scenarios which portray a range of potential adjustment paths over the short to medium term. These scenarios include a more rapid recovery, a delayed recovery with some long term scarring and a recovery following a second wave in the second half of 2020. In the *Recovery* scenario, the economy returns to the no-pandemic baseline by the middle of 2023, whereas in the *Delayed Recovery* scenario the return to no-pandemic baseline takes two more years and some output and employment is permanently lost. The Box also explores the potential effects of a No-Deal Brexit on the potential recovery. While a No-Deal Brexit will produce long-term economic losses, a disorderly exit could also have significant short-term effects.

*This Box was prepared by Adele Bergin (ESRI), Abian Garcia Rodriguez (ESRI), Luke Rehill (Department of Finance) and Éamonn Sweeney (Department of Finance).*

### Sectoral impact of COVID-19

To date, the impact of COVID-19 on the Irish economy has been severe in aggregate terms. However, there have been significant differences in its impact amongst the different sectors of the economy. Figure 1 plots the year-on-year output growth rates for the NACE 2 sectors for the Irish economy in Q2 2020.

**FIGURE 1          ANNUAL CHANGES (%) IN SECTORAL OUTPUT VALUE: Q2 2019 – Q2 2020**



- Manufacturing
- Construction
- Distribution & Transport
- Information & Communication
- Financial & Insurance
- Real Estate Activities
- Professional
- Public Admin
- Arts & Entertainment

*Source:* Central Statistics Office.

From the graph it is clear that sectors such as Arts and entertainment, Professional, admin support services, Construction, Distribution and transport, and Hotels and restaurants were impacted the most severely, while other sectors such as Financial and insurance and Public administration were less affected. This is borne out by the discussion in both the labour section and the public finances section where the labour market implications of COVID-19 for the public finances are discussed.

The sectoral patterns above can also be seen in a cross-country context (Figure 2). The significant performance of the Industry sector relative to other European countries is a particular feature of the Irish economy over the lockdown. The more domestic-focused sectors actually experienced larger declines than other countries.

**FIGURE 2      ANNUAL CHANGES (%) IN SECTORAL OUTPUT VOLUMES: Q2 2019-Q2 2020: IRELAND VS EU27**
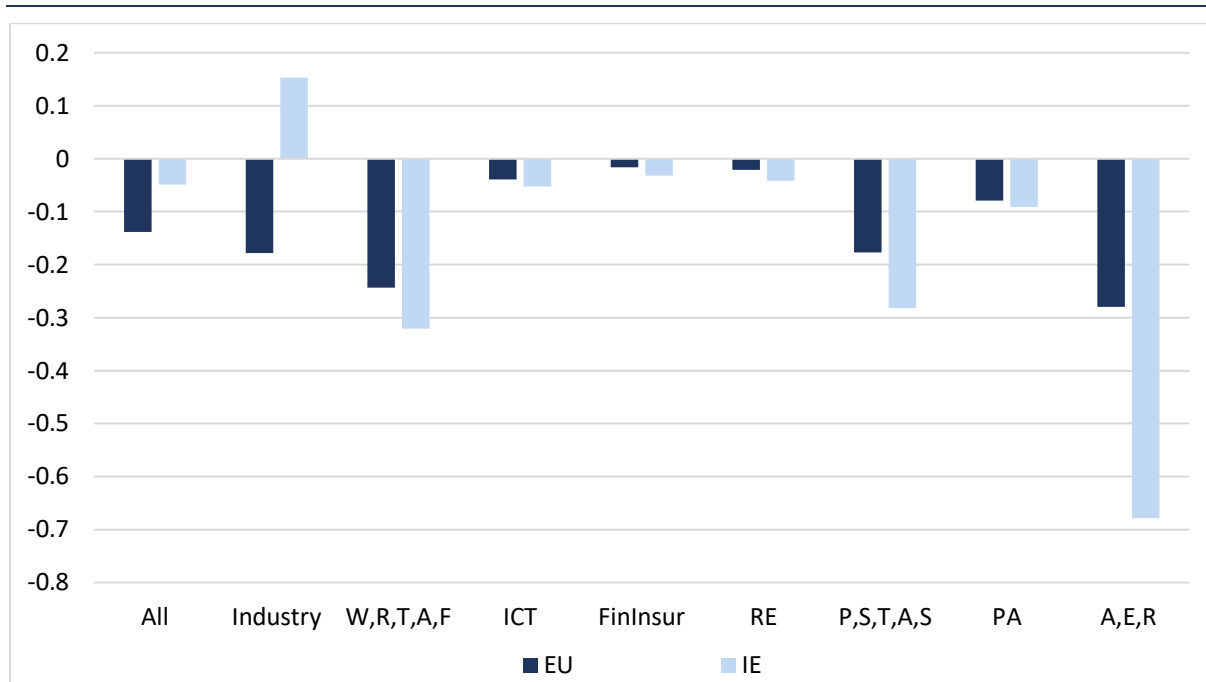


*Source:*    Eurostat.
*Note:*      W,R,T,A,F is Wholesale, retail, transport, accommodation and food services; RE is Real estate; P,S,T,A,S is Professional, scientific, technical, administration and support services; PA is Public administration; A,E,R, is Arts entertainment and recreation.

The manufacturing sector registered an increase of 17 per cent in output terms between 2019 and 2020. This sector is dominated by multinational firms, with many of the largest pharmaceutical firms located here. Many of these firms are producing products which are central to the international response to COVID-19. This is one of the reasons why Irish exports grew slightly through Q2 2020 despite the general decline in global trade.

As manufacturing accounts for approximately 40 per cent of Irish output, it is one of the main reasons why the pandemic has impacted the Irish economy to a lesser extent than comparator EU countries. The relative impact of the pandemic can be compared in a cross-country context from Figure 3 which compares the quarterly growth rate for Q2 2020.

**FIGURE 3     QUARTER-ON-QUARTER CHANGES (%) IN GDP FOR SELECTED EU COUNTRIES: Q2 2020**
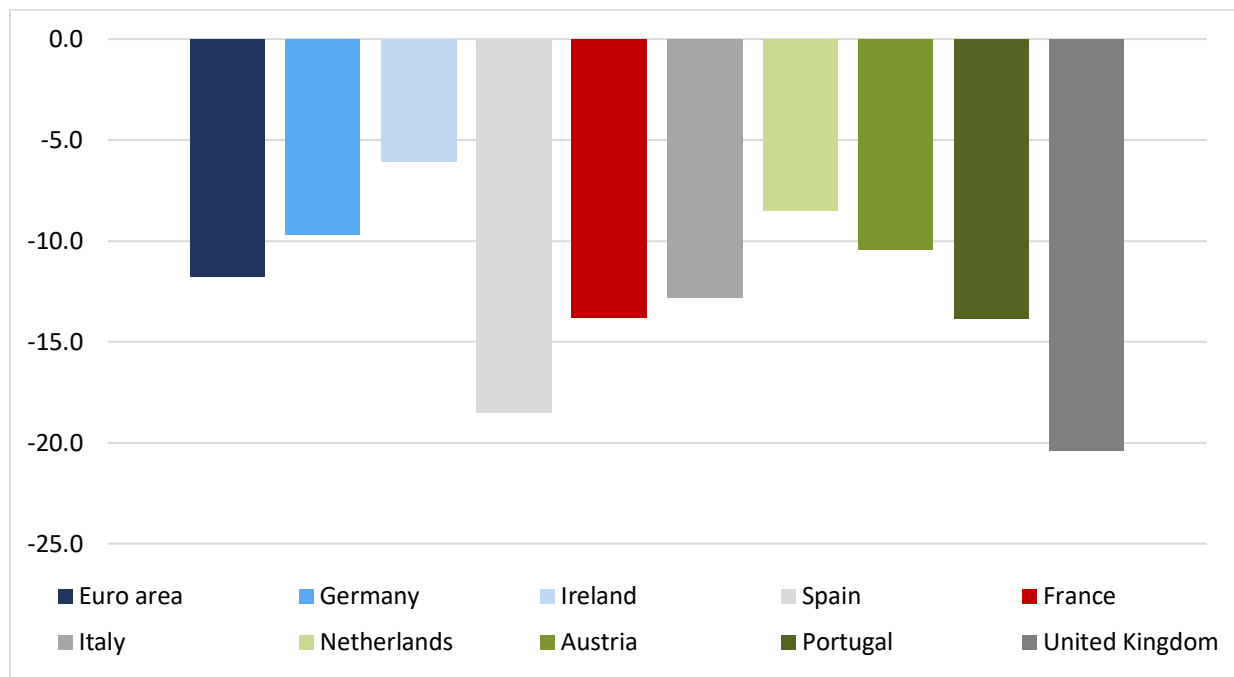


*Source:*     Eurostat and QEC Calculations.

Ireland along with the Netherlands has the smallest decline on a quarterly basis when compared with other European countries. The outcome for Ireland is all the more notable given that the economy actually grew quite significantly in Q1 2020.

A cross-country comparison of the sectoral performance of the Irish economy over the lockdown is presented in O'Toole (2020) who traces the relatively benign impact of the economic shock to the specific performance of a small number of export sectors.

Estimating the impact of COVID-19 on real activity in the domestic economy is clearly complicated by the distortionary transactions from certain multinational firms. In the present year, for example, there was a significant increase in intellectual property products (IPP) related capital investment in Q1 2020, however this was followed by a substantial reduction in this activity in Q2. While some of the reason for this fall off was due to COVID-19, in the main they appear to be related to distortionary transactions. In the following Box McQuinn examines the

extent to which the treatment of IP by certain large firms operating in the Irish and Dutch jurisdictions is now having non-trivial implications for Euro Area wide data as well as for national data.

**BOX 2       THE TREATMENT OF INTELLECTUAL PROPERTY (IP): HOW EURO AREA DATA ARE NOW BEING DISTORTED**

The implications of certain multinational decisions for the Irish National Accounts has attracted a significant amount of attention amongst domestic policymakers and academics (FitzGerald, 2018). In response to the distortionary impact on GDP as well as other key macroeconomic aggregates such as investment, imports and exports, the Irish Central Statistics Office (CSO) has published a number of new indicators that seek to provide a more accurate assessment of underlying Irish economic activity. One such indicator is adjusted Gross National Income or GNI* (see Lane, 2017, for more details on this). Of course, GDP and GNP are still important indicators for issues such as the EU fiscal rules and contributions to the EU budget.

However, while the implications for domestic policymakers of these distortions are significant, recent analysis suggests that issues particularly to do with the treatment of investment in intellectual property (IP) by certain large firms operating in the Irish and Dutch jurisdictions are now having non-trivial implications for Euro Area data (see Setser, 2020). Given that the monetary policy decision of the European Central bank (ECB) is primarily influenced by Euro Area data, this could lead to significant and important decisions concerning Euro Area policy rates being made on somewhat misleading information.

To provide some context for this, following Setser (2020), it is telling to observe the growing relevance of certain Irish and Dutch macroeconomic data on the corresponding Euro Area aggregates. In Figure C, real investment in Irish and Dutch intellectual property is expressed as a ratio of Euro Area GDP. From 2010 onwards, it is clear that this ratio is typically in the order of 0.1 and 0.3 for Ireland and the Netherlands respectively. Certain large transactions in the Dutch economy in 2015 and in Ireland in 2017 cause the ratios to increase substantially. In reality, these transactions are to do with certain subsidiaries of multinationals based in these countries acquiring the intellectual property of a non-resident company. Under certain tax arrangements based on the use of full capital allowances for expenditure on intellectual property, large companies can use massive intra-group loans to purchase the IP, with substantial deductions on the interest paid for these loans reducing significantly the taxable income of these entities. Both Ireland and the Netherlands had such tax arrangements in place during the period in question (see Clancy, 2018, amongst others for more on this).

To understand the implications of these transactions on Euro Area data, in Figure D two series for Euro Area domestic demand are plotted where domestic demand is defined as

private and government consumption and investment. The two series are the official estimate and that estimate excluding Irish and Dutch investment in IP.

**FIGURE C    IRISH AND DUTCH INVESTMENT IN IP AS A % OF EURO AREA GDP**
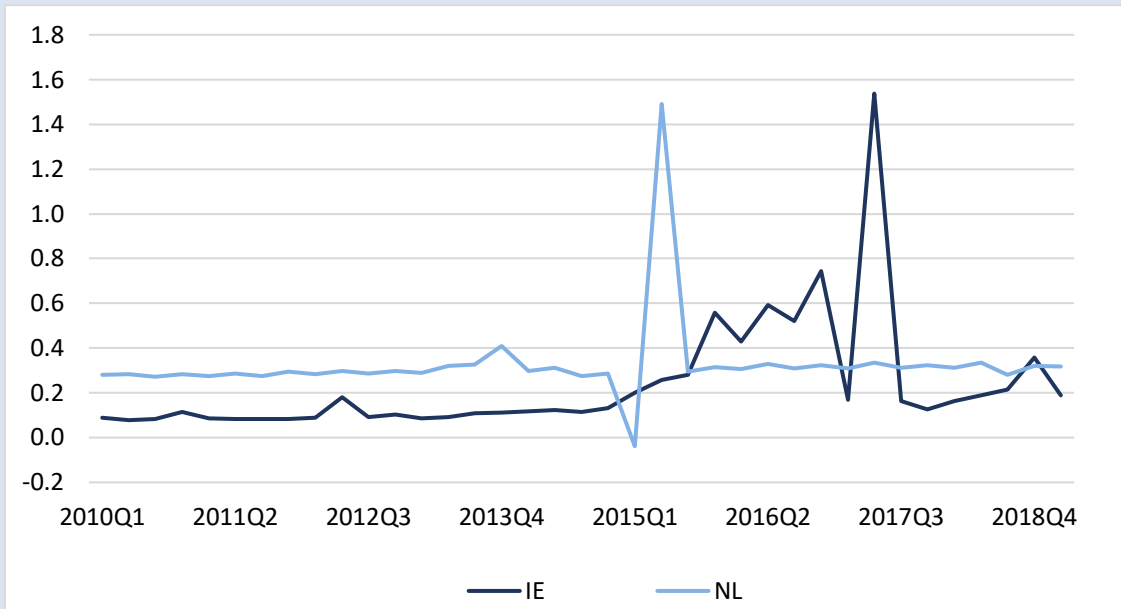


*Sources:*        Eurostat and Authors' calculations.

**FIGURE D    ANNUAL CHANGE IN EURO AREA DOMESTIC DEMAND WITH IRISH AND DUTCH INVESTMENT IN IP REMOVED (%)**
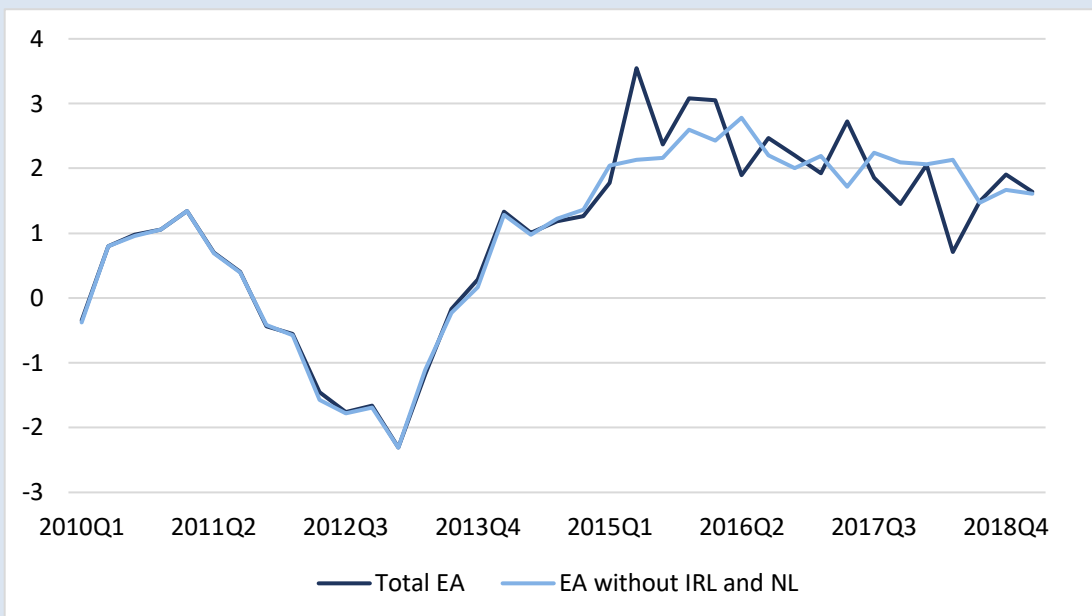


*Sources:*        Eurostat and Authors' calculations.

Clearly stripping out the Irish and Dutch data from the total provides a clearer picture of domestic developments in the Euro Area economy. For instance, the decline in Euro Area activity evident since 2017 appears to be less dramatic; the official data would have suggested a sharp decline in 2018; however the adjusted data indicate that the decline is at a slower (but still persistent) rate.

**FIGURE E**     **YEAR-ON-YEAR CONTRIBUTION OF NET TRADE TO EURO AREA GDP WITH IRISH AND DUTCH NET TRADE EXCLUDED (%)**
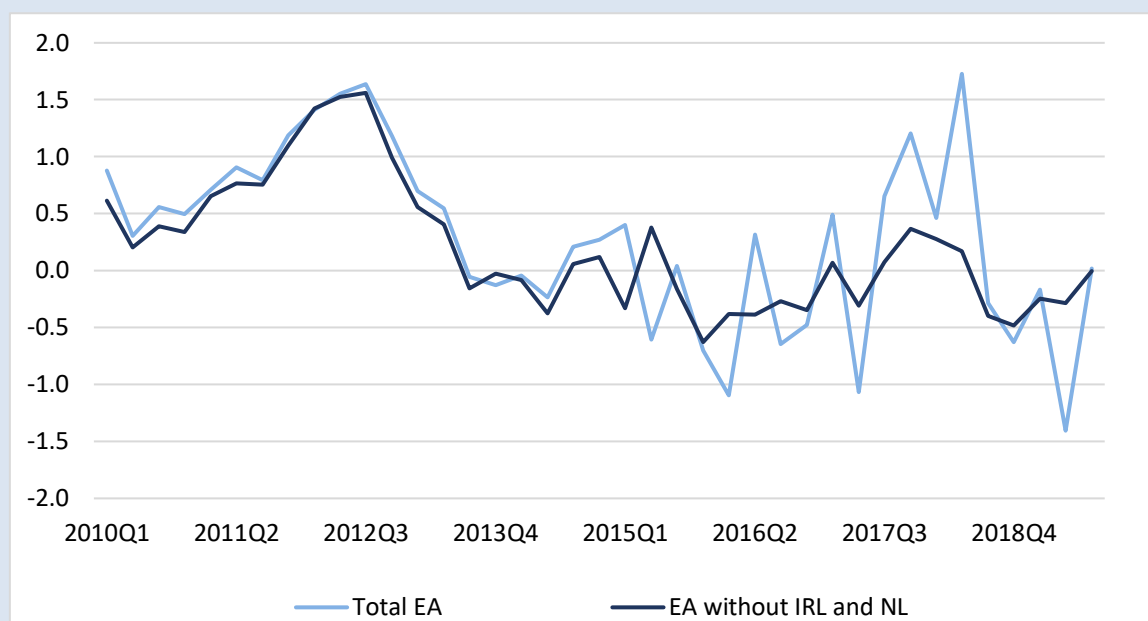


*Sources:*        Eurostat and Authors' calculations.

Figure E illustrates the degree to which these fluctuations also have implications for Euro Area trade data. In this case, the two series plotted are the official contribution of net trade to Euro Area GDP and an adjusted series with the trade data for Ireland and the Netherlands omitted. Again, it is evident that the official data suggest that trade is making a much greater contribution since 2015 than what the adjusted data would indicate.

All of this raises a number of important points:

1.  In order for monetary policy at the Euro Area to be conducted in as efficient a manner as possible, it may be necessary for new macroeconomic indicators to be provided by Eurostat. This exercise could mirror the efforts currently underway in the CSO.

2.  Amongst other issues, this will enable a more accurate characterisation of cross-border flows in foreign direct investment (FDI), which is also obviously distorted by these transactions.

3.  Information revealed in National Accounts can reveal evidence of profit-shifting by multinational firms.

4. In a post-Brexit European Union, Ireland's strategy on corporation tax is likely to come under increased scrutiny and pressure from our European partners. It is important that Irish authorities avoid any tax arrangements that multinationals can use to significantly reduce their global tax liabilities.

*References:*

Clancy E. (2018). 'Apple, Ireland and the new Green Jersey tax avoidance technique', blogpost: https://www.socialeurope.eu/apple-ireland-and-the-new-green-jersey-tax-avoidance-technique.

FitzGerald J. (2018). 'National accounts for a global economy: the case of Ireland', *Quarterly Economic Commentary*, Special Article, Summer. ESRI.

Lane P. (2017). 'The treatment of global firms in National Accounts', *Economic Letter*, 01/EL/17, Central Bank of Ireland.

Setser B.W. (2020). 'Leprechaun adjusted Euro Area GDP', blogpost available online at https://www.cfr.org/blog/leprechaun-adjusted-euro-area-gdp.

*This Box was prepared by Kieran McQuinn.*

## DEMAND

*Household sector consumption*

*Key Points*

- *Consumption expenditure fell by nearly one-fifth cumulatively between Q1 and Q2 2020;*

- *The fall in consumption was the third largest of 23 European countries;*

- *Spending rebounded as the economy reopened but the recovery has been uneven;*

- *Local lockdowns and further restrictions will limit the recovery and we expect consumption to be over 9 per cent lower in 2020 relative to 2019;*

- *A strong recovery can be expected in 2021 as long as more extreme restrictions can be avoided for a significant period.*

The impact of the economic shock associated with COVID-19 can be clearly demonstrated in personal consumption expenditure on goods and services. As

noted in previous research such as Coffey et al. (2020)[6] and McQuinn et al. (2020a; 2020b),[7] the decline in household spending in Ireland was driven by a number of factors including: a) the change in behaviours by households before the public health restrictions, in which they attempted to avoid infection; b) a reduction in expenditure over the strict lockdown phase as businesses were closed and sales opportunities curtailed and c) the extent to which the economy was reopened with increased opportunities for consumers to undertake expenditure.

The fall in expenditure can clearly be seen in the Quarterly National Accounts. Figure 4 presents the real growth rate of expenditure on goods and services on a quarter-on-quarter and a year-on-year basis. The quarter-on-quarter drop in Q1 2020 was 3.5 per cent, while the quarterly drop in Q2 was 19.6 per cent; therefore, on a cumulative basis consumption fell by nearly one-quarter between the end of 2019 and the middle of 2020. The year-on-year drop in Q1 2020 was just over 2.6 per cent and over 22 per cent in Q2. The closest fall in magnitude during the financial crisis was in Q1 2009 when the growth rate dropped by 2.7 per cent quarter-on-quarter and 4.8 per cent year-on-year. This highlights the scale and rapidity of the current crisis.

**FIGURE4**   **QUARTERLY PERSONAL CONSUMPTION ON GOODS AND SERVICES: CONSTANT MARKET PRICES AND SEASONALLY-ADJUSTED GROWTH RATES**
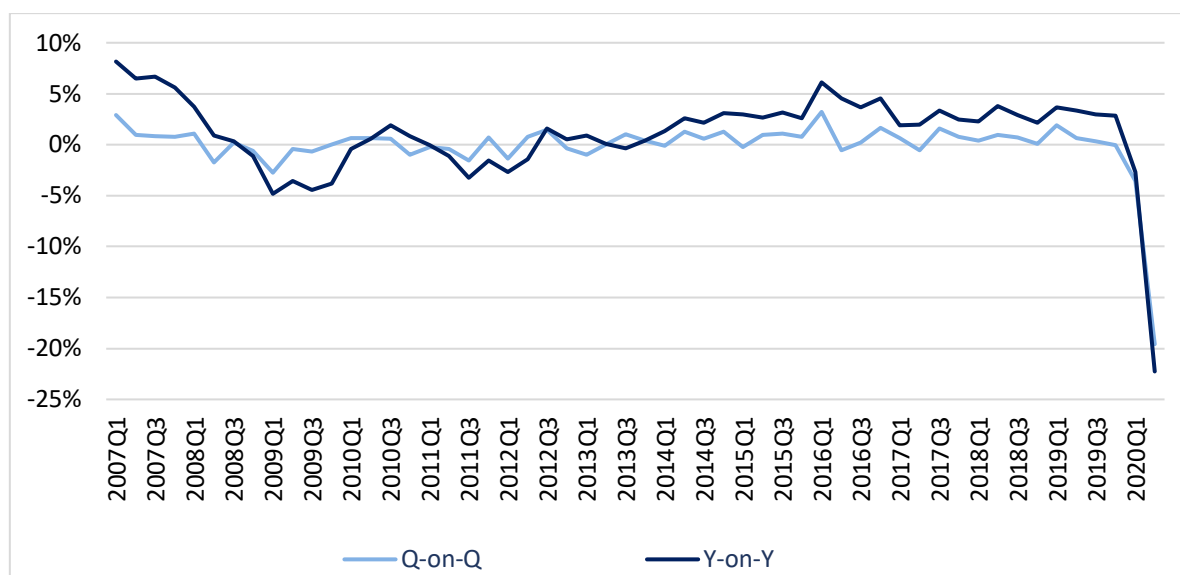


*Source:*   Central Statistics Office.

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[6]   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.

[7]   McQuinn, K, C. O'Toole, M. Allen-Coghlan and C. Coffey (2020a). *Quarterly Economic Commentary,* Spring. Economic and Social Research Institute.
McQuinn, K, C. O'Toole, M. Allen-Coghlan and C. Coffey (2020b). *Quarterly Economic Commentary*, Summer, Economic and Social Research Institute.

Some cross-country context for the size of the decline in consumption is provided in Figure 5, which presents the cumulative quarter-on-quarter changes across Q1 and Q2 2020 for Ireland and selected other European economies. Naturally, the scale of the consumption decline will depend on (i) the severity of the public health restrictions, (ii) the degree to which incomes and the labour market adjusted (and were supported by policy), (iii) the severity of the disease outbreak and (iv) the relative changes in households' own behaviour. The fall in consumption in Ireland over the period Q1 and Q2 2020 is the third highest of the selected countries, with only Spain and the UK experiencing a greater fall in expenditure by households.

**FIGURE 5**          **CUMULATIVE CHANGE IN CONSUMPTION FOR SELECTED EUROPEAN ECONOMIES**
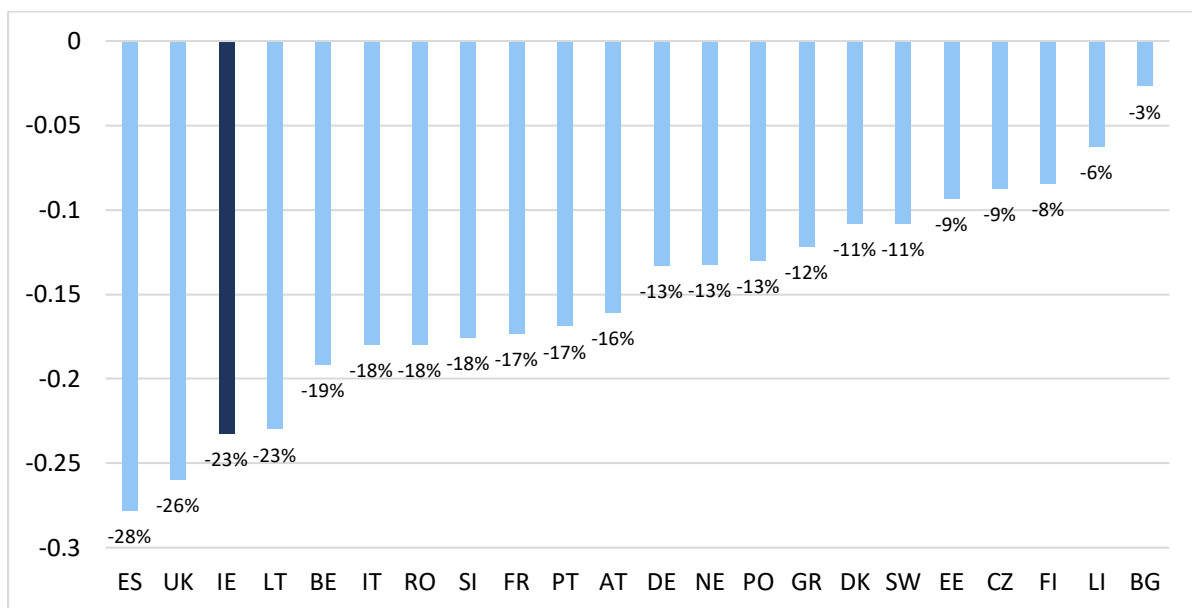


*Source:*     ESRI Analysis of Eurostat data. Consumption is the cumulative quarter-on-quarter changes for Q1 2020 and Q2 2020. Series: Final consumption expenditure of households, chain linked volumes (2010), seasonally- and calendar-adjusted data.

Despite the rapid and severe decline in expenditure in the first and second quarter, real time indicators of expenditure such as retail sales data point to a sustained and strong recovery as the economy was reopened. Table 1 presents the year-on-year change in retail sales by item for the period March to July 2020. While nearly all spending categories declined over the period March-May (with the exception of expenditure on food and beverages) a strong rebound is evident in June and July 2020. Indeed, overall expenditure was nearly 4 and 6 per cent higher year-on-year in June and July respectively. It is likely some of this increase is due to deferred expenditure which was put off during the lockdown period. For example, expenditure on motor trades declined to such a degree in April and May that a rebound was always likely when trade was reopened.

Despite the rebound, some areas of expenditure are still well below the levels seen in 2019. In particular, retail sales in department stores, automotive fuel and

expenditure on books, stationery and newspapers remains 16 per cent, 11 per cent and 40 per cent below the July 2019 level in July 2020. For retail sales in bars, there was some recovery as establishments selling food were allowed reopen but sales in July 2020 were still over 50 per cent lower than the level 12 months previous.

**TABLE 1    YEAR-ON-YEAR CHANGES IN RETAIL SALES (VOLUMES) BY MONTH (%)**

|  | March | April | May | June | July |
|---|---|---|---|---|---|
| Motor trades | -30 | -81 | -50 | 4 | 6 |
| Non-specialised stores | 17 | 17 | 18 | 16 | 10 |
| Department stores | -28 | -78 | -54 | -15 | -16 |
| Food, beverages and tobacco in specialised stores | 18 | 15 | 14 | 20 | 16 |
| Automotive fuel | -15 | -50 | -37 | -18 | -11 |
| Pharmaceutical, medical and cosmetic articles | 14 | -15 | -11 | 3 | 2 |
| Textiles, clothing and footwear | -47 | -82 | -79 | -17 | 4 |
| Furniture and lighting | -16 | -86 | -66 | 13 | 21 |
| Hardware, paints and glass | 12 | -49 | 1 | 31 | 19 |
| Electrical goods | 23 | -34 | -13 | 14 | 26 |
| Books, newspapers and stationery | -29 | -75 | -83 | -40 | -40 |
| Other retail sales | -4 | -40 | 7 | 27 | 28 |
| Bars | -58 | -92 | -92 | -82 | -53 |
| All retail businesses | -11 | -44 | -25 | 4 | 6 |

*Source:*    Central Statistics Office.

The recovering trend in retail sales can clearly be seen in Figure 6 which presents the three-month rolling average of the year-on-year growth rates for all retail sales, retail sales excluding the motor trade, and household equipment. All items recovered strongly in June and July 2020.

**FIGURE 6**   **ANNUAL GROWTH (%) IN RETAIL SALES INDEX VOLUME ADJUSTED (BASE 2015=100), THREE-MONTH ROLLING AVERAGE**
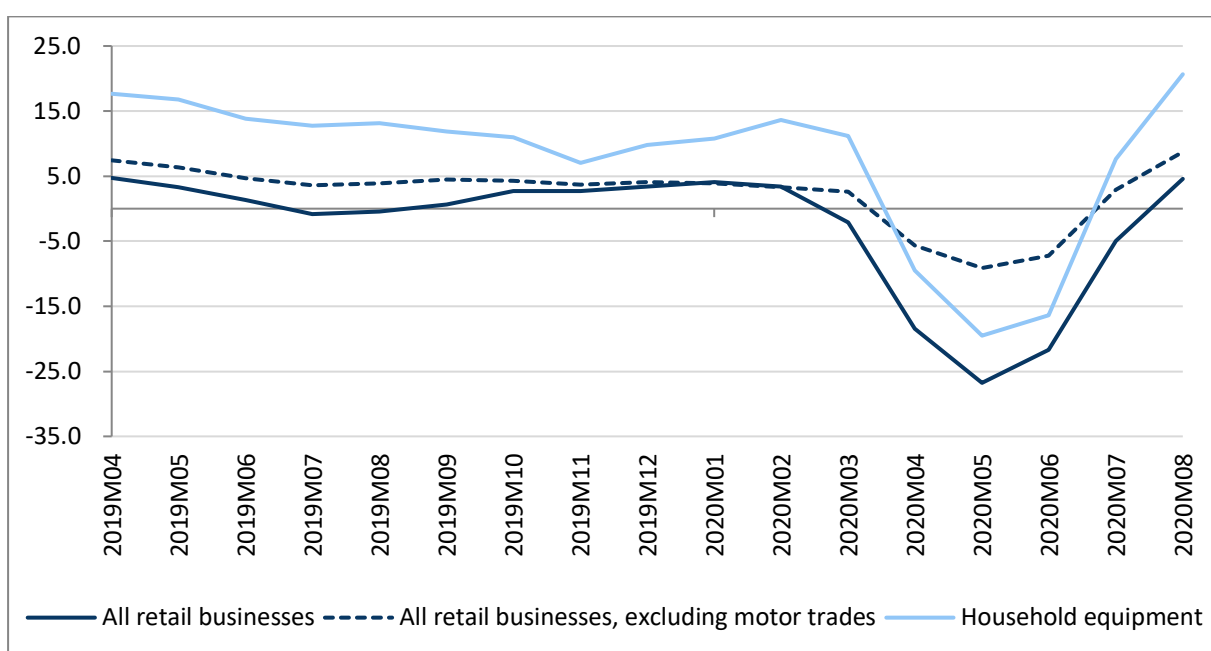


*Source:*   Central Statistics Office.

To provide further insight into the trajectory of consumer spending for 2020, we explore recent trends in consumer sentiment. Figure 7 provides trends in consumer sentiment for Ireland, the UK and the EU27 for the period July 2019 to August 2020. The Index takes the value of 100 in January 2020. The onset of the pandemic is associated with a rapid and extensive drop in consumer confidence as households were subject to restrictions, job and income losses, and changed their behaviour in respect of the virus. Relative to the rest of the EU and the UK, the fall in consumer confidence in Ireland was greater (relative to January 2020) and the recovery has been considerably more muted. Indeed, consumer confidence in August 2020 declined relative to the July data which likely reflects the public discourse around the pick-up in infections through August. It may also reflect the fact that the deferred expenditure which likely drove the June and July figures was waning by August.

**FIGURE 7**   **CONSUMER SENTIMENT INDICATORS – IRELAND, UK AND REST OF EU (JANUARY 2020 = 100)**
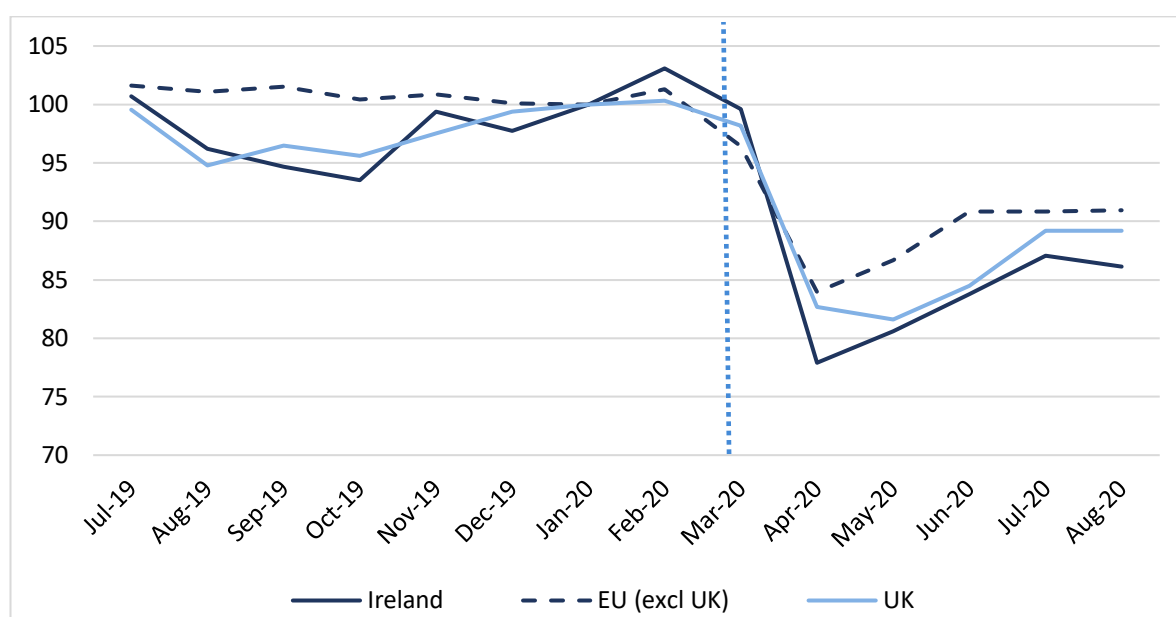


*Source:*   European Commission data and ESRI calculation.

*Note:*   The positive/negative balances from the EU COF series are transformed by adding 100. We then set the base to 100 in January 2020 with growth relative to this point i.e. ((Yt/YJan2010) -1)*100.

### Consumption forecasts

At this juncture, quarterly data on consumption are available for Q1 and Q2 from the Quarterly National Accounts. In line with the trend in expenditure and consumer sentiment documented above, we provide a 'bottom up' figure for consumption for the second half of 2020 by following a similar approach to that developed in Coffey et al. (2020) and McQuinn et al. (2020a). The spending categories from the Household Budget Survey are linked to the CSO retail sales, Central Bank credit card data and selected other sources.[8] The consumption data from the Quarterly National Accounts are used for Q1 and Q2 2020. To generate an estimate of consumption expenditure in Q3 2020, we use a combination of retail sales, card spending, consumer sentiment and other data to approximate how consumer spending has changed between the first and the third quarter of 2020.[9] For Q4 2020, we assume that consumption drops back from Q3 levels by just over 4 per cent reflecting increased local lockdowns and restrictions such as the movement of Dublin to Level 3 on the risk scale in late September. This leads us to an overall annual decline in consumer expenditure of 9.2 per cent for 2020.

For 2021, we assume that a strong rebound in consumption is driven by improvements in the labour market and household spending increasing relative to

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8      Other data sources include Ryanair and CSO data on vehicle registrations.
9      More details on the mapping are available on request.

2020. An implicit assumption is that as long as households are 'living with COVID-19', behavioural adaptation as well as more targeted public health responses will facilitate increases in expenditure relative to the first half of 2020. This alone would provide strong consumption growth in 2021.

## TRADED SECTOR

*Key Points*

- *Exports performed relatively strongly in Q2 compared to other sectors of the economy, recording positive annual growth;*

- *Import growth was negative over the same period as consumption and investment deteriorated.*

*Exports*

While COVID-19 has had a severe negative impact on the Irish domestic economy, the overall impact on the traded sector has been much more muted. Relative to other sectors of the economy, the strong performance of the traded sector is the primary reason why the overall fall in GDP in the second quarter was not as severe as originally anticipated.

Despite the unprecedented negative economic impact that COVID-19 has had on Irelands' major trading partners, exports remained resilient through the first half of the year. Using the seasonally-adjusted series, export volumes grew by 0.1 per cent in Q2 2020 compared to the same period the previous year. While Figure 8 shows that this growth rate is significantly lower than previous quarters, the fact that export growth was positive at all is remarkable in light of the current international economic situation. Taking a look behind the headline growth rate, there is a clear divergence in exports of goods and services. While on a seasonally-adjusted basis exports of services fell by 8.0 per cent, exports of goods increased by 7.9 per cent over the same period.

**FIGURE 8   SEASONALLY-ADJUSTED EXPORTS, YEAR-ON-YEAR GROWTH (VOLUME, %)**
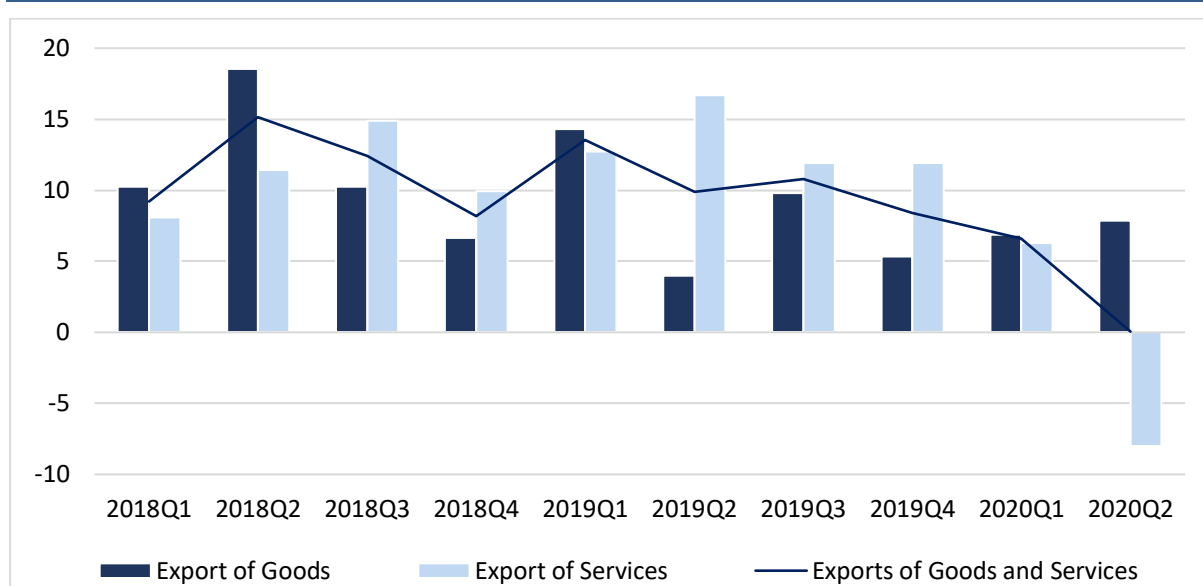


*Source:*    Central Statistics Office.

Figure 9 shows the five largest commodity groups of merchandise exports. These statistics exclude goods related to merchanting and contract manufacturing and so give a better idea of the underlying trends in goods trade.[10] By far the largest commodity group was medicinal and pharmaceutical products, which accounted for over 32 per cent of all goods exports in 2019. The primary reason why goods exports performed so well over the second quarter was the strong performance of this commodity group which grew by 30.5 per cent compared to the same period the previous year. Medicinal and pharmaceutical goods were highlighted as one of the few sectors that might benefit from the current crisis as a result of the increased international demand for healthcare products. This tallies with the findings of Leibovici and Santacreu (2020)[11] who argue that countries who are net exporters of essential goods can experience gains in trade during a pandemic. Looking at the next largest export groups it is clear the pandemic has had a much more negative impact on their performance. Organic chemicals, machinery and transport equipment and miscellaneous manufactured articles all declined over the same period by 11.2, 16.8 and 23.6 per cent respectively. More detail on the relative impact of these items can be found in the *Research Note* within this *Commentary* where O'Toole (2020) documents the link between the specific structure of the Irish export market and the performance during the lockdown.

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[10]    For more on this see:
       https://www.cso.ie/en/releasesandpublications/in/geid/explaininggoodsexportsandimports2012-2016.
[11]    Leibovici F. and A.M. Santacreu (2020). *International Trade of Essential Goods During a Pandemic,* Federal Reserve Bank of St Louis working paper 2020-010B.

**FIGURE 9   MERCHANDISE EXPORTS BY COMMODITY GROUP (VALUE, € MILLION)**
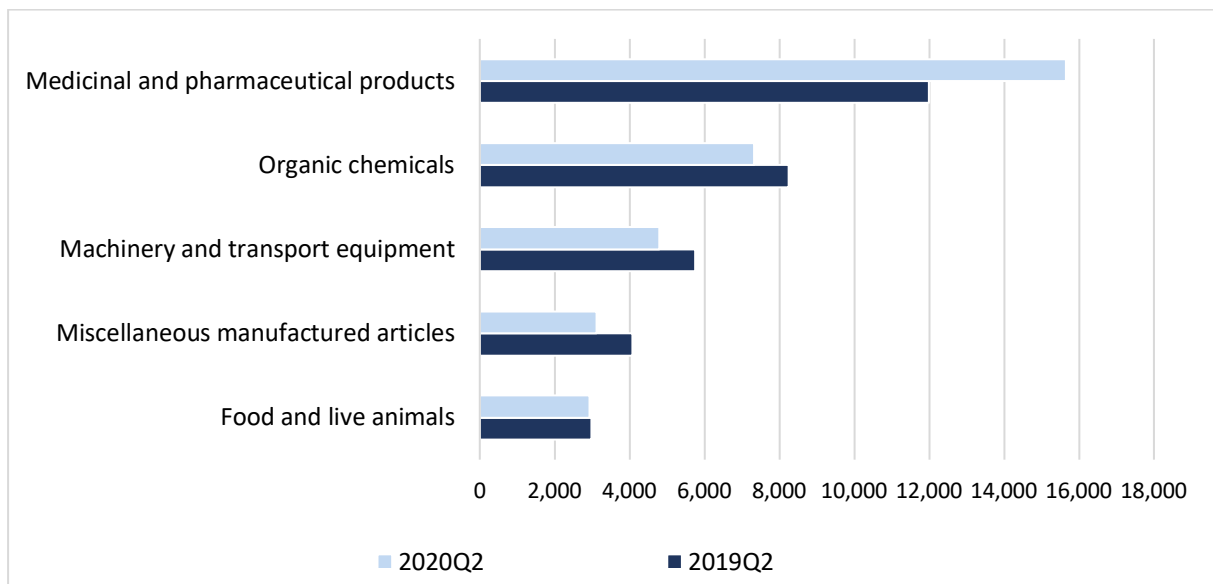


*Source:*   Central Statistics Office.

In terms of the exports of services, it is also the case that one component of services is far larger than all others. In this case computer services are by far the largest component, accounting for over 47.1 per cent of all service exports in 2019. In Q2 2020 the value of computer services grew by 4.3 per cent compared to Q2 2019. Despite this, overall service exports declined for the period as a result of the poor performance of most other components, most notably business services.

**FIGURE 10        SERVICE EXPORTS BY COMPONENT (VALUE, € MILLION)**
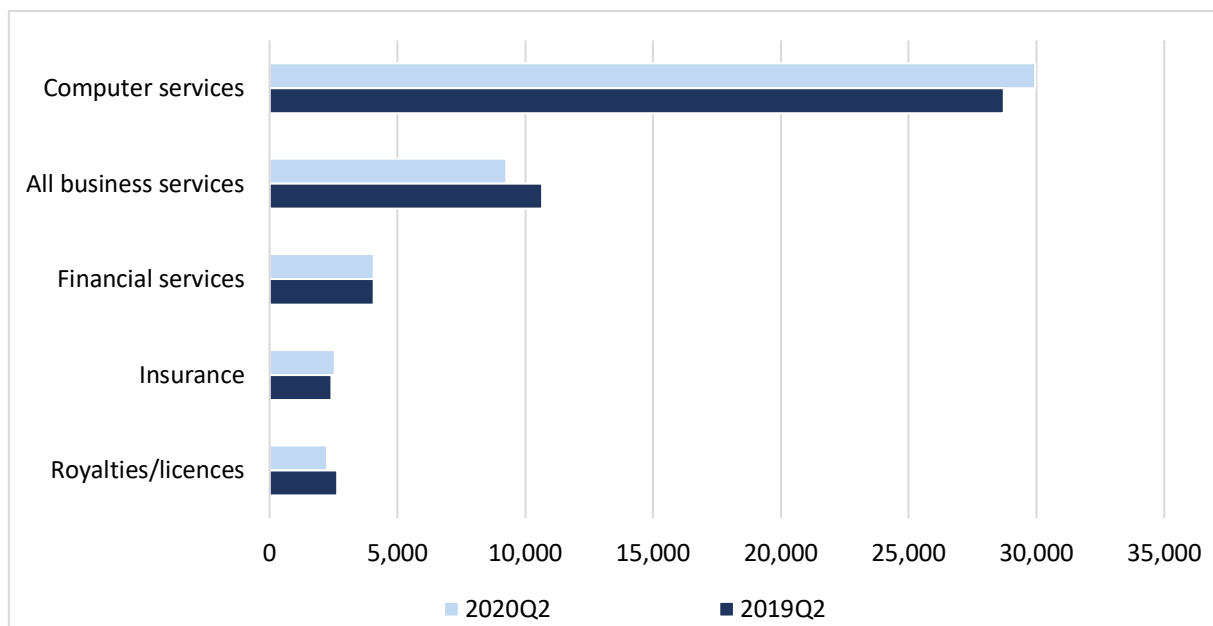


*Source:*   Central Statistics Office.

Both Figure 9 and Figure 10 highlight the performance of the largest components of service and good exports, namely computer services and medicinal and pharmaceutical products, in the robust performance of exports over the second quarter. This was enough to offset the deterioration in the performance of most other components of goods and services exports over the same period. Therefore, despite a collapse in external demand for the majority of internationally traded sectors, overall exports remained positive for the quarter. Given that Q2 is assumed to be the nadir of the pandemic crisis for both Ireland and its main trading partners, many of these export components should see some improvement during the remainder of this year and into 2021. These developments bring back into focus just how reliant the Irish economy is on a small number of sectors which in turn are dominated by a small number of firms.

*Imports*

There was a sharp decline in imports in Q2 2020, down over 37 per cent compared to the same period the previous year. A significant decline was not unexpected given the fall in household consumption. However, a substantial proportion of this decline was due to a fall in the imports of capital investment. This category can be highly volatile from quarter to quarter. While imports and investment are often linked in this regard and net out in terms of overall impact on GDP, when looking at imports in isolation the importation of intellectual property and aircraft related to leasing can often distort the Irish data.

**FIGURE 11        SEASONALLY-ADJUSTED IMPORTS, YEAR-ON-YEAR GROWTH (VOLUME, %)**
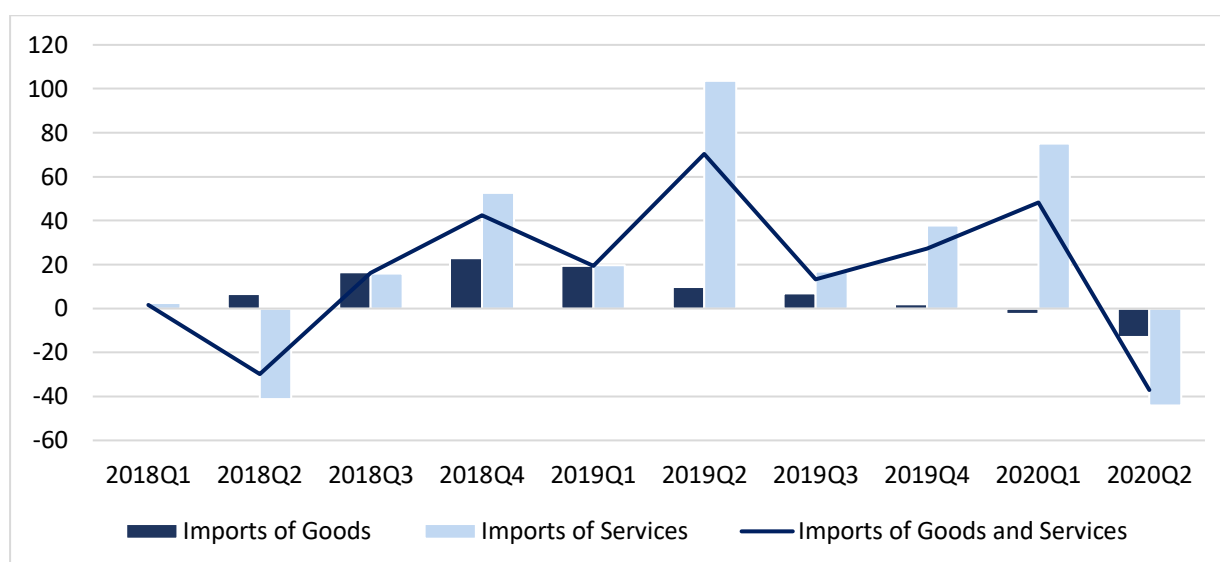


*Source:*    Central Statistics Office.

While imports are expected to remain muted this year in light of falling investment and consumption, the relatively strong performance of some exports should boost

the imports of some goods and services which are used in the production process. Table 2 shows the performance of the largest components of imports not related to intellectual property and aircraft related to leasing. Aside from tourism and travel, which has collapsed as a result of international travel restrictions, other components of imports have been robust.

**TABLE 2    SEASONALLY-ADJUSTED IMPORTS, YEAR-ON-YEAR GROWTH (VOLUME, %)**

| Import Category | Share of Total Imports 2019 % | Growth in Q2 2020 % |
|---|---|---|
| **Business services other than R&D and operational leasing** | 14.8 | 8.6 |
| **Financial services** | 3.8 | 6.5 |
| **Insurance** | 2.0 | 9.3 |
| **Tourism and travel** | 1.8 | -96.4 |
| **Medicinal and pharmaceutical products** | 1.8 | 7.5 |
| **Organic chemicals** | 1.2 | 63.5 |

*Source:*    Central Statistics Office.

Given the most recent data, forecasts for export growth this year have been revised upwards: growth for 2020 is now forecast at 1.7 per cent while growth for 2021 is also expected to be strong at 6.1 per cent. The growth in 2021 reflects the recovery in sectors which suffered a sharp decline in 2020 and are set to experience growth as the international climate improves. Meanwhile imports are expected to decline by 6.1 per cent this year but increase by 6.5 per cent next year as consumption and investment both recover in the domestic economy.

## INVESTMENT

*Key Points*

- *Significant decline in modified Gross Domestic Fixed Capital Formation in Q2 2020;*

- *Lockdown results in collapse in building and construction activity in Q2;*

- *Recent Purchasing Managers Indices for manufacturing and services indicate potential signs of recovery.*

Unsurprisingly, the increased level of uncertainty created by the pandemic and the ensuing lockdown have had a significant negative impact on Irish businesses. This was shown in the first Business Impact of COVID-19 Survey administered by the CSO in April which revealed that nearly one-in-four businesses in the country had ceased trading at that time. There has been a more optimistic outlook of late with the most recent survey in August showing that over 96 per cent of businesses

responded that they are currently trading. However, nearly a third of these reported that they were trading at reduced capacity. These figures indicate that while business conditions have improved since the strictest period of lockdown was lifted, we still remain a long way from pre-pandemic conditions. This has obvious repercussions for investment as businesses which are uncertain about their future prospects are unlikely to engage in long-term capital expenditure.

In a Special Article in this *Commentary*, Martinez-Cillero et al. (2020) assess the number of SMEs that will face losses through 2020 given the COVID-19 pandemic. They find that nearly one-in-two firms faced losses during the lockdown and that up to €15 billion in losses could be accumulated through to year end. These devastating economic losses are likely to deter all but the most insulated of firms from investing.

In Q2 Gross Domestic Fixed Capital Formation (GDFCF) fell by 73 per cent compared to the same period the previous year. However, headline investment figures are often distorted by the activity of multinational firms which result in large fluctuations in investment from quarter to quarter. Modified GDFCF provides a better indication of underlying investment in the Irish economy by removing the distortionary impacts of investment in intellectual property and investment in aircraft related to leasing. In Q2 2020 modified GDFCF formation decreased by 24.4 per cent compared to the same period the previous year (Figure 12). This is comparable to figures seen in the aftermath of the Financial Crisis when underlying investment dropped by nearly 30 per cent. Part of this decline was explained by the fall in investment in buildings and construction, which declined by over 35 per cent in Q2. Although statistics on investment in machinery and equipment were not released for this period, it is likely investment in these assets also declined sharply. Previous research has highlighted the correlation between machinery and equipment investment and businesses confidence, which has been significantly lower since the start of the pandemic (O'Toole, 2019).[12]

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[12]    O'Toole, C. (2020). 'Box 2, Global uncertainty and the impact on Irish aggregate investment', in *Quarterly Economic Commentary,* Summer 2020, Economic and Social Research Institute.

**FIGURE 12        MODIFIED GROSS DOMESTIC FIXED CAPITAL FORMATION**
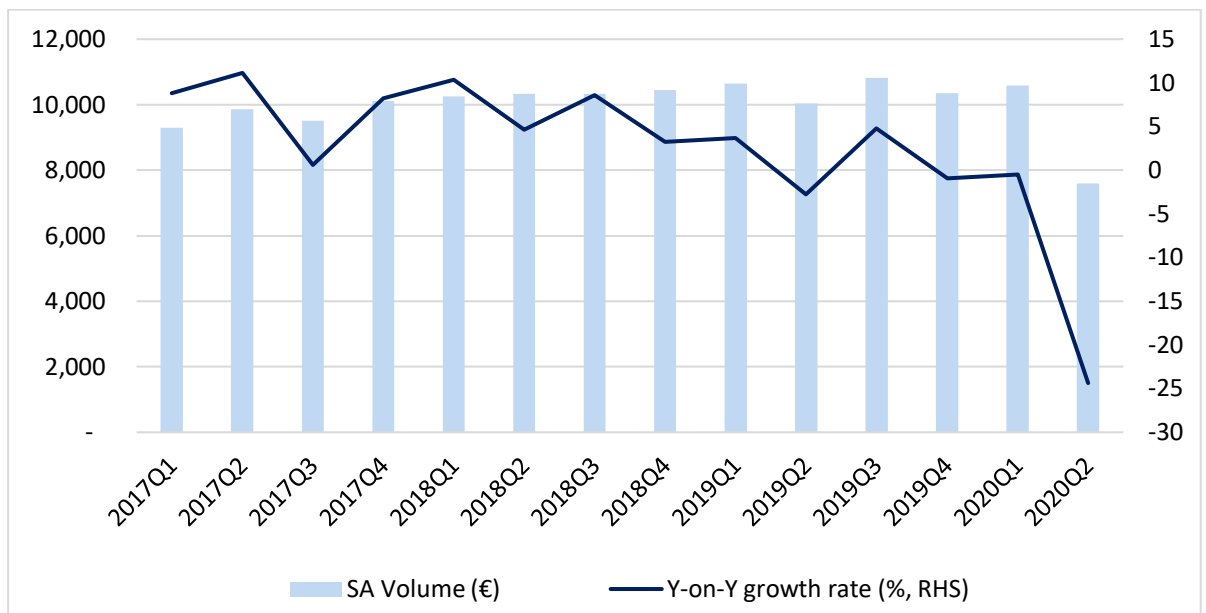


*Source:*    Central Statistics Office.

Figure 13 shows the number of housing completions in the State since 2012. There had been a gradual increase in the number of completions over the past decade as supply increased to meet the level of structural demand, estimated to be in the region of 35,000 new homes a year. This trend had been forecast to continue in 2020 with 24,500 completions projected at the start of the year. However, as a result of economic disruption caused by COVID-19, this figure has been reduced to 17,000. Already there was a significant decline in completions in Q2, down by over 30 per cent compared to the same period the previous year. This decline is likely related to the physical restrictions that were in place in late March and April which stopped all work on construction sites. Even though construction sites have reopened in recent months, building capacity is likely to remain below pre-pandemic levels due to social distancing measures and additional safety protocols which have been put in place. Going forward supply may remain subdued as investment is curtailed in an environment of high uncertainty.

While pre-pandemic we forecast that there would be around 28,000 completions in 2021, this has now been reduced to just over 20,000. The issue of falling supply has been noted in the Special Article by Allen-Coghlan, McQuinn and O'Toole (2020), who posit that the most significant effect the pandemic will have on the housing market is to exacerbate the current imbalance between supply and demand. Uncertainty around COVID-19 is likely to lead to a reduction in investment in new building projects in the short term which in turn will lead to a fall in housing supply in the future. When the demand for housing begins to increase as uncertainty around the virus subsides, the level of supply may not be there to meet this demand.

**FIGURE 13**      **HOUSING COMPLETIONS**
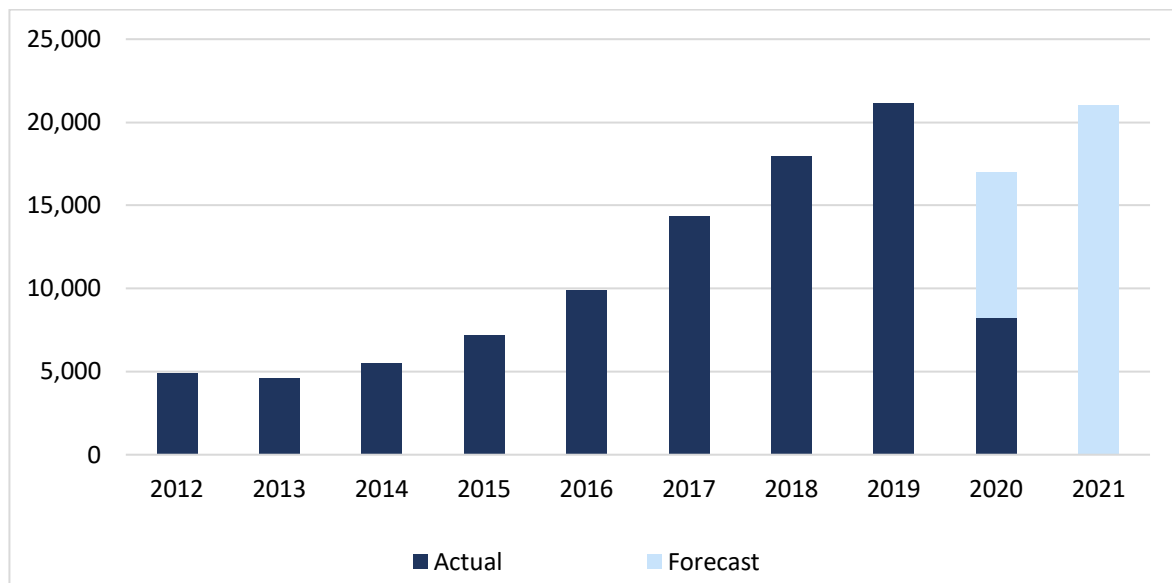


*Source:*     Central Statistics Office.

Figure 14 shows the Purchasing Managers Index (PMI) for both manufacturing and services. The PMI is based on a monthly survey of senior executives at private market companies across five fields, namely; supplier deliveries, inventories, order backlogs, new orders and employment levels. The indices give an indication of underlying business conditions and sentiment. An Index value of over 50 indicates an expansion in the sector relative to the previous month, while a value below 50 indicates a contraction. The PMI for both manufacturing and services plunged in April as the lockdown took effect across the country. The Manufacturing Index which had been around 50 for the previous 12 months declined to 36 in April. There was an even greater fall in the services sector which declined to just under 14. The greater decline in services is unsurprising given the widespread shutdown of non-essential domestic services in April such as restaurants, pubs, hairdressers etc. Since April both sectors have experienced a rapid recovery. As of August, the indices are above 50 indicating that business conditions are improving on the previous month. However, further improvements may be halted as a result of the additional restrictions which have been brought into Dublin from the middle of September.

**FIGURE 14        PURCHASING MANGERS INDEX**
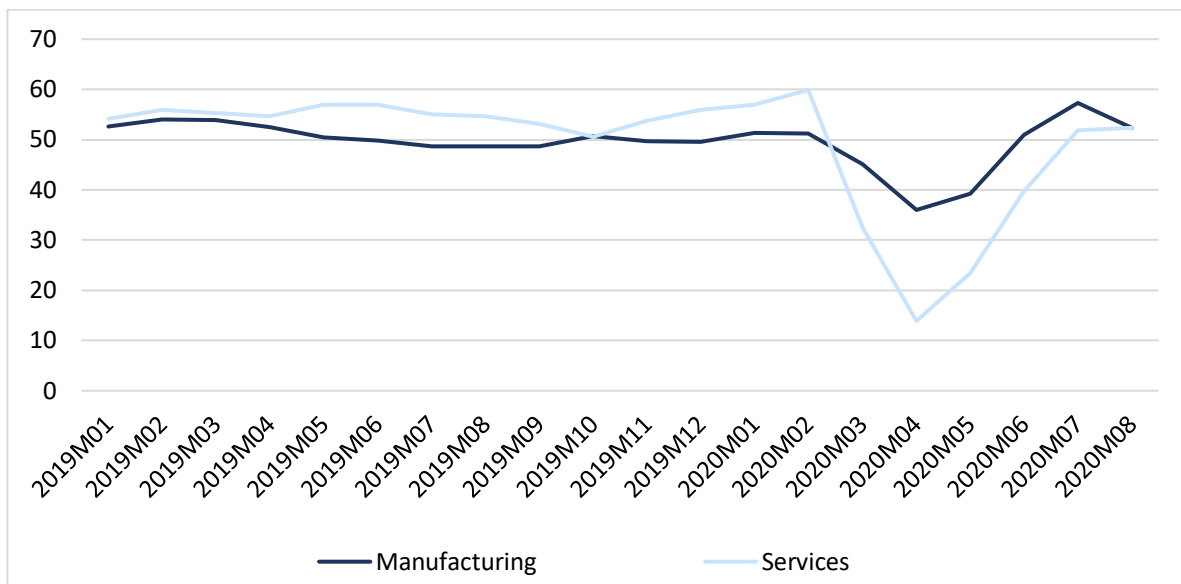


*Source:*     Markit Purchasing Managers Index.

Investment in both machinery & equipment and buildings & construction are expected to remain subdued over the rest of this year and through 2021 as uncertainty remains. Despite most businesses resuming trading, reduced capacity and increased uncertainty mean investment in capital expenditure is likely to be well below the level it was at pre-pandemic. Overall, investment is expected to decline by 17.0 per cent this year before recovering some of this loss in 2021, growing by 8.0 per cent.

The investment forecast for 2021 is also based on the assumption that there is a free trade agreement between the EU and UK in place in January next year. In the event of a Disorderly No-Deal Brexit the level of investment will be lower again. Work by Daly and Lawless (2020)[13] shows that sectors that would be most exposed to a Disorderly No-Deal Brexit are also those that have been least impacted by COVID-19, for example financial services and agriculture. This means that in the event of a Disorderly No-Deal Brexit, while there will not be a multiplicative effect of both crises on individual sectors, there will be a greater spread of sectors that are exposed to some form of risk. It should be noted that over the long term, Brexit may result in increased FDI to Ireland as a result of firms relocating from the UK, and Ireland generally being seen as a more attractive investment opportunity than the UK.

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[13]     Daly, L. and M. Lawless (2020). 'Examination of the sectoral overlap of COVID-19 and Brexit shocks'. ESRI Working Paper Series. No. 677.

## LABOUR MARKET

*Key Points*

- *Unemployment rate was 14.7 per cent in September 2020;*

- *450,800 people were either on the Live Register or claiming the PUP in August;*

- *Approximately 360,000 were being supported by the TWSS in August;*

- *The impact of COVID-19 on the labour market has varied significantly across sectors.*

The impact of the COVID-19 pandemic on the Irish labour market has been swift and unprecedented. In September, the unemployment rate was 14.7 per cent. This is up from 4.9 per cent in February but marks a significant decline from a peak of 30.4 per cent in April. Figure 15 illustrates the substantial rise in unemployment, both in terms of its rapidity and scale.

**FIGURE 15     UNEMPLOYMENT BY MONTH (%)**
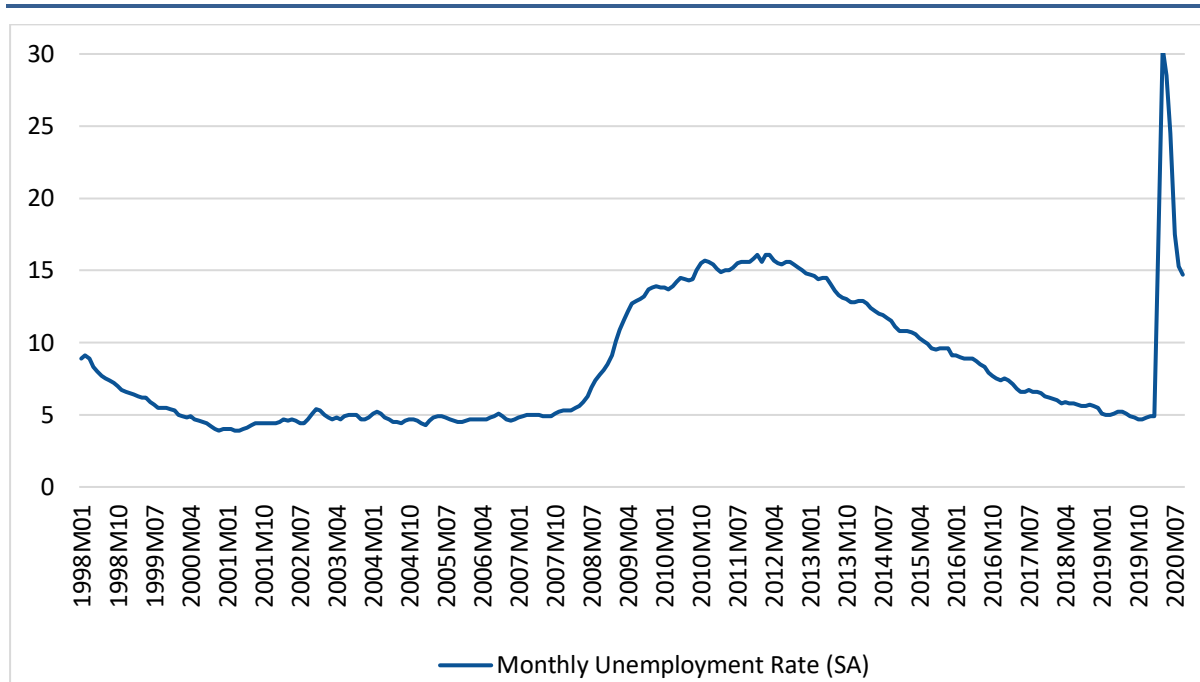


*Source:*   Seasonally-Adjusted Monthly Unemployment Rate Series and the COVID-19 Adjusted Monthly Unemployment Rate Series. Central Statistics Office.
*Note:*     The COVID-19 Adjusted Monthly Unemployment rate is used from March onward, rather than the traditional Monthly Unemployment Rate.

As well as the changes in unemployment, the level and composition of those employed has also changed. According to the Labour Force Survey there were an estimated 2,222,500 people at work in the State in Q2 2020. This is down by 77,600 or 3.4 per cent compared to Q2 2019. This figure may not represent the full impact

of the COVID-19 pandemic on the Irish labour market as it has been determined using strict classification criteria set by the ILO. In light of this, a COVID-19 adjusted estimate of employment has been produced. As of June 2020, the CSO estimates that 1,783,567 persons aged 15 and over were in employment.[14] The number of people '*Away from Work*' (employed but not working) also illustrates the impact of the pandemic on the labour market. In Q2 2020 the number of those 'away from work' was up by 276.7 per cent year-on-year.[15]

In the previous *Commentary* Roantree illustrated how younger workers were disproportionately impacted by the pandemic in terms of joblessness. In this *Commentary* we focus more on the impact across sectors. Employment in some sectors has been more severely impacted than others by the pandemic. Sectors such as 'Public administration and defence' and 'Education' have largely escaped the substantial falls in employment between Q1 and Q2 2020 witnessed in sectors such as 'Administrative and support services' and 'Accommodation and food services' brought on by the COVID-19 pandemic.

The CSO has carried out research using administrative data from Revenue based on a sample that excludes the self-employed and firms with fewer than three employees. Based on this sample, the CSO estimates that the percentage fall in employment from Q1 to Q2 2020 for the 'Accommodation and food' sector was 61.2 per cent, while the fall for the 'Administrative and support' sector was 17.1 per cent. On the other hand, employment in 'Public administration and defence' and 'Education' only fell by 5.7 per cent and 6 per cent respectively.[16]

The vast majority of those who lose their jobs as a result of the COVID-19 pandemic are entitled to some form of State support and 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. The number of people on the Live Register or claiming the PUP peaked at over 816,800 in April. In August of this year it stood at 450,800; this compares to the 199,100 on the Live Register in August 2019. These figures do not include the number of people being supported by the Temporary Wage Subsidy Scheme (TWSS) as they are still in employment. This scheme allowed employees, whose employers were negatively impacted by the pandemic, to receive supports directly through their employer's payroll system. The scheme ran from 26 March 2020 to 31 August 2020. It is estimated that 360,000 employees were being directly supported by the scheme on 31 August. The total cost to the

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[14]   For more information see:
       https://www.cso.ie/en/releasesandpublications/er/lfs/labourforcesurveylfsquarter22020.
[15]   For more information see:
       https://www.cso.ie/en/releasesandpublications/br/b-lfs/labourmarketinsightseries1q22020.
[16]   For more information see:
       https://www.cso.ie/en/releasesandpublications/br/b-lfs/labourmarketinsightbulletinseries2.

Exchequer of operating the TWSS for its duration was approximately €2,853 million (Revenue Commissioners, 2020).

While the TWSS was active, approximately 125,100 people transitioned from the PUP to the TWSS and approximately 23,200 individuals transitioned from the TWSS to the PUP. Approximately 242,400 individuals moved from the TWSS to non-TWSS employment.[17] This shows the significant role the wage subsidy scheme has played in helping individuals retain/regain their jobs during the pandemic. The Employment Wage Subsidy Scheme (EWSS) replaced the TWSS from 1 September 2020 although the TWSS and the EWSS operated in parallel throughout July and August. By mid-September approximately 34,300 employers had registered with Revenue for the new scheme. Figure 16 shows the number of individuals on the Live Register, the number claiming the PUP and the number of employees being supported by the TWSS by week from March to September.

**FIGURE 16    NUMBER OF PEOPLE CLAIMING THE PUP AND BEING SUPPORTED BY THE TWSS BY WEEK**
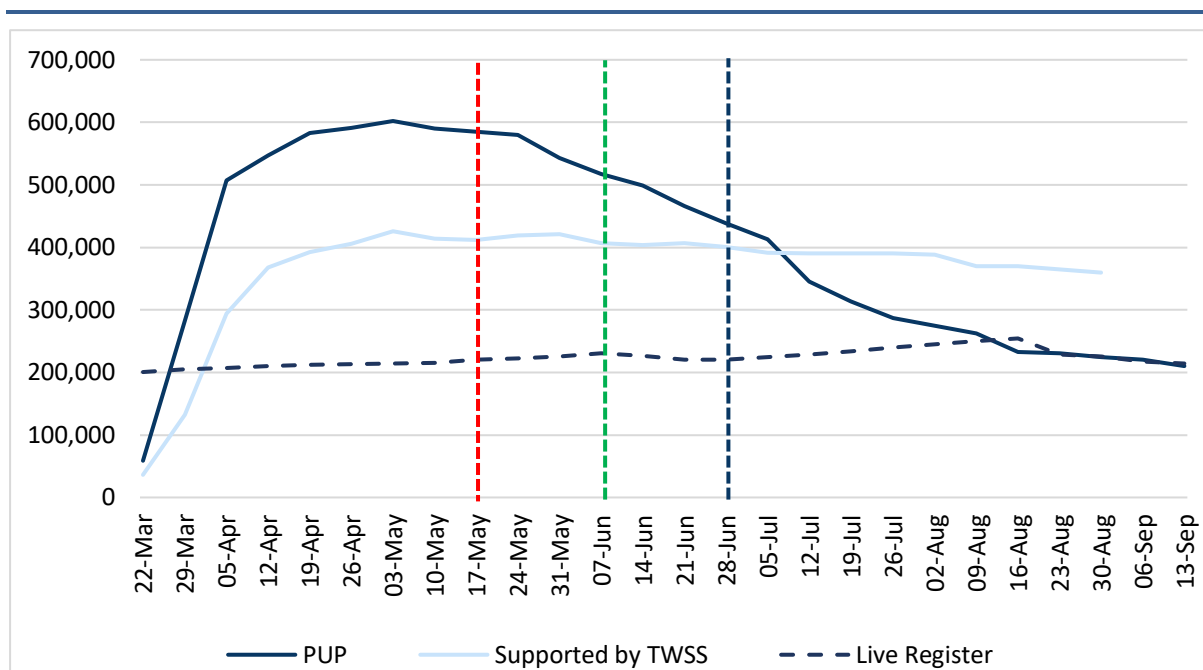


*Source:*    Central Statistics Office and Revenue Commissioners.
*Note:*    18 May (red line) was the beginning of Phase 1 of 'The Roadmap for Reopening Society and Business', while Phase 2 and Phase 3 began on 8 June (green line) and 29 June (blue line) respectively.

The impact of the COVID-19 pandemic has been unequal across sectors and time, with some sectors able to return to work sooner than others in line with the phased reopening of the economy. To illustrate this, three sectors – 'Accommodation and

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17    For more details see: https://revenue.ie/en/corporate/information-about-revenue/statistics/number-of-taxpayers-and-returns/covid-19-wage-subsidy-scheme-statistics.aspx.

food', 'Information and communication' and 'Construction' – are presented in more detail below. Figure 17 shows the number of people claiming the PUP and the number of people being supported by the TWSS in a given week for the 'Accommodation and food' sector. For comparative purposes, it also shows the number of people in employment according to the Q1 2020 Labour Force Survey. Figure 18 and Figure 19 show the same for the 'Construction' and the 'Information and communication' sectors.[18]

The 'Accommodation and food' (A&F) sector has been one of the most severely impacted by the COVID-19 pandemic. In Q1 2020 there were an estimated 173,900 people working in the sector. At the end of April, 127,000 people from the sector were claiming the PUP. This is 73 per cent of those working in the sector in Q1 2020. The numbers had fallen to 63,700 people, or 37 per cent, of Q1 2020 A&F workers by the end of July. However, the number of those from the sector being supported by the TWSS over the same period more than doubled – growing from 30,527 to 81,941 from the end April to the end of July. This shows the significant role the TWSS has played in helping PUP claimants from this sector to return to work. The number of those in the A&F sector being supported by the TWSS or claiming the PUP was 157,527 at the end of April (91 per cent of Q1 2020 A&F workers). By the end of July this had fallen slightly to 145,641 (84 per cent of Q1 2020 A&F workers).

**FIGURE 17       ACCOMMODATION AND FOOD – NUMBER ('000) ON PUP, TWSS AND IN SECTOR**
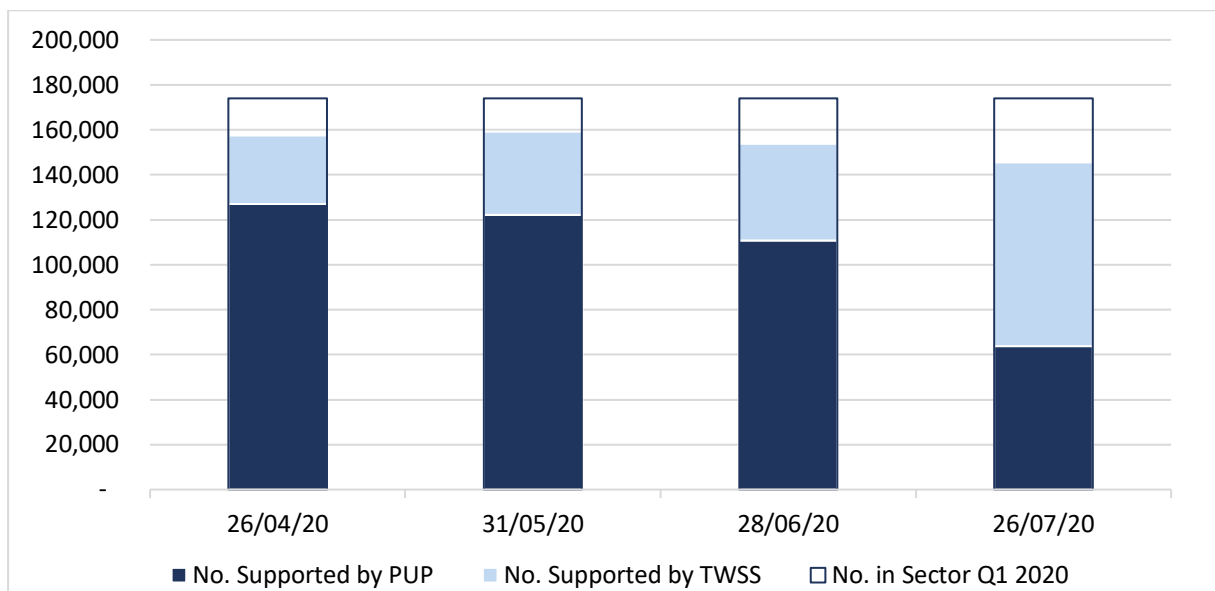


*Source:*     Central Statistics Office and the Department of Social Protection and Employment Affairs.

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[18]     The number of people being supported by the TWSS in a given sector is taken from the CSO while a combination of the figures published by the CSO and the DEASP are used for the number of those claiming the PUP.

The Construction sector is an example of a sector that was hit quite severely in the early stages of the pandemic but has recovered far better than the 'Accommodation and food' sector since then. In Q1 2020 there were an estimated 148,600 people working in the sector. At the end of April, 78,500 people from the sector, or 53 per cent of Q1 2020 construction workers, were claiming the PUP. This had fallen to 24,300 people or 16 per cent of Q1 2020 construction workers by the end of July. At the end of April 38,396 people in the sector were being supported by the TWSS. Unlike the 'Accommodation and food' sector, this number has fallen over time and by the end of July only 29,474 people from the sector were being supported by the TWSS. The number of those in the Construction sector being supported by the TWSS or claiming the PUP was 116,896 at the end of April (79 per cent of Q1 2020 A&F workers). By the end of July this had fallen substantially to 53,774 or 36 per cent of Q1 2020 Construction workers.

**FIGURE 18      CONSTRUCTION – NUMBER ('000) ON PUP, TWSS AND IN SECTOR**
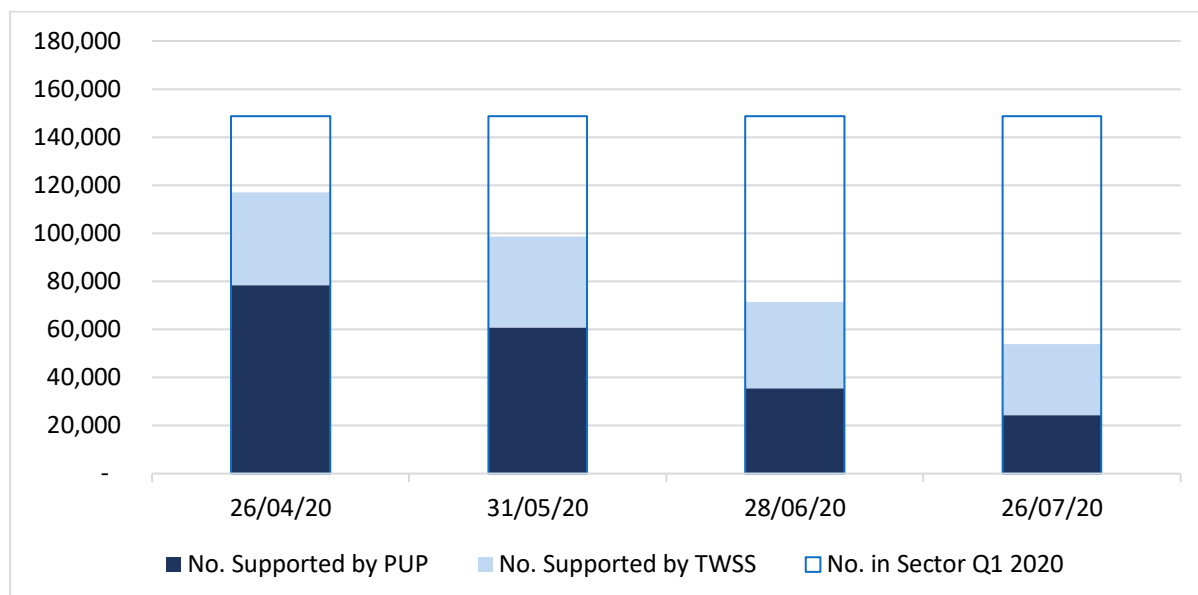


*Source:*    Central Statistics Office and the Department of Social Protection and Employment Affairs.

At the other end of the spectrum, when compared to the 'Accommodation and food' sector, the 'Information and communication' (I&C) sector has fared far better throughout the pandemic. In Q1 2020 there were an estimated 128,500 people working in the sector. At the end of April, 11,300 people from the sector (9 per cent of Q1 2020 I&C workers) were claiming the PUP. This had fallen to 8,000 people or 6 per cent of Q1 2020 I&C workers by the end of July. At the end of April 13,355 people in the sector were supported by the TWSS. Similar to the 'Construction' sector, this number has fallen over time and by the end of July only 11,064 people from the sector were being supported by the TWSS. The combined number of those in the I&C sector being supported by the TWSS or claiming the PUP was 24,655 at the end of April (19 per cent of Q1 2020 I&C workers). By the end of July

this had fallen to 19,064 or 15 per cent of Q1 2020 'Information and communication' workers.

**FIGURE 19    INFORMATION AND COMMUNICATION – NUMBER ('000) ON PUP, TWSS AND IN SECTOR**
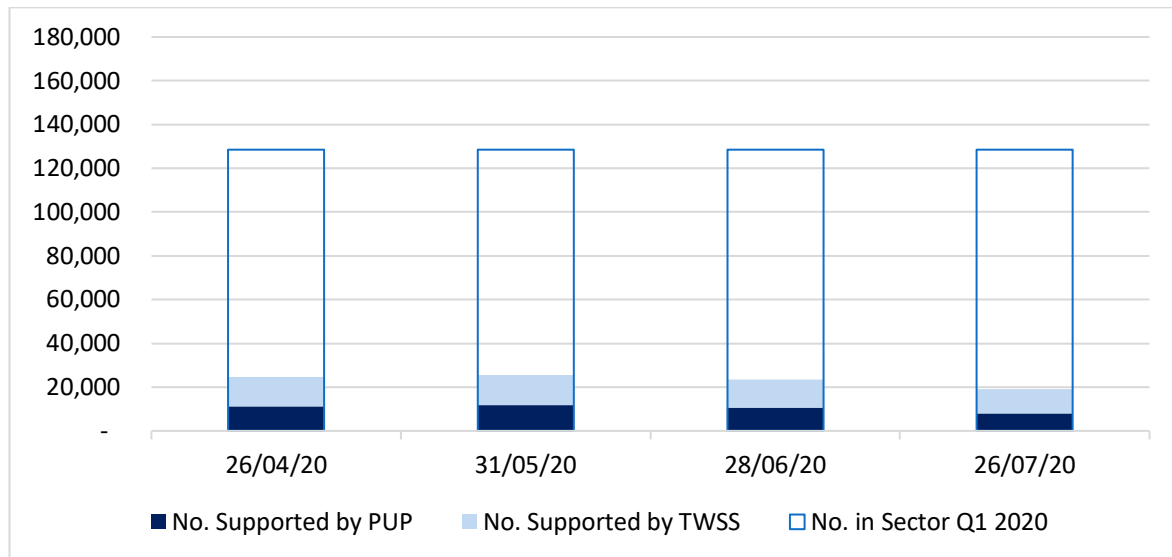


*Source:*    Central Statistics Office and the Department of Social Protection and Employment Affairs.

The figures above clearly illustrate the unequal impact the COVID-19 pandemic has had on the Irish labour market across the sectors. The sector specific nature of these job losses and the progressive nature of the income tax system in Ireland have combined to result in a fall of only 1.4 per cent in income tax for the year to August when compared to the same period in 2019.[19] The sectors worst affected by the pandemic, such as Accommodation and food, had a higher share of low-paid and part-time workers and as such many of the workers in this sector did not pay high levels of income tax before the pandemic occurred. For example, in February 2020, the Accommodation and food sector accounted for 7 per cent of employees but only 1 per cent of PAYE contributions. On the other hand, many of the workers that bear a significant PAYE liability are employed in sectors that were not severely impacted by the unemployment shock brought on by the pandemic. For example, employees in Public administration, Education and Health together accounted for 29 per cent of employees in February 2020 and for 26 per cent of PAYE contributions while the ICT sector accounted for 4 per cent of employees pre-pandemic but 12 per cent of PAYE contributions.[20]

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[19]    For further information see: https://www.gov.ie/en/publication/4181c-fiscal-monitor-august-2020.
[20]    For further information see:
https://www.revenue.ie/en/corporate/documents/research/additional-paye-information.pdf.

We expect the unemployment rate to be 12.7 per cent in Q4 2020 under the current 'Living with COVID' approach. This accounts for local restrictions and lockdowns but crucially it assumes that there is no return to a strict nationwide lockdown in the rest of 2020. Should this occur the unemployment rate will most likely be higher. Phase 2 of the reopening of the economy began on 8 June. There were approximately 308,000 fewer people receiving the PUP by mid-September when compared to the first week in June. Should we return to a similar level of restrictions it is possible that many of these individuals may need to return to claiming the PUP. For 2020 as a whole, we expect the unemployment rate will average 16.8 per cent. Under our Baseline scenario for 2021, which assumes a trade deal is agreed between the EU and the UK, we estimate the unemployment rate for 2021 will be 9.9 per cent.

**PUBLIC FINANCES**

*Key Points*

- *A substantial deficit is forecast for 2020;*

- *Decline in income taxation receipts were not as great as expected;*

- *Corporation tax receipts are likely to increase substantially again in 2020;*

- *A significant deficit is also likely in 2021.*

Figure 20 plots the growth rates for the main taxation items for the period January to August from 2016 to 2020. Most items registered significant growth in January and February, before the impact of COVID-19 started to take effect in March and April.

**FIGURE 20      ANNUAL CHANGES IN MAJOR TAX SUB-COMPONENTS (%): JANUARY – AUGUST**



*Source:*    Department of Finance, Department of Public Expenditure and Reform and QEC Calculations.
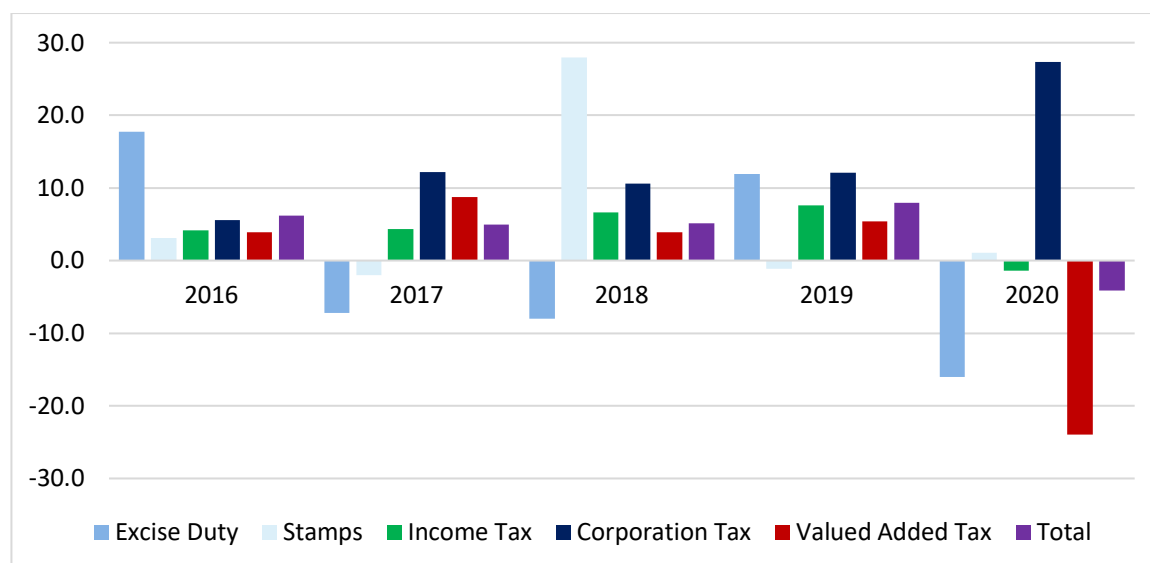
For the year to date income tax receipts are down by 1.4 per cent with respect to the same period in 2019. As noted in the labour market section this highlights the sector specific nature of many of the job losses due to COVID-19 along with the progressive nature of the income tax system. It would appear that many of those jobs that were lost were either outside of the income tax system or had a low level of liability because they were in sectors with relatively high proportions of low wage or part-time employment. It is also worth noting that, according to data released by the Revenue Commissioners, the ten largest tax paying firms in the Irish economy had annual job growth of 11 per cent in both April and May. Therefore, this has resulted in the average tax liability per new job exceeding the average tax liability per lost job (April and May), further reducing the overall impact of job losses on aggregate receipts. This heterogeneity of performance in the labour market is further illustrated by the fact that PRSI receipts increased by almost 9 per cent for the year to August.

As with previous years, corporation taxes continue to witness a significant increase in the present year with receipts up by over 27 per cent for the year to date. This contrasts sharply with the profile or expected level of these receipts published at the start of the year which indicated that a negative growth rate of 6.4 per cent was expected, leading to a tax take of €10.2 billion. The difference between the expected and actual receipts can be thought of as another 'windfall' amount for the Irish Exchequer. In effect, it means that the deficit, which is likely to be substantial anyway, could have been up to €2 billion higher had corporation taxes materialised as expected.

The surge in corporation tax may be related to certain tax arrangements, which allowed multinationals who dealt in intellectual property (IP) to significantly reduce their global taxable income. A Box by McQuinn in the Output section of the *Commentary* highlights the implications of some of these transactions on Euro Area aggregate data as well as the Irish National Accounts.

For the present year, the combination of the increased expenditure in areas such as social protection along with the overall decline in taxation revenues means that the Exchequer is likely to experience a deficit of €25.4 billion or 7.3 per cent of GDP. This will result in a significant increase in the national debt. In 2021, under our Baseline assumption that a free trade agreement will be achieved between the United Kingdom and the European Union, we also expect a sizeable deficit to occur. This is likely as the Government is committed to maintaining a number of the income support schemes until at least April 2021. This will result in a higher level of expenditure than would otherwise be the case.

We do expect to see most of the taxation headings registering positive growth in 2021 as they recover from the declines most experienced in 2020. However, as can be seen from Table 3, which presents the actual level of taxation receipts for 2019 as well as forecasts for 2020 and 2021, we believe that most tax aggregates will be lower in level terms in 2021 than they were in 2019. The exception is corporation taxes. Overall, we believe the deficit will be €15 billion in 2021 or 3.9 per cent of GDP.

**TABLE 3          ACTUAL AND FORECAST LEVEL OF SELECT TAXATION AGGREGATES (€ BILLION)**

| Taxation Heading | 2019 Actual | 2020 Forecast | 2021 Forecast |
|---|---|---|---|
| Income | 22.9 | 22.13 | 22.8 |
| VAT | 15.1 | 10.58 | 14.18 |
| Corporation | 10.9 | 12.52 | 12.52 |
| Excise | 5.9 | 4.75 | 5.61 |

*Source:*    Department of Finance and QEC.

In terms of funding for the State, two bonds matured in the present year; one in April and one in October. Also, four of the remaining five tranches of the UK bilateral loan matured in 2020. In terms of its response to the COVID-19 situation, the stated policy of the National Treasury Management Agency (NTMA) is to use existing cash balances to meet part of the additional 2020 funding requirement. The NTMA has already borrowed €20 billion of the revised funding target 2020. It is also envisaged that short-term paper will also be an important funding source for the sovereign.

We summarise the resulting implications for our forecasts of the debt-to-output ratios in Figure 21. By the end of 2020, we believe the debt-to-GDP ratio will be up to 67 per cent while debt-to-GNI* will have increased to almost 110 per cent. Both ratios will decline marginally in 2021 as the recovery in output will exceed the increase in the national debt.

**FIGURE 21**      **DEBT-TO-GDP/GNI\* (%)**
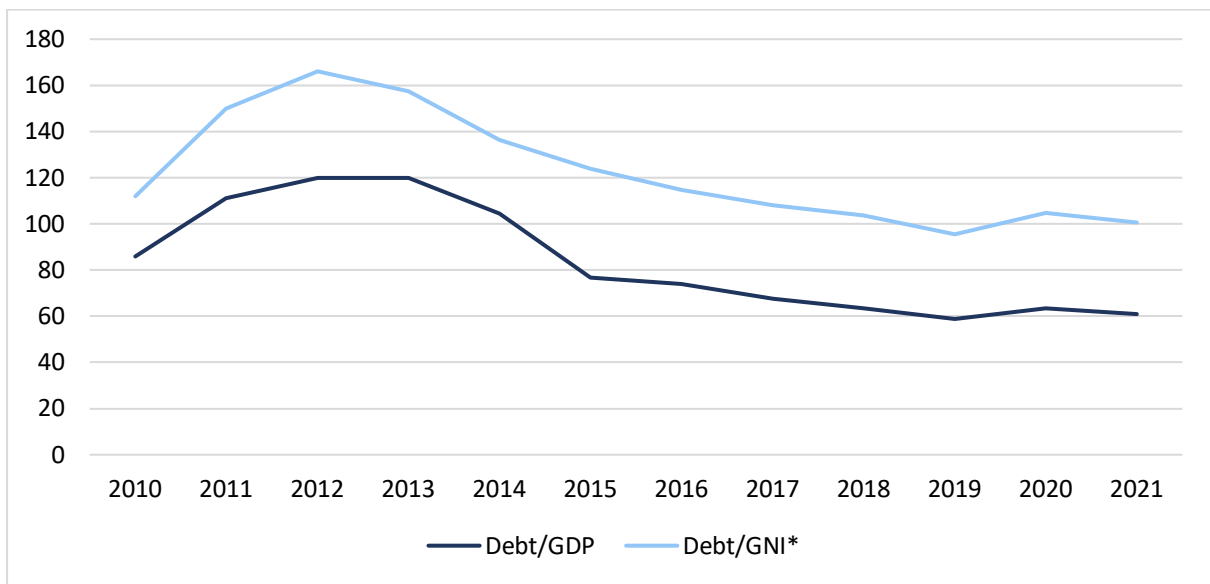


*Source:*      QEC Calculations.

# General Assessment

COVID-19 continues to have a significant negative impact on many aspects of the Irish economy. Consumption and certain elements of investment have witnessed substantial downturns, while the labour market is currently experiencing unemployment rates of almost 15 per cent. However, despite the fact that many of our exporting firms have been negatively impacted by COVID-19, the export sector as a whole avoided a decline in Q2 2020 compared with the same period in the previous year.

The strong contribution to economic growth of net trade in 2020 means that the Irish economy experienced a relatively small decline in headline GDP, compared to other EU countries in Q2 2020. In a Note to this *Commentary*, O'Toole (2020) sheds more light on the Irish macroeconomic performance in a cross-country context and links the relatively benign fall in GDP to individual, multinational-dominated export sectors. This, along with the expected recovery, particularly in consumption for the latter half of the year, means the Irish economy is set to experience a decline of 1.8 per cent for 2020. While the decline in GDP is much less severe than we previously expected, the economic shock has been substantial for particular sectors and for many households. It is clear from the decline in household spending – which has been amongst the largest in the EU – and the increase in unemployment, that COVID-19 has had a major adverse impact on Irish economic life.

The unique nature of the COVID-19 related economic shock has highlighted particular characteristics of the Irish economy. For example, despite the unemployment rate jumping to just above 30 per cent at one stage in the year and likely to be approximately 17 per cent for the year as a whole, income tax receipts were down by just 1.4 per cent for the year to August. This suggests that in the main, the labour market impact of COVID-19 appears to be concentrated in relatively low paid jobs. Many who lost their jobs may have been outside the income tax net altogether or work in sectors that have a high proportion of low wage and/or part-time employment. This contrasts with those employed in relatively 'tax rich' sectors such as FDI (manufacturing/ICT) and financial services.

Forming an accurate assessment of the impact of COVID-19 is a complex challenge given the continued presence of distortions in the Irish National Accounts due to the activities of a select few multinationals. For example, the headline investment figure for the Irish economy experienced substantial volatility in the present year due to variations in capital investment related to intellectual property products

(IPP). In a Box to the *Commentary*, McQuinn highlights the impact that these distortions in the Irish and Dutch data are having on Euro Area data.

Understanding the nature of the COVID-19 shock is important as the economy braces itself for the prospect of another adverse shock in the immediate future; namely that of Brexit. In the *Commentary* we draw on recent research by Daly and Lawless (2020) and on a Box in the *Commentary* by Bergin and Garcia Rodriguez, which uses COSMO, the macro-econometric model of the Irish economy, to assess the likely outcome for the Irish economy of a Disorderly No-Deal Brexit, given the COVID-19 downturn. Their analysis quantifies the significant impact on the domestic economy over the longer term of a Disorderly No-Deal Brexit.

We therefore prepare two scenarios for 2021; one is where an agreement is reached between the European Union and the United Kingdom on a substantive trade arrangement from 2021 onwards (Baseline) and a second where a Disorderly No-Deal arrangement is assumed to take place from the outset of 2021. In both cases, the underlying assumption is that COVID-19 will remain in society and that certain COVID-related restrictions will stay in place for the duration of 2021.

Our results indicate that under the Baseline scenario, the Irish economy will recover quite strongly in 2021 with GDP registering growth of 6.3 per cent. Consequently, GDP by the end of 2021 will be 4.5 per cent greater than that in 2019. If a Disorderly No-Deal Brexit does transpire however, the domestic economy will register a much more modest growth rate of 3.3 per cent in 2021 as exports, in particular, are adversely impacted.

While a number of the tax headings such as VAT, Customs and Excise Duty are likely to register significant declines for the present year, corporation taxes are set to register another year of substantial increases. For the year to August corporation tax receipts were up by over 27 per cent on the previous year. This may be related to the substantial increases in capital investment noted earlier. Importantly, from the perspective of the public finances, 2020 sees the end of the 'Double Irish' tax arrangement. This could have negative implications for future corporation tax receipts.

From a general budgetary perspective, it will continue to be necessary to support the Irish economy with the various measures already in place as we move into 2021. Taking the Baseline scenario presented in the *Commentary*, this means a deficit is again likely in 2021. This is particularly the case if there is a Disorderly No-Deal Brexit. However, given the underlying strength of the Irish economy and the likelihood that the economy will grow robustly once uncertainty concerning

the virus has passed, the policy of supporting the economy in the present manner is the correct approach. This will minimise the adverse impact of COVID-19 on the domestic economy in the short term and hasten the recovery in the medium to longer term.

The impact of the COVID-19 related downturn on the financial performance of Irish small- and medium-sized enterprises (SMEs) is examined in a Special Article to the *Commentary*. Martinez-Cillero, Lawless and O'Toole (2020) use survey evidence on the extent of turnover and expenditure reductions for Irish SMEs due to COVID-19. This information is then used to calibrate a number of scenarios for a representative dataset of Irish firms. Martinez-Cillero et al. (2020) find that between two-in-five micro firms and one-in-two small/medium-sized firms faced a revenue shortfall from March to June 2020. This accounts for a revenue shortfall of between €6 billion and €10 billion for the period. Looking forward to the end of 2020, scenario estimates for the gap are between €8 billion and €15 billion depending on the epidemiological situation.

While it is certainly the correct approach at present to continue to support firms (either through ongoing wage subsidy arrangements, grants, or loan finance mechanisms such as the expanded credit guarantee scheme), the longer the economy continues to operate under COVID-related public health measures, the more difficult it will be for some firms to survive in the absence of policy supports. There will come a point where the tapering of policy measures will be necessary. At that stage a greater focus on the sustainability or otherwise of the enterprise will be needed to ensure the most efficient use of policy measures.

As noted earlier, distortions in the National Accounts due to the activities of a few multinational companies make identifying the true impact of COVID-19 on the domestic economy particularly challenging. In another paper to the *Commentary*, FitzGerald (2020) argues that the best measure of economic welfare for those living in Ireland is Net National Product (NNP). Using new data FitzGerald shows the contribution to NNP by each industrial sector, broken down by foreign and domestically owned businesses. The growth rate of NNP and the contribution to it from the different industrial sectors and from foreign and domestically owned firms is analysed. The results suggest that the economic welfare of those living in Ireland has grown by around 5 per cent a year since 2013. The analysis in the paper shows that the foreign owned sector has contributed around 20 per cent of the growth in the economy since the recovery began. It also shows that the contribution from domestically owned businesses is spread across a range of industrial sectors.

In another Special Article to the *Commentary* Allen-Coghlan, McQuinn and O'Toole (2020) assess the implications for the Irish property market of COVID-19. The issue is addressed under the headings of housing demand, housing supply, affordability and the rental market. The paper draws on a number of studies conducted by ESRI researchers, which have examined the implications of COVID-19 on house prices (Allen-Coghlan and McQuinn, 2020),[21] rent levels (Allen-Coghlan, M., C. Coffey, and C. O'Toole, 2020)[22] and affordability in the rental sector (O'Toole, Slaymaker, McQuinn, Coffey and Corrigan, 2020).[23] One of the conclusions of the paper is that arguably the main long-term consequence of COVID-19 on the property market is that the existing imbalance between supply and demand in the market may be exacerbated. Housing demand will likely recover quite quickly when the economy stabilises, particularly if the increased savings observed amongst households are used for house purchasing purposes. However, housing supply, which will also be impacted adversely by COVID-19, is likely to take longer to recover. Consequently, the paper argues, as previous Commentaries have, for a renewed commitment to the provision of social and affordable housing. This will help to offset any increase in the imbalance between housing needs and housing provision which may otherwise occur.

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[21]  Allen-Coghlan M. and K. McQuinn (2020). 'Property prices and COVID-19 related administrative closures: What are the implications?', *International Journal of Housing Markets and Analysis*, accepted.

[22]  Allen-Coghlan, M., C. Coffe, and C. O'Toole (2020). *Exploring the Impact of the COVID-19 Pandemic on Rental Prices in Ireland from January to June 2020: Early Insights from a Monthly Rent Index*. Economic and Social Research Institute (ESRI) and Residential Tenancies Board (RTB).

[23]  Coffey C., E. Corrigan, K. McQuinn, C. O'Toole and R. Slaymaker (2020). *Exploring the short-run implications of the COVID-19 pandemic on affordability in the Irish private rental market*. ESRI Research Series 108, Economic and Social Research Institute (ESRI).

# Research Note

# THE LOCKDOWN TALE OF TWO ECONOMIES IN IRELAND: HOW BIG TECH AND PHARMA BUCKED THE TREND

## * Conor O'Toole[1]

## 1. INTRODUCTION

The COVID-19 pandemic represents the most severe, and rapid, disruption to the Irish and international economies in the post-World War Two era. Across the globe, authorities have been imposing public health restrictions which effectively close whole of sections of the economy in an effort to limit the transmission of the virus. While such measures have proven to be effective in many countries to 'flatten the curve', the economic cost associated with these lockdowns is high (IMF, 2020; Mandel and Veetil, 2020).

In Ireland, the authorities introduced extensive restrictions on economic and social life which saw much of the economy put into a deep freeze before gradually opening in June and July 2020. Indeed, Ireland had one of the strictest and longest lockdowns as measured by the recently developed Oxford Stringency Index.[2] Over the first and second quarters of 2020, consumer spending fell by nearly one-quarter (in cumulative terms) and the COVID-19-adjusted unemployment rate peaked at just over one in every three workers.

However, despite the international and domestic economy shock, the economic impacts on Ireland's macroeconomy, as measured by the growth rate of gross domestic product (GDP),[3] were relatively benign. Despite having the third largest consumption fall across 23 European countries, Ireland's GDP decline was the sixth smallest, mainly due to robust export growth. As a small and highly globalised economy, Ireland's growth is always sensitive to international trends. However, the relatively strong performance of Irish exports during the first half of 2020 bucks the international trends when export growth around the world was falling (as evidenced by declining exports in countries such as Germany).

The aim of this Note is to explore the cross-country differences in the scale of the COVID-19 macroeconomic shock, to highlight the relative sectoral performance in

a cross-country context and to provide some evidence on the very unique structure of the composition of Irish exports which enabled these areas to buck the COVID-19 economic trend.

A number of findings emerge. First, the performance of the industrial sector in Ireland has masked very large economic adjustments in other sectors. While industrial value added grew by 11 per cent cumulatively over the first half of 2020, value added in construction fell by over 40 per cent, and value added in arts, entertainment and recreation fell by nearly 75 per cent; both of these represent the largest declines of any EU country or the UK.

This duality in performance can be traced back to Ireland's export structure and its concentration in a limited number of areas. Based on 2019 data, 26 per cent of Ireland's exports are computer services, a further 15 per cent are goods for processing, 11 per cent are medical and pharmaceutical goods and 7 per cent are organic chemicals. Only 3 per cent of export values were accounted for by transport, travel and tourism activities which have been severely affected by COVID-19.

During the lockdown period, strong quarterly growth in exports of medicinal and pharmaceutical products, goods for processing (or contract manufacturing) and computer services outweighed very large declines in many other items (on a year-on-year basis).[4] Indeed, the value of tourism, travel and transport exports virtually collapsed (year-on-year in Q2 2020), but their contribution to the fall in overall export values (3 per cent) was completely outweighed by the growth in the value of medicinal and pharmaceutical product exports (3 per cent).

A question arises as to whether these developments were part of multinational corporate activities without any real economic activity taking place on the island of Ireland. Goods for processing activity does not relate to a core activity undertaken in Ireland and could be seen as part of the unusual globalisation effects on the Irish economy (Lane, 2017; FitzGerald, 2015). However, the relatively good performance of computer services and medicinal and pharmaceutical products comes from areas of a real sectoral specialisation advantage for Ireland. Even if these sectors are not employment intensive, the contribution of these activities should not be discounted from the discourse around Ireland's economic recovery.

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[4]  It is not unexpected to find major variations in output by sector during the lockdown period as some sectors continued to function as per public health advice while others were restricted in their operations.

The rest of this Note is structured as follows: Section 2 provides a short overview of the macroeconomic performance of the Irish economy during the lockdown in a comparative perspective. Section 3 contrasts the sectoral performance of the Irish economy with other European countries and Section 4 provides insights into the structure of Irish exports and their unique performance which allowed them to buck the international trend. Section 5 concludes.

## 2.  THE MACROECONOMIC PERFORMANCE OF THE IRISH ECONOMY THROUGH THE LOCKDOWN IN A COMPARATIVE PERSPECTIVE

While the difficulties in using traditional macroeconomic aggregates in Ireland (such as GDP and GNP) have been well documented in recent times (FitzGerald, 2018; 2020), many forecasters, commentators and economic planners continue to glean insights into the trajectory of the Irish economy from trends in Quarterly National Accounts data in particular. Given the fast-paced nature of the current COVID-19 pandemic, the timely publication of economy wide statistics is extremely useful as a lens into recent trends. Figure 1 shows the relative macroeconomic performance of the Irish economy over the past number of years in comparison to the UK and the rest of the EU27.

**FIGURE 1      TRENDS IN GDP (CONSTANT PRICES – INDEX 100 SET IN Q4 2019) – Y AXIS INDEX**
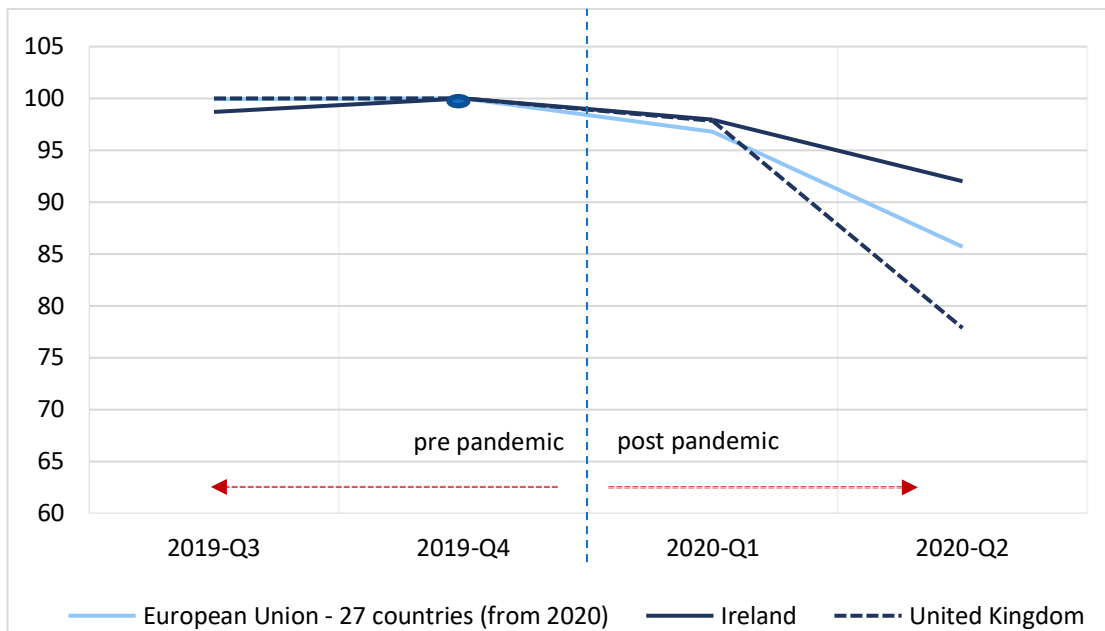


*Source:*       Eurostat.
*Note:*         Line above indicates pre- and post- pandemic (2019 and 2020). Oval shape indicates Q4 2019 = 100.

The drop in GDP during the lockdown (Q1 and Q2 2020) is much more benign in Ireland relative to other European countries but it also appears to be less severe

relative to expectations.[5] Indeed, the relatively benign impact on Ireland from a macroeconomic growth perspective is surprising given the lockdown in Ireland was amongst the most severe in Europe and occurred for longer than in other countries (as measured by the Severity Index presented by Hale et al., 2020).

**FIGURE 2    TRENDS IN LOCKDOWN STRINGENCY INDEX – FEBRUARY TO JUNE 2020**
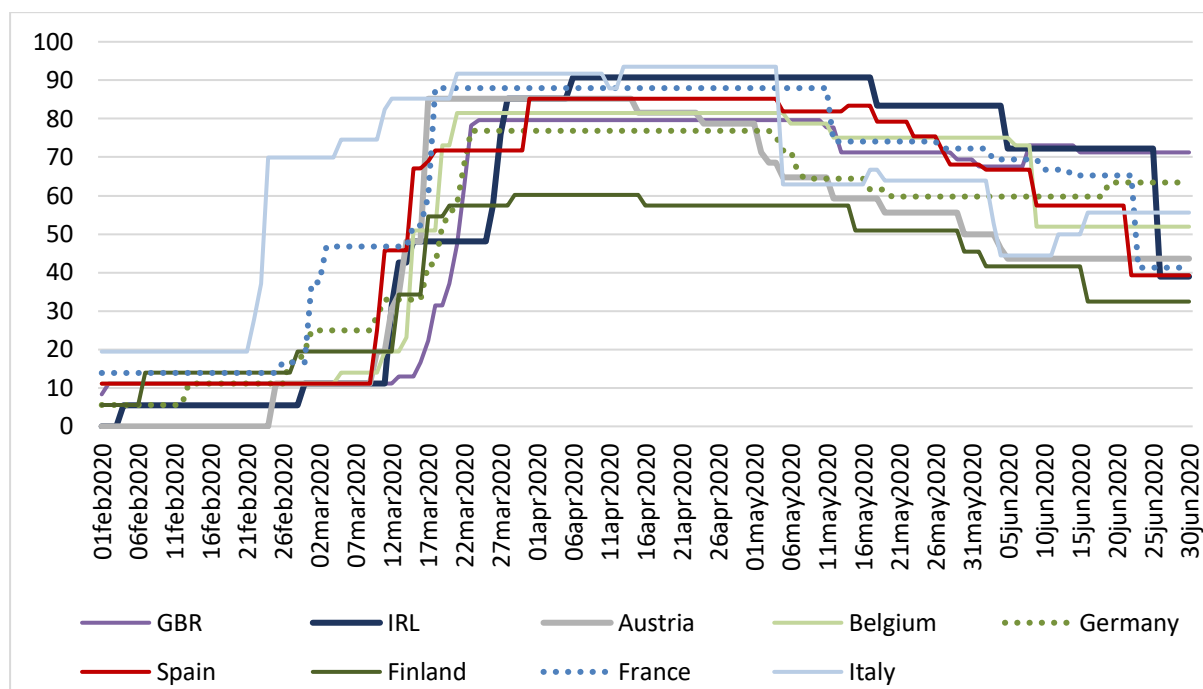


*Source:*    Hale et al. (2020).

To provide a further cross-country perspective, Figure 2 presents the quarter-on-quarter growth rate in Q1 and Q2 2020 as well as the cumulative quarterly growth rate for the two periods combined. The data are presented in this structure to attempt to capture the severity of the initial COVID shock relative to the pre-pandemic benchmark in Q4 2019. It is clear that the impact on Ireland is on the low end of the countries presented, with an impact closer to Denmark, Switzerland and Norway. The largest declines have been in Spain, the UK, Italy and France which have all lost at least 20 per cent of GDP over the first two quarters of 2020.

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5    In the recent *Quarterly Economic Commentary* (Summer 2020), we forecast much more severe falls in GDP than experienced in the second quarter of 2020 using National Accounts data.

**FIGURE 3     QUARTER-ON-QUARTER CHANGES IN GDP – Q1, Q2 2020 AND CUMULATIVE Q1+Q2**
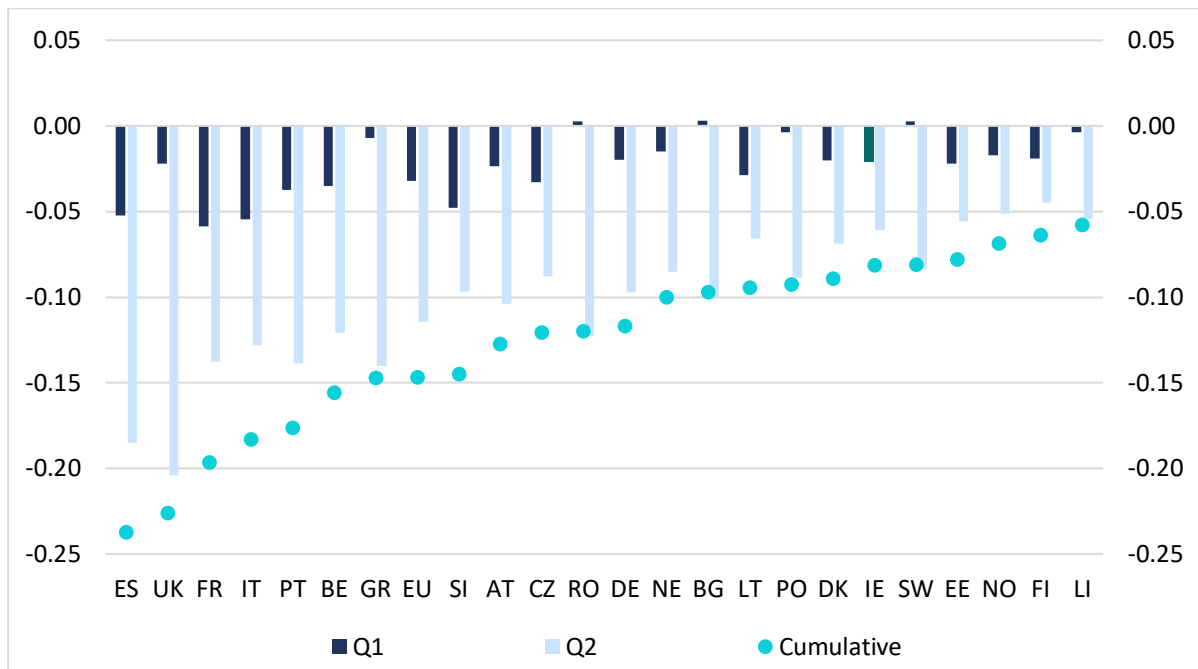


*Source:*     ESRI Analysis of Eurostat data. Data presented are cumulative quarterly growth ((Q2t/Q1t)-1) + ((Q1t/Q4t-1)-1) in seasonally-adjusted and calendar day adjusted value added volumes (chain linked € million).
*Note:*       Data seasonally and calendar days adjusted.

This relatively benign impact on Ireland can be explained by the difference in how the pandemic has impacted on domestic consumption and exports. While consumption expenditure has dropped dramatically, exports have been much more robust. The scatterplots below show the cumulative change for the first half of 2020 (Q1 Q-on-Q change plus Q2 Q-on-Q change) in GDP on the horizontal axis and the cumulative change in consumption and exports on the vertical axis. It is clear that the Irish fall in consumption is one of the largest, and much greater than the GDP fall. Conversely, the export fall has been small relative to other countries and relative to the fall in GDP. As an economy, exports in Ireland are a much larger share of GDP (approximately 137 per cent of 2019 GDP) as compared to consumption (31 per cent of 2019 GDP).[6] These figures are much higher than for the EU 27 at 51 and 52 per cent respectively and for the UK at 32 and 63 per cent. This makes Ireland's economy much more sensitive to changes in exports (naturally the final impact on GDP depends on the trade balance).

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6     Data using GDP volumes (GDP € million chain linked 2010) from Eurostat. Available on request from the author.

**FIGURE 4    SCATTER PLOT OF GDP FALL AND CHANGE IN CONSUMPTION AND EXPORTS**

*Cumulative Change in GDP Q1 + Q2 2020
Versus Change in Consumption (Y Axis)*
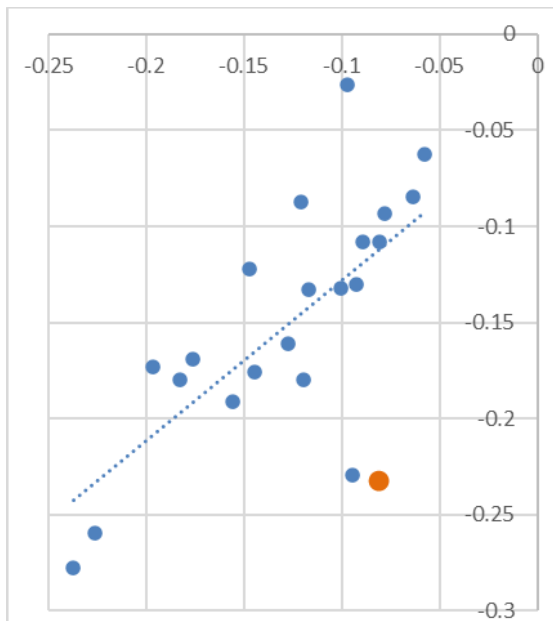
*Cumulative Change in GDP Q1 + Q2 2020
Versus Change in Exports (Y Axis)*
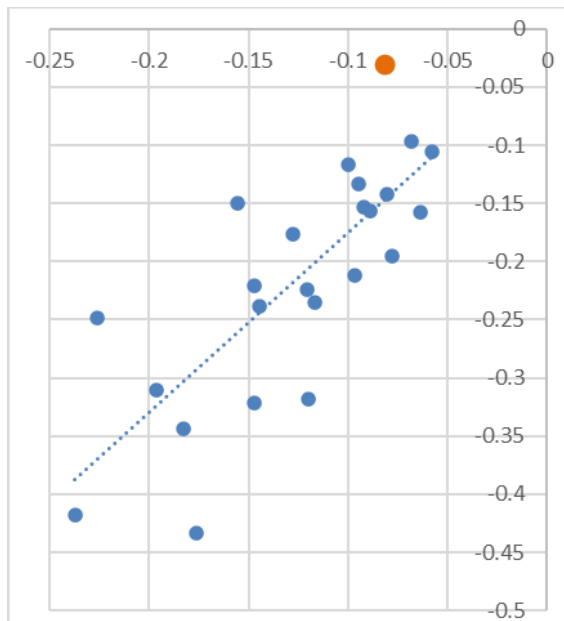


*Source:*     ESRI Analysis of Eurostat data.
*Note:*        Orange dot indicates Ireland.

Indeed, Figure 5 provides clearer evidence of the impact of the stringency of the lockdown measures in Ireland and its correlation with economic activity. The scatter diagram plots the average stringency by country over the period February to June 2020 (the period in which the pandemic began in Europe) on the vertical axis, and the cumulative quarterly changes in GDP and consumption on the horizontal axis. The line in the diagram is a simple linear fitted plot. The downward sloping trend line shows a highly negative correlation between stringency and GDP change. It is clear that the impact on Irish GDP is much less than would be expected by the stringency of the lockdown when compared to other countries (orange dot is well above the fitted plot line) while the impact on Irish consumption has a similar relationship to other countries (orange dot is closer to the fitted line).

**FIGURE 5     SCATTER PLOTS OF GDP CHANGE, CONSUMPTION CHANGE AND STRINGENCY INDEX**



*GDP Cumulative Change and Average Level of Stringency Index*

*Consumption Cumulative Change and Average Level of Stringency*
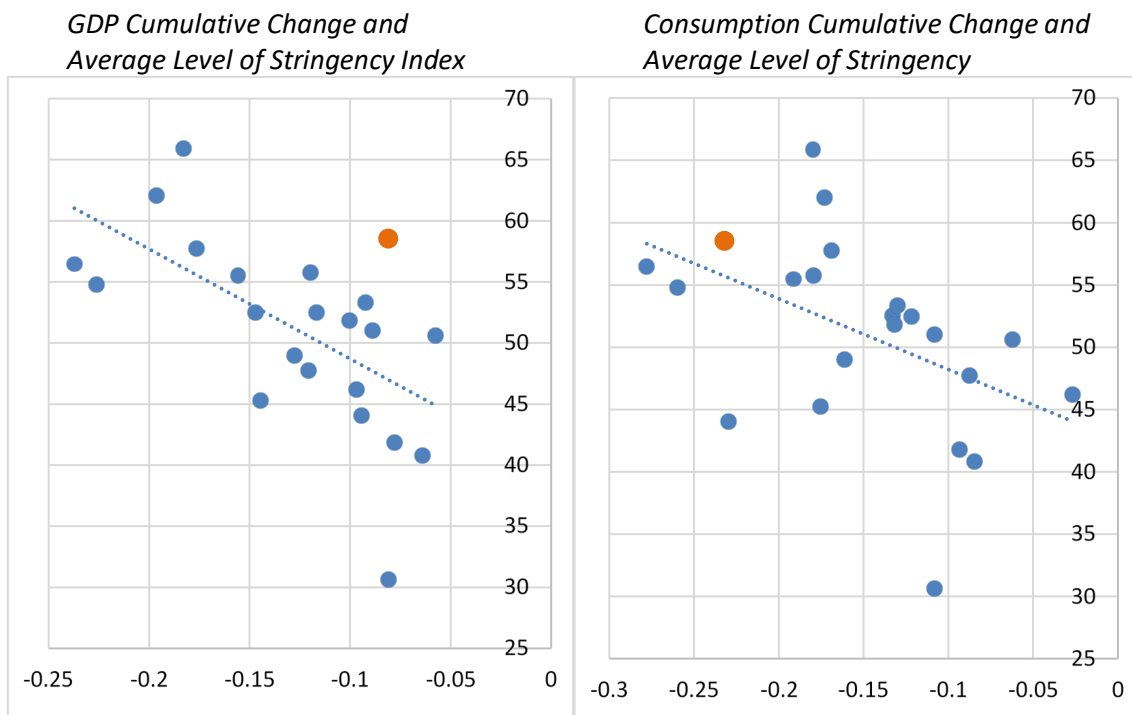
*Source:*     ESRI Analysis of Eurostat data.
*Note:*        Orange dot indicates Ireland.

For Ireland, the duality of the economic shock is notable. The domestic economy has been very badly affected by the pandemic with very large decreases in consumption. However, the export channel has held up extremely well and this has led to a much lower GDP adjustment than otherwise would have been expected. The rest of this Note explores the differences between sectors and export structure that can help shed further insight into this economic duality.

## 3.   A DEEPER DIVE INTO THE SECTORAL EXPERIENCE ACROSS COUNTRIES

To provide further insight into the comparative difference between Ireland and other countries in terms of the macroeconomic adjustments from the pandemic, the following charts explore the differences across sectors on a cross-country basis. The figures presented in all charts are the cumulative quarterly changes in value added for Q1 and Q2 for each sector individually.[7] The aim of this comparison is to explore just how different the economic adjustment was relative to other countries for different sectors of the Irish economy. The cross-country comparison includes 27 countries; all EU members (excluding Slovakia for whom data on Eurostat were missing at the time of analysis) and the UK.

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7     Quarter 1, 2020 quarter-on-quarter change plus Quarter 2, 2020 quarter-on-quarter change.

Comparisons across countries for the following sectors (available from the Quarterly National Accounts) are presented:

- Industry;

- Construction;

- Wholesale, retail, transport, accommodation and food services;

- ICT;

- Financial and insurance services;

- Real estate activities;

- Professional, scientific and technical activities; admin and support services; and

- Arts, entertainment, recreation, and extra territorial activities.

To begin, the cumulative quarterly growth changes in value added for Q1 and Q2 2020 are presented below for industrial activities. Of the 27 countries considered, 15 countries experienced a decline in industrial value added of over 15 per cent. Italian industrial value added shrank by nearly one-third, and the French and Spanish value added declined by nearly one-quarter. In fact, all countries, with the exception of Ireland, experienced a decline in industrial value added; Ireland, by contrast, experienced double digit growth (11 per cent).

**FIGURE 6    INDUSTRY – VALUE ADDED (VOLUMES), CUMULATIVE QUARTERLY CHANGES (Q1,Q2, 2020)**
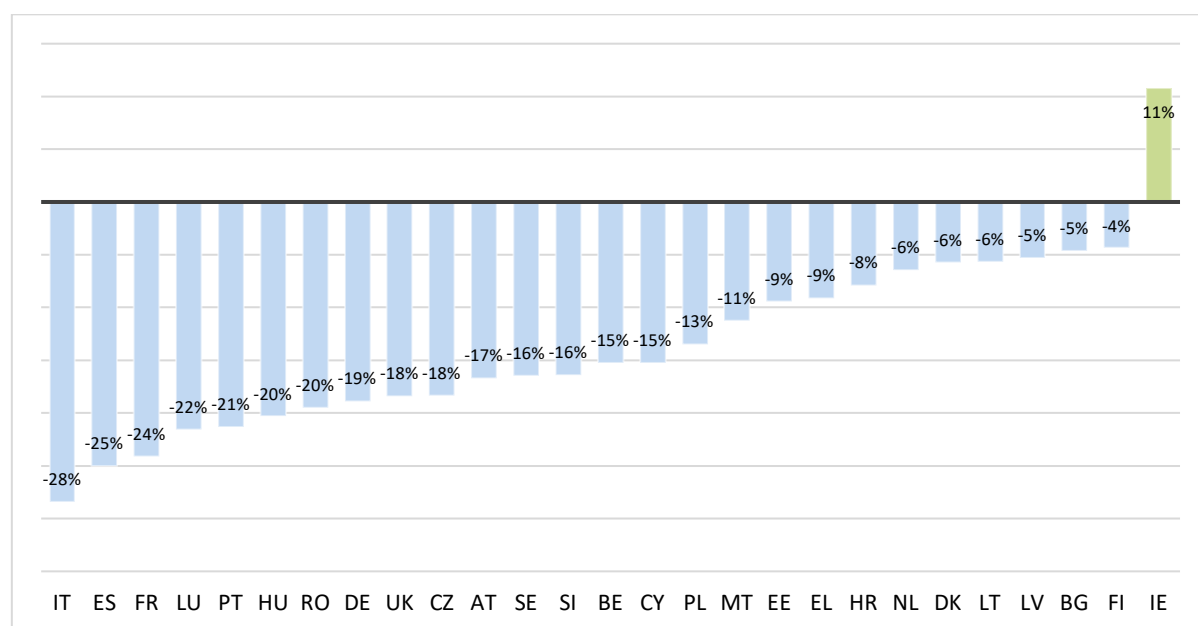


Source:    ESRI Analysis of Eurostat data.
Note:      Data seasonally and calendar days adjusted.

We next consider the change in value added in the construction sector. In contrast to the industrial sector's performance, the decline in Irish construction value added was nearly 40 per cent, the largest of any of the 27 countries considered. The UK and France also experienced very large drops in construction value added at 37 and 35 per cent. Spain, Cyprus, and Italy also lost over a third of value added in the construction sector. A number of countries experienced growth in construction value added over the period including Denmark, Romania, Portugal, Estonia, Finland and Germany.

**FIGURE 7**  **CONSTRUCTION – VALUE ADDED (VOLUMES), CUMULATIVE QUARTERLY CHANGES (Q1,Q2, 2020)**
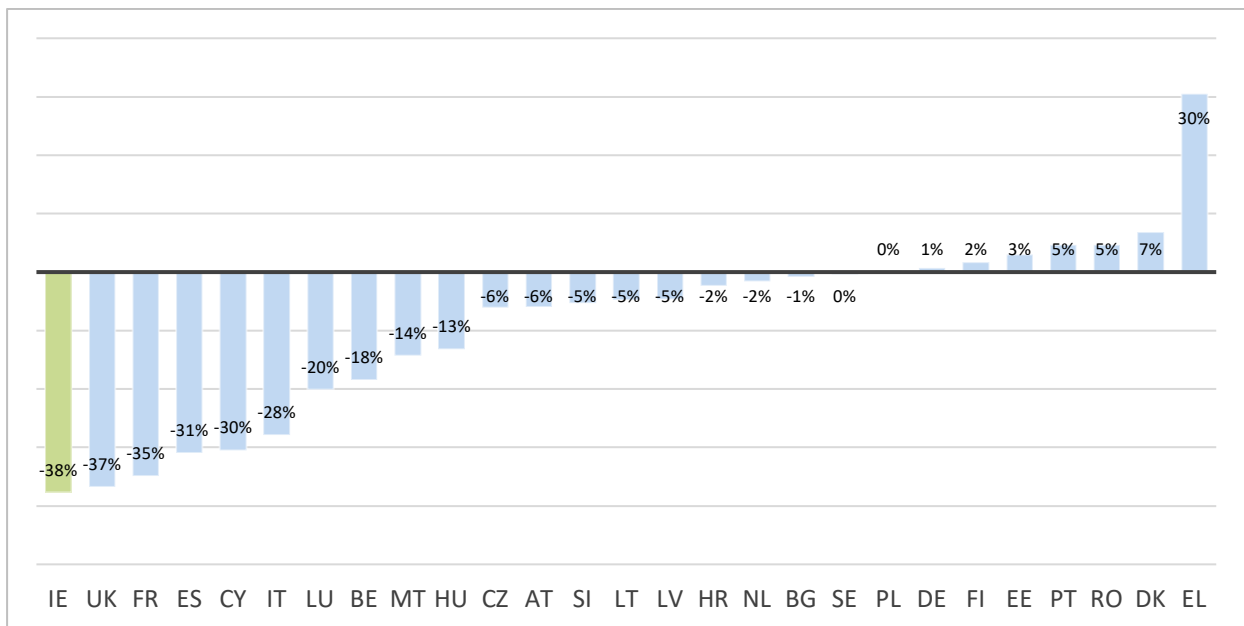


*Source:*    ESRI Analysis of Eurostat data.
*Note:*       Data seasonally and calendar days adjusted.

While construction value added declined extensively, value added in real estate services did not decrease by such an extent, having declined only circa 5 per cent. The country with the largest decline in this sector was Estonia at nearly 12 per cent.

**FIGURE 8     REAL ESTATE – VALUE ADDED (VOLUMES), CUMULATIVE QUARTERLY CHANGES (Q1,Q2, 2020)**
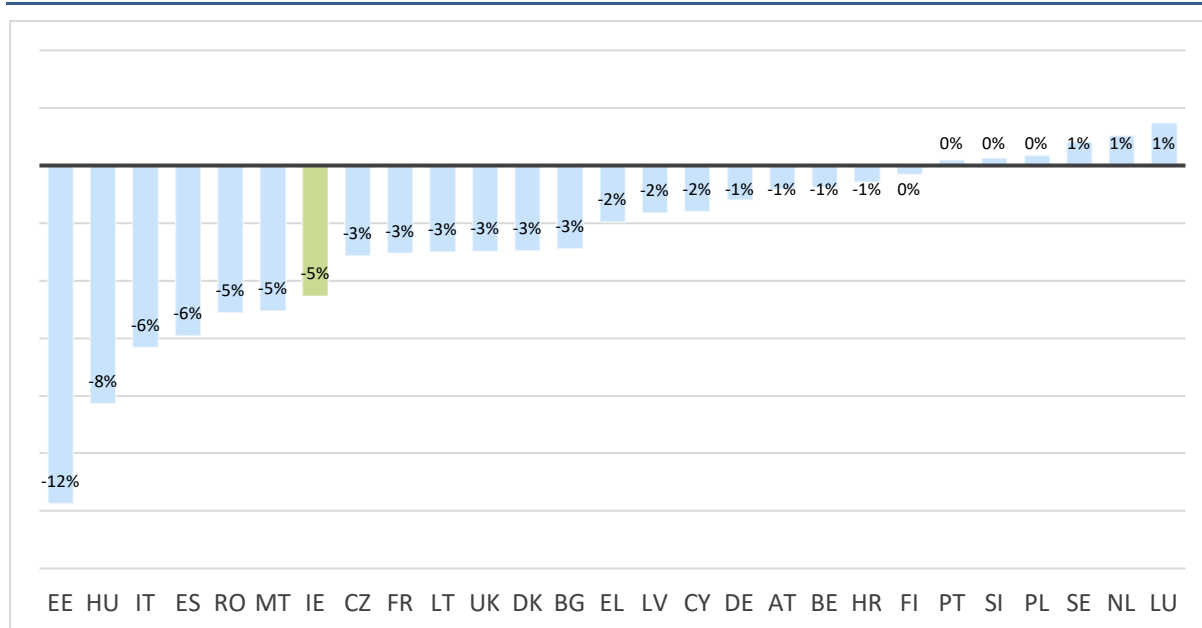


*Source:*     ESRI Analysis of Eurostat data.
*Note:*       Data seasonally and calendar days adjusted.

The next sector considered is a large composite sector including wholesale, retail, food, accommodation, transport and food services. The broad nature of this sector makes it somewhat more difficult to compare as it mixes items that we may consider to be insulated against the pandemic such as retail sale of food and groceries with services in the tourism and transport sector which are likely to have been very severely affected. Each of the European economies will have a differing reliance on these sectors which makes the comparison of this group more challenging.

Value added in these sectors fell considerably in Spain and Malta, down over 50 per cent. This is unsurprising given the reliance of these economies on tourism activities. Value added in these sectors also dropped by close to, or over, one-third in a further ten economies including Ireland, Portugal, Italy, the UK, Austria, France and Belgium. The country with the smallest decline in value added in this sector was Lithuania.

**FIGURE 9** **WHOLESALE, RETAIL, FOOD, ACCOMODATION, TRANSPORT – VALUE ADDED (VOLUMES), CUMULATIVE QUARTERLY CHANGES (Q1,Q2, 2020)**
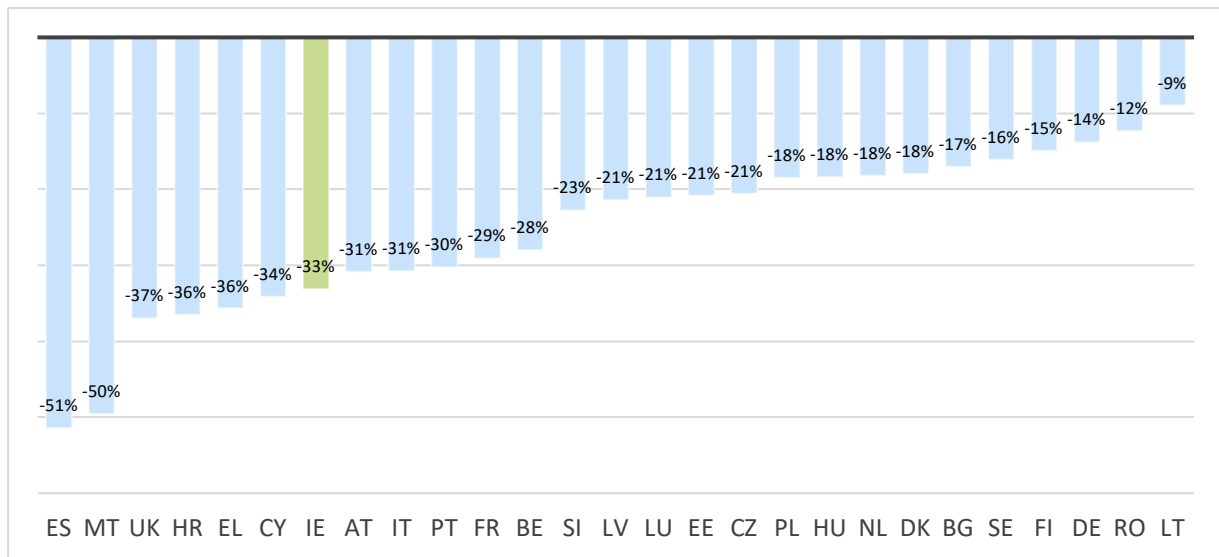


*Source:* ESRI Analysis of Eurostat data.
*Note:* Data seasonally and calendar days adjusted.

Ireland is well known for hosting some of the biggest technology companies and the value added in ICT is critically important for the Irish economic performance. Indeed, value added in ICT grew over the Q1-Q2 period in Ireland at over 3 per cent. This is the fourth highest of the countries considered, with Romania, Malta and Luxembourg the only countries with higher value added growth in ICT. The UK, Spain and France experienced 14, 16, and 9 per cent declines in ICT value added over the period respectively.

**FIGURE 10** **ICT – VALUE ADDED (VOLUMES), CUMULATIVE QUARTERLY CHANGES (Q1,Q2, 2020)**
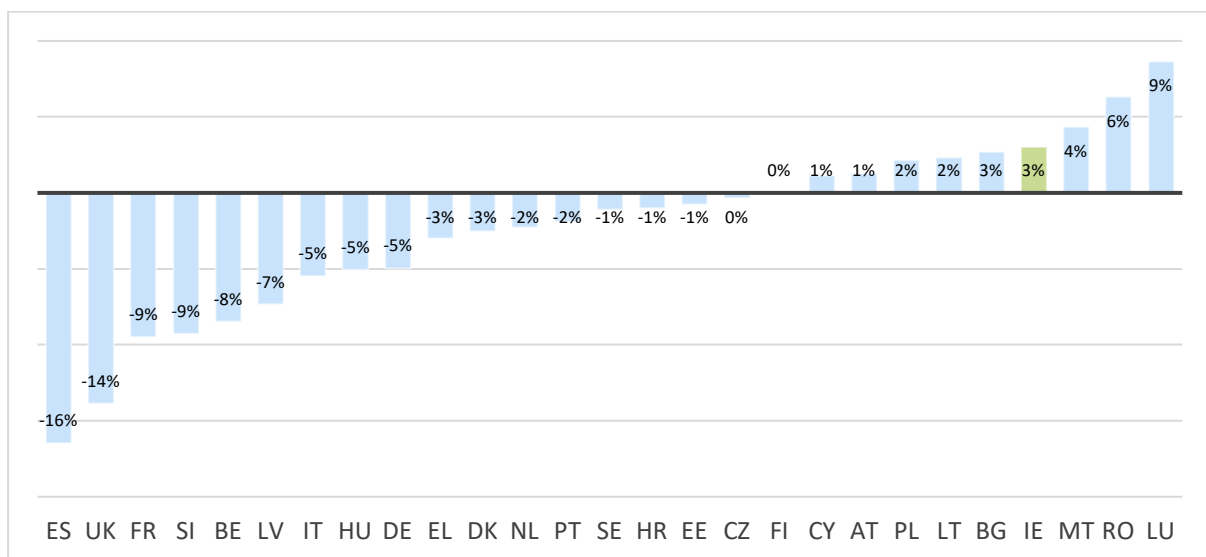


*Source:* ESRI Analysis of Eurostat data.
*Note:* Data seasonally and calendar days adjusted.

The next sector considered is financial and insurance activities. During the first half of 2020, Ireland experienced the largest drop in value added in financial and insurance activities of any of the 27 countries considered. Cumulatively for Q1 and Q2, value added in this sector fell by 9 per cent in Ireland. The country which experienced the largest increase in output in this sector was Spain with 7 per cent cumulative growth across the quarters.

**FIGURE 11 FINANCIAL INSURANCE – VALUE ADDED (VOLUMES), CUMULATIVE QUARTERLY CHANGES (Q1,Q2, 2020)**
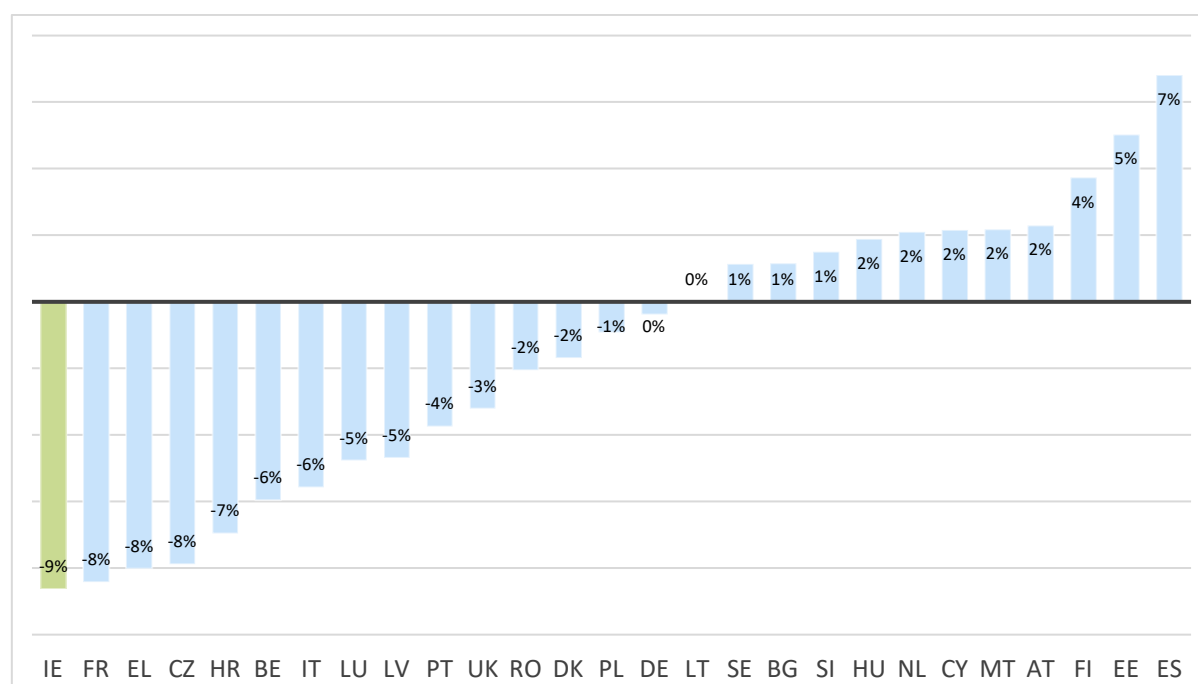


*Source:* ESRI Analysis of Eurostat data.
*Note:* Data seasonally and calendar days adjusted.

Figure 12 presents the cumulative change in value added for the professional, technical, scientific, administration and other services sectors. Ireland experienced the second largest decline in value added relative to other countries at 33 per cent. Only Spain, with a drop of 34 per cent, posted a larger decline in value added in this sector. Eight countries experienced value added falls in this sector of upwards of one-fifth. Bulgaria was the only country to experience an increase in sectoral value added in this service sector over the period.

**FIGURE 12   PROF, TECH, SCIEN, ADMIN – VALUE ADDED (VOLUMES), CUMULATIVE QUARTERLY CHANGES (Q1,Q2, 2020)**
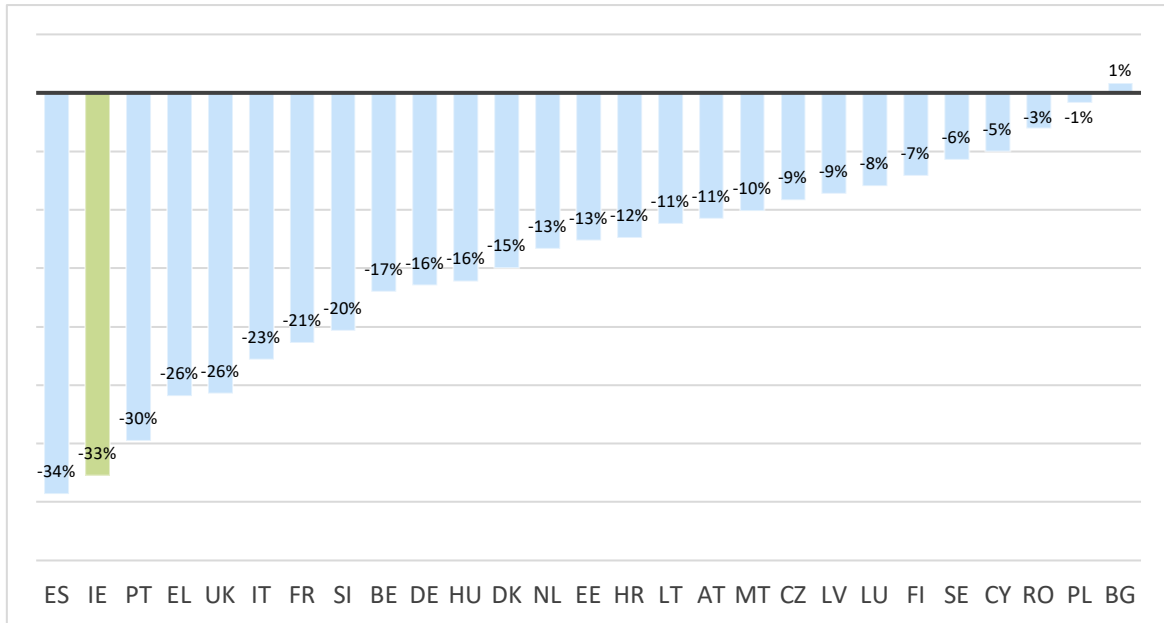


*Source:*    ESRI Analysis of Eurostat data.
*Note:*      Data seasonally and calendar days adjusted.

The final sector presented covers arts, entertainment and recreation activities. Naturally, the lockdown measures which have limited households' ability to travel far from their residence closed many public amenities, and restricted group entertainment activities will have a large impact on this sector. Indeed, Coffey et al. (2020) demonstrated the large decline in spending in this category for Ireland. While a decline in this area was to be expected, the fall in value added in this sector in Ireland was severe at 72 per cent; nearly three-quarters of value added in this sector was lost during the first half of 2020. This decline is far greater than for any other country, with Romania and Denmark the only other countries also losing more than 50 per cent of value added. The UK decline in value added in this sector was also extreme at 49 per cent. The dramatic decline in value added for Ireland in this sector highlights the severe challenge that firms operating in this area have to face to survive the pandemic. The phased reopening of the economy in Ireland continued to restrict activities in this area in order to help suppress the virus. This likely to have hampered the recovery of this sector in Ireland relative to other countries where these activities may have been allowed to restart.

**FIGURE 13    ARTS, ENTERTAINMENT AND RECREATIONAL ACTIVITIES – VALUE ADDED (VOLUMES), CUMULATIVE QUARTERLY CHANGES (Q1,Q2, 2020)**
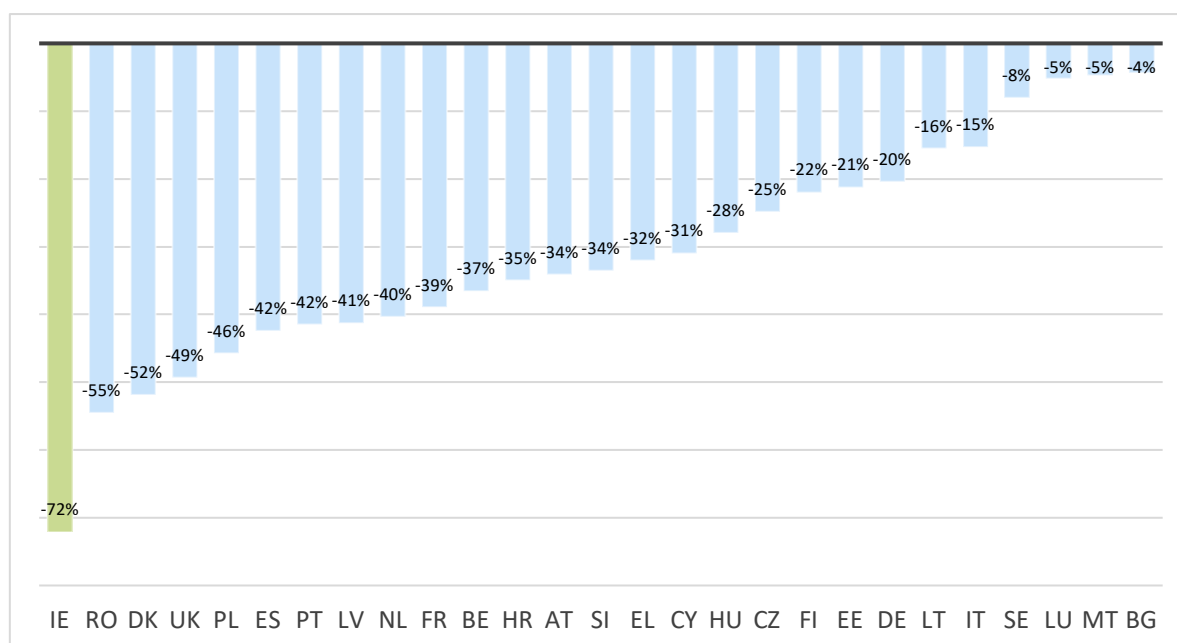


*Source:*     ESRI Analysis of Eurostat data.
*Note:*        Data seasonally and calendar days adjusted.

To summarise the sectoral experience in Ireland, it is clear industrial and ICT activities bucked the trend while Ireland experienced very large declines in construction, financial and insurance services, wholesale, retail, accommodation and food, and in particular in the arts, entertainment and recreational activities sector. Indeed, the declines in Ireland for construction, financial and insurance services, and the arts, entertainment, and recreation sectors were the largest experienced by any country of the 27 considered.

## 4.    THE RESILIENCE AND CONCENTRATION OF IRISH EXPORTS

The above sectoral analysis highlights the very robust performance of Irish industrial and ICT value added through the lockdown period. This section further investigates the specific trends occurring underlying these activities by providing detailed insight in the export patterns of Irish goods and services. As Ireland has a small domestic market, the large output of these sectors is naturally exported to other countries, and highlighting the trends in exports by product can shed more light on the extraordinary industrial performance through the lockdown.

Indeed, the exceptional performance of the Irish export sector can be seen in an international context when contrasting the growth rate of exports (for goods, services and overall) with other European economies. Figure 14 highlights the trend in annualised quarterly growth in exports for Ireland, the EU 27, Germany and the UK. While all countries experienced a severe drop in export growth, the

decline is much smaller in Ireland. Indeed, goods exports from Ireland increased by around 7 per cent on an annualised basis in Q2 2020. While services export growth was negative, the decline was much less severe than the other regions.

The contrast with Germany is interesting in that Germany provides a good proxy for international trading activity. As a highly export-oriented economy, German activity tends to move in line with international conditions. The fact that Irish activity does not follow a similar pattern provides clear insights into the structural differences which are worth exploring in more detail. In particular, this allows us to consider how the goods exports performed so well on the back of the extremely difficult international trading conditions.

**FIGURE 14    TRENDS IN OVERALL EXPORTS FOR IRELAND AND COMPARATOR COUNTRIES**



*Exports of Goods and Services*          *Exports of Goods*          *Exports of Services*
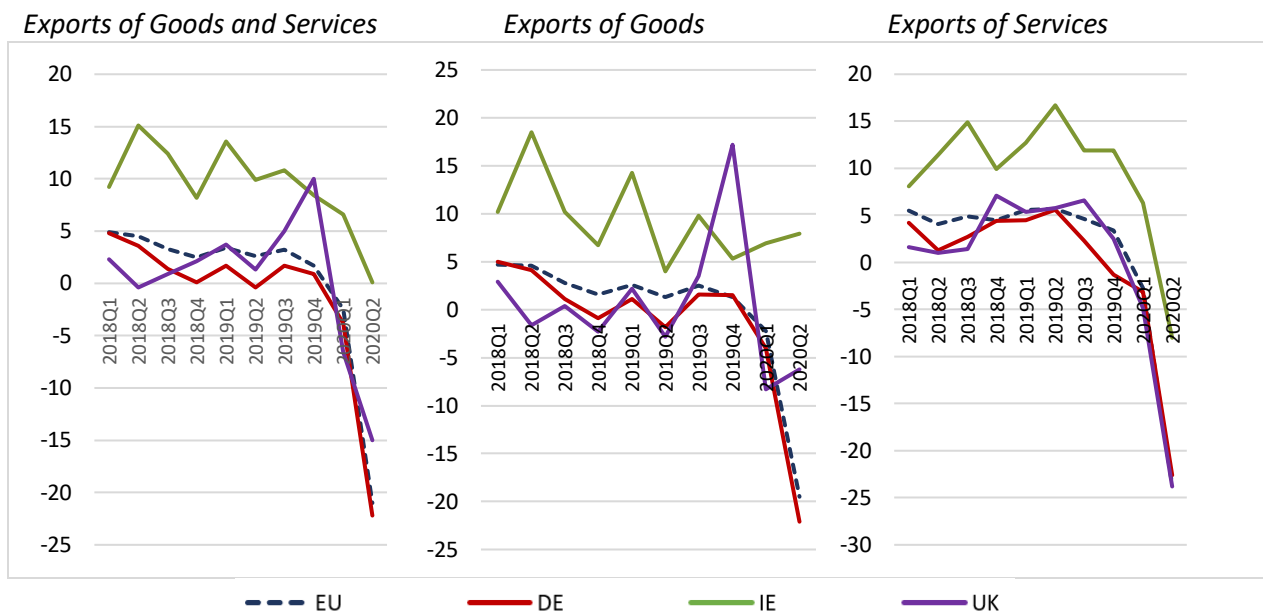
*Source:*     Eurostat.

To begin, it is useful to explore the structure of Irish exports to provide context for the discussion. For the full year 2019, Ireland exported approximately €448 billion worth of goods and services.[8] Merchandise exports accounted for just over half the total at €227 billion while service exports accounted for €221 billion.[9] Within these totals, particular product/service activities were very dominant. Of the €227 billion of goods exports, €152 billion was accounted for by international trade activities, by which activities are classified as having products which 'moved across borders'. This represents 34 per cent of total exports. A further €68 billion is accounted for by goods for processing. Recent CSO research notes that goods for processing (or contract manufacturing) are covered by the following activities: (a) goods sent

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[8]     Data taken from National Income Accounts 2019 table N1905. Current prices.
[9]     Current account exports for 2019 taken from annual Balance of Payments Series.

abroad for further processing in another economy, (b) goods received from abroad for processing in Ireland, or (c) goods purchased abroad and further processed abroad. These activities accounted for nearly 15 per cent of total Irish exports in 2019. For these activities, no trade has crossed the Irish State's border but a change in ownership has occurred involving an Irish resident firm which brings the value of activity within the context of the Irish National Accounts.

In terms of services activity, €117 billion of the total €221 billion is due to exports of computer services. These exports account for just over one-quarter of Ireland's export activity. Activities such as transport, tourism and travel which are severely affected by the pandemic did not account for a large share of Irish export revenues, at just 3 per cent.

**TABLE 1          OVERVIEW OF TOTAL EXPORTS 2019 – BALANCE OF PAYMENTS DATA (€ MILLION)**

|  | € million | % of Total 2019 |
|---|---|---|
| **Total (A+B)** | 448,867 | |
| **Merchandise (A), of which:** | 227,497 | 51 |
| **International trade** | 152,679 | 34 |
| **Goods for processing** | 68,468 | 15 |
| **Other conceptual adjustments** | -7,128 | -2 |
| **Merchanting (net export)** | 13,477 | 3 |
| **Services (B)** | 221,370 | 49 |
| **Repairs and processing** | 2,477 | 1 |
| **Transport, tourism and travel** | 13,780 | 3 |
| **Financial and insurance** | 26,772 | 6 |
| **Computer services** | 117,099 | 26 |
| **Royalties/licences** | 10,614 | 2 |
| **All business services** | 43,792 | 10 |
| **Comms and other services** | 6,837 | 2 |

*Source:*    Central Statistics Office, Balance of Payments Data.

The breakdown of exports by product or service for the 20 largest export items are presented in Table 2 using a bottom up approach.[10] The items are ranked by their share of 2019 export values. The first result of note is that as well as computer services, two particular product items accounted for nearly 20 per cent of total exports in 2019 – these were medicinal and pharmaceutical products (11 per cent of 2019 export values) and organic chemicals (7 per cent of 2019 export values).

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[10]    To measure total exports, the 'international trade' component in the balance of payments export data is replaced by the product specific export values from the merchandise trade (monthly) data. These figures are not identical therefore slight differences exist in the overall value of exports in this bottom up exercise. However this allows a calculation of the share of total from each of the individual items.

Nearly 60 per cent of total exports in 2019 were accounted for by four goods and service export categories. It can also be seen that medicinal and pharmaceutical products grew strongly in Q2 2020 during the lockdown, increasing 5 per cent in the quarter and 31 per cent on an annualised basis. Goods for processing also increased strongly over the lockdown at 9 per cent quarter-on-quarter growth. The negative effect of the pandemic on sectors such as transport and tourism can be seen by the major declines in transport services exports (down 72 per cent Q-on-Q) and tourism (down 78 per cent Q-on-Q and 90 per cent Y-on-Y).

**TABLE 2**      **BREAKDOWN OF EXPORTS BY PRODUCT OR SERVICE FOR TOP 20 LARGEST ITEMS (SORTED BY 2019 SHARE OF TOTAL)**

|  | (1) | (4) | (5) |
|---|---|---|---|
|  | **2019 Share** | **Q2 Y-on-Y** | **Contribution to Growth (Y-on-Y)** |
| **Computer services** | 26 | 4 | 1 |
| **Goods for processing** | 15 | 14 | 2 |
| **Medicinal and pharmaceutical products (54)** | 11 | 30 | 3 |
| **Organic chemicals (51)** | 7 | -16 | -1 |
| **Business services other than research and development and operational leasing** | 5 | -18 | -1 |
| **Financial services** | 4 | 0 | 0 |
| **Business services: Operational leasing** | 4 | -9 | 0 |
| **Merchanting (Net)** | 3 | -2 | 0 |
| **Royalties/licences** | 2 | -15 | 0 |
| **Insurance** | 2 | 5 | 0 |
| **Electrical machinery, appliances etc., n.e.s. (77)** | 2 | 21 | 0 |
| **Transport** | 2 | -86 | -2 |
| **Essential oils, perfume materials, toilet preparations etc. (55)** | 2 | -12 | 0 |
| **Miscellaneous manufactured articles, n.e.s. (89)** | 2 | -18 | 0 |
| **Professional, scientific and controlling apparatus (87)** | 2 | -28 | 0 |
| **Tourism and travel** | 1 | -90 | -1 |
| **Office machines and automatic data processing equipment (75)** | 1 | -7 | 0 |
| **Business services: Research and development** | 1 | -7 | 0 |
| **Other transport equipment (79)** | 1 | -76 | -1 |
| **Chemical materials and products, n.e.s. (59)** | 1 | -25 | 0 |
| **Overall** | 100 | -1.7[11] |  |

*Source:*     ESRI Analysis of CSO International Accounts (Table 2.1) and Merchandise Trade data (Statbank Table TSM06).

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[11]     To calculate the changes and contribution to growth at a product level the individual items from the merchandise trade data are used on a monthly basis to gross up to the quarterly data. The total level of the grossed up monthly data is marginally different from the quarterly total international trade data from Table 2.1 of the Balance of Payments quarterly release. Therefore the year-on-year growth in export values presented differs from that calculated from the BOP release. The difference comes mainly from Q2 2020 which is €0.5 billion lower using the disaggregated data (growth difference -1.7 per cent to -1.4 per cent (using BOP)).

Column (5) in Table 2 highlights the contribution to the change in overall exports (in value terms) of change in each individual item.12 This provides a magnitude for how each individual item affects the total change in the value of goods and service items. Computer services export growth contributed 1 percentage point growth to the overall annualised change, medicinal and pharmaceutical product growth contributed a full 3 percentage points in growth to overall exports. In a sense, this fully counteracted the decline in transport, tourism and travel exports whose near decimation acted to drop overall exports by only 3 per cent in value terms.

This relative performance-concentration argument can be more clearly seen in Figure 15, which presents a scatter plot covering all the product and service categories with the year-on-year growth rate in Q2 2020 (vertical axis) and the share of total exports in 2019 (horizontal axis). It is very clear that while exports fell dramatically for the vast majority of export items, the overall activity was masked by the relatively benign performance in the largest items (as discussed above).

**FIGURE 15    SCATTERPLOT OF EXPORT SHARE (2019) (X-AXIS) AGAINST Q2 2020 YEAR-ON-YEAR CHANGE (Y-AXIS)**
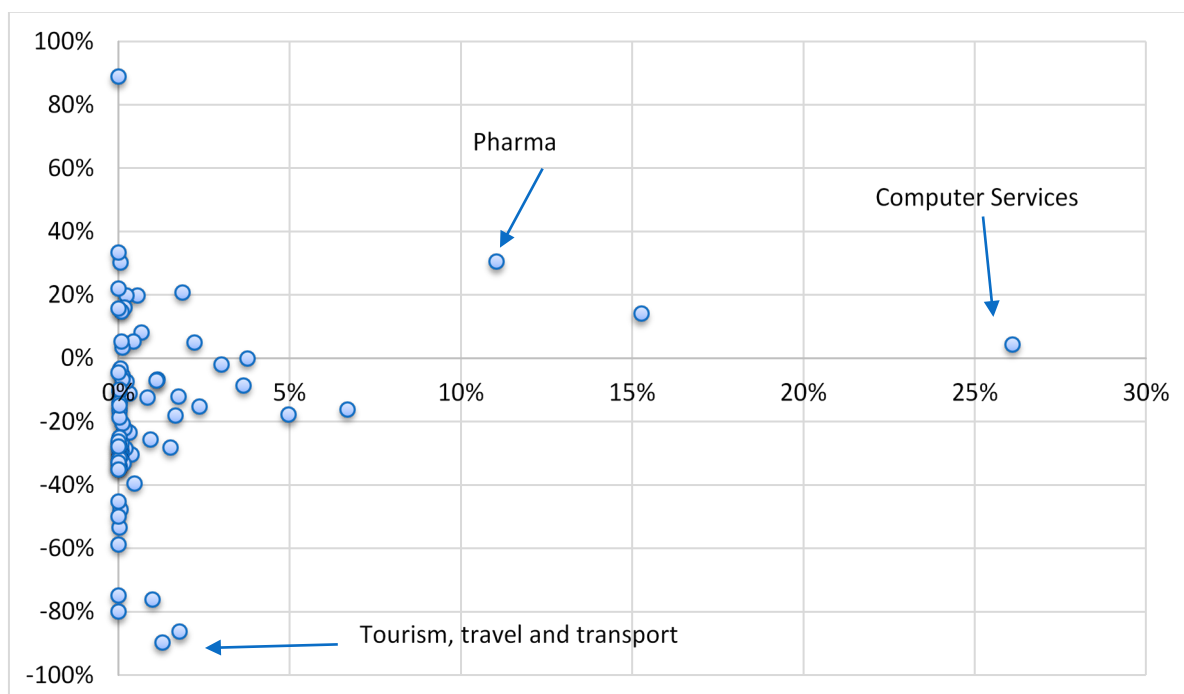


*Source:*    ESRI Analysis of CSO data.

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12    For example, the overall percentage change in total exports in value terms on a year-on-year basis to Q2 2020 is shared amongst the relative contributions of each individual item to that overall change.

## 5. CONCLUSIONS

This Research Note explores the macroeconomic performance of the Irish economy over the lockdown period in the first half of 2020 in a cross-country context. The main aim of the Note is to highlight the duality of the performance across sectors and to provide insight into how, despite one of the strictest lockdowns in terms of public health restrictions, the economic impacts on the overall macroeconomy were relatively benign.

The research shows that, despite a drop in personal consumption expenditure that is one of the highest across the European countries examined, the concentration of Irish exports in computer services and pharmaceutical and medicinal goods ensured that overall GDP impact was much more muted due to the growth in these export products.

While the impact on the economy of the pharmaceutical and computer services sector is disproportionate to its employment share, many of the companies in big tech and pharma are indeed large employers here in Ireland and do have a real presence on the ground. Growth from exports in this area are not therefore necessarily national accounting distortions from activities without an economic presence in Ireland (such as   contract manufacturing activities). The continued strong performance of these export areas is likely to influence the path of Irish GDP which may continue to outperform metrics such as unemployment and consumption which are arguably better measures of changes in national economic welfare. From a policy perspective, the importance of these multinational activities (in terms of employment and taxation) is likely to help boost the resources available to support the worst affected domestic sectors through the course of the pandemic. The resilience of our exports to the COVID-19-specific economic shock should be seen as a strength as the course of the pandemic continues.

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# Special Articles

# UNDERSTANDING RECENT TRENDS IN THE IRISH ECONOMY

## John FitzGerald[1]

### ABSTRACT

The latest release by the CSO of the Institutional Sector Accounts provides important new data that provide a much clearer picture of recent developments in the economy. This paper argues that the best measure of the economic welfare of those living in Ireland is Net National Product (NNP). Using the new data this paper shows the contribution to NNP by each industrial sector, broken down by foreign and domestically owned businesses. The growth rate of NNP and the contribution to it from the different industrial sectors and from foreign and domestically owned firms is analysed. The results suggest that the economic welfare of those living in Ireland has grown by around 5 per cent a year since 2013. The analysis in the paper shows that the foreign owned sector has contributed around 20 per cent of the growth in the economy since the recovery began. It also shows that the contribution from domestically owned businesses is spread across a range of industrial sectors. Finally, the paper makes some suggestions for further data improvements.

## 1. INTRODUCTION

Over the last 20 years the problems for policymakers in interpreting the Irish national accounting data have increased, making it very difficult to discern what is happening to the Irish economy. These problems have arisen because of the way globalisation is affecting the economy and they have posed special challenges, not only for those responsible for fiscal policy, but for those seeking to understand the key contributors to Irish growth.

The traditional national accounting framework was developed in the first half of the twentieth century at a time of largely closed economies. Nearly all the output and income of an economy such as Ireland's, then reflected in the GDP aggregate, was available to those living in that economy. Thus, GDP was also the best measure of the economic welfare of those living in an economy.

However, globalisation has meant that an increasing share of the output and income arising in an economy, such as Ireland, belongs to the foreign owners of multinational enterprises (MNEs) operating in Ireland. However, the income available to those living in Ireland is also enhanced by the inflow of profits and wages from Irish companies and individuals operating abroad.

Beginning in the late 1970s it was apparent that Gross National Income (GNI) was a better measure of the economic welfare of those living in Ireland than GDP because it excluded the profits of the foreign MNEs. These profits are repatriated to foreign owners and they are, as a result, not available to be spent by those living in Ireland, including the Irish government. GNI also takes account of profit inflows.

This measure proved reasonably satisfactory for policymakers and the wider public until about 15 years ago. However, since the early 2000s a range of developments, arising from new dimensions of the globalisation of the Irish economy, began to muddy the statistical waters. These developments are discussed in detail in FitzGerald (2018) and FitzGerald (2020).

For example, redomiciled PLCs, which are essentially foreign-owned funds operating in Ireland, receive their investment income here. However, because their foreign owners take much of the return on their investments in the form of capital gains, there is no income outflow corresponding to the investment income received. This raises Irish GNI, while the income so recorded is of no benefit to those living in Ireland.

Further globalisation developments, including aircraft leasing operations in Ireland and, even more important, the location by foreign MNEs of much of their very large intellectual property in Ireland, have affected the traditional national accounting aggregate GNI. This has rendered it a very unsatisfactory measure of the economic welfare of those living in Ireland.

These problems were brought to the fore with the publication by the CSO of National Income and Expenditure (NIE), 2015, which showed a 25 per cent growth rate for GDP in that year. It was apparent to all looking at these data that this increase in real GDP massively overstated the improvement in economic welfare of those living in Ireland.

While some of these problems are affecting the interpretation of the National Accounts for other countries, their manifestation in the Irish National Accounts has been extreme by international standards. To deal with these problems the CSO has

taken the lead in developing additional measures and publishing a range of new information to help policymakers and the public at large understand what is really going on in the economy.

Following on the experience with the National Accounts for 2015, the CSO set up the Economic Statistics Review Group (ESRG) to review the problems with the existing framework of accounts and to recommend how they could be best supplemented with additional information to provide a better understanding of what is happening in the Irish economy.

The ESRG report, published in 2017, recommended a series of developments, most of which have now been implemented by the CSO.

The first significant change was the publication by the CSO of an adjusted GNI measure – commonly referred to as GNI*. This removes many of the distortions in GNI, including the effects of depreciation of aircraft leasing operations and of the intellectual property of foreign-owned MNEs. It also excludes the income of redomiciled PLCs.

While the GNI* measure was initially only available at current prices, in 2019 the CSO published an experimental constant price GNI* figure.[2] While useful as a measure of what was happening in the aggregate economy, it did not give a good idea of what industrial sectors were fuelling the growth in the economy, and of the relative importance in that growth of foreign MNEs and domestic business. It also showed surprising volatility, suggesting a small fall in the volume of GNI* in 2015 compared to the 25 per cent volume increase for GDP.

However, at the end of 2019, as part of the Institutional Sector Accounts, the CSO published a full break-down by industrial sector of output for foreign-owned MNES and domestic business.[3] At last, this makes possible a detailed analysis of the sectors that are growing rapidly and the relative importance of foreign MNEs. It also makes it possible to provide a good measure of the development of the aggregate economic welfare of those living in Ireland and how it has grown since 2013.

This article uses these new CSO data to better understand key developments in the economy since 2013. It shows how Net National Product (NNP) can be decomposed

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2      https://www.cso.ie/en/releasesandpublications/in/nie/in-mgnicp/
3      https://www.cso.ie/en/releasesandpublications/ep/p-isanff/isanff2018/

by industrial sector and by ownership, foreign or domestic, to give a much better understanding of what is driving growth in the economy. The article suggests that NNP is a better measure of economic activity for this purpose than GNI*. In particular, NNP allows the separation out of all the activity of foreign MNEs which does not add to the economic welfare of Irish residents and, by excluding all depreciation, it gives a better indication of the long-term sustainable level of output.

When the adjusted data are analysed, they show that foreign MNEs contributed about 20 per cent of NNP over the period 2013 to 2018. The stability over time in their contribution to the welfare of Irish residents contrasts with the big increase in their contribution to GVA over that period. The sectors where foreign MNEs made a substantial contribution to NNP were manufacturing, distribution, IT services and financial services. Interestingly the contribution to NNP of domestic firms in the IT sector was quite close to that for foreign MNEs, in spite of their much smaller GVA. Foreign MNEs accounted for 25 per cent of the wage bill over the period 2013-2018, significantly larger than their contribution to NNP.

Finally, it is estimated that real NNP grew by an average of around 5.2 per cent a year over the period 2013-2018, very close to the growth rate in the experimental CSO GNI* aggregate. However, unlike GNI*, the contributions to this growth from different sectors can now be separately identified.

Section 2 considers the best aggregate measure of economic welfare for those living in Ireland. Section 3 describes the new information available from the CSO. That information is used to develop an alternative presentation of the output and income tables of the traditional National Accounts in Section 4, showing separately the contributions of foreign-owned MNEs and domestic business. These new data are then used to consider the recent trends in the economy, showing the contributions to growth from the different industrial sectors. Section 5 describes some further developments of the National Accounts that could prove useful, and Section 6 concludes.

## 2. MEASURING ECONOMIC WELFARE

As discussed above, GDP, the traditional measure of national output and income, is no longer a good measure of the economic welfare of those living in Ireland.

Figure 1 illustrates the adjustments that are made to GDP in this paper to arrive at a more appropriate measure of economic welfare – Net National Product.[4]

To facilitate the analysis, an adjustment is first made to how goods are priced – product taxes and subsidies are deducted to move from market prices to what are referred to as basic prices. This adjustment is done to simplify the calculations and it does not significantly affect the underlying measure of welfare.

**FIGURE 1     ADJUSTMENTS TO GDP TO MOVE TO NNP, 2018, € MILLION**
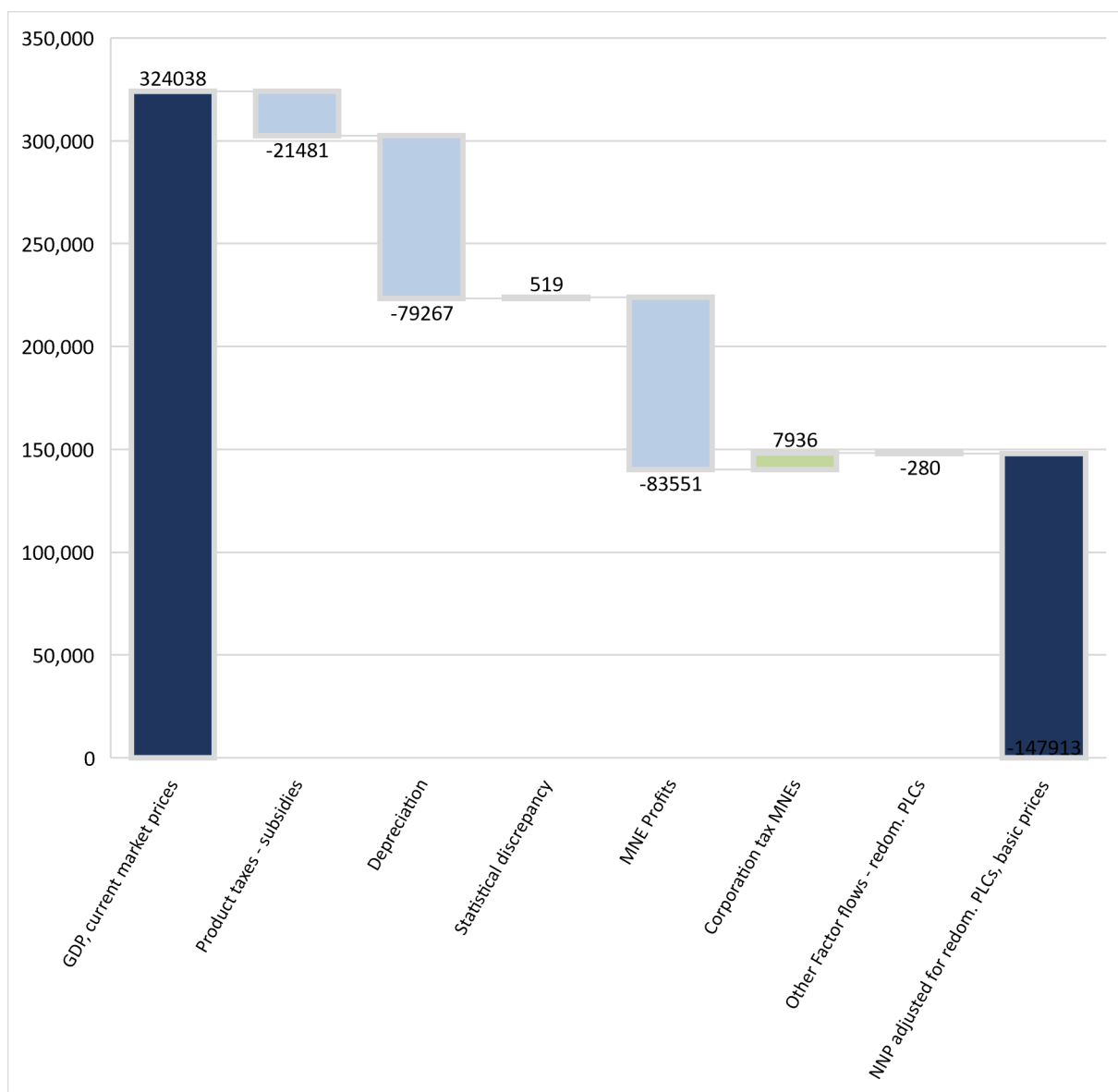


*Source:*     CSO Institutional Sector Accounts, Non-Financial and author's calculations.

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[4]     This aggregate measure does not give information on the distribution of that income. It also fails to capture many other factors which affect the welfare of individuals, such as life expectancy and it also does not take account of the environmental impact of economic development.

The second adjustment made is the deduction of depreciation. In producing goods and services some of the stock of capital is used up and must be replaced if production is to be maintained in future years. This adjustment for depreciation is quite large because of the movement to Ireland in recent years of substantial intellectual property (IP), owned by foreign MNEs. This capital is used by the foreign-owned MNEs, not only to produce goods and services in Ireland, but also to produce them elsewhere. While only the depreciation of certain foreign owned capital, such as IP, is deducted in deriving GNI*, in moving to NNP all depreciation is deducted. This reflects the fact that, as capital is used up (depreciated) in producing goods and services in the domestic economy, it must be replaced if that level of production is to be maintained, keeping the economic welfare of those living in Ireland unchanged.

The statistical discrepancy in the National Accounts is added back in to maintain consistency with the detailed data derived from the CSO Institutional Sector accounts for the individual industrial sectors.

The profits of foreign-owned MNEs, which accrue to their foreign owners, are deducted. However, the corporation tax paid on those profits is added back in as it accrues to the Irish government, to be used to enhance the welfare of those living in Ireland.

An adjustment is then made for other factor flows, excluding the receipts of redomiciled PLCs. These other flows include dividend payments made abroad by Irish companies and dividends received from abroad by Irish residents. It also includes profits from abroad received by Irish owned MNEs, as well as wages received from abroad by Irish residents less wages paid to people living outside Ireland. In 2018 these net factor payments in and out of the country were quite small, as shown in the Figure. However, in other years they can be significantly larger.

After these adjustments, the residual is NNP at basic prices, before the inclusion of the inflows of redomiciled PLCs. This is the measure of the economic welfare of those living in Ireland which is used in the rest of the paper.

A key difference between the NNP measure suggested in this article and GNI* is that NNP adjusts for all depreciation, whereas GNI* only adjusts for depreciation on foreign-owned intellectual property, R&D service imports and leased aircraft. In addition, by focusing on NNP it is possible to decompose output by industrial sector

and by ownership, allowing one to clearly identify where the growth in the economy, that adds to the welfare of Irish residents, is coming from. This is not possible with GNI*.The next two sections exploit the advantages of this NNP measure to identify the contribution to NNP of each institutional and industrial sector, broken down by foreign MNEs and domestic business.

## 3. DATA FROM THE INSTITUTIONAL SECTOR ACCOUNTS

The latest version of the Institutional Sector Accounts for Ireland contains important new information. For both the financial sector and the non-financial corporations sector, the accounts separate out foreign-owned MNEs, giving a full range of data for those sectors. In addition, the CSO has made available data on GVA, compensation of employees (COE) and Gross Operating Surplus (GOS) for each industrial sector, cross-classified by institutional sector. These data are available for the period 2013 to 2018.

This is the first time that we have complete coverage of foreign-owned MNEs. Previous very useful CSO publications only covered the larger foreign MNEs, or certain industrial sectors. The latest release of data makes possible a much more detailed analysis of the role of MNEs in the economy and it helps us to build a much better picture of what is really going on in the Irish economy.

This section uses the extensive new data released by the CSO to estimate the income and output available to those living in Ireland to spend or invest. In each case NNP, excluding factor inflows of redomiciled PLCs, is used as a summary measure of economic welfare. The resulting analysis, using the data from the Institutional Sector accounts, is consistent with the published National Accounts aggregates in National Income and Expenditure.

Some limited imputation was needed to allocate depreciation and corporation tax across the industrial sectors. The methodology used is described in a separate Data Appendix.[5]

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[5]     The Data Appendix is available from the author.

**TABLE 1    NNP AT BASIC PRICES, BEFORE ADJUSTING FOR THE STATISTICAL DISCREPANCY, € MILLION**

| Foreign MNEs | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| 1. Compensation of employees | 18,056 | 18,848 | 20,201 | 21,089 | 22,373 | 23,308 |
| 2. Gross operating surplus/mixed income | 52,654 | 59,552 | 117,723 | 118,073 | 131,425 | 145,830 |
| 3. Consumption of fixed capital | 14,710 | 16,135 | 42,730 | 49,244 | 57,244 | 62,279 |
| 4. (2-3) Net operating surplus | 37,944 | 43,417 | 74,993 | 68,829 | 74,181 | 83,551 |
| 5. (1+2) Gross value added | 70,710 | 78,400 | 137,924 | 139,162 | 153,798 | 169,138 |
| 6. (5-3) Net value added | 56,000 | 62,265 | 95,194 | 89,918 | 96,554 | 106,859 |
| 7. Corporate taxes | 3,329 | 3,427 | 5,202 | 5,615 | 6,258 | 7,936 |
| 8. Factor flows - profit repatriations (allocation of primary income flows) | 34,615 | 39,990 | 69,791 | 63,214 | 67,923 | 75,615 |
| 9. (6-8) Contribution to NNP | 21,385 | 22,275 | 25,403 | 26,704 | 28,631 | 31,244 |

| Domestic | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| 1. Compensation of employees | 52,591 | 54,250 | 57,588 | 61,579 | 65,778 | 69,986 |
| 2. Gross operating surplus/mixed income | 41,267 | 45,924 | 48,977 | 53,266 | 57,671 | 63,958 |
| 3. Consumption of fixed capital | 11,829 | 12,548 | 13,603 | 14,512 | 15,832 | 16,989 |
| 4. (2-3) Net operating surplus | 29,438 | 33,376 | 35,374 | 38,754 | 41,839 | 46,969 |
| 5. (1+2) Gross value added | 93,858 | 100,174 | 106,565 | 114,845 | 123,449 | 133,944 |
| 6. (5-3) Net value added | 82,029 | 87,626 | 92,962 | 100,333 | 107,617 | 116,955 |
| 7. Corporate taxes | 955 | 1,206 | 1,689 | 1,758 | 1,959 | 2,485 |
| 8. Factor flows - profit repatriations (allocation of primary income flows) | 0 | 0 | 0 | 0 | 0 | 0 |
| 9. (6-8) Contribution to NNP | 82,029 | 87,626 | 92,962 | 100,333 | 107,617 | 116,955 |

| Total | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| 1. Compensation of employees | 70,647 | 73,098 | 77,789 | 82,668 | 88,151 | 93,294 |
| 2. Gross operating surplus/mixed income | 93,921 | 105,476 | 166,700 | 171,339 | 189,096 | 209,788 |
| 3. Consumption of fixed capital | 26,539 | 28,683 | 56,333 | 63,756 | 73,076 | 79,268 |
| 4. (2-3) Net operating surplus | 67,382 | 76,793 | 110,367 | 107,583 | 116,020 | 130,520 |
| 5. (1+2) Gross value added | 164,568 | 178,574 | 244,489 | 254,007 | 277,247 | 303,082 |
| 6. (5-3) Net value added | 138,029 | 149,891 | 188,156 | 190,251 | 204,171 | 223,814 |
| 7. Corporate taxes | 4,284 | 4,633 | 6,891 | 7,373 | 8,217 | 10,421 |
| 8. Factor flows - profit outflows | 34,615 | 39,990 | 69,791 | 63,214 | 67,923 | 75,615 |
| 9. (6-8) Contribution to NNP | 103,414 | 109,901 | 118,365 | 127,037 | 136,248 | 148,199 |
| 10. Residual factor outflows excluding profit repatriations and redomiciled PLCs | 1,022 | -1,888 | -3,176 | -6,456 | -1,327 | 280 |
| 11. (9-10) NNP adjusted for redomiciled PLCs | 102,392 | 111,789 | 121,541 | 133,493 | 137,575 | 147,919 |
| 12. Redomiciled PLCs | 6,492 | 6,852 | 4,662 | 5,781 | 4,458 | 5,002 |
| 13. (11+12) NNP | 108,884 | 118,641 | 126,203 | 139,274 | 142,033 | 152,921 |
| NNP adjusted for redomiciled PLCs | 102,392 | 111,789 | 121,541 | 133,493 | 137,575 | 147,919 |
| Foreign MNEs % of GVA | 43 | 44 | 56 | 55 | 55 | 56 |
| Foreign MNEs % of NNP adjusted | 21 | 20 | 21 | 20 | 21 | 21 |

*Source:*    CSO Institutional Sector Accounts, Non-Financial and author's calculations.

Table 1 summarises the data for foreign owned MNEs and for the rest of the economy. The approach taken here is to replicate Table 2 in National Income and Expenditure 2018,[6] first classifying by institutional sector rather than by industrial sector. The data are shown at basic prices. Profit repatriations are allocated to the foreign MNE sector, so that the contributions to NNP from the foreign and domestic sectors are separately identified. The residual factor flows are included in the third panel to arrive at NNP for the economy, excluding and including the income of redomiciled PLCs.

In the first panel, the data for foreign MNEs are shown. Data are given on the wage bill and the gross operating surplus (GOS) and consumption of fixed capital (depreciation). Rows 4 to 6 then derive the net operating surplus (NOS) after deducting depreciation, gross valued added and net value added. Row 7 shows the corporation tax paid by these firms. Item 8 is the factor flows paid abroad by these firms − profit repatriations. These are the residual when corporation tax is deducted from the NOS for these firms. Some additional factor payments are received and paid by this sector.[7] However, here these residual flows are shown as part of residual factor flows in panel 3 of the Table.

The direct contribution of the foreign MNE sector to NNP is then the sum of the wage bill and the corporation tax paid by the firms, shown as item 9 in the first panel.

The second panel shows a similar set of data for the domestic economy. Here, profit repatriations are zero because the businesses are Irish-owned. There are net factor flows to and from the sector, such as dividend payments and profits received from abroad. These factor flows are included in the residual factor flows item in panel 3 of the Table. The contribution to NNP by the sector is equivalent to the GVA arising in the sector.

The third panel shows the aggregates for the whole economy. Row 10 shows the residual factor flows, excluding the receipts of redomiciled PLCS, and row 11 shows NNP before the inclusion of the receipts of the redomiciled PLCs. This measure of NNP is used in the rest of the paper as the best summary measure of the economic welfare of those living in Ireland. Finally, row 13 adds in the receipts of the

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6    https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=N1802&PLanguage=0
     However, to facilitate the analysis by industrial sector in this article, these residual flows are treated as a single item
     when deriving NNP for the economy, rather than being separately allocated by industrial sector.

redomiciled PLCs to arrive at NNP at basic prices, consistent with the data in National Income and Expenditure.[8]

The final panel of Table 1 shows the share of GVA and NNP accounted for by the foreign-owned MNE sector. On the basis of GVA, the MNE sector dominates the economy, accounting for over 50 per cent of GVA since 2015. However, when allowance is made for the factor outflows from this sector, its contribution to NNP is around 20 per cent. Also, as shown in the Table, the contribution of the foreign-owned MNE sector to NNP has been steady throughout the period 2013 to 2018, in spite of the widely reported major expansion of the activity of these firms in Ireland over the period.

## 4. CONTRIBUTION TO GROWTH BY INDUSTRIAL SECTOR

*Current prices*

Appendix Table A.1 shows the NNP arising in each industrial sector at current basic prices, broken down by foreign-owned MNEs and the domestic sector. While the CSO has supplied data on this basis for the wage bill and the Gross Operating Surplus (GOS), it does not provide full details of the allocation of depreciation and corporate taxes across industrial sectors cross-classified by ownership. Where this detail was lacking, depreciation and taxes were imputed using a set of simple rules, described in the separate Data Appendix.

Table 2 shows the growth rate at current prices for three different measures of NNP and for GNI*. The first row shows NNP after accounting for profit repatriations, but before including residual factor flows. The second row in the Table is the preferred measure of economic welfare, NNP before the factor inflows to redomiciled PLCs are included. The third item is NNP including the income of redomiciled PLCs. As can be seen from the Table the average growth rate between 2013 and 2018 in the preferred measure is identical to that for GNI*. Also, the annual pattern of growth is rather similar, with a significant dip in the growth rate in 2017. In the case of NNP after accounting for profit repatriations and before taking account of residual factor flows, the average growth rate over the period is also very close to that of GNI*. However, there is little variation in the growth rate over the five years and there is no significant dip in 2017. This highlights the contribution to the volatility of GNI* arising from the residual factor flows.

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[8] There is a small further residual item of around €100 million, which reflects the fact that there is a small difference between the net factor flows shown in the Institutional Sector Accounts and the flows shown in National Income and Expenditure.

**TABLE 2     CURRENT PRICES, GROWTH RATE, %**

|  | 2014 | 2015 | 2016 | 2017 | 2018 | Average Annual 2013-2018 |
|---|---|---|---|---|---|---|
| **1. NNP after profit repatriations** | 6.3 | 7.7 | 7.3 | 7.2 | 8.8 | 7.5 |
| **2. NNP adjusted for redomiciled PLCs** | 9.2 | 8.7 | 9.8 | 3.1 | 7.5 | 7.6 |
| **3. NNP** | 9.0 | 6.4 | 10.4 | 2.0 | 7.7 | 7.0 |
| **4. GNI\* - from NIE** | 8.6 | 9.4 | 8.0 | 4.7 | 7.3 | 7.6 |

*Source:*    CSO Institutional Sector Accounts, Non-Financial and author's calculations and CSO National Income and Expenditure.

**TABLE 3     AVERAGE SHARE OF NNP, CURRENT PRICES, 2013-2018, %**

|  | Total | Foreign | Domestic |
|---|---|---|---|
| **Agriculture, forestry and fishing** | 1.4 | 0.0 | 1.4 |
| **Manufacturing** | 13.2 | 6.3 | 6.9 |
| **Electricity, gas, and water** | 1.8 | 0.1 | 1.8 |
| **Construction** | 4.4 | 0.2 | 4.2 |
| **Distribution, transport, hotels and restaurants** | 19.0 | 3.7 | 15.3 |
| **Information and communication** | 6.4 | 3.4 | 3.0 |
| **Financial and insurance activities** | 9.6 | 4.1 | 5.5 |
| **Real estate activities** | 8.8 | 0.1 | 8.7 |
| **Professional, admin and support services** | 10.5 | 2.5 | 7.9 |
| **Public admin, education and health** | 20.7 | 0.1 | 20.5 |
| **Arts, entertainment and other services** | 2.6 | 0.1 | 2.5 |
| **Factor income - profit repatriations** | 46.5 | 46.5 | 0.0 |
| **NNP after profit repatriations** | 98.5 | 20.6 | 77.8 |
| **Factor income - other, excluding redomiciled PLCs** | -1.5 | -2.3 | 0.8 |
| **NNP adjusted for redomiciled PLCs** | 100.0 | 22.9 | 77.1 |

*Source:*    CSO Institutional Sector Accounts, Non-Financial and author's calculations.

Table 3 shows the average share of the different industrial sectors in NNP over the period 2013 to 2018, broken down by ownership. It shows that public administration, health and education accounted for 20 per cent of NNP and that the Distribution sector also accounted for nearly 20 per cent. Manufacturing was the next largest sector, accounting for 13 per cent of NNP.[9]

Looking at the contribution of the foreign owned MNE sector, it was particularly significant in manufacturing (6 per cent of NNP), and the Distribution, Information and Financial sectors (each between 3 per cent and 4 per cent of NNP). Also, the

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[9]   Because these data are shown at basic prices, they do not include non-product taxes and subsidies. The foreign sector paid around €1 billion in non-product taxes in 2018. Thus, the figures here may slightly underestimate the contribution to NNP of the foreign sector. If the CSO published the data on the taxes and subsidies cross-classified by industrial sector, allowance could be made for this factor by moving from showing the data at basic prices to showing them at factor cost.

Table shows that in three of these sectors – Industry, Information Communications and Finance, foreign-owned firms account for roughly half of the NNP arising in the sector.

In the case of the Information and communication sector, it is surprising that, while domestically owned firms account for only 15 to 20 per cent of the GVA in the sector, they account for just under half of the sector's contribution to NNP. Domestic firms also account for around 45 per cent of the wage bill in the sector. These data suggest that more attention should be focused on the progress of the domestic firms in this sector, as they represent a significant share of NNP.

The overall share of the financial sector in NNP, at almost 10 per cent, is rather high by international standards.[10] However, this may be accounted for by the presence of quite a large share of foreign-owned companies, many of whom are providing international services. However, the foreign share of NNP has been around 40 per cent since 2016, lower than it was in 2013-2015. This is in spite of the influx of foreign financial firms to Ireland as a result of Brexit. This suggests that the contribution of recent arrivals to NNP has been small.

**TABLE 4      AVERAGE SHARE OF WAGES, 2013-2018, %**

|  | Total | Foreign | Domestic |
|---|---|---|---|
| **Agriculture, forestry and fishing** | 0.8 | 0.0 | 0.8 |
| **Manufacturing** | 12.8 | 6.5 | 6.3 |
| **Electricity, gas, and water** | 1.4 | 0.1 | 1.3 |
| **Construction** | 3.8 | 0.3 | 3.5 |
| **Distribution, transport, hotels etc.** | 20.2 | 5.4 | 14.8 |
| **Information and communication** | 7.2 | 4.1 | 3.1 |
| **Financial and insurance** | 9.2 | 5.0 | 4.1 |
| **Real estate activities** | 0.7 | 0.2 | 0.6 |
| **Professional, admin & support** | 11.6 | 3.5 | 8.1 |
| **Public admin, educ. & health** | 29.8 | 0.2 | 29.6 |
| **Arts, entertainment etc.** | 2.4 | 0.1 | 2.3 |
| **Total** | 100.0 | 25.5 | 74.5 |

*Source:*    CSO Institutional Sector Accounts, Non-Financial and author's calculations.

Table 4 shows the average share of wages by industrial sector and ownership over the period 2013-2018. The share of wages arising in foreign-owned firms is around 26 per cent. This is significantly greater than their share of NNP shown in Table 3.

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10      For the EU15, GVA arising in the financial sector accounts for 5 per cent of GVA.

This partly reflects the fact that, as other CSO data suggest, the average earnings in foreign MNE firms are well above the economy average.[11]

Table 5 in the Data Appendix shows corporation tax revenue as a share of the Net Operating Surplus (NOS) by institutional sector and ownership. The average rate of tax paid by foreign and domestic firms shown in this Table is then used to impute corporation tax payments across the different industrial sectors.[12] Table 5 (below) shows that the tax rate has consistently been higher in the financial sector than elsewhere. This reflects the fact that the NOS is not a good measure of the tax base in the sector and also problems arising from FISIM (Financial Services Indirectly Measured). For the rest of the economy the average tax rate has ranged between 7 per cent and 10 per cent. This is somewhat lower than the marginal tax rate of 12.5 per cent, and it may reflect differences in the treatment of depreciation between the National Accounts and the tax system.

**TABLE 5    AVERAGE CORPORATION TAX RATE BY INSTITUTIONAL SECTOR, %**

|                                         | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|-----------------------------------------|------|------|------|------|------|------|
| **Financial Domestic**                  | 7.6  | 8.6  | 12.3 | 15.5 | 18.8 | 21.2 |
| **Financial Foreign**                   | 23.5 | 17.3 | 23.4 | 18.5 | 18.7 | 25.2 |
| **Non-Financial Corporation Domestic**  | 7.2  | 7.7  | 9.7  | 8.2  | 7.9  | 8.7  |
| **Non-Financial Corporation Foreign**   | 7.5  | 6.9  | 5.8  | 7.3  | 7.5  | 8.4  |
| **Total**                               | 6.4  | 6.1  | 6.3  | 6.9  | 7.1  | 8.0  |
| **Foreign**                             | 8.9  | 8.0  | 7.0  | 8.2  | 8.5  | 9.6  |
| **Domestic**                            | 7.3  | 7.8  | 10.2 | 9.8  | 9.8  | 10.8 |

*Source:*    CSO Institutional Sector Accounts, Non-Financial and author's calculations.

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[11]    https://www.cso.ie/en/releasesandpublications/ep/p-fdi/foreigndirectinvestmentinireland2017/awe/
[12]    Details are given in the Appendix.

**TABLE 6     FOREIGN MNE SHARE OF NNP, %**

|  | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| **Agriculture, forestry and fishing (A)** | 2.0 | 1.5 | 1.9 | 1.6 | 1.2 | 1.4 |
| **Manufacturing** | 46.5 | 45.1 | 51.3 | 45.6 | 47.7 | 48.7 |
| **Electricity, gas, and water** | 3.5 | 4.1 | 4.3 | 5.5 | 5.4 | 3.9 |
| **Construction (F)** | 6.3 | 5.1 | 4.3 | 4.4 | 3.9 | 3.7 |
| **Distribution, transport, hotels and restaurants** | 21.0 | 19.8 | 19.5 | 19.7 | 18.9 | 18.6 |
| **Information and communication** | 52.0 | 52.6 | 53.0 | 52.1 | 52.4 | 52.9 |
| **Financial and insurance activities (K)** | 45.4 | 44.3 | 43.0 | 40.6 | 41.8 | 40.9 |
| **Real estate activities (L)** | 1.2 | 1.3 | 1.3 | 1.3 | 1.4 | 1.2 |
| **Professional, admin and support services** | 25.0 | 23.8 | 23.6 | 25.0 | 24.5 | 23.6 |
| **Public admin, education and health** | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 |
| **Arts, entertainment and other services** | 2.8 | 2.7 | 2.6 | 2.4 | 2.3 | 2.3 |
| **NNP excluding additional factor flows** | 20.7 | 20.3 | 21.5 | 21.0 | 21.0 | 21.1 |
| **Factor income** | 29.7 | 43.0 | 62.0 | 57.2 | 20.2 | -24.1 |
| **NNP excluding redomiciled PLCs** | 22.5 | 23.3 | 24.9 | 25.2 | 21.7 | 20.3 |

*Source:*     CSO Institutional Sector Accounts, Non-Financial and author's calculations.

Table 6 shows how the share of the NNP in each sector that is accounted for by foreign MNEs has evolved over the period 2013-2018. In the case of manufacturing, the share has only shown a small increase, in spite of the huge increase in GVA arising in the sector due to relocation of activity to Ireland in the period from 2015. Except for the IT sector, where the foreign share has slightly increased over time, the other sectors where foreign MNEs account for significant activity have seen a limited reduction in their share. Thus, while the share of NNP in the economy accounted for by all foreign MNES has fluctuated over time, there has been relatively little change between 2013 and 2018.

*Constant price data*

The CSO has not published separate deflators for individual industrial sectors broken down by ownership. Here the aggregate deflator for each industrial sector is used to deflate the NNP data for both the foreign-owned MNE sector and the domestic sector. In many cases this simplification may not matter. However, because they are engaged in different sub-sectors of the manufacturing and IT sectors, the appropriate deflator for the output of foreign-owned MNEs may be different from that for domestically owned firms.

The approach taken here means that the profit repatriations from foreign-owned MNEs are effectively deflated by the deflator for the relevant industrial sector, which seems appropriate. The implied deflator for net factor income from NIE 2018 is used to deflate the residual factor flows.

While the approach taken here involves some simplifications, as shown below, the results of using these sectoral deflators look broadly consistent with the CSO constant price data, where available.

Appendix Table A.2 shows the resulting data for each year and industrial sector, broken down by ownership, and these results are summarised in the Tables below.

**TABLE 7     GROWTH RATE, CONSTANT PRICES, %**

|  | 2014 | 2015 | 2016 | 2017 | 2018 | Average Annual 2013-2018 |
|---|---|---|---|---|---|---|
| **NNP after profit repatriations** | 4.6 | 3.2 | 6.1 | 4.0 | 7.0 | 5.0 |
| **NNP adjusted for redomiciled PLCs** | 7.2 | 3.2 | 7.8 | 1.6 | 6.3 | 5.2 |
| **NNP** | 6.2 | 0.1 | 8.4 | 0.9 | 6.2 | 4.3 |
| **GNI* from NIE** | 8.8 | -0.4 | 8.7 | 3.7 | 6.3 | 5.4 |
| **GNI from NIE** | 8.7 | 13.7 | 9.7 | 5.1 | 6.5 | 8.7 |
| **GDP from NIE** | 8.6 | 25.2 | 3.7 | 8.1 | 8.2 | 10.5 |
| **Modified Total Domestic Demand** | 6.3 | 5.3 | 6.1 | 3.5 | 1.7 | 4.6 |
| **Employment** | 2.6 | 3.4 | 3.6 | 2.9 | 2.9 | 3.1 |

*Source:*    CSO Institutional Sector Accounts, Non-Financial and author's calculations CSO National Income and Expenditure.

As can be seen in Table 7, the average growth in the preferred measure of NNP, adjusted for redomiciled PLCs, is 5.2 per cent a year between 2013 and 2018. This is very similar to the growth rate of GNI* in the experimental CSO data over the same period. However, unlike the CSO figure for GNI*, the adjusted NNP figure shows less volatility over time.

Also, it is interesting that the NNP measure which shows least volatility is that which just adjusts for profit repatriations, omitting the residual factor flows. This shows that the volatility in the adjusted NNP series, and also probably in the GNI* series, arises from the volatility in these residual factor flows.

The growth in the CSO measure Modified Total Domestic Demand is also shown in the Table. It displayed somewhat slower growth than the modified NNP measure or the GNI* measure. This reflected the fact that the modified balance on the current account of the Balance of Payments moved into increasing surplus over the period, adding to the resources available to those living in Ireland. Thus, while the modified total domestic demand measure is a very useful summary statistic, it does not take account of developments in the Balance of Payments, which can have important implications for domestic economic welfare.

Table 7 also shows the growth rate for GNI and GDP at constant prices. As can be seen from these data, they showed a dramatically higher growth rate over the period. However, much of this measured increase in output did not directly benefit those living in Ireland, and hence GNI* and NNP are much more appropriate for measuring the development of domestic economic welfare.

Table 7 also shows the growth in employment each year between 2013 and 2018. This series shows very little volatility. Over the full period 2013 to 2018, it indicates a growth in output per person employed of around 2 per cent a year.

**TABLE 8    AVERAGE GROWTH RATE BY INDUSTRIAL SECTOR, 2013-2018, CONSTANT PRICES, %**

|  | All Sectors | Foreign MNEs | Domestic |
|---|---|---|---|
| **Agriculture, forestry and fishing** | 8.9 | 1.8 | 9.0 |
| **Manufacturing** | 7.3 | 8.3 | 6.5 |
| **Electricity, gas, and water** | 0.3 | 2.7 | 0.2 |
| **Construction** | 10.8 | -0.3 | 11.4 |
| **Distribution, transport etc.** | 5.9 | 3.3 | 6.6 |
| **Information and communication** | 9.9 | 10.2 | 9.4 |
| **Financial and insurance activities** | -0.1 | -2.1 | 1.5 |
| **Real estate activities** | 2.7 | 3.5 | 2.7 |
| **Professional, admin and support services** | 8.2 | 6.9 | 8.6 |
| **Public Admin, Education and Health** | 2.0 | 7.3 | 2.0 |
| **Arts, entertainment and other services** | 5.9 | 1.5 | 6.0 |
| **NNP after profit repatriations** | 5.0 | 5.1 | 5.0 |
| **NNP adjusted for redomiciled PLCs** | 5.2 | 3.3 | 5.7 |

*Source:*    CSO Institutional Sector Accounts, Non-Financial and author's calculations.

Table 8 shows the average growth rate by industrial sector over the period 2013 to 2018. It shows that above average growth rates were experienced in agriculture, manufacturing, construction, information and communications and professional services. The growth in public administration and financial services was particularly low over the relevant period.

While the growth in the output of the foreign-owned sector in manufacturing and information and communications was higher than for domestic firms, the domestically owned businesses in these industrial sectors also grew quite rapidly.

Table 9 summarises the contribution to growth over the period 2013-2018 from each industrial sector, broken down by ownership. The foreign-owned sector in manufacturing contributed 10 per cent of the growth in the economy over the five

years. Foreign firms in the information and communications sector contributed 7 per cent of the growth and foreign firms in the professionals and administrative service sector contributed 3.5 per cent of the growth.

For domestically owned businesses the major contribution to growth was in the distribution sector (19 per cent) and professional and administrative services (13 per cent). Domestically owned manufacturing firms, construction firms and public administration all contributed between 8 per cent and 10 per cent of the growth in the economy.

**TABLE 9       CONTRIBUTION TO GROWTH OF NNP, PERCENTAGE POINTS**

|  | Total | Foreign | Domestic |
|---|---|---|---|
| **Agriculture, forestry and fishing** | 2.2 | 0.0 | 2.2 |
| **Manufacturing** | 18.6 | 10.0 | 8.6 |
| **Electricity, gas, and water** | 0.1 | 0.0 | 0.1 |
| **Construction** | 9.8 | 0.0 | 9.8 |
| **Distribution, transport, hotels and restaurants** | 21.7 | 2.4 | 19.2 |
| **Information and communication** | 12.7 | 6.9 | 5.8 |
| **Financial and insurance activities** | -0.1 | -2.0 | 1.8 |
| **Real estate activities** | 4.7 | 0.1 | 4.7 |
| **Professional, admin and support services** | 16.7 | 3.5 | 13.3 |
| **Public Admin, Education and Health** | 8.1 | 0.2 | 7.9 |
| **Arts, entertainment and other services** | 2.7 | 0.0 | 2.7 |
| **NNP after profit repatriations** | 97.1 | 21.2 | 76.0 |
| **NNP adjusted for redomiciled PLCs** | 100.0 | 14.0 | 86.0 |

*Source:*    CSO Institutional Sector Accounts, Non-Financial and author's calculations.

While the foreign-owned sector of the economy contributes directly up to a fifth of the growth in the economy, it may have a wider indirect impact. This is because the sector buys services from other sectors in the domestic economy, such as legal and accounting services.

The approach taken here has been to deduct the profit repatriations from foreign MNEs in arriving at their contribution to NNP in each industrial sector. However, the dividends paid by domestic firms and the profits received from abroad by Irish-owned MNEs are included in the aggregate residual factor income item in the Tables shown here and in Tables A.1 and A.2.

The institutional sector accounts provide information on total net factor payments by institutional sector, but not by industrial sector. If the data were available by

industrial sector it might be appropriate to include these residual factor payments in arriving at the NNP for each industrial sector.

Then, in arriving at the constant price data for NNP, these residual factor payments would then be deflated by the deflator for the industrial sector in which they arise. This would certainly seem sensible in the case of the dividend payments paid by Irish firms – consistent with the approach on profit repatriations. It could be argued that it would also be the best approach in deflating the profits from abroad of Irish MNEs.

The factor payments received by the household sector, principally the dividends received on institutional investment could then be deflated by the deflator for consumption. The factor payments paid by the government sector, principally national debt interest could be deflated by either the consumption deflator or the deflator for NNP.

## 5. NEXT STEPS

These new data, published by the CSO, represent a major step forward in understanding developments in the Irish economy. The analysis shown here could still be improved in a number of dimensions with some further data.

- If the CSO could fill in some of the missing data for depreciation and corporation tax, this would allow some refinement of the analysis in this paper. However, it would be unlikely to change any of the conclusions.

- It would be helpful if the CSO published their data on a constant price basis using appropriate deflators. This would provide a more robust estimate of the growth in NNP at constant prices.

- It is important that employment data be published mirroring the industrial classification used here, with details of sectoral employment by ownership. This would allow a more robust analysis of trends in productivity in the economy.

- It would be very helpful if some current indicators were developed which could help in forecasting key aggregates.

- It would be desirable to carry these data back to the mid-2000s to allow appropriate economic modelling of the Irish economy.

As discussed in this article, the new analysis that is made possible by the additional data provides a much more coherent picture of developments in the Irish economy over the last five years than is possible from the standard National Accounts. Instead of exceptional and erratic growth rates, as seen in the headline National Income and Expenditure data, the pattern shown here for NNP is smoother and

more plausible. Of course, that does not necessarily mean that the numbers are right, but it does suggest a greater degree of coherence with other data on developments in the economy, such as employment.

The analysis in this paper suggests that an important factor in the volatility of key aggregates, such as GNI*, is the volatility in the residual factor flows. Separating these out, as in this paper, would give a better indication of the long-term trends in the domestic economy.

Because of the huge gross flows into and out of the country in the form of goods, services and factor incomes, it would be exceptionally difficult to carry out the kind of analysis undertaken here for the expenditure side of the National Accounts. The modified total domestic demand measure is reasonably straightforward to derive, but that still leaves out the very important effects of developments in the external account on the economic welfare of domestic residents.

Heretofore forecasts for the economy have concentrated on the expenditure side of the National Accounts. However, the problems with understanding the developments in the Balance of Payments mean that, for an economy such as Ireland's, much more attention should be focused on forecasting output and incomes.

Of necessity, the NNP data shown here are only available with a significant lag, being published in the second half of the year subsequent to the year to which they refer. While there is a wide range of short-term indicators available on items on the expenditure side of the National Accounts, it would be very helpful if better current indicators were developed which could help in forecasting key aggregates on the income and output side. For example, the long-running monthly output index could be extended and reweighted to better reflect trends in NNP.

## 6. CONCLUSIONS

This paper uses the new data published by the CSO in the Institutional Sector accounts to derive an adjusted NNP measure, showing the economic welfare of those living in Ireland. The contribution to this NNP measure can now be disaggregated by industrial sector, and also by nationality of ownership.

The resulting analysis shows that foreign MNEs operating in Ireland contribute approximately 20 per cent of NNP and that this share has not varied much since the economic recovery began in 2013. The analysis also shows that domestic firms in the manufacturing and the IT and communications sector, while much less

important than the foreign firms when measured in terms of their contribution to GVA, make nearly as large a contribution to NNP. Also, the growth in the economy, contributing to the economic welfare of Irish residents has been spread over quite a number of sectors of the economy.

The analysis in this paper developing a constant price NNP aggregate is consistent with the CSO's new data for GNI* at constant prices, suggesting an average growth rate over the period 2013-2018 of a little more than 5 per cent. However, the analysis also suggests that the volatility seen in this measure is due to extreme volatility in factor flows other than profit repatriations.

Given the importance of the new data published by the CSO in developing our understanding of the Irish economy, when the CSO publish their Institutional Sector Accounts for 2019 in the traditional format towards the end of this year they should, in addition, consider presenting these data in a similar framework to that used in this paper.

## REFERENCES

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**APPENDIX 1: NNP BY INDUSTRIAL SECTOR OF ORIGIN AT BASIC PRICES**

The derivation of these data from the Institutional Sector Accounts and the National Accounts is shown in a separate Data Appendix in Excel format.

**APPENDIX 1: NNP BY INDUSTRIAL SECTOR OF ORIGIN AT BASIC PRICES**

**TABLE A.1    NNP BY INDUSTRY, CURRENT BASIC PRICES, BEFORE STATISTICAL DISCREPANCY, € MILLION**

| | All sectors | | | | | | Foreign MNEs | | | | | | Domestic | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| **Agriculture, forestry & fishing** | 1185 | 1599 | 1493 | 1693 | 2587 | 2019 | 23 | 24 | 28 | 27 | 31 | 28 | 1161 | 1575 | 1464 | 1664 | 2556 | 1991 |
| **Manufacturing** | 12872 | 14054 | 15757 | 18336 | 18187 | 20665 | 5986 | 6343 | 8083 | 8368 | 8679 | 10057 | 6876 | 7703 | 7669 | 9965 | 9502 | 10602 |
| **Electricity, gas, and water** | 2484 | 2226 | 2147 | 2091 | 2010 | 2899 | 87 | 91 | 93 | 116 | 109 | 114 | 2399 | 2136 | 2052 | 1973 | 1901 | 2785 |
| **Construction** | 3199 | 4151 | 4762 | 5553 | 7105 | 8125 | 201 | 212 | 205 | 246 | 275 | 300 | 3001 | 3938 | 4558 | 5307 | 6830 | 7824 |
| **Distribution, transport, hotels etc.** | 20976 | 21938 | 23166 | 24484 | 26005 | 27177 | 4413 | 4354 | 4506 | 4819 | 4915 | 5055 | 16562 | 17586 | 18659 | 19662 | 21090 | 22122 |
| **Information and communication** | 6073 | 6548 | 7374 | 8272 | 9435 | 10530 | 3158 | 3445 | 3905 | 4308 | 4942 | 5573 | 2916 | 3102 | 3468 | 3963 | 4495 | 4957 |
| **Financial and insurance** | 10406 | 10917 | 12157 | 12328 | 12946 | 14018 | 4722 | 4838 | 5223 | 5007 | 5412 | 5730 | 5683 | 6078 | 6935 | 7321 | 7534 | 8287 |
| **Real estate activities** | 8601 | 9536 | 10450 | 11630 | 11989 | 14246 | 101 | 121 | 140 | 146 | 171 | 175 | 8500 | 9416 | 10310 | 11484 | 11817 | 14071 |
| **Professional, admin & support** | 9838 | 10963 | 12622 | 13612 | 15584 | 16544 | 2462 | 2612 | 2979 | 3408 | 3818 | 3908 | 7378 | 8351 | 9645 | 10204 | 11766 | 12638 |
| **Public admin, education & health** | 24790 | 24878 | 25454 | 25924 | 26883 | 28211 | 146 | 152 | 163 | 184 | 198 | 214 | 24641 | 24726 | 25291 | 25740 | 26685 | 27997 |
| **Arts, entertainment & other** | 2995 | 3094 | 2990 | 3124 | 3522 | 3765 | 85 | 83 | 78 | 76 | 81 | 86 | 2910 | 3014 | 2910 | 3048 | 3441 | 3678 |
| **Factor income - profit repatriations** | 34615 | 39990 | 69791 | 63214 | 67923 | 75615 | 34615 | 39990 | 69791 | 63214 | 67923 | 75615 | 0 | 0 | 0 | 0 | 0 | 0 |
| **NNP after profit repatriations** | 103421 | 109905 | 118373 | 127046 | 136253 | 148200 | 21384 | 22275 | 25404 | 26705 | 28631 | 31239 | 82026 | 87625 | 92962 | 100331 | 107616 | 116952 |
| **Factor income - other, excluding redomiciled PLCs** | 1022 | -1888 | -3176 | -6456 | -1327 | 280 | -1623 | -3760 | -4859 | -7001 | -1168 | 1139 | 2645 | 1872 | 1683 | 545 | -159 | -859 |
| **NNP adjusted for redomiciled PLCs** | 102399 | 111793 | 121549 | 133502 | 137580 | 147920 | 23007 | 26035 | 30263 | 33706 | 29799 | 30100 | 79381 | 85753 | 91279 | 99786 | 107775 | 117811 |
| **Redomiciled PLCs** | 6492 | 6852 | 4662 | 5781 | 4458 | 5002 | 0 | 0 | 0 | 0 | 0 | 0 | 6492 | 6852 | 4662 | 5781 | 4458 | 5002 |
| **NNP** | 108891 | 118645 | 126211 | 139283 | 142038 | 152922 | 23007 | 26035 | 30263 | 33706 | 29799 | 30100 | 85873 | 92605 | 95941 | 105567 | 112233 | 122813 |
| **Memo: Total Factor Flows** | 29145 | 31250 | 61953 | 50977 | 62138 | 70893 | 32992 | 36230 | 64932 | 56213 | 66755 | 76754 | -3847 | -4980 | -2979 | -5236 | -4617 | -5861 |

*Source:*    CSO Institutional Sector Accounts, Non-Financial and author's calculations.

**TABLE A.2    NNP BY INDUSTRY, CONSTANT BASIC PRICES, BEFORE STATISTICAL DISCREPANCY, € MILLION**

| | All sectors | | | | | | Foreign MNEs | | | | | | Domestic | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| **Agriculture, forestry & fishing** | 1321 | 1815 | 1847 | 2130 | 2587 | 2021 | 26 | 27 | 35 | 34 | 31 | 28 | 1294 | 1788 | 1812 | 2094 | 2556 | 1994 |
| **Manufacturing** | 14181 | 15745 | 14694 | 17861 | 18187 | 20210 | 6595 | 7106 | 7538 | 8151 | 8679 | 9836 | 7575 | 8630 | 7151 | 9707 | 9502 | 10368 |
| **Electricity, gas, and water** | 2804 | 2525 | 1997 | 2038 | 2010 | 2848 | 98 | 103 | 87 | 113 | 109 | 112 | 2707 | 2423 | 1909 | 1924 | 1901 | 2736 |
| **Construction** | 4734 | 5171 | 5611 | 6191 | 7105 | 7896 | 297 | 264 | 241 | 274 | 275 | 292 | 4440 | 4906 | 5370 | 5917 | 6830 | 7604 |
| **Distribution, transport, hotels etc.** | 21070 | 22915 | 24503 | 25809 | 26005 | 28099 | 4433 | 4548 | 4766 | 5080 | 4915 | 5226 | 16636 | 18369 | 19735 | 20727 | 21090 | 22872 |
| **Information and communication** | 6847 | 7238 | 7769 | 9188 | 9435 | 10958 | 3561 | 3808 | 4114 | 4785 | 4942 | 5799 | 3288 | 3429 | 3654 | 4402 | 4495 | 5159 |
| **Financial and insurance** | 13716 | 12658 | 13865 | 12807 | 12946 | 13674 | 6224 | 5609 | 5957 | 5201 | 5412 | 5589 | 7491 | 7047 | 7909 | 7605 | 7534 | 8083 |
| **Real estate activities** | 10864 | 11491 | 11646 | 11953 | 11989 | 12400 | 128 | 146 | 156 | 150 | 171 | 152 | 10736 | 11346 | 11490 | 11803 | 11817 | 12248 |
| **Professional, admin & support** | 11242 | 12258 | 12924 | 13709 | 15584 | 16664 | 2813 | 2921 | 3050 | 3432 | 3818 | 3936 | 8430 | 9337 | 9876 | 10276 | 11766 | 12729 |
| **Public admin, education & health** | 24900 | 25051 | 25732 | 25995 | 26883 | 27526 | 147 | 153 | 165 | 185 | 198 | 209 | 24751 | 24898 | 25567 | 25811 | 26685 | 27317 |
| **Arts, entertainment & other** | 2655 | 2774 | 2920 | 3354 | 3522 | 3530 | 75 | 74 | 77 | 82 | 81 | 81 | 2579 | 2701 | 2842 | 3272 | 3441 | 3448 |
| **NNP after profit repatriations** | 114334 | 119640 | 123508 | 131034 | 136253 | 145826 | 24396 | 24759 | 26185 | 27487 | 28631 | 31259 | 89927 | 94874 | 97317 | 103536 | 107616 | 114558 |
| **Factor income - other, excluding redomiciled PLCs** | 1079 | -1715 | -1676 | -3893 | -784 | 146 | -1714 | -3416 | -2565 | -4221 | -690 | 596 | 2793 | 1701 | 888 | 329 | -94 | -449 |
| **NNP adjusted for redomiciled PLCs** | 113255 | 121355 | 125184 | 134926 | 137037 | 145680 | 26110 | 28175 | 28750 | 31709 | 29321 | 30664 | 87134 | 93174 | 96428 | 103207 | 107710 | 115008 |
| **Redomiciled PLCs** | 6856 | 6224 | 2461 | 3486 | 2634 | 2616 | 0 | 0 | 0 | 0 | 0 | 0 | 6856 | 6224 | 2461 | 3486 | 2634 | 2616 |
| **NNP** | 120110 | 127580 | 127645 | 138412 | 139671 | 148296 | 26110 | 28175 | 28750 | 31709 | 29321 | 30664 | 93990 | 99398 | 98889 | 106693 | 110344 | 117624 |

*Source:*    CSO Institutional Sector Accounts, Non-Financial and author's calculations.

# ASSESSING THE IMPACTS OF COVID-19 ON THE IRISH PROPERTY MARKET: AN OVERVIEW OF THE ISSUES

## Matthew Allen-Coghlan, Kieran McQuinn and Conor O'Toole[1]

### ABSTRACT

In this paper we examine some of the potential channels through which COVID-19 is likely to impact the Irish housing market and discuss some policy areas which may need refocusing or re-evaluation. Building on existing work by ESRI researchers, we examine the implications under the headings of housing demand, housing supply, affordability of prices and the rental market. While there is likely to be a significant number of effects across a wide variety of headings, the most long-lasting impact of the crisis is the potential exacerbation of the imbalance between housing demand and supply which already exists in the market. The most efficient policy response in that context is for an increase in the State provision of social and affordable housing over the short to medium term.

## 1. INTRODUCTION

Along with the general economy, the impact of COVID-19 on different aspects of the Irish housing market is likely to be profound. As noted in a variety of publications by researchers working in the ESRI and elsewhere (see McQuinn, 2017, for example), the Irish residential market has experienced unprecedented volatility over the past 25 years. It is evident that COVID-19 will exacerbate this volatility across a variety of headings in the housing sector.

In this paper we will outline some of the major issues which are likely to impact the Irish housing sector due to COVID-19. The impact of the pandemic on different aspects of housing demand and supply is discussed as is the impact on affordability in both the rental and home ownership markets. We will also outline pressure points through which the COVID-19 shock may impact the credit market.

To date, in light of the emergence of the pandemic, researchers in the ESRI have already produced three reports dealing directly with the impact of COVID-19 on the housing and rental markets. Allen-Coghlan and McQuinn (2020) look at how the shock caused by the virus on mortgage activity, incomes and supply is likely to affect house prices over the next two years. Forecasts range from no change in

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[1] The authors are economists at the Economic and Social Research Institute (ESRI). They can be contacted at: kieran.mcquinn@esri.ie. The authors are solely responsible for the views expressed in the paper.

prices to house prices declining by 12 per cent by the end of 2021. Allen-Coghlan et al. (2020) consider the short-term impacts of the pandemic on rental price developments as part of the ESRI/RTB Rent Index series and show a clear trend towards falling rental inflation.

A separate report by Coffey et al. (2020a) looks at the impact of the pandemic on affordability issues in the private rental market. They found that contrary to the pandemic increasing affordability issues in the sector, affordability may have actually improved over the last few months as a result of the government income support schemes and falling consumer costs.

These reports have primarily explored the shock of COVID-19 on the housing and rental sector from a short-term perspective, analysing how prices and affordability have been impacted by the initial lockdown instigated in the country in March. However, due to the uncertainty caused by the lockdown and the impact this will have on demand and supply, COVID-19 is likely to have significant long-term impacts on both house prices and rents, affecting the market for years to come.

The rest of the paper is laid out as follows. In Section 2 the impact of COVID-19 on housing demand is explored, in Section 3 we look at the impact of the pandemic on housing supply, Section 4 deals with issues around price and affordability in the housing market, Section 5 looks at the rental market, Section 6 concludes.

## 2. HOUSING DEMAND

The impact COVID-19 has had on the Irish labour market is unprecedented. In April 2020, the unemployment rate spiked at 28.2 per cent, up from 4.8 per cent just two months earlier in February (Figure 1). This change in unemployment is unique both in terms of the rapidity and scale of the increase. While the labour market has recovered somewhat in the past couple of months as lockdown measures have been eased, the unemployment rate remains elevated at just under 17 per cent.

**FIGURE 1     UNEMPLOYMENT RATE (%)**
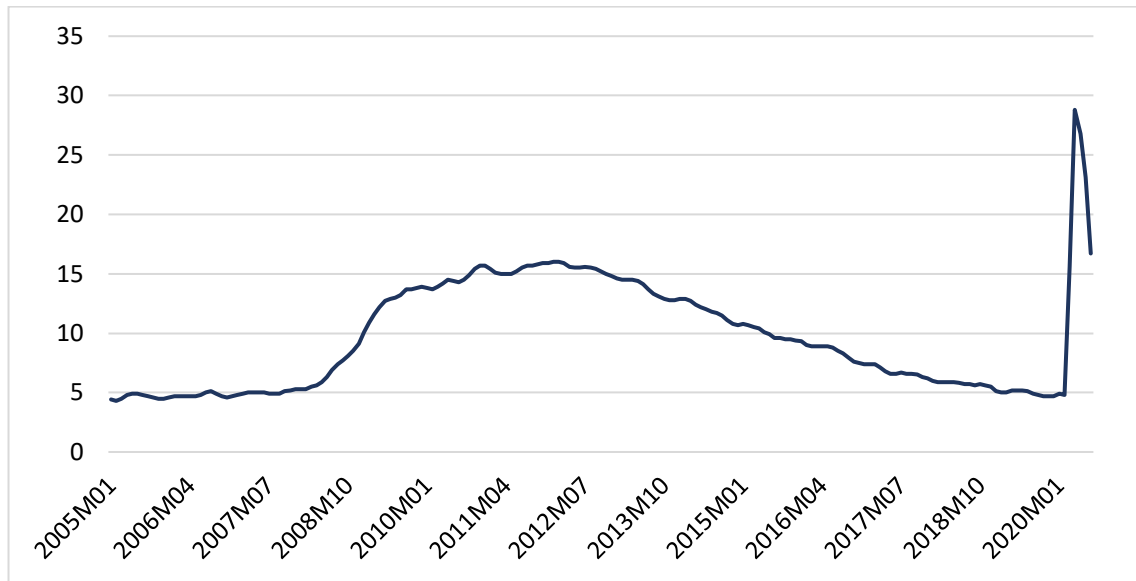


*Source:*    Central Statistics Office.

Typically, such a large increase in unemployment would lead to a significant decrease in income which in turn would reduce the demand for housing. Kelly and McQuinn (2014), for example, observe a very close relationship between house prices and developments in the Irish labour market. However, as shown in Beirne et al. (2020) the immediate impact on incomes during this crisis has been largely offset by the introduction of extraordinary fiscal measures in the form of the Pandemic Unemployment Payment (PUP) and the Temporary COVID-19 Wage Subsidy Scheme (TWSS). As a result, the direct impact of the labour market shock on housing demand may be muted in the short term.

However, these support measures are set to be unwound over the next year. From September the welfare amount received will be dependent on an individual's pre-pandemic income and the supports are scheduled to be phased out altogether by April 2021. If unemployment rates remain elevated as income supports are curtailed, overall income in the country would likely decline which in turn would reduce the demand for housing. A critical question will relate to which households across the income distribution will face income shocks and how their demand for housing will change. Recent research by Beirne et al. (2020) and Coffey et al. (2020b) show considerable differences across the income distribution.

Beyond the direct impact of the pandemic on the Irish economy, the increased uncertainty around COVID-19 is likely to have a contractionary impact on demand. The longer the virus persists and uncertainty about the future opening of the economy continues, the greater the adverse impact on housing demand. Consumers will be less willing to engage in significant purchases such as buying a

house when there is such a high degree of uncertainty. Other practical considerations such as potential buyers being restricted from viewings of real estate are also likely to have impacted demand in the short term.

> *Key Issues for Consideration*
>
> - *How will the labour market shocks translate into housing demand developments during, and in the aftermath of, the pandemic?*
> - *To what extent will uncertainty affect housing demand?*

Moving beyond the short term it is possible that the Irish housing market may experience a significant increase in demand when the pandemic is brought under control. Coffey et al. (2020b) show that as a result of the heightened uncertainty and the administrative closures which limited the ability of consumers to spend, consumption this year is likely to be significantly lower than previous years. Combined with the PUP and TWSS which have offset a significant decrease in income there is likely to be a large increase in savings this year. FitzGerald (2020) estimates that the savings rate in 2020 will be 19.7 per cent in comparison to 10.5 per cent in 2019. When the uncertainty around the pandemic begins to subside this large increase in savings may in part be directed towards the housing market. This opens up the possibility of a surge in housing demand when concerns about the pandemic subside in the future. In many respects this is what occurred after the financial crisis of 2007/2008. Between 2008 and 2012, house prices fell significantly in the Irish market. However, by 2012, once economic conditions had stabilised and uncertainty had abated, demand recovered strongly.

Housing demand will also be impacted through the credit channel, with COVID-19 likely to impact on credit institutions in a number of different ways. As a result of the supports that have been put in place for mortgage holders and SMEs, loan repayments have been deferred. There is also likely to be increased uncertainty around the issuance of credit in an environment of increased unemployment and falling incomes. These issues are likely to have an impact on bank profitability and capital levels. As such this may give rise to the possibility of credit constraints, with households limited in the amount of credit that they can obtain relative to before the crisis. This in turn will reduce the demand for housing. Fitzpatrick and McQuinn (2007) estimated a significant mutually reinforcing link between house prices and mortgage credit in the Irish market. Figure 2 shows that already there has been a sharp decline in the value of new residential mortgage loans with the annual growth rate declining by 35 per cent in Q2 2020. While early indications are that mortgage approvals have increased from April, banks may tighten underwriting standards given the difficulties in assessing risk in the current climate. This may further increase credit access difficulties.

Where credit access difficulties become a binding concern for households (i.e. creditworthy households are unable to access sufficient credit), this may lead to a requirement for further policy interventions to deal with this market failure. The current Rebuilding Ireland Home Loan for first time buyers, which targets credit access issues for lower income households, may need to be revisited to ensure that it is dealing with the post-pandemic difficulties which certain households may have in accessing credit. This could be achieved through alleviating income constraints. It could be the case that the pandemic leads to more households facing wealth constraints in terms of saving for house purchase. If this occurs, then it may be necessary to provide a revamped equity scheme for first time buyers. While the Help-to-Buy Scheme is still in place, there is evidence that this scheme has been poorly targeted (to those with already low LTVs who are not constrained) (Parliamentary Budget Office, 2019),[2] and many commentators have noted the scheme is likely leading to higher levels of inflation in the market given present levels of housing supply. However, if the evidence is clear that households are facing wealth constraints then some intervention to facilitate equity support is warranted. One offsetting effect may be the rise in savings which could provide many households with ample equity for house purchase. At the very least, a reassessment of credit access following the pandemic and the role of public mortgage and equity supports for first time buyers is required given the highly changeable context.

> *Key Issues for Consideration*
>
> - *How will the lending market evolve in the context of the pandemic?*
> - *Do households face increased income or wealth constraints as a consequence of the pandemic and what is the appropriate policy mix required to deal with these issues?*

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[2]  https://data.oireachtas.ie/ie/oireachtas/parliamentaryBudgetOffice/2019/2019-09-25_an-overview-of-the-help-to-buy-scheme-which-is-set-to-expire-at-the-end-of-2019_en.pdf

**FIGURE 2     GROWTH RATE VALUE OF RESIDENTIAL MORTGAGE LOANS (%)**
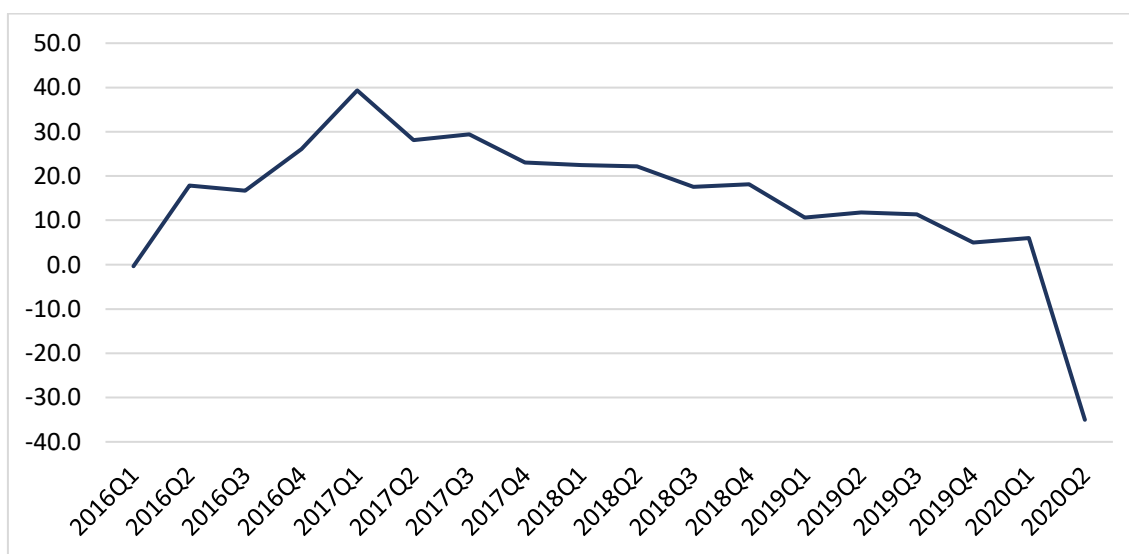


*Source:*     Banking and Payments Federation Ireland.

Prior to the pandemic Bergin and Garcia-Rodriguez (2020) used a regional demographic model to determine the level of structural demand for housing at a local authority level up to 2040. Under their Baseline scenario urban areas are expected to continue to have the highest population share up to 2040 with the Mid-East region around Dublin expected to experience the fastest population growth relative to population shares. As a result, higher levels of housing demand are forecast in Dublin city, Cork county, south Dublin (SDCC), Dún Laoghaire-Rathdown, Cork city, Meath and Kildare.

One of the most significant impacts that the pandemic and lockdown have had on the labour market is the increase in the number of people working from home. While the permanency of this shift to remote working remains to be seen, many companies have already signalled that employees will be given greater opportunities to work from home going forward. This may reduce the need for workers to be located near city centres both as a direct result of remote working and also the knock-on effect of reduced economic activity in city centres. In turn, this may result in decreased demand for housing in urban areas where house prices and rents are currently highest. The existing, desired move towards higher density models of accommodation is likely to be more challenging as a result of COVID-19. Households, particularly those with children, may place more emphasis on green space and houses rather than apartments. If the pandemic leads to a systemic re-evaluation of households housing preferences, then this may alter the composition of demand. Future research could examine how such changes are occurring and whether a review of related policies around planning is required.

*Key Issues for Consideration*

- *How will the pandemic affect the structural demand for housing, in particular around migration?*
- *Will the pandemic change housing type preferences and location choice due to more working from home possibilities?*
- *Will such changes provide an opportunity for development in regional and rural locations?*

Figure 3 shows the ratio of transactions in 2020 compared to the same period the previous year. There was a clear decline in transactions in April and May relative to 2019. While the transaction rate is influenced by demand- and supply-side factors, some of the reduction in sales may be coming through reduced housing demand as incomes decline and households are more uncertain about the future.

**FIGURE 3     RATIO OF SALES TRANSACTIONS IN 2020 VS 2019**
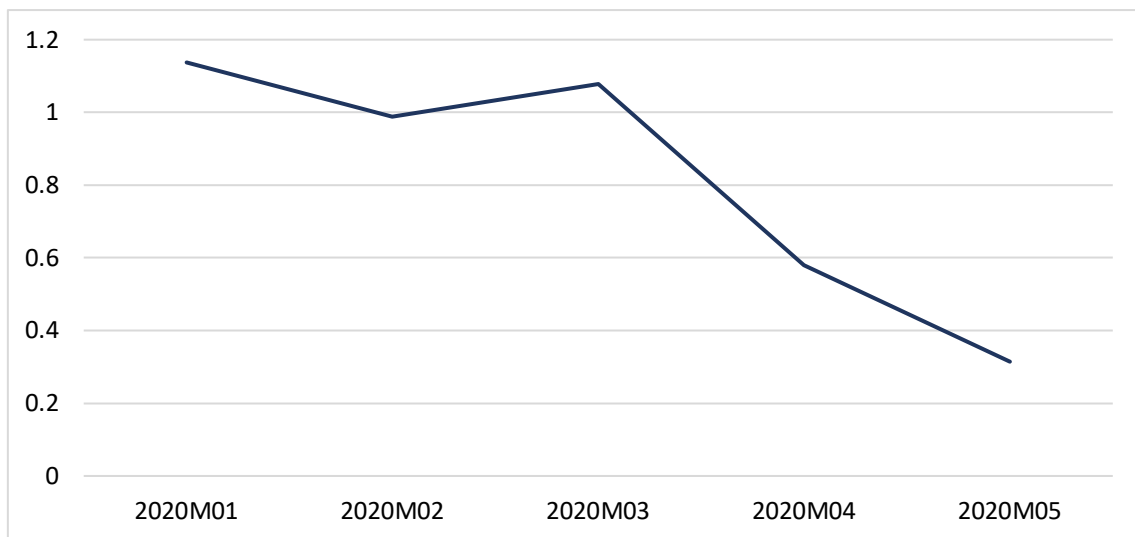


*Source:*     Central Statistics Office, Property Price Register.

## 3.  HOUSING SUPPLY

Before the pandemic emerged, the Irish housing market was already faced with a significant problem of undersupply. Despite increases over the last number of years there were still only 21,000 housing completions in 2019. This is well short of the amount of housing needed to keep up with the level of structural demand, estimated to be in the region of 30,000-35,000.[3] Issues of undersupply are likely to be amplified by the pandemic which will hinder both investment and construction of new housing.

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[3]     See for example: Conefrey and Staunton (2019) and earlier work in Duffy et al. (2016).

The immediate consequence of the lockdown was to put physical restrictions on the construction industry. Construction sites were closed for a number of weeks as part of the administrative closures instigated in late March. Despite the easing of these restrictions efficiency on sites is likely to be below the level it was at before the pandemic. This is due to the safety protocols which have been put in place such as the limitations on the number of workers on site at any one time. Further to this a number of building sites have already had to be temporarily closed as a result of workers testing positive for the virus. As long as these measures remain in place, efficiency in the construction sector is likely to remain below normal. A key question arises as to how productivity in the construction sector will be affected under an economic environment with ongoing lockdowns and infection risks. These issues will naturally raise the cost of development if such measures, for example, lead to fewer employees allowed on site. However, COVID-19 could increase the popularity of alternative construction practices such as off-site volumetric builds particularly in the context of large scale builds.

Due to the nature of housing investment it may take a number of years before there is a return on the initial investment. Therefore, any uncertainty with regard to future market conditions is likely to reduce investment in housing today. A reduction in investment today will lead to a fall in new housing in the future. Thus, while a fall in uncertainty around the pandemic would likely result in an immediate increase in demand there is likely to be more of a lag for housing supply. As a result, the present imbalance in the market between demand and supply could be exacerbated over the coming years as supply lags behind a recovery in housing demand. This mismatch in terms of the recovery of supply vis-à-vis demand was observed post-2012 in the Irish market. However, for a comparable outcome to the financial crisis to materialise, the adverse effects of the pandemic would want to continue for a number of years.

*Key Issues for Consideration*

- *How will ongoing public health restrictions affect productivity in the building industry?*
- *How will uncertainty around the economic and epidemiological situation affect the supply of new housing?*

**FIGURE 4     HOUSING COMPLETIONS**
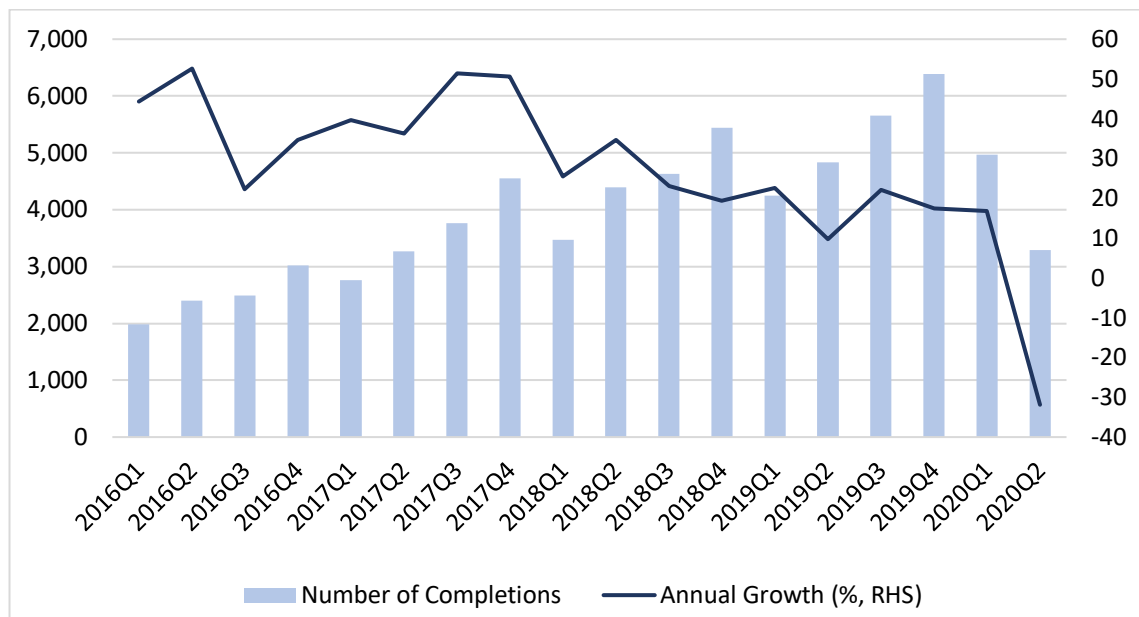


*Source:*     Central Statistics Office.

Another aspect of housing supply that may need an alternative set of scenario analysis following the pandemic is the issue of planning and demographic spread. While the current National Planning Framework and associated local county development plans are based off demographic projections built around strong economic growth, these results may now need to be accompanied by an alternative set of assumptions. It will not be possible to ascertain what the demographic impacts of the pandemic will be until the epidemiological situation is clearer but there may well be a range of additional questions that now need to be addressed from a planning and demographic perspective.

> *Key Issues for Consideration*
>
> *How does planning policy react to changes brought on by the pandemic?*
>
> - *Is city-led development going to be as required going forward with a more agile "working from home" culture and can this be an opportunity for a rejuvenation of rural areas and provincial towns?*
> - *Is there the potential for surplus office accommodation in cities to be converted to residential accommodation?*
> - *Will lower density housing with fewer apartments be more preferential for households given concerns around outdoor space and green spaces?*

While city-led urban development is highly efficient from a public service provision perspective and spatial planning perspective, demand amongst households for this type of living may decline. This may need a reappraisal of the emphasis traditionally

placed on such development and may offer an opportunity for a more balanced spread of population on a regional basis.

*Investment and rental supply*

Another concern from the supply side in the rental market is the extent to which tenant protection mechanisms and price cap limitations feed through over time into supply impacts. The immediate crisis related measures in the rental sector which were enacted as part of the *Emergency Measures in the Public Interest (COVID-19) Act 2020* removed eviction and price rise risk from the private rental sector for the period of the pandemic. This measure was entirely consistent (and warranted) with households being asked to restrict their movements to deal with the pandemic. While protections for households in arrears who had been affected by COVID-19 were continued to early 2021 as part of the *Residential Tenancies and Valuation Act 2020*, the extent to which these policies (and the longer-term rent control measures) add uncertainty and price risk for investors is an open question. The impact of the risk-return calculations of both household and institutional investors may lead to lower rental supply from private sources going forward. If these impacts delay project starts now, this could exacerbate supply bottlenecks in the future.

A consequence of this may be that the pandemic results in a major increase in State provision of longer-term rental housing which can be targeted at providing affordable solutions for lower income households. However, the impact of the pandemic on investment in rental supply requires a detailed exploration. In particular, it may be necessary to estimate if the current legislation, which limits evictions, has a significant impact on future investment levels in the sector? In both cases, an increase in the State provision of rental housing is likely to be required and could form a cornerstone of any post-pandemic capital stimulus.

> *Key Issues for Consideration*
>
> - *How do changes in pandemic-related tenancy legislation impact rental supply?*
> - *To what extent should the State step in to provide rental housing supply directly?*

## 4. PRICE/AFFORDABILITY IN THE HOUSING MARKET

While house prices increased rapidly in the years following the nadir of the market in 2013, the inflation rate had fallen somewhat from 2019 onwards (see Figure 5). The stabilisation of house prices over this period reflected the fact that actual

house prices had converged with their fundamental values as a result of the rapid increase in prices in preceding years.[4]

Since April 2020 the inflation rate has started to decline again, and in July 2020 national house prices experienced the first negative year-on-year growth rate since May 2013.

**FIGURE 5    YEAR-ON-YEAR GROWTH RATE OF RESIDENTIAL PROPERTY PRICE INDEX: 2013:01 – 2020:07**
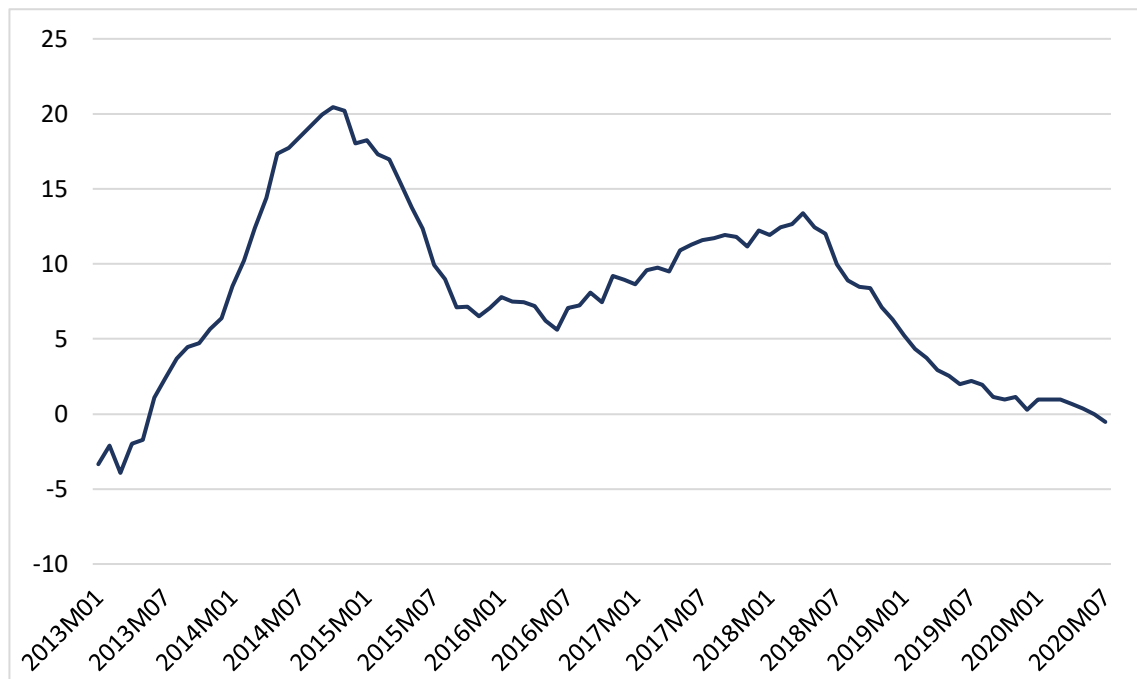


*Source:*    Central Statistics Office.

Despite the moderation of house price inflation, affordability issues in the housing market remain. Research by Corrigan et al. (2019) show that affordability pressures in the housing market are not universal but rather pertain to specific groups. Unsurprisingly those on low incomes face the greatest challenges in this regard with mortgaged households in the lowest 25 per cent of the income distribution paying on average two-fifths of their income on housing costs. A more granular look at affordability for first time buyers by Allen Coghlan et al. (2019) found that affordability issues are most pronounced in Dublin and the surrounding counties.

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[4]    For further information on house price sustainability in Ireland see: McQuinn et al. (2019). *House price expectations, labour market developments and the house price to rent ratio: A user cost of capital approach* and Allen-Coghlan M. et al. (2019). *Irish house price sustainability: a county-level analysis,* for detail on house price sustainability.

Given the aforementioned impact that COVID-19 will have on housing demand and supply it is very likely that the pandemic will have a knock-on effect for house prices and affordability.

Allen-Coghlan and McQuinn (2020) look at the implications for house prices due to the potential impact of the pandemic on incomes, credit and new housing supply. An inverted demand model for housing with a mortgage credit activity variable is utilised to analyse the historical relationship between prices and these three variables. The coefficients estimated from this model are then used in a scenario analysis where incomes, credit and supply are modelled over the next two years. Three scenarios are put forward representing different recovery paths for the Irish economy; the Baseline, Benign and Severe. The Baseline is a counterfactual scenario where there was no pandemic. Under this scenario house prices were estimated to increase by just over 1 per cent this year and just over 3 per cent in 2021. Under the Benign scenario there is a significant contraction in the economy in Q2 2020 due to the lockdown restrictions imposed by the government. However, after this period, as the restrictions are gradually lifted, the economy recovers rapidly and by 2021 the economy has recovered to the level expected under the Baseline scenario. Here house prices in Q4 2021 are forecast to be the same level they were in Q1 2020, the period just before the pandemic. In the Severe scenario where the impacts of the pandemic stretch beyond 2020, house prices decline by over 12 per cent by the end of 2021 relative to Q1 2020.

While the short-term impact on prices will likely be dominated by demand-side factors of falling incomes and reduced credit access, longer-term prices are likely to be more influenced by supply-side factors which, as discussed, tend to have a lagged effect. This means that we could possibly experience a sharp increase in house price inflation when demand initially begins to pick up again.

> *Key Issues for Consideration*
>
> - *How will house prices react to demand and supply side factors following the pandemic?*

**FIGURE 6      FORECASTS OF HOUSE PRICES (REAL) UNDER THREE SCENARIOS: 2019Q1-2021Q4**
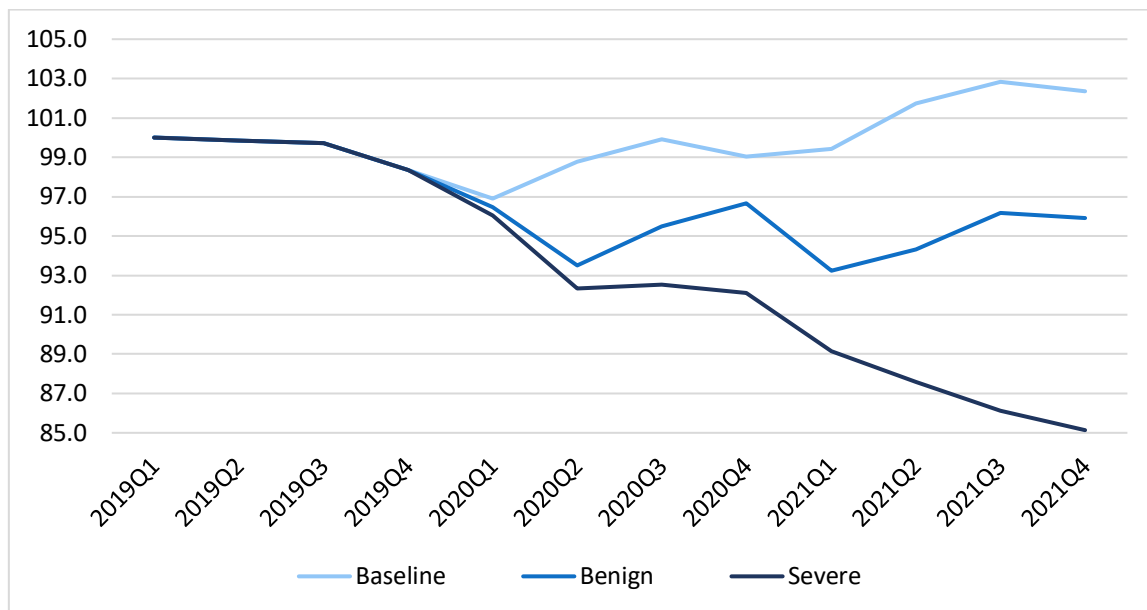


*Source:*    Authors' calculations.
*Note:*      All data are in index form with 2019Q1 set = 100.

While a short-term decline in house prices may be a relief to those currently seeking to buy a home, the pandemic will not be a panacea for affordability issues in the housing market. The negative impact of COVID-19 on the Irish labour market has not been evenly distributed across sectors or demographics. In a Box in the summer *Commentary* Roantree (2020) has shown that young workers have been disproportionately impacted by COVID-19. It is also clear from the labour market data that employees in lower paid sectors such as hospitality and tourism have been much more adversely impacted than those in higher paid sectors such as finance and ICT. As the work by Corrigan et al. (2019) showed, those in lower income groups were disproportionally impacted by affordability issues in the housing market before the pandemic. Allen-Coghlan et al. (2019) showed that there were significant affordability issues for first time buyers in the housing market, particularly in the GDA and urban areas generally. While government supports have prevented a significant drop in incomes for these groups so far, if the negative labour market shock persists then the very groups that were facing the most significant affordability issues before the pandemic may be even more negatively impacted in the years to come.

## 5.   RENTAL MARKET

While there was some moderation in house price growth over the past year, rental prices have continued to increase rapidly. Figure 7 presents the RTB Quarterly Rent Index up to Q1 2020, before the lockdown took effect. The annualised growth rate of rents increased by 5.4 per cent in Q1 2020 nationally while the annual growth rate in Dublin increased by 5.3 per cent.

**FIGURE 7      RTB/ESRI RENT INDEX ANNUAL GROWTH (%)**
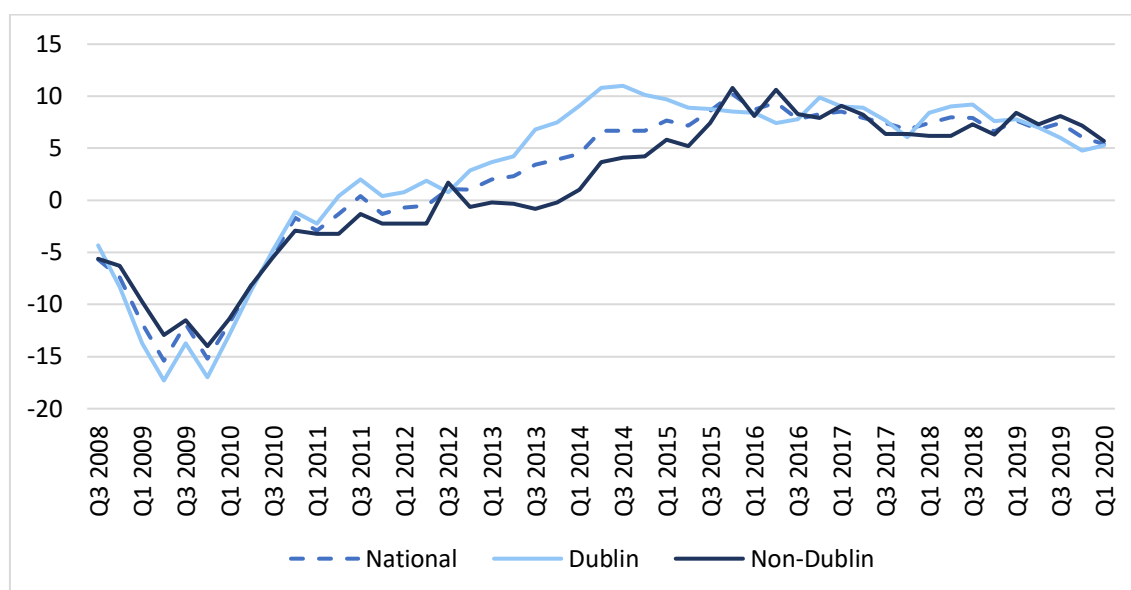


*Source:*      ESRI/RTB Rent Index.

In order to explore the early impact of the pandemic on the rental market, the ESRI and RTB undertook a short-term analysis of monthly rent prices and transactions from January to June 2020 using a hedonic regression model (Allen-Coglan et al., 2020). The results of this are presented in Figure 8. Rent price growth has moderated somewhat since the pandemic began, declining by 2.7 per cent between March and April. The initial price decline was even more significant in Dublin where prices fell by 4.5 per cent between March and April. National month-on-month declines were registered in three of the four months since March 2020.

However, it should be noted that these price trends were based on early provisional data received by the RTB. These data do not include the total number of rental transactions that took place over this period as registrations with the RTB are often made in the months following the commencement of a tenancy. In order to assess the full impact of the pandemic on the rental market, we will need to wait until the regular quarterly RTB Rent Index for Q2 is released. Further downward pressure on rent prices may come as a result of the *Residential Tenancies and Valuation Act 2020* which provides a limitation on price increases for tenants affected by COVID-19 until early 2021.

**FIGURE 8    SHORT-TERM INDEX OF RENT PRICES**
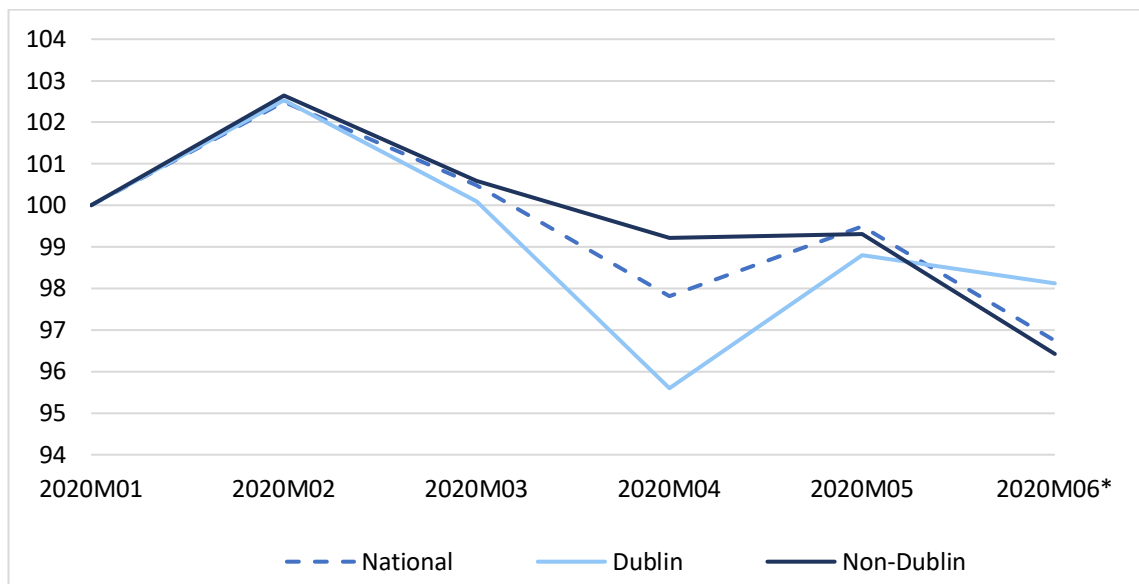


*Source:*    ESRI/RTB Rent Index.
*Note:*    * Data only available for tenancies commencing over the first 16 days of the month.

Figure 9 shows the number of tenancy registrations each month. Between March and April there was a significant decline in the number of tenancies registered with the RTB. While in March there were over 7,000 registrations, in April this had fallen to less than 4,000. The number of new registrations also remained subdued in May. The fall in registrations is consistent with the restrictions on economic and social life brought in to stop the spread of the COVID-19 virus.

**FIGURE 9    NEW AND RENEWAL TENANCIES REGISTERED WITH THE RTB**
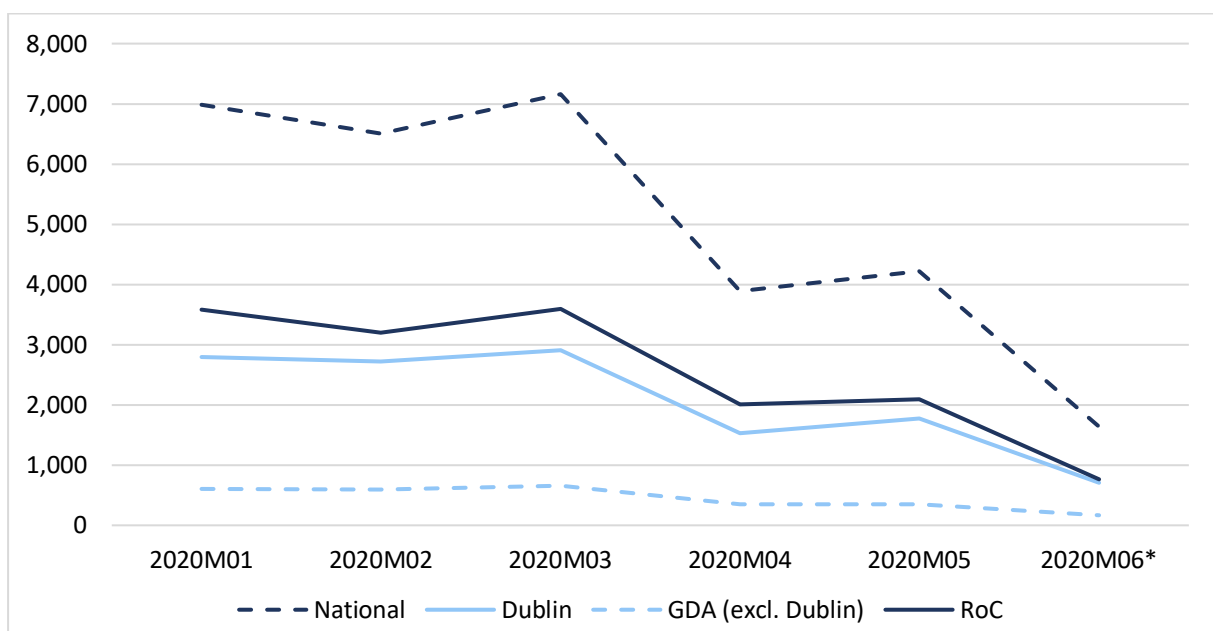


*Source:*    ESRI/RTB Rent Index.
*Note:*    * June only contains data up to the 18th of the month.

Coffey et al. (2020b) looked at how COVID-19 would impact on affordability in the rental sector in the short term. The paper focused on households which were not in receipt of rental supports such as the Housing Assistance Payment (HAP) or Rent Supplement. The paper used two metrics to determine affordability (1) the ratio of rental payment to net income of the household and (2) a residual income ratio which takes the income left after the rental payment is made and determines whether it is sufficient to cover a minimum required level of expenditure. They find that while prior to the lockdown one-third of renters already experienced affordability issues, on an aggregate basis the immediate impact of the pandemic would not have made these affordability challenges any worse. This is primarily due to the extraordinary income supports which were put in place in the form of the PUP and the TWSS. As a result of these supports, they actually find a fall in affordability pressures among households. However, they also find that renting households were more likely to work in sectors affected by the pandemic and the income shock experienced by renters was greater than that for homeowners.

This paper also looked at how the pandemic affected missed rental payments. While model estimates based on the relationship between affordability stress, unemployment and rental payment difficulties suggest that there is likely to be an increase in missed payments, this will be reduced somewhat by consumption expenditure falling more rapidly than incomes. Model estimates suggest that missed payments will increase slightly from just under 10 per cent to just under 11 per cent.

Over a longer time period the pandemic is likely to worsen affordability issues in the rental market. Incomes are likely to rebound slower than rising costs in areas such as transport and childcare costs. COVID-19 is having the most significant impact on those in the accommodation and food service sectors, where 15 per cent of workers in these sectors live in private rental households compared to more than three times as many as in mortgaged households. As the income supports are removed any sluggishness in the recovery of incomes in these sectors will exacerbate pre-existing affordability challenges in the rental sector.

Work by Cronin and McQuinn (2016) has shown that restrictions in credit also have implications for tenure choice, leading to an increase in demand for rented accommodation. If there is a decline in the provision of credit going forward due to the pandemic then, ceterus paribus, we would expect to see greater demand for rental properties relative to owner-occupying which again could put upward pressure on rental prices.

These considerations reinforce the discussion above regarding the supply of rental properties given changes to the legislative agenda and the ongoing affordability

challenges. If fewer households are able to afford the transition from renting to owning this will exacerbate the affordability issues in the rental sector.

## 6.  OTHER CONSIDERATIONS

Given how fast moving and changeable the situation with regard to COVID-19 is regarding the broader economy, it is likely there are many aspects of the housing market that we have not explored that will be impacted by COVID-19. One such issue that may require additional analysis to understand its role in a post-COVID environment is the generalised goal of improving energy efficiency in the housing stock. The retrofitting of private housing may be more difficult to achieve if households become credit constrained or face a reduction in living standards due to the deterioration in labour market conditions. Incentivising investment through the private sector may need additional policy intervention if private households are unable or unwilling to finance such investment going forward.

## 7.  CONCLUSIONS

COVID-19 has already had an unprecedented impact on the Irish economy and this has extended to the housing and rental markets. While government support schemes are likely to keep incomes stable in the near term, as these measures are unwound and the labour market struggles to recover, incomes are likely to fall, putting downward pressure on housing demand. The extensive and prompt introduction of the different household income supports has to date insulated the housing market from some of the most adverse consequences of COVID-19.

The fall in economic activity is also likely to lead to credit constraints which will also reduce the level of demand. These credit constraints may be compounded by any increases in the provisioning for impaired loans the domestic financial sector has to undertake due to the crisis.

While there has already been a fall in the number of housing completions due to reduced efficiency in the construction sector, the most significant impact on supply may not be seen for another year. In the face of a high level of uncertainty today investment is likely to be curtailed, meaning as demand starts to pick up the level of supply will not be there to meet it, amplifying the existing undersupply in the Irish market.

Ultimately, over the longer-term, this is likely to be the main impact on the housing market of COVID-19; an increase in the imbalance between the supply and demand for properties in the Irish market. Consequently, one of the most appropriate policy responses is for an increase in State provision of social and affordable housing. An

increase in the supply of such housing at this point would help to reduce the extent to which the imbalance would be exacerbated by the present crisis. Ultimately, facilitating cheaper, more efficient housing supply is the primary policy concern in the housing market over the medium term.

At a more speculative level, the potential increase in the number of people who can and will work from home in the future may have significant implications for the housing market and the general economy over the longer term. In practical terms, this may mean that much of the longer-term analysis, which has already been conducted concerning the structural demand for housing at both a national and regional level, now needs to be accompanied by an alternative set of scenarios. More broadly, the impact of COVID-19 may lead to an additional set of questions examining the possibility of better regional and rural distribution along with a new consideration of the future purpose of towns and cities.

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# COVID-19 PANDEMIC AND SMES REVENUES IN IRELAND: WHAT'S THE GAP?

## Maria Martinez-Cillero, Martina Lawless and Conor O'Toole[1]

### ABSTRACT

The COVID-19 economic crisis has caused an unprecedented economic shock for the Irish SME sector. In this paper, we assess the financial resilience of Irish SMEs and explore the extent to which they have faced revenue shortfalls (where revenue falls below expenditure on a monthly basis) since the onset of the COVID-19 pandemic. We also undertake a forward-looking exercise which attempts to quantify SME revenue shortfalls to the end of 2020 under three scenarios. We found that between two-in-five micro firms and one-in-two small/medium-sized firms faced a revenue shortfall from March to June 2020. This accounted for a revenue shortfall of between €6 billion and €10 billion for the period. If firms' own cash resources bridge the gap, then between €2.2 billion and €4.3 billion remains unaccounted for. Looking forward to the end of 2020, scenario estimates for the gap are between €8 billion and €15 billion, depending on the epidemiological situation. Own fund usage can reduce this to between €4 billion and €8 billion, depending on the scenario.

## 1. INTRODUCTION

The COVID-19 pandemic represents the most severe economic shock to the Irish economy in living memory. The speed and scale of the disruption to economic and social life are outside any experience bar wartime. While dealing with the health implications of the pandemic was the highest priority, the economic cost of the restrictions is substantial. An early estimate of the potential scale of the shock forecast for 2020 is provided by McQuinn et al. (2020), who suggest the economy could contract by between 9 and 17 per cent depending on the epidemiological situation with respect to COVID-19.

The outlook for the economy as it exits the initial lockdown phase depends on continued suppression of the virus, which gives rise to considerable uncertainty on the scale of the economic impact and the necessary policy interventions. With these uncertainties in mind, this paper attempts to estimate the scale of the

revenue losses and liquidity shortfalls of the Irish small and medium enterprise (SME) sector. We do this both for the period of the stringent restrictions throughout the second quarter of 2020 and also across several outlook scenarios for the rest of the year.

The SME sector makes up the vast majority of firms operating in Ireland and employs over one million people (68.4 per cent of total employment) according to the CSO (2019). While much of the prospects for the sector over the coming months depend very much on epidemiological developments and the scale of the economic shock, the resilience of individual firms and the SME sector as a whole also depends on the financial position entering the crisis.

The paper therefore begins with a description of the performance of the SME sector before it entered the crisis period. To do this, we used detailed survey data on profitability, indebtedness, cash holdings and payment arrears across firms to gauge their potential resilience or vulnerability to a severe shock to their revenues. We particularly focused on the relationship between expenditure and turnover across SMEs and how much capacity did SMEs have to absorb shocks through their build-up of internal funds before the crisis hit. Following the description of the SME sector's performance entering the crisis, we calculated the potential impact in terms of revenue shortfalls over the lockdown period in the second quarter of 2020. We combined estimates of the range of turnover reductions from surveys carried out by the CSO and by Chambers Ireland with expenditure reductions coming from support schemes such as an illustrative wage subsidy (like the Temporary Wage Subsidy Scheme (TWSS) or the Employee Wage Subsidy Scheme (EWSS) which replaced it in July 2020) and reductions in other input costs. It must be noted that we did not try and directly model either of these exact wage subsidies in operation, as we do not have employee level data which would allow us to do a microsimulation exercise. Instead, we used an illustrative subsidy that is based on the average earnings per employee at the firm. We used this survey evidence on the extent of turnover and expenditure reductions to calibrate a number of scenarios for our detailed firm dataset. This allowed us to examine how widespread revenue gaps were across firms and how these compared to the reserves that firms had in place to cope with a negative shock. We also aggregated across firms to build up a total estimate of the revenue shortfall for the SME sector as a whole – both including and excluding the sector's own internal funds resources. The combination of granular data on cash holdings and the up-to-date input of turnover and expenditure shocks from the CSO allowed us to extend earlier work on liquidity for SMEs in the COVID-19 period (McGeever et al., 2020).

The estimates for the revenue shortfalls over the lockdown period have been extended to cover the full year 2020 under a range of different scenarios. Our

central scenario is a gradual return to normal turnover for most firms by the end of the year with some ongoing public health measures (like physical distancing) continuing. A more optimistic scenario is for a rapid improvement in turnover throughout the third quarter, and a more pessimistic scenario has restrictions in place and has turnover improve somewhat in the third quarter of 2020 – but then stay at this level for the final quarter as well, although without returning to a full lockdown. These scenarios were used to calibrate the financial evolution of firms in the SME survey and results were then aggregated to give an overall indication of the range of potential shortfalls and the capacity of firms to survive them.

The results are subject to considerable uncertainty, particularly in the case of the forward-looking scenarios which depend to a large extent on health developments and the control of the pandemic. Our key results suggest that between 40-55 per cent of micro enterprises experienced a revenue shortfall for three months to mid-June 2020. The median revenue gap per month for these firms was between €3,000-€3,500. For small/medium-sized firms, between 43-60 per cent of these firms faced a revenue gap with a median size ranging from €30,000 to €40,000 per month. Approximately one-in three micro firms, and two-in-five small/medium-sized firms, did not have sufficient own resources to cover the three-month revenue gaps.

Our next step was to aggregate these figures to provide estimates of the revenue gap for those firms who experienced a loss. It must be clearly noted at the outset that such a process is complicated using survey data and can lead to considerable uncertainty around any point estimate. Furthermore, our revenue gaps only relate to SMEs with a turnover less than €50 million due to the survey design. Our estimates would probably underestimate the gap (potentially by some margin) if larger medium-sized firms were to be included. Aggregating our figures for the revenue gap provides an estimate of between €6 billion and €10 billion as a result of the pandemic for the second quarter of 2020. Some of this can be covered by SMEs' existing internal resources but, even assuming a full running down of SME cash resources, a revenue shortfall of between €2.2 billion and €4.3 billion remains. This is not to say that having SMEs use all internal funds in this way is desirable, particularly as it would have knock-on implications for their ability to invest and grow in any recovery phase, but it does show that some absorptive capacity existed within the sector prior to the shock.

The range of estimates for the full year effect is much wider given the importance of the health developments in determining the recovery path. In our base scenario, assuming a steady recovery over the second half of the year, the shortfall in SME liquidity is between €8.1 billion and €12.3 billion, however this declines to between €3.9 billion and €6.7 billion if SMEs use their own reserves fully. In an optimistic

scenario of a more rapid return to near normal turnover levels, this revenue gap is between €7.4 billion and €10.7 billion (when accounting for own resources the figures are between €3.6 billion and €5.7 billion). A slower recovery would increase the shortfall considerably to between €9.5 billion and €14.9 billion. Depending on the scenario, the gaps are approximately €4.8 billion and €8.25 billion when accounting for own funds, as firms have to bridge a longer period of low turnover, and as any internal resources that helped to cushion the initial impact are run down.

It should be noted that the estimates of gaps or shortfalls presented in this paper should not be seen as the required level of government support. Rather, they are estimates of the revenue gaps that firms will face under various economic scenarios. There is a very large range of options which can be drawn upon to bridge these gaps including the cash reserves that firms have on their balance sheet, drawdowns of existing loans, new lending from the private sector etc. Furthermore, if the economic shock persists many companies may not survive, and company closure will be one economic adjustment mechanism for firms with revenue gaps. State support (be it guarantees on loans, grants or equity transfers) will all be considerably important but will not on their own fully bridge the gaps suggested in this paper. Indeed, a large range of state supports have already been introduced, such as the enhanced credit guarantee scheme, lending facilities through the SBCI and a range of restart grants. These policies can act to address firms who have a revenue shortfall. However, the optimal policy response to the current crisis is beyond the scope of this paper but requires considerable detailed research and analysis over the coming months.

The rest of the document is structured as follows: Section 2 presents the financial position of SMEs prior to the pandemic; Section 3 outlines our estimates of the scale of the shock and liquidity gap; Section 4 attempts to provide an aggregation of the firm level gaps; Section 5 presents forward looking estimates out to the end of 2020, while Section 6 concludes.

## 2. FINANCIAL POSITION OF SMES PRIOR TO THE PANDEMIC

This section documents the structure of the SME sector and its financial position before the shock of the COVID-19 pandemic hit. The primary data source we used for the analysis of SMEs in this paper is the Credit Demand Survey (CDS), carried out twice a year by the Department of Finance. The survey is documented in detail in Gargan et al. (2018) and Martinez-Cillero et al. (forthcoming). It contains a wide range of financial and credit indicators, which we briefly overview here. Table 1 shows averages of selected indicators of the financial situation of SMEs in Ireland in 2018, the latest year for which data are available in the CDS. We display this

information by size[2] and sector categories. The chosen indicators show that 46 per cent of SMEs hold some external debt and, of these firms with debt, the average ratio of debt-to-turnover is 16 per cent. The share of firms with debt is quite noticeably higher amongst medium firms than micro and small firms, which may indicate that it is easier for firms to access finance once they reach a certain scale or that debt financing has played a role in investing to expand operations. The extent of the debt held as a percentage of turnover is also larger for the medium-sized firms. Across sectors, the share of firms with debt is highest in hotels and restaurants and manufacturing.

Seven-in-ten firms made a profit, a share that is slightly higher amongst small and medium firms relative to micro firms but not substantially so. The percentage of profitable SMEs is slightly lower for the sub-sample of firms which have debt. The ratio of debt-to-turnover is steady across most sectors with the exception of hotels and restaurants where the ratio is considerably higher than average at 42 per cent. The share of firms making a profit is lowest in this sector at 58 per cent and the share of firms that have missed a payment on debts is highest. This is a serious concern in the context of vulnerability to the COVID-19 shock as the hospitality sector has been subject to the most stringent restrictions and is likely to have to deal with limitations on activity due to social distancing requirements for the longest. On the demand side, households are also likely to be more restrained in their activity to engage with this sector while the threat of infection continues to remain in the community.

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[2]    Throughout this report, size categories are defined in terms of number of employees. *Micro* firms employ between 0-9 people, *Small* firms employ between 10-49 people, and *Medium* firms employ between 50-249 people.

**TABLE 1       AVERAGE FINANCIAL INDICATORS BY FIRM CATEGORY**

| | % Firms with Debt | % Debt/ Turnover | % Firms, Made Profit | % Firms with Debt, Made Profit | % Firms, Missed Repayment |
|---|---|---|---|---|---|
| *Total* | 46.0 | 15.6 | 69.4 | 67.6 | 4.5 |
| *Size categories* | | | | | |
| **Micro** | 40.8 | 14.0 | 65.5 | 60.8 | 6.3 |
| **Small** | 46.7 | 14.1 | 71.6 | 68.1 | 3.4 |
| **Medium** | 55.9 | 25.7 | 72.5 | 77.1 | 3.0 |
| *Sector categories* | | | | | |
| **Manufacturing** | 50.8 | 12.5 | 68.4 | 63.1 | 4.6 |
| **Construction & Real estate** | 42.9 | 12.5 | 60.3 | 59.1 | 3.7 |
| **Wholesale & Retail** | 45.6 | 12.4 | 71.3 | 68.8 | 5.1 |
| **Hotels & Restaurants** | 54.1 | 41.6 | 58.3 | 56.1 | 6.1 |
| **Professional, Scientific and Technical** | 42.5 | 13.5 | 77.3 | 76.6 | 4.8 |
| **Other** | 43.4 | 22.2 | 72.9 | 74.8 | 2.3 |

*Source:*    Authors' analysis of Department of Finance Survey Data.
*Note:*    The Debt/Turnover ratio distribution is capped at 5. The mean Debt/Turnover ratio is calculated using only firms with debt. Debt numbers include those whose debt has been imputed and therefore can differ to previous (or different metrics) estimated using this specific survey. For more information please contact the authors for clarification.

We next looked at the relationship between expenditure and turnover across SMEs and how much capacity SMEs have available to absorb shocks in terms of internal funds.[3] In order to explore the relation between annual turnover and annual expenditure we built a ratio as *total annual turnover/total annual expenditure*. An additional ratio built as the share of *total annual cash and cash equivalents to total annual expenditure* was also computed. The latter ratio indicates the overall capacity of SMEs to deal with potential income shocks by covering their annual expenditure using their available cash reserves alone.

The histograms in Figure 1 and Figure 2 show the total distribution of each ratio while the subsequent tables show the medians across firm groups. The histograms show that both ratios are extremely skewed, which is why the median is used in the tables following as the better representation of the standard firm experience. However, in later aggregations, we switched to using means to capture the fact that large revenue and liquidity gaps, even in a small number of firms, affect the overall sector requirements.

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[3]    Outliers have been removed in all continuous variables used to obtain the statistics presented (i.e. turnover, debt, cash and cash equivalents and expenditure). Observations are considered an outlier if they are above of the upper/lower 1 per cent of the distributions.

**FIGURE 1**     **RATIO OF TURNOVER TO EXPENDITURE**
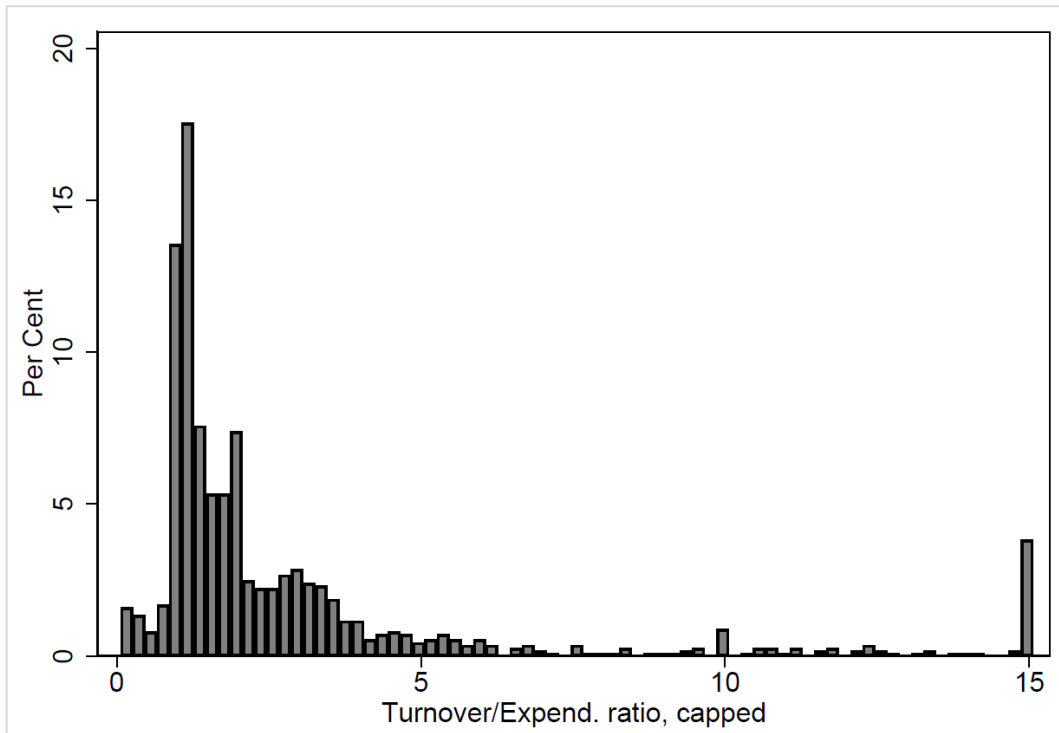


*Source:*     Authors' analysis of Department of Finance Survey Data.
*Note:*        Upper end of the distribution is capped at 15. Bin width is 0.2.

**FIGURE 2**     **RATIO OF CASH AND CASH EQUIVALENTS TO EXPENDITURE**
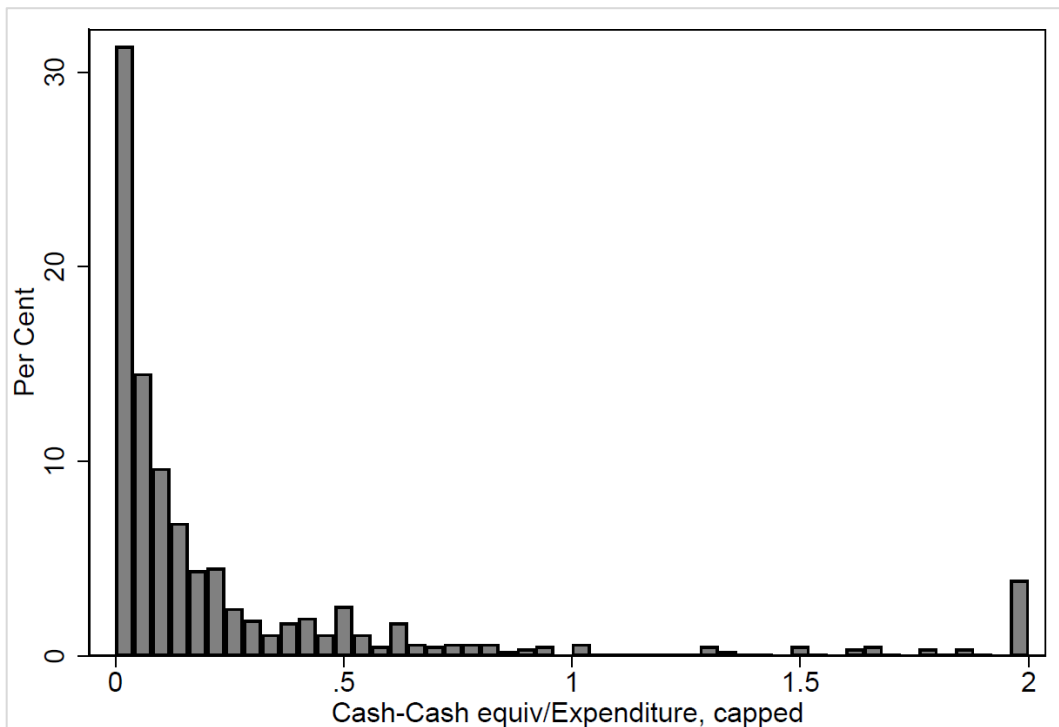


*Source:*     Authors' analysis of Department of Finance Survey Data.
*Note:*        Upper end of the distribution is capped at 2. Bin width is 0.4.

The median values of the *total annual turnover/total annual expenditure* and *total annual cash and cash equivalents-to-total annual expenditure* ratios are presented in Table 2 and Table 3 respectively. Table 2 also includes the percentage of firms for which annual turnover was higher than annual expenditure in 2018, the most recent year of available data. Turnover was 60 per cent higher than expenditure for the SME sector overall and approximately 90 per cent of firms had turnover greater than expenditure. The difference in this ratio between firms with debt and those without debt is fairly modest, with firms with no debt having a slightly higher ratio of turnover to expenditure but also being slightly more likely to have turnover not exceeding expenditure. Across firm sizes, micro firms have greater ratios of turnover to expenditure and are also marginally more likely to have turnover exceed expenditure.

**TABLE 2      MEDIAN TURNOVER/EXPENDITURE RATIO, BY CATEGORIES**

|  | Turnover/Annual Expenditure | | | % Firms Turnover > Expenditure | | |
|---|---|---|---|---|---|---|
|  | All | Debt | No debt | All | Debt | No debt |
| **Total** | 1.59 | 1.56 | 1.65 | 89.9 | 92.5 | 88.5 |
| *Size categories* |  |  |  |  |  |  |
| **Micro** | 1.88 | 1.75 | 2.00 | 91.4 | 93.6 | 90.2 |
| **Small** | 1.45 | 1.45 | 1.50 | 88.7 | 90.9 | 87.4 |
| **Medium** | 1.33 | 1.36 | 1.25 | 88.9 | 93.4 | 84.3 |
| *Sector categories* |  |  |  |  |  |  |
| **Manufacturing** | 1.50 | 1.56 | 1.33 | 84.3 | 79.9 | 88.8 |
| **Construction & Real estate** | 1.67 | 1.43 | 1.87 | 93.6 | 96.4 | 92.7 |
| **Wholesale & Retail** | 1.79 | 1.75 | 2.00 | 90.2 | 96.1 | 87.6 |
| **Hotels & Restaurants** | 1.80 | 1.83 | 1.79 | 92.1 | 93.4 | 89.8 |
| **Prof. & Scientific & Technical** | 1.52 | 1.45 | 1.80 | 91.8 | 94.0 | 90.6 |
| **Other** | 1.33 | 1.38 | 1.33 | 87.6 | 92.3 | 83.9 |

*Source:*     Authors' analysis of Department of Finance Survey Data.
*Note:*        The upper end of the distributions of the Turnover/Annual expenditure ratio is capped at 15.

A key indicator of financial resilience that we used to indicate ability to absorb shocks was the extent of cash and cash equivalents held by SMEs. Table 3 shows how much cash SMEs hold relative to their annual expenditure. The median firm holds enough cash or equivalent to cover 10 per cent of their annual expenditure. Firms with outstanding debt understandably hold less in cash reserves, at 6 per cent of annual expenditure compared to 18 per cent for firms without debt to be serviced. Micro firms tend to hold greater cash (which may be a reflection of their more limited access to external financing) than small and medium firms. In contrast to their higher levels of vulnerability shown in the earlier tables, the hotel and restaurant sector does have a more substantive buffer of cash and cash equivalents relative to turnover than most other sectors.

**TABLE 3      MEDIAN CASH/EXPENDITURE RATIO, BY CATEGORY**

|  | Cash-Cash equiv./Annual expenditure | | |
|---|---|---|---|
|  | **All** | **Debt** | **No debt** |
| **Total** | 0.10 | 0.06 | 0.18 |
| *Size categories* | | | |
| **Micro** | 0.13 | 0.07 | 0.22 |
| **Small** | 0.10 | 0.06 | 0.18 |
| **Medium** | 0.10 | 0.06 | 0.15 |
| *Sector categories* | | | |
| **Manufacturing** | 0.10 | 0.06 | 0.13 |
| **Construction & Real estate** | 0.10 | 0.06 | 0.12 |
| **Wholesale & Retail** | 0.09 | 0.05 | 0.18 |
| **Hotels & Restaurants** | 0.14 | 0.06 | 0.42 |
| **Prof. & Scientific & Technical** | 0.15 | 0.10 | 0.22 |
| **Other** | 0.07 | 0.05 | 0.13 |

*Source:*      Authors' analysis of Department of Finance Survey Data.
*Note:*         The upper end of the distribution of the Cash-Cash equivalent/Annual expenditure ratio is capped at 2.

**FIGURE 3      NUMBER OF MONTHS THAT CASH AND CASH EQUIVALENTS CAN COVER EXPENDITURE**
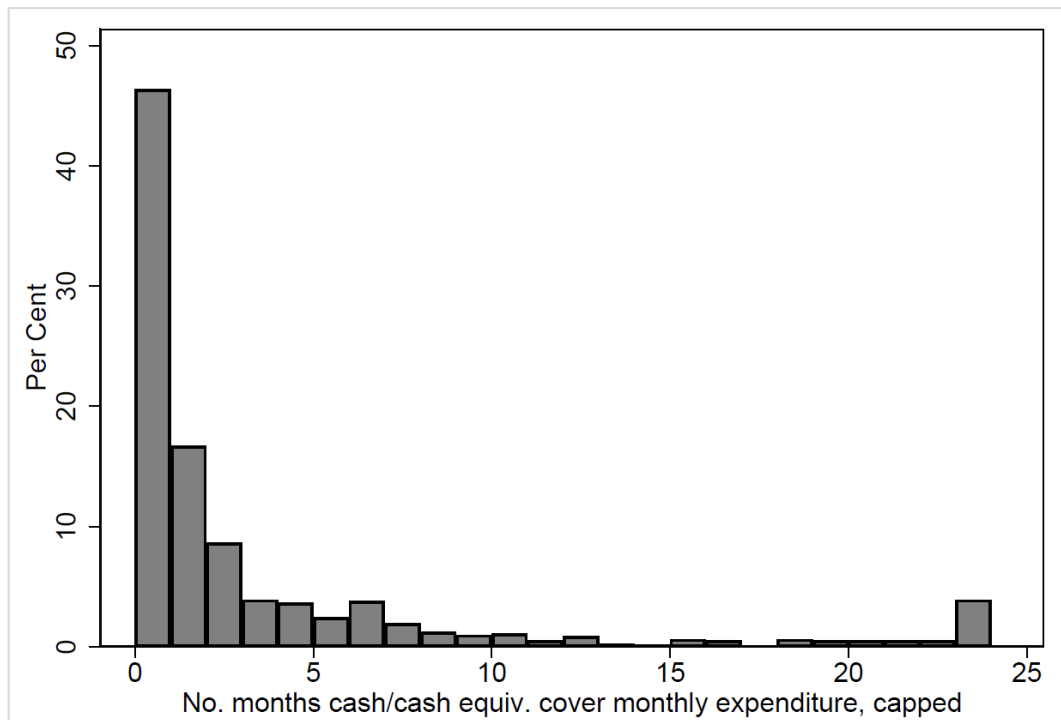


*Source:*      Authors' analysis of Department of Finance Survey Data.
*Note:*         Bin width is 1. Capped at 24 months.

Another way of representing the shock absorption capacity of firms, in a more tangible sense, is to calculate the number of months that the cash reserves of a firm can cover their regular expenses. This is done by dividing the cash and cash

equivalent amount by average monthly expenditure.[4] The total distribution of the number of months is displayed in the histogram in Figure 3, again showing a very strong level of skewedness across firms. The percentage of firms that do not have enough cash reserves to cover even a month of their monthly expenditures in 2018 is shown in Table 4. This table also provides the percentage of SMEs that reported having zero cash reserves. Close to half of SMEs have cash reserves that fall short of a single month's average expenditure. Unsurprisingly, the median number of months cash that SMEs have which can cover monthly total expenditure is just above one. In addition, 4 per cent report no cash reserves available at all. Medium firms have slightly less cash cushions than smaller firms relative to their expenditure levels.

**TABLE 4    MEASURES OF CASH RESERVES, TOTAL AND BY CATEGORY**

| | % Firms, Cover <1 Month Expenditure | % Firms, Zero Cash | No. Months Cash can Cover Expenditure (Median) |
|---|---|---|---|
| *Total* | 45.4 | 4.1 | 1.25 |
| *Size categories* | | | |
| **Micro** | 42.6 | 4.6 | 1.50 |
| **Small** | 46.6 | 4.9 | 1.20 |
| **Medium** | 48.7 | 1.6 | 1.15 |
| *Sector categories* | | | |
| **Manufacturing** | 49.3 | 6.6 | 1.15 |
| **Construction & Real estate** | 47.8 | 4.5 | 1.17 |
| **Wholesale & Retail** | 47.4 | 3.1 | 1.08 |
| **Hotels & Restaurants** | 35.3 | 2.0 | 1.71 |
| **Prof. & Scientific & Technical** | 34.1 | 5.0 | 1.75 |
| **Other** | 54.8 | 4.5 | 0.80 |

*Source:*    Authors' analysis of Department of Finance Survey Data.

## 3.    ESTIMATING THE EXTENT OF THE SHOCK AND REVENUE SHORTFALLS

Having provided an overview of the health of SME finances entering the current crisis, this section examines the extent of the shock and how it might impact firms. In particular, our aim is to give an estimate of the typical revenue shortfall or gap firms may be facing and the size of this on an aggregate scale. We define revenue shortfall (gap) as the case whereby revenues drop below required expenditure on a monthly basis during the pandemic.[5] We therefore structured our scenarios to

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[4]    To obtain monthly expenditure we divided total annual expenditure provided in the CDS by 12. We recognised that this even annual assumption will not be reflective of the seasonality of many SMEs' actual activity.

[5]    Expenditure in this case is both fixed and variable expenditure and we allow this to decline (as well as revenue adjustments) in line with the falls in expenditure for both non-personnel and personnel costs as outlined in the recent CSO survey. While we do not specifically model issues like loan repayment breaks or rate deferments, if such items are part of the firm's reported expenditure in the survey, we allow these to change in line with how firms report their non-personnel expenditure has changed since the pandemic began.

calculate how many firms have revenue fall below expenditure in each shock scenario and how much of this shortfall can be covered with their existing cash resources. From a policy perspective, we were also interested in how these aggregate across the entire SME sector, although the idiosyncratic nature of firm exposure and vulnerability along with the skewed distribution of SME financial structures demonstrated in the previous section gives considerable uncertainty bands around any aggregate values.

In order to test how SMEs in our survey data would react to the extent of the shock posed by COVID-19, we set up a basic simulation exercise. In this section, we focused on the 'lockdown' period and presented estimates for the second quarter of 2020 (running from mid-March to mid-June in our simulation), which we calibrated using two different surveys of firms' experiences. We then looked at extending the simulation to cover a range of scenarios for the economy over the second half of 2020.

Our overall strategy was to take the SME structure and financial position from the 2018 survey return and subject them to the following simulated shocks and then examine how this affected the financial position of the firms in the survey. The steps are summarised here and are described in more detail in the rest of the section:

1.  Applied a turnover shock to firms calibrated by survey evidence from the CSO and Chambers Ireland. Shocks differ across sectors but were applied randomly across firms within a sector.

2.  Applied a reduction to personnel costs to firms utilising a wage subsidy scheme (such as the TWSS/EWSS). We used CSO data on how many firms used the TWSS scheme and calculated firm-level usage based on employment levels collected in the CDS survey and other CSO data on the share of personnel to total costs in SMEs, in order to apply the relevant salary thresholds.

3.  Applied a reduction in non-personnel expenditure based on CSO survey responses to questions on non-personnel expenditure changes due to COVID-19 reductions in activity.[6]

4.  Calculated how many firms these shocks applied to, how many had turnover fall below expenditure and how large this gap was for the median and mean firms.

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[6]  An important limitation of this analysis was that we could not distinguish between permanent expenditure foregone (because the business was not operating and did not need to use intermediate inputs for example), and expenditure reductions that are delayed (such as debt payment breaks) that firms will need to repay later.

5.  Provided an illustrative example by multiplying by the total number of firms from the CSO business demography data, to aggregate the average revenue shortfall to a SME total estimate for the whole economy.

**Turnover shock simulation:**

The first step was to simulate reductions in firm 2018 turnover reported in the CDS. We used two different sources to do this, the first based on the results of the Business Impact of COVID-19 Survey, carried out by the CSO,[7] and a second version based on adapting the CSO results to take into account a survey by Chambers Ireland of their members' experience. We drew on the CSO survey as our baseline dataset as it was the most comprehensive survey conducted to date and is repeated for each month April, May and June providing both reductions in turnover and expenditure by sector. This allowed us to create a shock for the three months April-June which is the average of the reported shocks.

The reason for using the Chambers Ireland survey was that the CSO noted their estimates are likely to be affected by sample selection, whereby firms that were closed during the lockdown may not have answered the survey. This, therefore, would make their scenario more benign than was the case. The Chambers Ireland survey data for April showed a more extreme shock than the CSO's and we used these relativities to adjust the sample for a more severe scenario, as it is likely that a more extreme shock would capture firms who were closed.

Table 5 displays the results on the percentages of SMEs that reported their expected impact of COVID-19 restrictions on turnover averaged over the relevant CSO survey waves and varying by broad sector. As the survey requested firms to indicate bands of turnover reduction, we based the simulations on the midpoint percentage of each turnover bracket (as displayed in column 2). We allocated the turnover reductions randomly across the firms in the survey by sector. There were no data to date to ascertain which firms in the sectors had been most affected. This means that 13 per cent of firms in industry were randomly chosen to have a turnover reduction of 87.5 per cent for example.

Table 6 gives a similar picture for the response when CSO data are adjusted downwards by the relatively more negative survey responses from the Chambers Ireland data. We found that the worst affected sector in terms of turnover reduction was in accommodation and food, where the most stringent lockdown restrictions applied. Construction was also particularly heavily affected. For other sectors, the extent of the reduction in turnover was extensive but more varied across the percentage bands with only accommodation and food having all firms

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7   https://www.cso.ie/en/releasesandpublications/er/bic19/businessimpactofcovid-19survey16marchto19april2020.

lose turnover. Other sectors, while encountering many substantial reductions in activity, still show some firms with normal levels of turnover and in some cases with turnover increases. This is particularly the case for the wholesale and retail trade where some of the loss of the accommodation and food sector demand is likely to have been deflected to.

**TABLE 5    BASELINE SCENARIO USING CSO SURVEY OF IMPACT OF COVID-19 MEASURES ON SMES TURNOVER, BY SECTOR (Q2, 2020), PERCENTAGE OF RESPONDING ENTERPRISES**

| Survey bands of reduced turnover | Simulated reduction % | Industry | Construct. | Wholesale & Retail | Accom. & Food | Other |
|---|---|---|---|---|---|---|
| **75-100% < normal** | 87.5 | 13 | 41 | 18 | 79 | 20 |
| **50-74% < normal** | 62.5 | 16 | 19 | 16 | 15 | 10 |
| **25-49% < normal** | 37.5 | 26 | 21 | 21 | 6 | 17 |
| **10-24% < normal** | 17.0 | 17 | 10 | 11 | 0 | 19 |
| **Normal turnover** | | 21 | 9 | 17 | 0 | 29 |
| **More than normal** | | 7 | 0 | 17 | 0 | 5 |

*Source:*    CSO data provided to authors for shares across sectors.

**TABLE 6    MORE SEVERE SCENARIO ADJUSTING CSO DATA IN LINE WITH – CSO ADJUSTED SURVEY OF IMPACT OF COVID-19 MEASURES ON SMES TURNOVER, BY NACE SECTOR (Q2 2020), PERCENTAGE OF RESPONDING ENTERPRISES**

| Survey bands of reduced turnover | Simulated reduction % | Industry | Construct. | Wholesale & Retail | Accom. & Food | Other |
|---|---|---|---|---|---|---|
| **75-100% < normal** | 87.5 | 22 | 50 | 27 | 87 | 29 |
| **50-74% < normal** | 62.5 | 32 | 35 | 32 | 13 | 27 |
| **25-49% < normal** | 37.5 | 24 | 15 | 18 | 0 | 14 |
| **10-24% < normal** | 17.0 | 13 | 0 | 7 | 0 | 14 |
| **Normal turnover** | | 7 | 0 | 3 | 0 | 15 |
| **More than normal** | | 2 | 0 | 13 | 0 | 1 |

*Source:*    Authors' analysis using CSO and Chambers Ireland data. The Chambers Ireland data are only used to re-allocate the CSO data i.e. the Chambers Ireland data show a larger shock than the CSO. All CSO figures are then grossed down by these factors in aggregate while the sectoral relativities are held constant.

**Expenditure reductions**

Striking demand reductions are evident across all sectors in the previous tables, reflecting the dramatic extent of the shock across all types of firm. To estimate how firms were able to absorb (or not) this level of turnover reduction, we allowed for a calculation of a fall in expenditure during this period. We applied various expenditure falls which varied for personnel and non-personnel costs. Although the CDS has overall expenditure data per firm, it does not have information on the types of expenditure (e.g. labour cost, materials, purchases, rent, mortgage etc). Therefore, we used CSO aggregate data to calculate a sector and size specific share of personnel costs of SME expenditure and applied this to the total expenditure in the CDS.

*Personnel costs*

Two different personnel expenditure reduction channels were calculated. The first came from the explicit subsidisation of wages via a subsidy such as that which is available through the TWSS/EWSS schemes. These schemes were brought in to enable firms to retain employees despite the reduction to turnover.[8] After obtaining monthly personnel expenditure per employee, we constructed an estimate of eligibility for an illustrative subsidy which was built to proxy the TWSS/EWSS introduced as part of the COVID-19 measure. It was not possible for us to explicitly model these schemes as we did not have employee level data that would provide us with their employment status (such as part time, full time etc.), or their wage level. To illustrate the impacts, we instead used a proxy scheme, which was based on the average employee wage per firm in our data. The implementation of this illustrative scheme across firms in the survey involved several steps.[9]

- We calculated the 70 per cent cap of the personnel costs per employee for the scheme.

- We limited this figure to a maximum of €1,640 each month for each employee when 70 per cent of costs go over that amount.

- We applied usage of our illustrative scheme to firms based on sector-specific percentages of firms which availed from the TWSS, according to CSO survey data as displayed in Table 7.

**TABLE 7    CSO SURVEY OF IMPACT OF COVID-19 MEASURES ON SMES BY NACE SECTOR (Q2 2020), PERCENTAGE OF RESPONDING ENTERPRISES**

|  | Industry | Construction | Wholesale & Retail | Accom. & Food |
|---|---|---|---|---|
| **Availed of Revenue COVID-19 TWSS** | 52.2 | 65.7 | 59.1 | 54.9 |

*Source:*    Authors' analysis of Department of Finance Survey Data.

These percentages are applied to correspond with the firms which suffered the worse turnover shocks based on the two scenarios outlined above. This gave us the closest match to the actual share of SMEs that used the TWSS, as reported in the CSO COVID-19 impact surveys. In this regard, we do not explicitly model the assumption in the actual TWSS that firms have to have had at least a 25 per cent reduction in turnover, rather we allow sufficient firms to receive the subsidy under

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8    Details of the TWSS structure, eligibility and usage statistics are available from the Revenue Commissioner website https://www.revenue.ie/en/Home.aspx.

9    The TWSS scheme relies on a worker's previous wages and, as we do not have these data, we used an illustrative example which was based on average per employee subsidy. As we adjusted the rest of the personnel costs in line with the total reductions that firms themselves have indicated they achieved, this should capture issues such as top-ups above the TWSS. We did not model any tax implications for workers, for example PRSI, USC or income tax. Rather, we worked on a total gross wage bill per firm basis.

the proportions in Table 7. In practice, nearly all the firms in our data that receive a subsidy had a turnover shock greater than 25 per cent.

The second channel again exploited the CSO survey. As firms have laid off workers and cut the wages of existing workers, as well as used the TWSS, we reduced the wage bill after TWSS by the proportions suggested in the personnel cost reductions provided in the CSO survey. Results are displayed in Table 8, by sector. The bands on expenditure reduction were broader than those asked relating to turnover. However, we applied the largest expenditure reductions to firms again on a random basis using the random split applied to the turnover scenarios, in order to assign higher unsubsidised personnel expenditure reductions to firms worse affected by the turnover reductions.

While it is mentioned above, it must be reiterated here that our analysis is not meant as a microsimulation of the impacts of the TWSS scheme. As this scheme is applied based on each employee's existing wage, we cannot use such a basis as we do not have individual employee-level data. Instead, our method provided an illustrative subsidy which is meant to somewhat mirror the TWSS. Our reduction in personnel costs then was a combination of an illustrative subsidy and then a decline in the rest of costs in line with the survey responses. In this manner, whether firms laid off workers or dropped the wages of existing workers did not matter for our analysis as we purely relied on firms indicated responses to how much their wage bill has fallen.

**TABLE 8    CSO SURVEY OF IMPACT OF COVID-19 MEASURES ON SMES PERSONNEL EXPENDITURE, BY NACE SECTOR (Q2, 2020), PERCENTAGE OF RESPONDING ENTERPRISES**

| Survey bands of reduced personnel costs | Simulated reduction % | Industry | Construct. | Wholesale & Retail | Accom. & Food | Other |
|---|---|---|---|---|---|---|
| **50-100% < normal** | 75 | 4.9 | 11.4 | 13.9 | 64.4 | 6.6 |
| **0-50% < normal** | 25 | 24.5 | 14.3 | 25.3 | 15.6 | 22.4 |
| **No change or higher expenditure** | | 57.1 | 45.7 | 51.0 | 20.0 | 60.1 |

*Source:*    CSO.
*Note:*    This excludes the share of firms who reported 'Don't Know', so percentages do not add to 100 in all cases.

*Non-personnel costs*

Finally, we simulated two non-personnel reduction scenarios based on CSO published survey data, as displayed in Table 9. Since the expenditure information available in the CDS did not provide any details regarding the proportion of expenditure devoted to fixed costs (such as rent), or variable costs (such as purchases), we applied two reduction bands based on CSO survey data to account for the likely reductions in some of these expenditure items as a result of the slow down or cease in trading activity (see Table 9). We applied the non-personnel

expenditure reductions to firms on a random basis using the random split applied to the turnover scenarios, in order to assign larger expenditure reductions to firms more affected by the turnover shocks.

TABLE 9    REDUCTIONS BASED ON CSO SURVEY OF IMPACT OF COVID-19 MEASURES ON SMES NON-PERSONNEL EXPENDITURE, BY NACE SECTOR (Q2, 2020), PERCENTAGE OF RESPONDING ENTERPRISES

| Survey bands of reduced non-personnel costs | Simulated reduction % | Industry | Construct. | Wholesale & Retail | Accom. & Food | Other |
|---|---|---|---|---|---|---|
| 50-100% < normal | 75 | 11.4 | 7.2 | 5.5 | 48.9 | 18.0 |
| 0-50% < normal | 25 | 11.4 | 7.2 | 18.8 | 24.4 | 24.0 |
| No change or higher expenditure | | 59.8 | 50.7 | 63.7 | 22.2 | 43.8 |

Source:    CSO.

After applying the various reductions to the different items outlined above, firms in the CDS experienced the turnover and expenditure reductions outlined in Table 10 under each scenario (information on the percentage reductions by sector can be found in Appendix 1). Average turnover reductions were higher in the more severe calibration, as it is to be expected. Turnover reductions in this scenario were over 10 percentage points higher. Personnel expenditure was reduced by almost half on average, and total expenditure was reduced by almost one-fifth.

TABLE 10    MEAN PERCENATGE REDUCTION (THREE MONTHS)

| | Turnover (baseline CSO calibration) | Turnover (severe calibration) | Expenditure personnel | Expenditure non-personnel | Expenditure total |
|---|---|---|---|---|---|
| Total | 42.4 | 56.6 | 46.4 | 16.9 | 22.0 |
| *Size categories* | | | | | |
| Micro | 40.4 | 55.1 | 46.0 | 13.9 | 18.0 |
| Small | 41.6 | 56.4 | 46.1 | 16.2 | 23.3 |
| Medium | 47.0 | 59.3 | 47.8 | 23.5 | 28.4 |

Source:    Authors' analysis of Department of Finance Survey Data.

### Estimated average revenue gap

Having applied the reductions in turnover, personnel expenditure and non-personnel expenditure across the firms in the data, we then calculated the percentage of firms who have expenditure greater than turnover and the median and mean amounts of this revenue shortfall. There are four sets of results presented in Table 11 on these calculations. This table displays the selected statistics by size categories. A table displaying the same statistics by sector categories instead can be found in Appendix 1. The top panel shows the results where the shocks are based on the CSO survey data. The bottom panel shows the

results based on the more severe turnover shocks (i.e. calibrated based on the Chambers Ireland data). The personnel and non-personnel expenditure reductions were applied in the same way in both cases. For each of the two calibrations, we reported first the raw impact of the shock as the share of firms where revenue has fallen below expenditure and the size of the shortfalls. Secondly, we provided a figure for the share of firms who faced a revenue shortfall and who did not have sufficient internal cash resources to cover the gap for three months.

In the baseline CSO calibration (top panel of Table 11), we estimated that approximately 39 per cent of micro firms and 43 per cent of small and medium firms had shocks large enough for expenditure to exceed turnover in the three-month period of COVID-19 restrictions. If we base our estimates on the more severe scenario, these numbers increase to 55 per cent of micro firms and 60 per cent of small and medium firms. The size of the estimated shortfall in each month for the median micro firm is €3,000 in the CSO calibration and €3,500 in the severe calibration. Reflecting the highly skewed nature of the size and financial performances of firms (as shown in Section 2), the size of the revenue gap is much larger for the mean firm; more than three times as large in the case of micro firms, where the mean gap is €10,800 in the baseline CSO calibration and €12,600 in the severe calibration. The size of the shortfalls in both calibrations are larger for small and medium firms, with a median gap of €28,000 in the baseline CSO calibration and €38,000 in the severe scenario. The mean gaps are again approximately three times as large as the median.

**TABLE 11    PERCENTAGE OF AFFECTED SMES AND GAP SIZE (GAP = REVENUE SHORTFALL)**

| | Baseline CSO calibration | | |
|---|---|---|---|
| | **% Firms Expenditure > Turnover** | **Median gap (Monthly)** | **Mean gap (Monthly)** |
| *Without use of firm cash* | | | |
| **Micro** | 39% | 3,062 | 10,789 |
| **Small/Medium** | 43% | 28,125 | 91,291 |
| | **% Firms Gap > Cash** | **Median Gap (3 Months)** | **Mean Gap (3 Months)** |
| *Including use of cash* | | | |
| **Micro** | 28% | 14,902 | 39,644 |
| **Small/Medium** | 39% | 78,460 | 290,715 |
| | | | |
| | Severe calibration[10] | | |
| | **% Firms Expenditure > Turnover** | **Median Gap (Monthly)** | **Mean Gap (Monthly)** |
| *Without use of firm cash* | | | |
| **Micro** | 55% | 3,573 | 12,610 |
| **Small/Medium** | 60% | 38,250 | 124,949 |
| | **% Firms Gap > Cash** | **Median Gap (3 Months)** | **Mean Gap (3 Months)** |
| *Including use of cash* | | | |
| **Micro** | 32% | 24,881 | 47,873 |
| **Small/Medium** | 41% | 114,915 | 389,616 |

*Source:*    Authors' analysis of Department of Finance Survey Data.

The next question is how much of these gaps remain if firms absorb some of the shortfall with their existing cash resources. We did this calculation by taking the firm-level gap just described and then subtracting the reported cash and cash equivalents. In the lower panel of Table 11, we report how many firms still have expenditure greater than turnover shortfalls after using their cash resources and how large this remaining shortfall is. In the CSO calibration, 28 per cent of micro firms and 39 per cent of small and medium firms still have a shortfall. The more severe scenario percentages reduce by more, bringing them closer to the baseline CSO numbers at 32 per cent of micro firms and 41 per cent of small and medium firms. We also re-calculated the median and mean revenue shortfall for the firms that were not able to cover the shortfall through their cash resources. In both calibrations, the size of the shortfall for firms that were not able to cover themselves out of cash resources was much larger than the initially calculated gaps. This is because it was primarily firms with smaller shortfalls that were able to cover themselves with internal resources and taking those firms out of the calculation leaves us with the firms that have more severe shortfalls.

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[10]    Calibrated using the differences between the CSO and Chambers Ireland survey shocks.

## 4.  ESTIMATING A TOTAL REVENUE GAP

The next step was to attempt to calculate an aggregate amount for the shortfall in revenues in the total SME sector based on the firm-specific gaps estimated in Table 11. This exercise was important in terms of policy interest in the overall level of exposure to the COVID-19 pandemic amongst SMEs. A degree of caution was needed however, as the design of the survey works best in calculations based on proportions and was not intended for aggregation of monetary amounts. Indeed, the survey only captures firms with turnover less than €50 million by design. This therefore would bias downwards any estimates for the SME sector as a whole if a strict employee definition (based on less than 250 employees) were to be used. As there are limited national data on total SME turnover and expenditure (for the sample of firms less than €50 million for which our survey represents), the aggregation was based on numbers of active SMEs in the CSO sectoral business demography data. Further details regarding the CSO table were used to obtain the number of active firms, as well as a detailed sectoral overview provided in Appendix 2. As many of the financial variables are very skewed, this aggregation approach should be treated as a broad guide to relative magnitudes rather than as precise point estimates.

The approach to aggregation for each of the calibration scenarios can be summarised as:

A.  Take proportion of firms who have a 'revenue gap' (turnover less than expenditure);

B.  Calculate mean level of gap for these firms for the three-month period;

C.  Get number of affected firms based on CSO business demography data (see Appendix 2).

The aggregate gap is given by inputs (A x C) x B. As with the firm-level calculations, we performed the aggregation exercise both for calibrations based on baseline CSO and severe scenarios. We applied the aggregation for the total revenue gap as a result of the pandemic and also the gap that cannot be covered by existing cash resources of the affected firms. The totals for each case are presented in Table 12, along with the totals for micro firms and for small and medium firms separately.

**TABLE 12    AGGREGATED MEAN REVENUE GAP FOR THREEE-MONTH PERIOD (€ BILLION)**

| | Baseline CSO calibration | Severe calibration |
|---|---|---|
| *No cash adjustment included (€ billion)* | | |
| **Micro** | 3.27 | 5.32 |
| **Small/Medium** | 2.63 | 5.01 |
| **Total** | 5.89 | 10.34 |
| *Adjusting for firm cash holdings (€ billion)* | | |
| **Micro** | 1.11 | 2.13 |
| **Small/Medium** | 1.10 | 2.15 |
| **Total** | 2.21 | 4.28 |

*Source:*    Authors' analysis of Department of Finance Survey Data.

The scale of the shock to the SME sector of the pandemic is evident in these calculations, even given the caveats regarding their precision. The raw impact on SMEs in the top panel of Table 12 is estimated to be between €5.9 billion (in the CSO-calibrated shock) and €10.34 billion (in the severe calibration). In both cases, the split in the aggregate amounts are close to 50:50 between micro firms and the small and medium group (although of course there are many more firms affected in the micro group but with lower average shortfalls due to their smaller scale).

The cash holdings of the SME sector can absorb some but not all of these revenue shortfalls. The lower panel of Table 12 shows the remaining gap after all internal resources have been exhausted. This still leaves a revenue shortfall of between €2.21 billion and €4.3 billion depending on the shock calibration used. Again, the impact is roughly evenly split across the two broad size categories of firms. These impacts relate solely to the three-month period of restrictions on activity in the second quarter of 2020. The next section looks at a range of potential paths for the economy and SME sector for the second half of 2020 and how these revenue gaps may evolve.

## 5.   RECOVERY PATHS AND SME REVENUE GAPS

The path of the economy over the second half of 2020 is highly uncertain with health developments the key driver and considerable risks around any scenarios. This section is therefore highly speculative, but we feel it should be useful to present a range of scenarios that give some broad parameters as to how different economic paths would impact on the SME sector.

In line with McQuinn et al. (2020) we presented three broad scenarios:

- Base scenario: Gradual recovery with ongoing public health measures (e.g. physical distancing);

- Optimistic scenario: More rapid recovery towards normal turnover levels;

- • Pessimistic scenario: Initial opening up but no further recovery.

The way in which we implemented the scenarios in terms of turnover evolution for firms is shown in Table 13. For the annual estimates, we assumed that in the first quarter of the year firms operated normally. In the second quarter, we applied the turnover reductions described in the previous sections calibrated to either the CSO or Chambers Ireland surveys. Table 13 shows these in the 'Q2' column for the CSO calibration and the approach is identical for the Chambers Ireland (i.e. more severe) shocks.

The scenarios begin in Q3 where all firms experienced a step improvement in turnover and then recovery paths diverge in Q4. In the base scenario, we applied a steady improvement in firm turnover but one that is relatively slow. We did this by moving firms gradually up through the turnover reduction categories by one step in each quarter. This means that the 13 per cent of firms that were hit with an 87.5 per cent reduction to turnover in Q2 (the midpoint of the 75-100 range), have turnover that is 62.5 per cent below normal in Q3 and 37.5 per cent below normal in Q4. In this base scenario, 71 per cent of firms were back at normal turnover levels by Q4.

In the optimistic scenario, we allowed a greater bounce back from the lifting of restrictions, with firms moving up one step in the turnover shock categories in Q3 and then two steps in Q4. This meant that the firms which were worst affected from the lockdown period had turnover that was 62.5 per cent lower than normal in Q3 and 17 per cent lower than normal in Q4. In this scenario, 45 per cent of firms returned to near normal turnover levels in Q3 (as in the base scenario) and now 87 per cent were back at normal levels by Q4.

The pessimistic scenario has some recovery in Q3, at the same level as in the base case. However, the recovery then stalls (for example if restrictions were re-imposed), and in Q4 firms remained as they were in Q3, i.e. at far below normal turnover. This results in only 45 per cent of firms being modelled as back to normal turnover levels by Q4. Note that our optimistic and pessimistic scenarios did not take the form of extreme 'best' and 'worst' case outcomes, with the optimistic scenario leaving some firms still below pre-COVID-19 turnover levels by the end of the year and the pessimistic scenario did not envisage a return to the level of turnover reductions during the lockdown phase.

**TABLE 13    TURNOVER EVOLUTION IN RECOVERY SCENARIOS (BASELINE CSO CALIBRATION), PERCENTAGE OF RESPONDING ENTERPRISES (ALL SMES)**

| Survey bands of reduced turnover | Q2 | Q3 | Q4 |
|---|---|---|---|
| **BASE SCENARIO** | | | |
| **75-100% < normal** | 23 | | |
| **50-74% < normal** | 15 | 23 | |
| **25-49% < normal** | 20 | 15 | 23 |
| **10-24% < normal** | 14 | 20 | 15 |
| **Normal turnover or greater** | 28 | 42 | 62 |
| **OPTIMISTIC SCENARIO** | | | |
| **75-100% < normal** | 23 | | |
| **50-74% < normal** | 15 | 23 | |
| **25-49% < normal** | 20 | 15 | |
| **10-24% < normal** | 14 | 20 | 23 |
| **Normal turnover or greater** | 28 | 42 | 77 |
| **PESSIMISTIC SCENARIO** | | | |
| **75-100% < normal** | 23 | | |
| **50-74% < normal** | 15 | 23 | 23 |
| **25-49% < normal** | 20 | 15 | 15 |
| **10-24% < normal** | 14 | 20 | 20 |
| **Normal turnover or greater** | 28 | 42 | 42 |

*Source:*    Authors' analysis of Department of Finance Survey Data.

As turnover improves, we assume that firm expenditure also begins to increase (hence the scenarios are not simply scaled up versions of the one quarter estimates in the previous section). In terms of the illustrative wage subsidy scheme, we assumed that firms no longer qualify for the subsidy once they moved into the turnover category where turnover is 10-24 per cent below normal which approximates the qualification threshold for the scheme. For firms where turnover remained below this level, we assumed a subsidy scheme remained in place and applied this reduction in personnel expenditure across both remaining quarters for qualifying firms. Non-personnel expenditure was assumed to increase broadly in line with the recovery in turnover. Table 14 displays the average reductions in turnover and expenditure items for each scenario and each recovery simulation (sector-specific information in this regard can be found in a Table in Appendix 3).

**TABLE 14    MEAN PERCENTAGE REDUCTION (Q2 TO Q4)**

| | Turnover (baseline CSO calibration) | Turnover (severe calibration) | Expenditure non-personnel | Expenditure total |
|---|---|---|---|---|
| **BASE SCENARIO** | | | | |
| **Total** | 27.3 | 37.0 | 9.7 | 10.2 |
| **Size categories** | | | | |
| **Micro** | 25.7 | 36.0 | 7.7 | 8.1 |
| **Small** | 26.3 | 36.7 | 9.3 | 10.9 |
| **Medium** | 30.6 | 39.3 | 14.3 | 13.8 |
| **OPTIMISTIC SCENARIO** | | | | |
| **Total** | 24.3 | 32.9 | 8.6 | 8.6 |
| **Size categories** | | | | |
| **Micro** | 23.2 | 32.1 | 6.9 | 6.9 |
| **Small** | 23.8 | 32.7 | 8.2 | 9.2 |
| **Medium** | 27.5 | 34.9 | 12.6 | 11.4 |
| **PESSIMISTIC SCENARIO** | | | | |
| **Total** | 31.3 | 42.8 | 11.1 | 11.4 |
| **Size categories** | | | | |
| **Micro** | 29.9 | 41.7 | 8.7 | 9.1 |
| **Small** | 30.6 | 42.6 | 10.6 | 12.2 |
| **Medium** | 35.3 | 45.3 | 16.5 | 15.2 |

*Source:*    Authors' analysis of Department of Finance Survey Data.

For each of the scenarios, we applied turnover (and associated expenditure) evolutions as above using the CSO-calibrated shares of firms in each turnover reduction bracket and did the same for the shares reported by Chambers Ireland. For each scenario, we applied the initial shock of Q2 and then grew forward turnover and expenditure across the remaining quarters of 2020. We then calculated how many firms had expenditure fall below turnover for the entire period and by how much. As before, we also examined how much of the shortfall remained after firms had used their cash resources to cover as much of the gap as they could. Table 15 shows the results for the CSO calibrated turnover reductions and Table 16 shows those based on Chambers Ireland. These two tables display the selected statistics by size categories. Tables displaying the same statistics by sector categories instead can be found in Appendix 3.

In our base case of steady growth, 21 per cent of micro firms and 25 per cent of small and medium firms had a revenue shortfall over the full nine-month period in the CSO calibration, (if you recall these percentages were 39 per cent and 43 per cent respectively for the Q2 shock in Table 9). The size of the gap spread evenly across the months are quite similar to the lockdown estimate for micro firms (both in terms of median and mean). The gaps are lower in magnitude for small and medium firms with a median of €20,000 per month in this base case compared to

€28,000 a month for the Q2 scenario in Table 11. Due to the distribution of SMEs being highly skewed (i.e. there is a very large number of micro firms compared to medium firms, for example) the medians and means presented display large differences. It is clear to the reader that this would have implications when performing the aggregation exercise presented below (based on means). Therefore, as noted in the previous section, the aggregate results should be treated as a broad guide to relative magnitudes rather than as precise point estimates.

**TABLE 15    PERCENTAGE OF AFFECTED SMES AND GAP SIZE UNDER ALTERNATIVE HEALTH SCENARIOS (BASELINE CSO CALIBRATION)**

| | % Firms with Expenditure > Turnover | Median Gap (Monthly) | Mean Gap (Monthly) |
|---|---|---|---|
| *No cash adjustment* | | | |
| **BASE SCENARIO** | | | |
| Micro | 0.21 | 3,859 | 9,222 |
| Small/Medium | 0.25 | 20,934 | 71,620 |
| **OPTIMISTIC SCENARIO** | | | |
| Micro | 0.21 | 3,237 | 8,357 |
| Small/Medium | 0.26 | 16,935 | 65,720 |
| **PESSIMISTIC SCENARIO** | | | |
| Micro | 0.23 | 3,333 | 9,673 |
| Small/Medium | 0.29 | 19,731 | 74,166 |
| | **% Firms with Gap > Cash** | **Median Gap (Nine Months)** | **Mean Gap (Nine Months)** |
| *Adjusting for firm cash holdings* | | | |
| **BASE SCENARIO** | | | |
| Micro | 0.41 | 30,399 | 79,042 |
| Small/Medium | 0.47 | 243,734 | 781,306 |
| **OPTIMISTIC SCENARIO** | | | |
| Micro | 0.39 | 21,453 | 76,040 |
| Small/Medium | 0.46 | 204,823 | 753,284 |
| **PESSIMISTIC SCENARIO** | | | |
| Micro | 0.40 | 36,430 | 94,862 |
| Small/Medium | 0.46 | 272,909 | 827,524 |

*Source:*    Authors' analysis of Department of Finance Survey Data.

A return to growth is therefore crucial in restoring SME health, although this relatively slow path in our base case leaves a substantial portion of firms with expenditure below turnover and an accumulating gap to be covered. As our optimistic and pessimistic scenarios diverge only towards the end of the year, we did not find that they dramatically changed the shares of firms that have revenue shortfalls, although the size of the monthly gap was affected more noticeably. This is particularly the case when cash holdings were considered as more firms exhausted their reserves and were no longer able to bridge the revenue shortfall.

**TABLE 16    PER CENT OF AFFECTED SMES AND GAP SIZE UNDER ALTERNATIVE HEALTH SCENARIOS (SEVERE CALIBRATION)**

| | % Firms with Expenditure > Turnover | Median Gap (Monthly) | Mean Gap (Monthly) |
|---|---|---|---|
| | *No cash adjustment* | | |
| **BASE SCENARIO** | | | |
| Micro | 0.27 | 4,412 | 10,272 |
| Small/Medium | 0.34 | 30,343 | 85,822 |
| **OPTIMISTIC SCENARIO** | | | |
| Micro | 0.26 | 3,371 | 9,174 |
| Small/Medium | 0.34 | 25,750 | 75,163 |
| **PESSIMISTIC SCENARIO** | | | |
| Micro | 0.30 | 4,723 | 11,030 |
| Small/Medium | 0.40 | 31,771 | 91,958 |
| | **% Firms with Gap > Cash** | **Median Gap (Nine Months)** | **Mean Gap (Nine Months)** |
| | *Adjusting for firm cash holdings* | | |
| **BASE SCENARIO** | | | |
| Micro | 0.43 | 59,349 | 108,533 |
| Small/Medium | 0.55 | 264,032 | 827,882 |
| **OPTIMISTIC SCENARIO** | | | |
| Micro | 0.41 | 46,031 | 98,625 |
| Small/Medium | 0.52 | 202,281 | 743,404 |
| **PESSIMISTIC SCENARIO** | | | |
| Micro | 0.42 | 56,468 | 120,592 |
| Small/Medium | 0.54 | 333,686 | 907,545 |

*Source:*    Authors' analysis of Department of Finance Survey Data.

The final step was to examine how these different paths for the rest of 2020 aggregate into an overall SME revenue and liquidity shortfall. This was done in the same way as for the single quarter aggregation described earlier and the results presented in Table 17. The total revenue shortfall (i.e. not considering any cash reserves that could be used to cover it) is €8.1 billion in our base case using the CSO-calibrated shock and €12.3 billion using the more severe calibration. Adjusting for cash reserves, the base scenario gives a liquidity shortfall of between €3.9 billion and €6.7 billion. In the more optimistic scenario, these revenue gaps are smaller (with a range of between €7.4 billion and €10.8 billion), as are the liquidity gaps. The gaps in the pessimistic scenario are correspondingly larger with the liquidity shortfall coming in between €4.8 billion and €8.3 billion.

**TABLE 17    AGGREGATE MEAN GAP FOR 2020 UNDER ALTERNATIVE HEALTH SCENARIOS (€ BILLION)**

|  | Base | Optimistic | Pessimistic |
|---|---|---|---|
| *No cash adjustment (€ billion)* | | | |
| **Baseline CSO calibration** | 8.12 | 7.44 | 9.56 |
| **Severe calibration** | 12.32 | 10.75 | 14.92 |
| *Adjusting for cash holdings (€ billion)* | | | |
| **Baseline CSO calibration** | 3.87 | 3.60 | 4.80 |
| **Severe calibration** | 6.7 | 5.69 | 8.25 |

*Source:*    Authors' analysis of Department of Finance Survey Data.

## 6.  CONCLUSIONS

In addition to the unknown path of the virus itself, which will determine much of the recovery outcomes, several other caveats applied to the analysis. The first set of limitations arose from the nature of the survey data we used to calibrate our scenarios and generate our picture of firm finances. Individual firms and sectors had different exposures to the shocks, different cost profiles and different underlying financial positions making one size fits all policy recommendations from the analysis difficult since the CDS can only generate an average picture. Implementing ongoing social distancing measures are quite different for small hospitality businesses than for office settings and these types of costs are not fully reflected in the scenarios presented. In addition, the total annual expenditure figure provided in the CDS may not provide a totally accurate representation of real firm expenditure, as there could be issues with how firms interpret this concept when asked. Therefore, some uncertainty in the revenue gap estimates presented could arise from the use of this variable. Indeed, the profit margin figures implied by the CDS are quite high, which may overestimate the extent to which firms have buffers available. Future work on this topic could benefit from using other sources of more accurate balance sheet data for Irish SMEs.

Second, in all of our scenarios we included estimates of the extent to which the SME sector's own internal resources could cover some of the shortfall. However, running down all internal funds is not an Optimistic outcome either for an individual firm or for the sector as a whole. While it helps to cushion the current blow, the longer-term outlook for the sector's growth could be severely hampered in terms of limiting investment. Other work using the CDS by Martinez-Cillero et al. (forthcoming), shows many SMEs engaging in investment activities only when they had substantial internal resources available to finance it. The experience of the financial crisis may have left some scarring in terms of willingness to take on external debt, a consideration that is important both for the implementation of policies addressing the current crisis and for longer-term implications of having to meet the cost of the pandemic.

A third limitation is that we can only examine the impact on active firms and base this on their turnover levels prior to the crisis. The overall cost therefore does not include damage from lost potential growth opportunities, delayed or cancelled expansion plans or from potential entrepreneurs deciding not to enter the SME market in the current environment.

Finally, our assumptions on expenditure reductions are implemented for each quarter but do not make any distinction between permanently foregone expenditure (e.g. inputs not needed due to lower activity levels) and expenditure that has been deferred but remains a liability to the firm (e.g. debt payment breaks or tax deferrals). A more in-depth investigation into expenditure categories that is not available in our current dataset would be needed to decompose expenditure further and gauge how much of the deferred expenditure may be a constraint on firm finances even as turnover recovers.

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**APPENDIX 1**       SIMULATED DESCRIPTIVE STATISTICS, BY SECTOR

**TABLE A1.1  MEAN PERCENTAGE REDUCTION (THREE MONTHS)**

|  | Turnover (baseline CSO calibration) % | Turnover (severe calibration) % | Expenditure personnel | Expenditure non-personnel | Expenditure total |
|---|---|---|---|---|---|
| **Manufacturing** | 34.2 | 50.4 | 38.5 | 11.2 | 15.5 |
| **Construction** | 57.6 | 71.4 | 47.2 | 7.3 | 18.9 |
| **Wholesale & Retail** | 36.6 | 51.5 | 48.1 | 8.7 | 12.4 |
| **Hotels & Restaurants** | 80.5 | 84.3 | 64.5 | 43.7 | 52.4 |
| **Other** | 34.1 | 50.6 | 41.3 | 20.3 | 24.1 |

*Source:*    Authors' analysis of Department of Finance Survey Data.

### TABLE A1.2  PERCENTAGE OF AFFECTED SMES AND GAP SIZE

| | Baseline CSO Calibration | | |
|---|---|---|---|
| | **% Firms with Expenditure > Turnover** | **Median Gap (Monthly)** | **Mean Gap (Monthly)** |
| *Without use of firm cash* | | | |
| **Manufacturing** | 0.39 | 19,604 | 63,920 |
| **Construction** | 0.58 | 16,483 | 53,897 |
| **Wholesale & Retail** | 0.38 | 17,221 | 56,267 |
| **Hotels & Restaurants** | 0.61 | 18,337 | 59,852 |
| **Other** | 0.32 | 16,516 | 54,004 |
| | **% Firms with Gap > Cash** | **Median Gap (Three Months)** | **Mean Gap (Three Months)** |
| *Including use of cash* | | | |
| **Manufacturing** | 0.34 | 56,850 | 205,351 |
| **Construction** | 0.44 | 48,937 | 174,088 |
| **Wholesale & Retail** | 0.39 | 50,808 | 181,483 |
| **Hotels & Restaurants** | 0.24 | 53,639 | 192,664 |
| **Other** | 0.30 | 49,022 | 174,424 |
| | Severe Calibration[62] | | |
| | **% Firms with Expenditure > Turnover** | **Median Gap (Monthly)** | **Mean Gap (Monthly)** |
| *Without use of firm cash* | | | |
| **Manufacturing** | 0.64 | 26,460 | 86,754 |
| **Construction** | 0.73 | 22,142 | 72,766 |
| **Wholesale & Retail** | 0.54 | 23,163 | 76,075 |
| **Hotels & Restaurants** | 0.62 | 24,707 | 81,077 |
| **Other** | 0.52 | 22,188 | 72,917 |
| | **% Firms with Gap > Cash** | **Median Gap (Three Months)** | **Mean Gap (Three Months)** |
| *Including use of cash* | | | |
| **Manufacturing** | 0.34 | 84,304 | 273,424 |
| **Construction** | 0.45 | 73,093 | 230,871 |
| **Wholesale & Retail** | 0.43 | 75,745 | 240,936 |
| **Hotels & Restaurants** | 0.29 | 79,754 | 256,154 |
| **Other** | 0.32 | 73,213 | 231,328 |

*Source:*     Authors' analysis of Department of Finance Survey Data.

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[62]    Calibrated using the differences between the CSO and Chambers Ireland survey shocks.

### APPENDIX 2  NUMBER OF ACTIVE SMES IN IRELAND

The NACE Rev. 2 sector-specific number of active enterprises used for the aggregation performed in this analysis is one of the business demography statistics published by the CSO.[63] The detailed sector disaggregation provided in the CSO table allows us to map the number of active firms to the detailed sector breakdown in the CDS.

Table A2.1 shows how SMEs are distributed across sectors, displaying CSO business demography data on the number of active enterprises in each sector and the shares accounted for by each size category. In all sectors, we find a preponderance of micro firms, varying from 80 per cent in the hotels and restaurant sector, which has one of the greatest shares of small firms, to a level of 97 per cent in construction and real estate. Construction and real estate sectors have the greatest number of micro firms in absolute terms as well, at over 70,000 of the total 311,000 SMEs. Other substantial clusters are in transport, storage and communications and in the professional and technical sector. There is also a large number of firms classified as 'other', showing the diversity of activities in which SMEs are active.

### TABLE A2.1  NUMBER OF ACTIVE ENTERPRISES BY EMPLOYMENT SIZE AND SECTOR

|  | Number of firms | | | Sector share (%) | | |
|---|---|---|---|---|---|---|
|  | Micro | Small | Medium | Micro | Small | Medium |
| **Manufacturing** | 14,085 | 1,500 | 511 | 87.5 | 9.3 | 3.2 |
| **Construction & Real Estate (F, L)** | 70,270 | 1,949 | 193 | 97.0 | 2.7 | 0.3 |
| **Wholesales & Retail** | 42,170 | 5,581 | 747 | 87.0 | 11.5 | 1.5 |
| **Transportation & Storage (H)** | 24,613 | 957 | 139 | 95.7 | 3.7 | 0.5 |
| **Information & Communication (J)** | 14,777 | 897 | 230 | 92.9 | 5.6 | 1.4 |
| **Hotels & Restaurants (I)** | 15,328 | 3,212 | 621 | 80.0 | 16.8 | 3.2 |
| **Prof., Scientific & Technical (M)** | 41,531 | 1,790 | 222 | 95.4 | 4.1 | 0.5 |
| **Admin. & Support (N)** | 17,366 | 970 | 297 | 93.2 | 5.2 | 1.6 |
| **Health & Social Work (G)** | 18,213 | 2,147 | 525 | 87.2 | 10.3 | 2.5 |
| **Other (B, D, E, K-642, P, R, S)** | 53,324 | 2,892 | 418 | 94.2 | 5.1 | 0.7 |
| **Total** | 311,677 | 21,895 | 3,903 | 92.4 | 6.5 | 1.2 |

*Source:*  Authors' analysis of Department of Finance Survey Data.
*Note:*  Based on CSO 2017 data. Rows of sector shares add to 100 per cent.

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[63]  https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=BRA11&PLanguage=0.

## APPENDIX 3    SIMULATED DESCRIPTIVE STATISTICS, RECOVERY SCENARIOS, BY SECTOR

**TABLE A3.1  MEAN PERCENTAGE REDUCTION (Q2 TO Q4)**

| | Turnover (baseline CSO calibration) | Turnover (severe calibration) | Expenditure non-personnel | Expenditure total |
|---|---|---|---|---|
| **BASE SCENARIO** | | | | |
| **Manufacturing** | 20 | 31 | 6.5 | 6.7 |
| **Construction** | 38 | 48 | 4.3 | 10.6 |
| **Wholesale & Retail** | 23 | 33 | 4.2 | 5.0 |
| **Hotels & Restaurants** | 56 | 60 | 27.1 | 27.4 |
| **Other** | 21 | 32 | 11.8 | 10.7 |
| **OPTIMISTIC SCENARIO** | | | | |
| **Manufacturing** | 18.4 | 28.0 | 5.7 | 6.0 |
| **Construction** | 33.7 | 42.3 | 3.8 | 8.3 |
| **Wholesale & Retail** | 20.5 | 29.4 | 3.8 | 4.4 |
| **Hotels & Restaurants** | 49.9 | 52.8 | 23.7 | 21.9 |
| **Other** | 19.2 | 28.9 | 10.5 | 9.2 |
| **PESSIMISTIC SCENARIO** | | | | |
| **Manufacturing** | 23.9 | 36.7 | 7.4 | 7.8 |
| **Construction** | 43.5 | 55.1 | 4.9 | 11.7 |
| **Wholesale & Retail** | 26.7 | 38.6 | 4.6 | 5.5 |
| **Hotels & Restaurants** | 64.0 | 67.7 | 31.3 | 29.7 |
| **Other** | 24.5 | 37.6 | 13.6 | 12.1 |

*Source:*    Authors' analysis of Department of Finance Survey Data.

## TABLE A3.2 PERCENTAGE OF AFFECTED SMES AND GAP SIZE UNDER ALTERNATIVE HEALTH SCENARIOS (BASELINE CSO CALIBRATION)

| | % Firms with Expenditure > Turnover | Median Gap (Monthly) | Mean Gap (Monthly) |
|---|---|---|---|
| *No cash adjustment* | | | |
| **BASE SCENARIO** | | | |
| **Manufacturing** | 0.23 | 15,128 | 50,405 |
| **Construction** | 0.33 | 13,002 | 42,635 |
| **Wholesale & Retail** | 0.24 | 13,505 | 44,473 |
| **Hotels & Restaurants** | 0.24 | 14,265 | 47,252 |
| **Other** | 0.19 | 13,025 | 42,719 |
| **OPTIMISTIC SCENARIO** | | | |
| **Manufacturing** | 0.23 | 12,278 | 46,216 |
| **Construction** | 0.30 | 10,572 | 39,074 |
| **Wholesale & Retail** | 0.23 | 10,976 | 40,763 |
| **Hotels & Restaurants** | 0.29 | 11,586 | 43,318 |
| **Other** | 0.20 | 10,591 | 39,150 |
| **PESSIMISTIC SCENARIO** | | | |
| **Manufacturing** | 0.25 | 14,156 | 52,238 |
| **Construction** | 0.38 | 12,114 | 44,208 |
| **Wholesale & Retail** | 0.26 | 12,597 | 46,107 |
| **Hotels & Restaurants** | 0.31 | 13,327 | 48,979 |
| **Other** | 0.21 | 12,136 | 44,294 |
| | **% Firms with Gap > Cash** | **Median Gap (9 Months)** | **Mean Gap (9 Months)** |
| *Adjusting for firm cash holdings* | | | |
| **BASE SCENARIO** | | | |
| **Manufacturing** | 0.38 | 171,200 | 542,536 |
| **Construction** | 0.46 | 144,637 | 455,093 |
| **Wholesale & Retail** | 0.50 | 150,920 | 475,775 |
| **Hotels & Restaurants** | 0.45 | 160,420 | 507,049 |
| **Other** | 0.41 | 144,922 | 456,032 |
| **OPTIMISTIC SCENARIO** | | | |
| **Manufacturing** | 0.33 | 142,477 | 523,021 |
| **Construction** | 0.50 | 119,645 | 438,693 |
| **Wholesale & Retail** | 0.48 | 125,045 | 458,639 |
| **Hotels & Restaurants** | 0.43 | 133,211 | 488,798 |
| **Other** | 0.39 | 119,890 | 439,599 |
| **PESSIMISTIC SCENARIO** | | | |
| **Manufacturing** | 0.38 | 192,506 | 578,419 |
| **Construction** | 0.45 | 163,061 | 487,191 |
| **Wholesale & Retail** | 0.48 | 170,026 | 508,769 |
| **Hotels & Restaurants** | 0.43 | 180,556 | 541,396 |
| **Other** | 0.41 | 163,377 | 488,171 |

*Source:* Authors' analysis of Department of Finance Survey Data.

**TABLE A3.3 PERCENTAGE OF AFFECTED SMES AND GAP SIZE UNDER ALTERNATIVE HEALTH SCENARIOS (SEVERE CALIBRATION)**

| | % Firms with Expenditure > Turnover | Median Gap (Monthly) | Mean Gap (Monthly) |
|---|---|---|---|
| | *No cash adjustment* | | |
| **BASE SCENARIO** | | | |
| **Manufacturing** | 0.27 | 21,526 | 60,135 |
| **Construction** | 0.38 | 18,298 | 50,728 |
| **Wholesale & Retail** | 0.31 | 19,061 | 52,953 |
| **Hotels & Restaurants** | 0.28 | 20,216 | 56,317 |
| **Other** | 0.30 | 18,332 | 50,829 |
| **OPTIMISTIC SCENARIO** | | | |
| **Manufacturing** | 0.28 | 18,141 | 52,726 |
| **Construction** | 0.35 | 15,355 | 44,510 |
| **Wholesale & Retail** | 0.29 | 16,014 | 46,453 |
| **Hotels & Restaurants** | 0.32 | 17,010 | 49,392 |
| **Other** | 0.30 | 15,385 | 44,598 |
| **PESSIMISTIC SCENARIO** | | | |
| **Manufacturing** | 0.32 | 22,575 | 64,442 |
| **Construction** | 0.42 | 19,207 | 54,365 |
| **Wholesale & Retail** | 0.35 | 20,003 | 56,749 |
| **Hotels & Restaurants** | 0.34 | 21,208 | 60,353 |
| **Other** | 0.33 | 19,243 | 54,474 |
| | % Firms with Gap > Cash | Median Gap (Nine Months) | Mean Gap (Nine Months) |
| | *Adjusting for firm cash holdings* | | |
| **BASE SCENARIO** | | | |
| **Manufacturing** | 0.59 | 194,440 | 583,303 |
| **Construction** | 0.49 | 168,953 | 493,733 |
| **Wholesale & Retail** | 0.53 | 174,981 | 514,918 |
| **Hotels & Restaurants** | 0.47 | 184,096 | 546,953 |
| **Other** | 0.46 | 169,227 | 494,695 |
| **OPTIMISTIC SCENARIO** | | | |
| **Manufacturing** | 0.53 | 149,156 | 524,179 |
| **Construction** | 0.50 | 129,701 | 443,894 |
| **Wholesale & Retail** | 0.51 | 134,302 | 462,883 |
| **Hotels & Restaurants** | 0.45 | 141,261 | 491,597 |
| **Other** | 0.43 | 129,910 | 444,756 |
| **PESSIMISTIC SCENARIO** | | | |
| **Manufacturing** | 0.53 | 239,432 | 639,981 |
| **Construction** | 0.47 | 204,914 | 541,993 |
| **Wholesale & Retail** | 0.52 | 213,078 | 565,170 |
| **Hotels & Restaurants** | 0.48 | 225,424 | 600,214 |
| **Other** | 0.47 | 205,285 | 543,046 |

*Source:* Authors' analysis of Department of Finance Survey Data.

**APPENDIX 4**     **MAIN DATA SOURCES**

| Source | Description |
|---|---|
| **Credit Demand Survey (CDS)** | Firm level microdata from the Department of Finance Credit Demand Survey. Used as the analytical basis for the report. The data cover the period 2018. |
| **CSO Business Impact of COVID-19 Survey** | This monthly survey was instituted by the CSO following the pandemic. We use these data for the months of April, May and June which are three separate survey returns. We averaged these across the three months. The data on turnover decline by sector as well as personnel and non-personnel cost declines come from these data. The share of firms using the TWSS also come from these survey returns. |
| **Chambers Ireland Survey Data** | We used the percentage decline in turnover from the April Chambers Ireland survey as our adverse turnover shock scenario. It is an overall figure not broken down by sector. |

*Source:*     Authors' analysis of Department of Finance Survey Data.

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