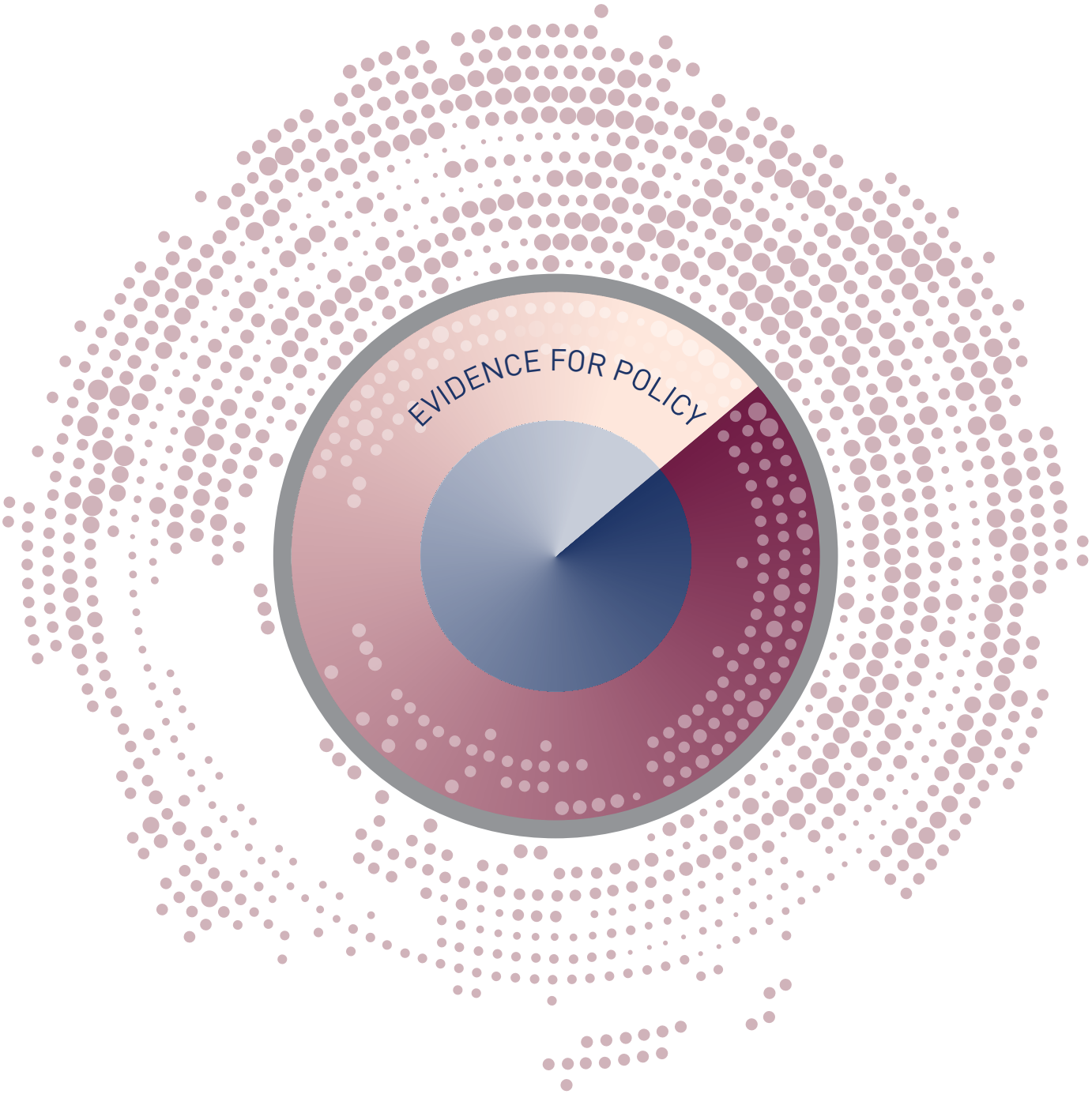
MACRO
ECONOMIC
FORECASTING
March 2021

QUARTERLY ECONOMIC COMMENTARY

SPRING 2021

KIERAN MCQUINN, CONOR O'TOOLE, ILIAS KOSTARAKOS
AND CATHAL COFFEY



ESRI ECONOMIC & SOCIAL RESEARCH INSTITUTE

QUARTERLY ECONOMIC COMMENTARY

Kieran McQuinn

Conor O'Toole

Ilias Kostarakos

Cathal Coffey

Spring 2021

The forecasts in this *Commentary* are based on data available by 10 March 2021

Draft completed on 11 March 2021

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

ISSN 0376-7191

DOI: https://doi.org/10.26504/qec2021spr

ABOUT THE ESRI

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

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

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

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

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

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

THE AUTHORS

The *Commentary* is edited by Kieran McQuinn and Conor O'Toole. Kieran McQuinn is a Research Professor and Conor O'Toole is an Associate Research Professor at the Economic and Social Research Institute (ESRI). Ilias Kostarakos is a Post-Doctoral Research Fellow and Cathal Coffey is a Research Assistant at the ESRI.

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

TABLE OF CONTENTS

SUMMARY TABLE

	2020	2021	2022
Output (Real Annual Growth %)			
Private Consumer Expenditure	-9.0	6.7	10.0
Public Net Current Expenditure	9.8	5.0	3.0
Investment	-32.3	5.8	6.8
Exports	6.2	7.0	7.0
Imports	-11.3	9.3	9.0
Gross Domestic Product (GDP)	3.4	4.4	5.2
Gross National Product (GNP)	0.6	3.6	4.9
Labour Market			
Employment Levels ('000)	1,976	2,033	2,303
Unemployment Levels ('000)	450	407	181
Unemployment Rate (as % of Labour Force)	18.7	16.7	7.3
Public Finances			
General Government Balance (€bn)	-19.7	-18.5	-7.8
General Government Balance (% of GDP)	-5.4	-4.7	-1.9

Note: The employment level for 2020 is based on the COVID-adjusted level of employment at the end of each quarter published by the CSO along with the quarterly LFS. As a result it represents a lower bound estimate for employment in 2020. The unemployment rate and level are based on the monthly unemployment and the COVID-Adjusted monthly unemployment series published by the CSO.

The Irish Economy – Overview

- December 2020 saw a significant increase in the level of COVID-19 infections prompting the Irish authorities to re-impose Level 5 public health restrictions on economic and social life from the end of 2020. These measures are set to remain in place until 5 April 2021 at the earliest.
- While the Winter 2020 *Commentary* did anticipate a further series of restrictions in 2021, it expected a shorter duration than now appears likely.
- Consequently, while we still expect to see the Irish economy grow in 2021, we have moderated our forecast for the present year when compared with the last *Commentary*.
- We now assume that the Level 5 lockdown that commenced on 30 December 2020 will last until at least 5 April 2021 and that there will be a gradual easing of restrictions thereafter.
- We assume that the vaccination programme will facilitate the broad relaxation of public health restrictions in the second half of 2021 and that there will not be another Level 5 lockdown this year.
- Given these assumptions, we now expect Irish GDP to increase by 4.4 per cent in the present year. Unemployment is expected to peak at 25 per cent in Q1 2021 before falling to just over 10 per cent by the end of the year.
- We also outline our first set of forecasts for 2022; we expect the economy to continue to recover next year with output set to increase by 5.2 per cent. Unemployment is set to fall further and will average just over 7 per cent for the year. However, we do not expect to see the unemployment rate fall back to pre-COVID rates until late 2023 at the earliest.
- The relatively elevated rates of unemployment for the present year will place the public finances under further strain. We now expect a deficit of just under €19 billion in 2021 or 4.7 per cent of GDP.
- In the public finances section of the *Commentary* we examine the implications of an alternative measure of debt sustainability; the ratio of real interest payments-to-GDP. The results based on this measure suggest the Exchequer has additional room for fiscal expansion over and above that suggested by the traditional debt-to-GDP metric.
- The *Commentary* contains a Box by FitzGerald which updates an earlier paper outlining a new variable for measuring Irish economic activity. In contrast to existing measures, this new measure suggests the Irish economy grew by 5 per cent on average between 2013 and 2019.

- A Research Note to the *Commentary* by McQuinn re-examines the interrelationship between mortgage credit and house prices in the Irish market. The Note presents some evidence to suggest that the present macroprudential measures are successful in limiting the degree of mortgage credit growth and ultimately house price increases.

The Domestic Economy

OUTPUT

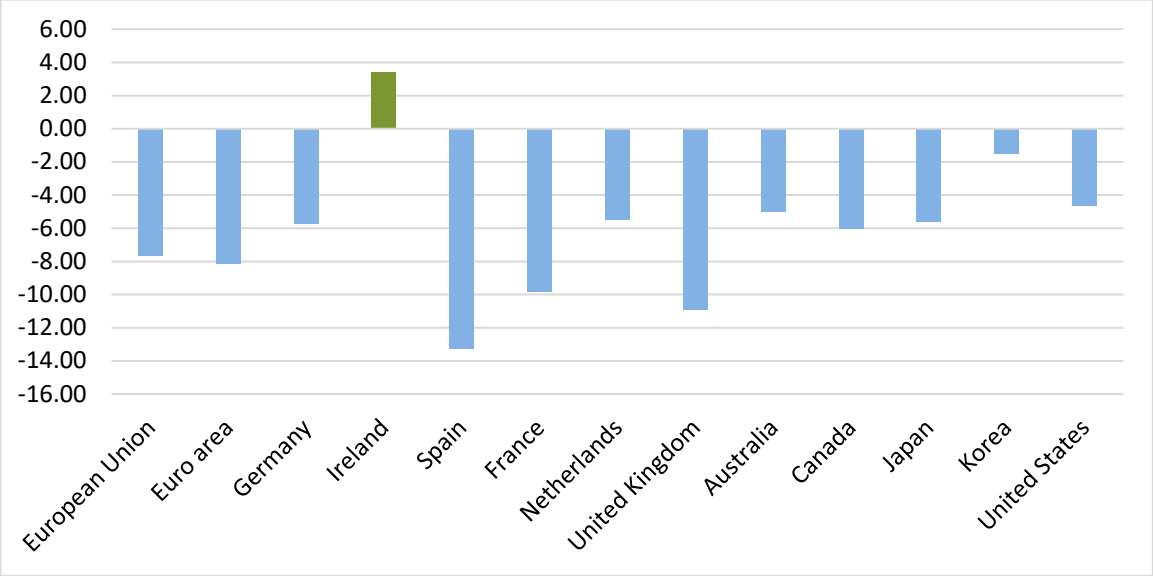
Key Points

- *For 2021 we assume that the vaccination programme will facilitate the broad relaxation of public health restrictions in the second half of 2021 and that there will not be another Level 5 lockdown this year.*
- *GDP is set to increase by 4.4 per cent in the present year and 5.2 per cent in 2022.*
- *An alternative estimate to GDP growth suggests the Irish economy grew by 5 per cent on average per annum between 2013 and 2019.*

In our previous *Commentary* we had assumed that a six-week Level 5 lockdown would occur during the first half of 2021. However, we now assume that the Level 5 lockdown which commenced on 30 December 2020 will last until at least 5 April 2021 and that there will be a gradual easing of restrictions thereafter. We assume that the vaccination programme will facilitate the broad relaxation of public health restrictions in the second half of 2021 and that there will not be another Level 5 lockdown this year.

The performance of the Irish economy in achieving positive growth in 2020 was quite remarkable. Most of this performance can be attributed to certain multinational intensive components of the export sector. Figure 1 compares the performance of a number of select advanced economies in 2020. Ireland, alone, experienced growth in GDP.

FIGURE 1 GDP GROWTH (%) 2020



Source: QEC calculations and EU Commission.

While the duration of the Level 5 restrictions is longer than had been expected in the Winter *Commentary*, we still expect a strong recovery in the domestic economy over the course of the year. As economic conditions improve through the year, consumption is expected to increase by 6.7 per cent while investment is forecast to increase by 5.8 per cent. The export sector is also likely to continue to perform strongly in 2021. However, the reliance on specific sectors such as pharmaceuticals and computer services means export growth is quite dependent on sector specific idiosyncratic performance. We are expecting output growth of 4.4 per cent for the current year.

In 2022, the Irish economy is expected to continue to grow strongly in the aftermath of the COVID-19 pandemic. As consumer confidence improves, some of the increased savings which have accumulated over the past year are likely to be spent and contribute to the recovery. The pace of growth is likely to increase next year as vaccines become more widely distributed on an international basis. Consequently, we expect the Irish economy to grow by 5.2 per cent next year.

TABLE 1 SUMMARY OF GROWTH FORECASTS (%) FOR 2021 AND 2022

	2020	2021	2022
Output (Real Annual Growth %)			
Private Consumer Expenditure	-9.0	6.7	10.0
Public Net Current Expenditure	9.8	5.0	3.0
Investment	-32.3	5.8	6.8
Exports	6.2	7.0	7.0
Imports	-11.3	9.3	9.0
Gross Domestic Product (GDP)	3.4	4.4	5.2
Gross National Product (GNP)	0.6	3.6	4.9

Source: QEC calculations.

In Box A the new economic output indicator outlined in FitzGerald (2020)[1] is updated with the latest set of Institutional Sector Accounts for Ireland, which were published in October 2020. The latest estimates of growth based on this approach suggest the Irish economy grew, on average, by 5 per cent per annum between 2013 and 2019.

BOX A ECONOMIC GROWTH BETWEEN 2013 AND 2019

Introduction

Over the last decade the traditional national accounting data for the Irish economy have proved increasingly difficult to understand. While they conform to the standard approach to national accounting followed by all EU countries, the globalisation of the Irish economy means that they no longer provide all the information that policymakers need.

To deal with these problems the CSO has provided a range of additional data, as recommended by the Economic Statistics Review Group in 2017. Initially a new measure, adjusted Gross National Income, GNI*, was published by the CSO which dealt with some of the problems with traditional GNI and GDP. In addition, a key set of new data was published by the CSO in their Institutional Sector Accounts in November 2019. However, in their raw form these data are difficult to interpret and, in a Special Article to the Autumn 2020 QEC, FitzGerald showed how these data, when appropriately analysed, provide valuable insights into the growth of national income in recent years and which industrial sectors are contributing most to that growth.

The latest version of the Institutional Sector Accounts for Ireland, covering the years to 2019, were published in October 2020. These accounts contain new data for 2019 together with revised data for earlier years. This Box updates the earlier Article to take account of the latest data. The methodology used is set out in that Article.

[1] FitzGerald J. (2020). 'Understanding recent trends in the Irish economy', Special Article, *Quarterly Economic Commentary*, Autumn.

The Institutional Sector Accounts provide data for both the financial sector and the Non-Financial Corporations sector, broken down by foreign-owned multinationals (MNEs) and domestic firms. In addition, the CSO has published data on Gross Value Added (GVA), compensation of employees (COE) and Gross Operating Surplus (GOS) for each industrial sector, cross-classified by institutional sector. These data are now available for the period 2013 to 2019.

The second section of this Box looks at what these data tell us about growth in the economy and how this information compares with the key aggregates in National Income and Expenditure, 2019. The third section then looks at the contributions of the different industrial sectors of the economy to growth.

Economic Growth

As outlined in the Special Article in the Autumn 2020 QEC, GDP, the traditional measure of national output and income, is no longer a good measure of the economic welfare of those living in Ireland.

As set out in the Article, the best available measure of real activity in Ireland is provided by Net National Product (NNP). A key difference between the NNP measure and adjusted Gross National Income, 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*.

TABLE A.1 ANNUAL GROWTH RATE, CONSTANT PRICES (%)

							Average Annual
	2014	2015	2016	2017	2018	2019	2013-2019
NNP after profit repatriations	6.8	1.7	5.6	4.8	5.6	3.9	4.7
NNP adjusted for redomiciled PLCs	**7.9**	**3.5**	**5.6**	**2.2**	**7.2**	**3.9**	5.0
NNP	7.8	1.4	6.3	1.2	7.3	3.2	4.5
GNI* from NIE	8.8	-0.3	5.9	4.6	6.8	1.7	4.6
GNI from NIE	8.7	13.7	9.7	5.1	6.5	6.5	8.7
GDP from NIE	8.6	25.2	3.7	8.1	8.2	8.2	10.5
Modified Total Domestic Demand	4.1	4.5	5.8	3.5	4.3	3.3	4.4
Employment	2.6	3.4	3.6	2.9	2.9	2.9	3.1

Source: Author's calculations using CSO data.

Table A.1 shows the annual growth rate for the economy using a number of different measures of economic welfare. The standard metric used internationally is GDP. However for Ireland, as discussed above, it has proved a very poor measure in recent years. As argued in the Autumn 2020 QEC Special Article, NNP adjusted for redomiciled PLCs is probably the best measure of growth.

Adjusted NNP grew by just under 4 per cent in 2019. With a growth in employment in that year of just over 3 per cent, that suggests a growth in productivity of slightly less than 1 per cent. Using this measure, over the six years from 2013 to 2019 the economy grew by around 5 per cent a year with a growth in productivity of around 2 per cent a year. The data suggest some volatility in the growth in output over the six years, with growth in 2017 being 2.2 per cent and that in 2018 of 7.2 per cent. By contrast the employment figures show very little volatility in growth around the average of 3.1 per cent.

The alternative best measure of the growth of the economy is the CSO aggregate of adjusted Gross National Income, GNI*. The average growth in this aggregate over the six years is 4.6 per cent, slightly lower than that for adjusted NNP. However, adjusted GNI* shows much greater volatility than adjusted NNP, with growth in GNI* implausibly being slightly negative in 2015, the year when GDP grew by over 25 per cent and employment grew by 3.4 per cent.

Modified Domestic Demand grew by an average of 4.4 per cent a year, slightly less than average growth in Adjusted NNP of 5 per cent. The higher growth in NNP indicates a moderate additional contribution to growth from the external sector over the period. Also, the growth in Modified Domestic Demand shows very little volatility over the six years, indicating that the volatility in the growth in adjusted NNP arose from economic relations with the outside world.

Contribution to Growth

Table A.2 shows the average contribution to adjusted NNP from each industrial sector over the period 2013 to 2019. Public administration accounted for a fifth of the output of the economy, and the distribution, transport and hospitality sector accounted for slightly less at 19 per cent of output. Manufacturing accounted for 14 per cent of output, the professional and administration sector for 11 per cent, the financial sector and real estate for 9 per cent each and IT for 7 per cent.

For the economy as a whole, the foreign MNE sector accounted for 22 per cent of national output and income, with the domestic sector accounting for the other 78 per cent. Within manufacturing and the IT sector, foreign MNEs accounted for just over half of the contribution to national income and output. While the figures for manufacturing are not a surprise, for the IT sector the fact that almost half of the contribution to national income came from domestic firms does stand out. While foreign MNE firms, such as Facebook and Microsoft have a high profile, the domestic firms, which are also making an important contribution, are much less well known.

TABLE A.2 AVERAGE SHARE OF NNP BY INDUSTRIAL SECTOR, CURRENT PRICES, 2013-2019 (%)

	Total	Foreign MNEs	Domestic
Agriculture, forestry and fishing	1.4	0.0	1.4
Manufacturing	14.1	7.3	6.7
Electricity, gas, and water	1.7	0.1	1.6
Construction	4.4	0.2	4.2
Distribution, transport, hospitality	18.9	3.7	15.2
Information and communication	7.1	3.6	3.5
Financial and insurance activities	8.9	3.4	5.5
Real estate activities	9.3	0.1	9.2
Professional, admin etc.	10.9	2.5	8.4
Public Admin, Education and Health	20.5	0.1	20.4
Arts, entertainment and other etc.	2.5	0.1	2.4
Factor Income - Profit repatriations	46.7	46.7	0.0
NNP after profit repatriations	99.6	21.2	78.4
Factor Income - other, excluding Redomiciled PLCs	-0.4	-1.1	0.7
NNP adjusted for redomiciled PLCs	100.0	22.2	77.7

Source: Author's calculations using CSO data.

TABLE A.3 AVERAGE ANNUAL GROWTH RATE BY INDUSTRIAL SECTOR, CONSTANT PRICES, 2013-2019 (%)

	All Sectors	Foreign MNEs	Domestic
Agriculture, forestry and fishing	12.2	1.2	12.5
Manufacturing	5.0	5.8	4.1
Electricity, gas, and water	-4.0	-0.7	-4.1
Construction	10.3	-1.0	11.0
Distribution, transport, hospitality	4.5	4.8	4.4
Information and communication	11.3	9.9	12.9
Financial and insurance activities	1.8	0.4	2.8
Real estate activities	2.9	-5.1	3.0
Professional, admin and support services	8.2	7.4	8.4
Public Admin, Education and Health	2.4	2.3	2.4
Arts, entertainment and other services	5.6	-1.2	5.7
NNP after profit repatriations	4.7	5.3	4.6
NNP adjusted for redomiciled PLCs	5.0	4.8	5.1

Source: Author's calculations using CSO data.

Table A.3 shows the average growth rate over the period 2013 to 2019. The MNE sector grew by 4.8 per cent a year while the domestic sector grew by slightly more at 5.1 per cent. This indicates that the shares of the economy accounted for by the MNE and the domestic sectors changed little over the period.

The rapidly growing sectors were construction, recovering from a very low base in 2013, IT, professional and administration, and agriculture. The arts and entertainment sector also grew quite rapidly at 5.6 per cent a year. However, that sector has since been decimated in 2020 due to the current crisis. Manufacturing, an important sector, grew by around 5 per cent a year, keeping pace with the overall growth in the economy. The public administration sector grew at just under 3 per cent a year, somewhat more slowly than the economy as a whole.

References

FitzGerald J. (2020). 'Understanding recent trends in the Irish economy', Special Article, *Quarterly Economic Commentary*. Economic and Social Research Institute, Autumn.

This Box was prepared by John FitzGerald.

DEMAND

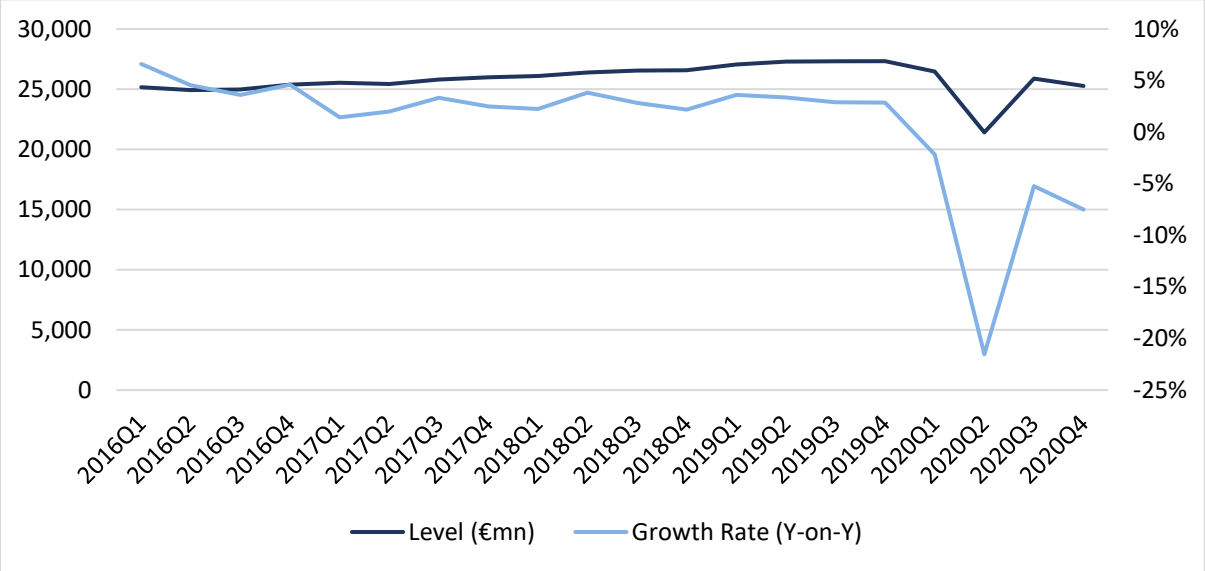
Key Points

- *Consumption expenditure dropped by 9 per cent in 2020.*
- *Ireland had a higher increase in the savings rate in 2020 than other countries. The unwinding of these excess savings may support economic recovery.*
- *The consumption forecast for 2021 is lower than previously expected due to ongoing restrictions, but strong growth is forecast for the second half of the year.*

Household sector consumption

The fall in consumer expenditure in 2020 was approximately 9 per cent relative to 2019 (CSO, 2021). The introduction of public health measures in March 2020 coincided with the largest decline in household spending on a quarterly basis on record. While a recovery occurred during the summer period as the economy was re-opened, the second and third waves of COVID-19 infections in the last quarter of 2020 led to a further setback in consumer spending. Figure 2 presents the trend in consumption in Ireland to end-2020. The pronounced drop and recovery in spending is clearly evident.

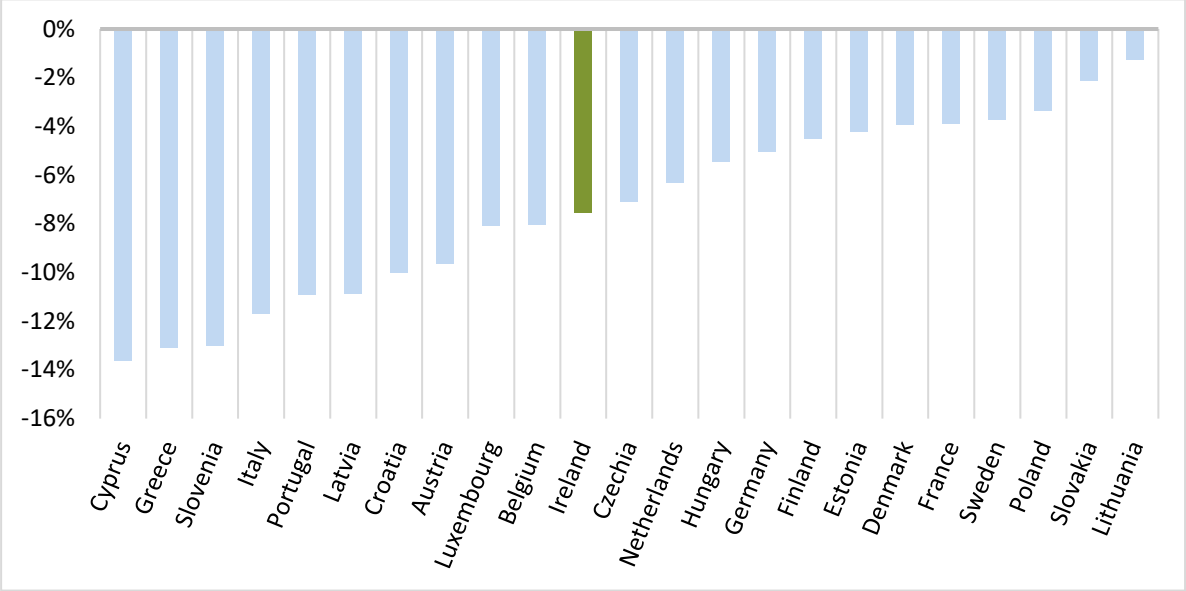
FIGURE 2 QUARTERLY PERSONAL CONSUMPTION ON GOODS AND SERVICES – CONSTANT MARKET PRICES AND SEASONALLY-ADJUSTED – GROWTH RATES



Source: Central Statistics Office.

The scale of the fall in consumption in Ireland in 2020 is in the mid-range experienced by other European economies. The largest drops in consumer expenditure were seen in Greece, Cyprus, Slovenia, Italy and Portugal. It is likely that a range of factors affected the overall fall in consumption, but of particular importance are the policy supports to protect household incomes combined with the degree of severity, and duration, of public health restrictions. Also important is the level of disease prevalence which has been shown to have a considerable impact on household behaviour through precautionary channels (Goolsbee and Syverson, 2021). Previous research (O'Toole, 2020) indicated that public health restrictions in the first part of the year were strict in Ireland relative to other countries, which likely had a bearing on the size of the decline in Q2 2020.

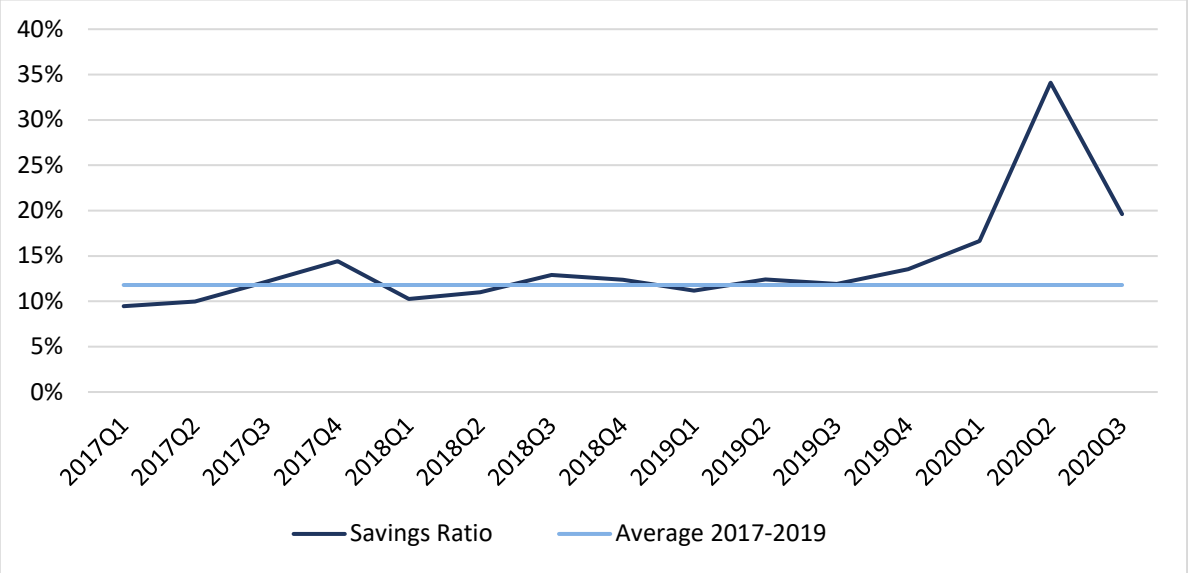
FIGURE 3 YEAR-ON-YEAR CHANGE IN FINAL CONSUMPTION EXPENDITURE FOR SELECTED EUROPEAN ECONOMIES (2019-2020)



Source: ESRI Analysis of Eurostat data. Series: Final consumption expenditure of households, chain linked volumes (2015).
Note: Figures may differ between these data and the CSO National Accounts Consumption Figure reported elsewhere due to definitional differences. The selection of this indicator was undertaken to ensure a consistent comparison across countries with the same variable from Eurostat.

While household spending dropped dramatically since the onset of the pandemic, a notable feature in the data is that household incomes appear to have been affected to a lesser extent (on aggregate). This has led to a major increase in the savings ratio to over 35 per cent in Q2 2020. While data for the third quarter indicate a fall-back in the share of savings from the Q2 high, the ratio still remains well above the pre-COVID-19 average. Figure 4 documents the change in the gross savings ratio.

FIGURE 4 EVOLUTION OF THE GROSS SAVINGS RATIO IN IRELAND



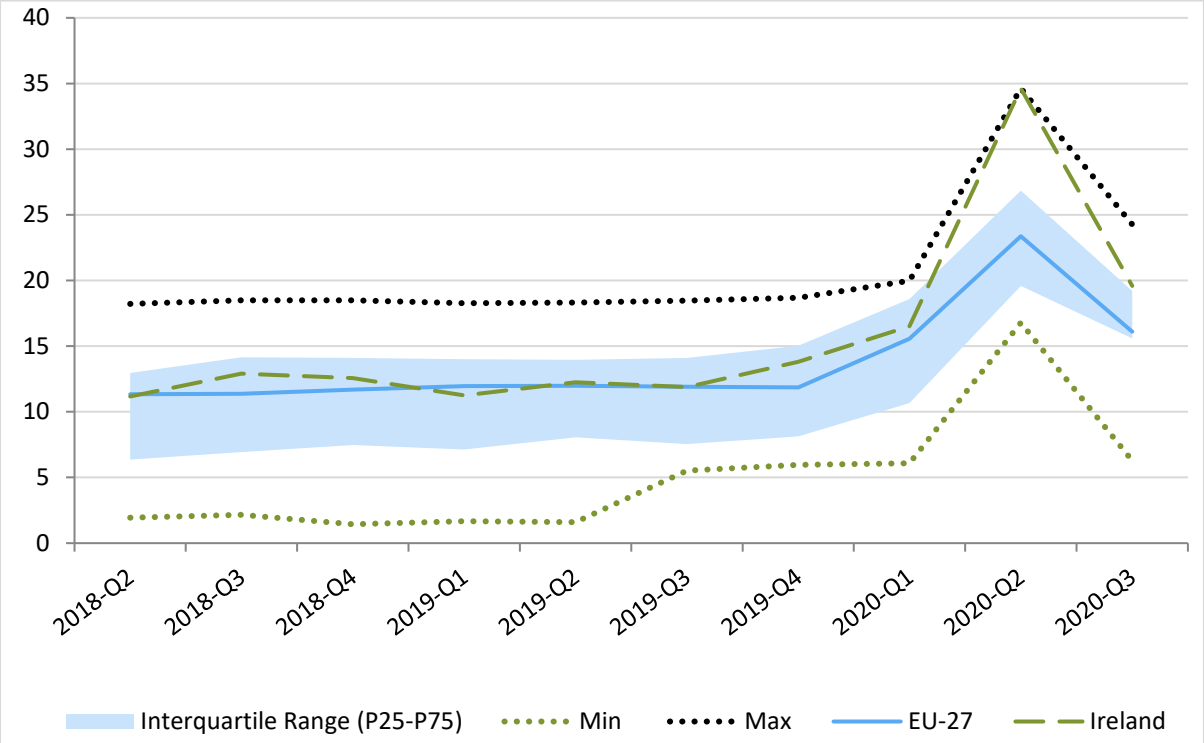
Source: Central Statistics Office.
Note: Savings rate is calculated as the difference between gross disposable income and final consumption expenditure from the institutional accounts scaled by gross disposable income.

The adjustment of the savings ratio is important for economic recovery; if households run down excess savings balances when their consumption possibilities are widened, this could provide a natural demand stimulus without policy intervention. Recent research by FitzGerald (2020) notes the potential benefit of these savings in providing a stimulus to the domestic economy when public health restrictions are lifted. Figure 5 also shows that the savings ratio increased in Ireland to a larger extent than other European countries. While a similar savings rate is observed before the pandemic when comparing Ireland to the EU27, the increase in Q2 and Q3 of 2020 were substantially higher. This may suggest that Ireland has more built up savings to boost the post COVID-19 recovery relative to other countries. As consumption adjusted in a similar manner to other countries, it also indicates that incomes have held up better in Ireland. Some possible explanations for Ireland's relatively strong record of sustaining incomes include the extensive income supports and the two-tier nature of the Irish economy which has left many households unaffected in earnings terms (O'Toole, 2020).

There are however a number of uncertainties around the degree to which the evident increase in savings will result in greater consumption. Firstly, a large portion of any consumption increase is likely to leak out of the economy in higher imports. Second, it matters where the change in the savings rate is taking place across the income distribution: for example, if the savings increase accrues to higher income households, these households may have a lower overall propensity to consume and thus the increase in consumption is more muted. Thirdly, if the labour market recovery is slower than expected households may maintain

precautionary savings as a buffer. Finally, some of the higher savings may be used to purchase assets such as housing rather than consumption goods.

FIGURE 5 EVOLUTION OF THE GROSS SAVINGS RATIO IN SELECTED EUROPEAN COUNTRIES



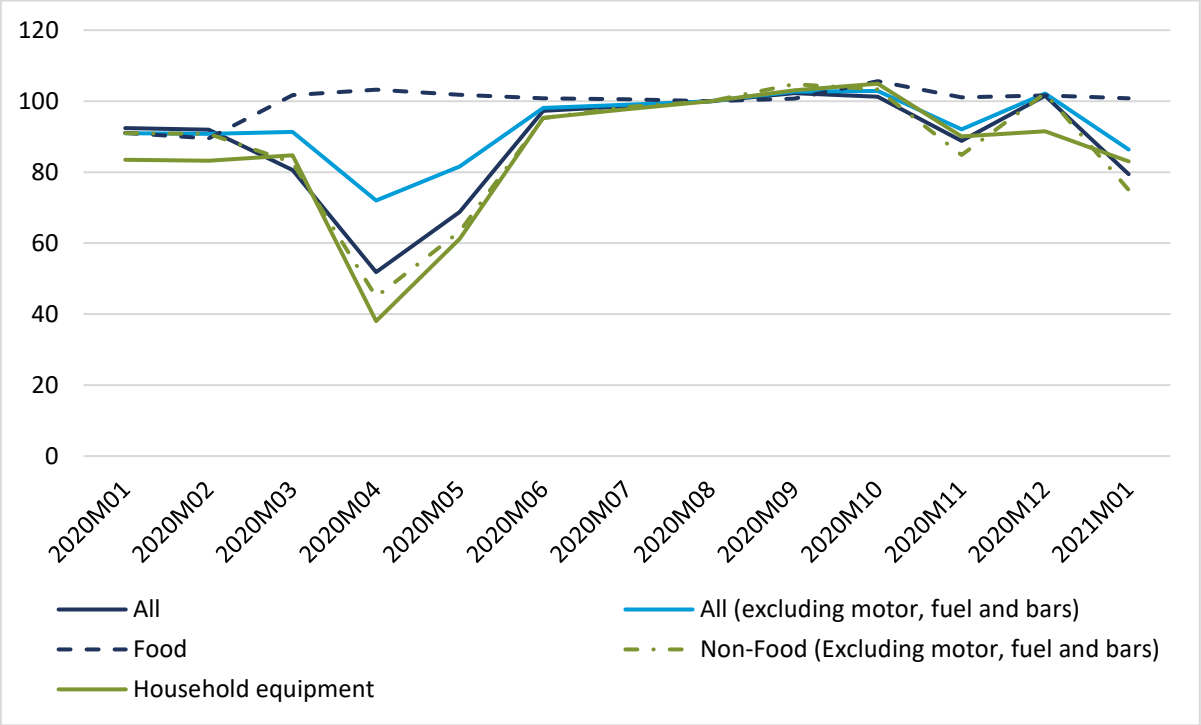
Source: Eurostat data on gross savings ratio. Countries included in comparison are: Belgium, Czechia, Denmark, Germany, Ireland, Spain, France, Italy, Netherlands, Austria, Poland, Portugal, Finland, Sweden, UK.

The third wave of COVID-19 infections which occurred at the end of 2020 has led to a more extreme set of public health measures being required than we anticipated in the previous *Commentary*. The duration and breadth of restrictions are likely to reduce expenditure, and an early indicator of this can be seen in the retail sales data. Figure 6 presents an index of selected main retail sales aggregates benchmarked at August 2020 (100) to provide an understanding of how the second half of 2020 has progressed relative to the summer rebound. The retail sales of food, as it remains relatively constant, provides a good benchmark in order to explore the time varying impact of public health restrictions and consumer spending changes for the other indicators. We can see the Level 5 restrictions in November and in early 2021 have led to a marked decline in retail sales.[2] More recent data from the Central Bank of Ireland credit card and debit card usage

[2] The retail sales index is based on an enterprise survey and, in sectors with closures due to COVID-19 health restrictions, the results may be more volatile over time due to reporting. See CSO discussion note: https://www.cso.ie/en/releasesandpublications/in/rsi/informationnoteontheimplicationsofcovid-19ontheretailsalesindexjanuary2021.

suggest that the drop in spending in the early months of 2021 is as large, if not larger, than the first wave in April 2020 in value terms.

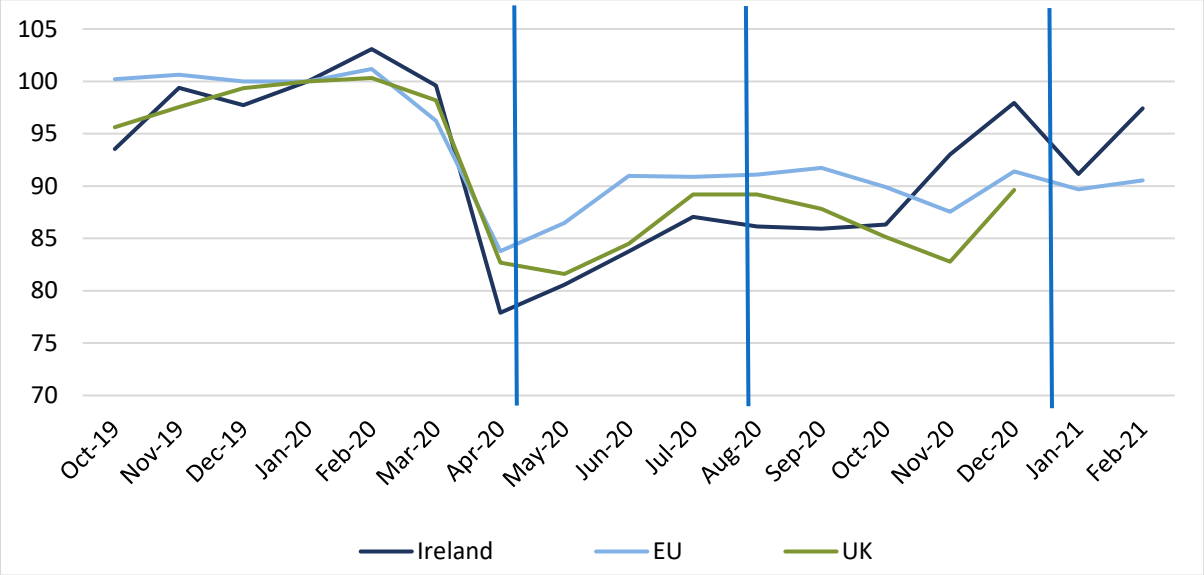
FIGURE 6 DEVELOPMENTS IN RETAIL SALES INDEX (ADJUSTED TO 100 IN AUGUST 2020)



Source: ESRI Analysis of CSO data. This sets the retail sales index (volumes) at 100 in August 2020.

To provide further real-time insight, 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 – February 2021. The index takes the value 100 in January 2020. The onset of the pandemic was associated with a rapid and extensive drop in consumer confidence as households were subject to the restrictions and the associated economic shocks. The re-introduction of lockdown restrictions in January 2021 led to a dip in consumer sentiment. However, a rebound did occur in February 2021. Consumer sentiment in Ireland remains above the level in the UK.

FIGURE 7 CONSUMER SENTIMENT INDICATORS – IRELAND, UK AND REST OF EU27 (JANUARY 2020 = 100)



Sources: European Commission data and QEC 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

In terms of our outlook for consumption for 2021, we expect a considerably lower overall level of spending than our previous *Commentary* outlined due to the longer duration of strict public health measures in the first half of the year. However, we still expect a strong rebound in the second half of the year as the vaccination coverage increases and public health measures are somewhat eased. We now expect consumption to increase by 6.7 per cent in 2021 relative to our previous forecast of 11.7 per cent. For 2022, we expect a strong recovery to continue with consumption growth of 10.0 per cent now expected.

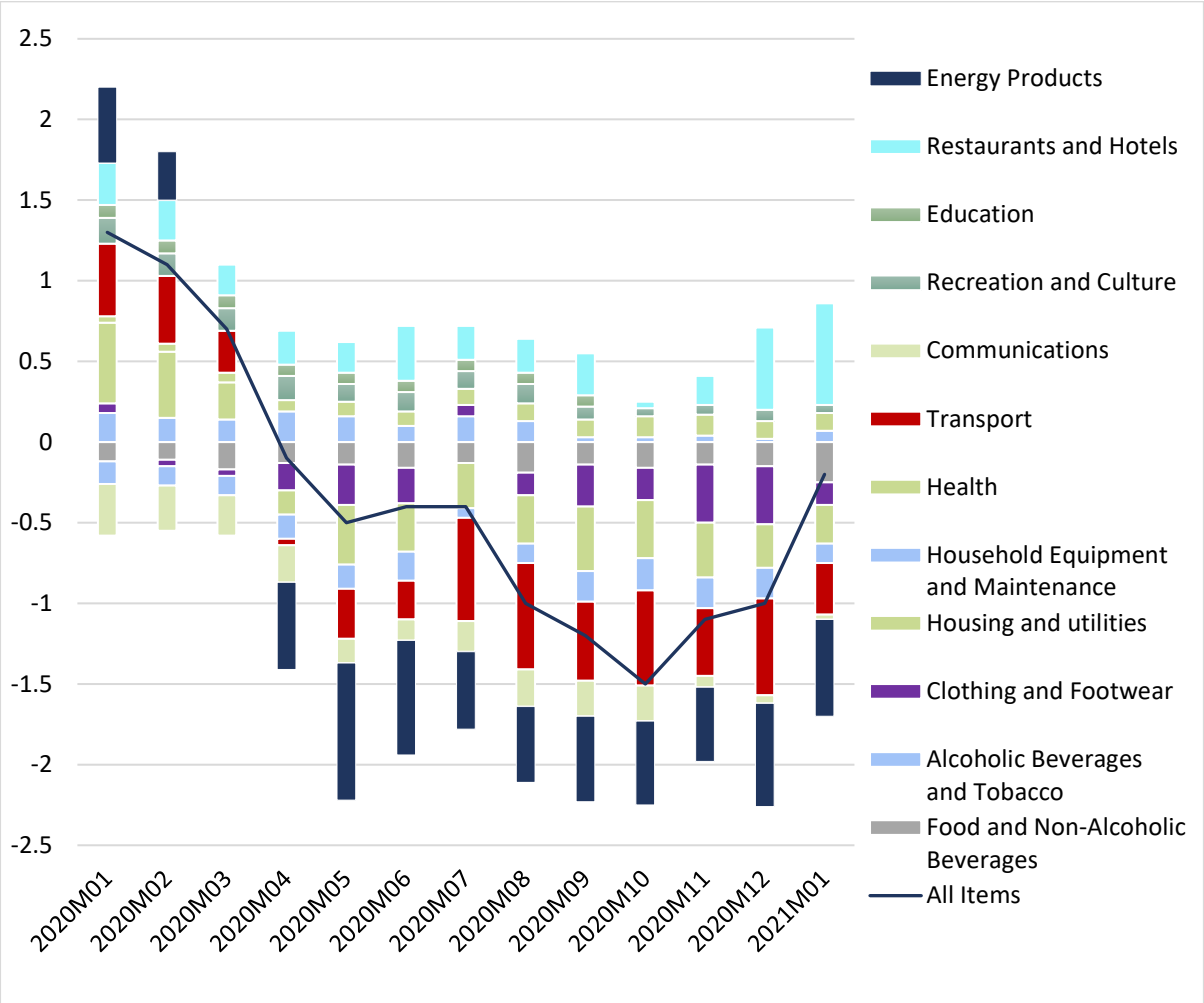
Developments in consumer prices

Since the onset of the pandemic there has been a drop in consumer prices. The year-on-year change in the Consumer Price Index is down -0.3 per cent on average for 2020. Figure 8 displays the trend in the overall (all items) CPI inflation rate and the rate of price changes for the main subcomponents.[3] It is clear a marked downward trend in inflation coincided with the pandemic. The inflation rate was -0.6 per cent in January 2021. The main items putting downward pressure on

[3] It must be noted there are difficulties with measuring price changes where there are low activity levels in sectors severely hit by public health measures. Please see CSO note for more details: https://www.cso.ie/en/releasesandpublications/in/cpi/informationnoteonimplicationsofcovid-19ontheconsumerpriceindex-january2021.

prices were transport prices, energy costs, food, housing and utilities. Deflationary pressures have eased somewhat in the later months of 2020 and into 2021.

FIGURE 8 CONSUMER PRICE INFLATION – CONTRIBUTION TO CHANGE IN CPI BY COMPONENT – YEAR-ON-YEAR % CHANGE



Source: CSO and QEC calculations.
Note: Please note the components in this chart do not sum to one as categories with cross-over items (such as energy) have been included for display purposes.

Given the developments in prices, our projection for consumer price inflation for 2021 is 0.7 per cent and 1.2 per cent for 2022. Given the unique nature of the pandemic related economic shock (with characteristics such as a constrained consumption basket, extensive fiscal support and accommodative monetary policy), there are some potential risks that inflationary pressures may build up in the recovery phase. Heightened surveillance is needed to monitor these risks.

TRADED SECTOR

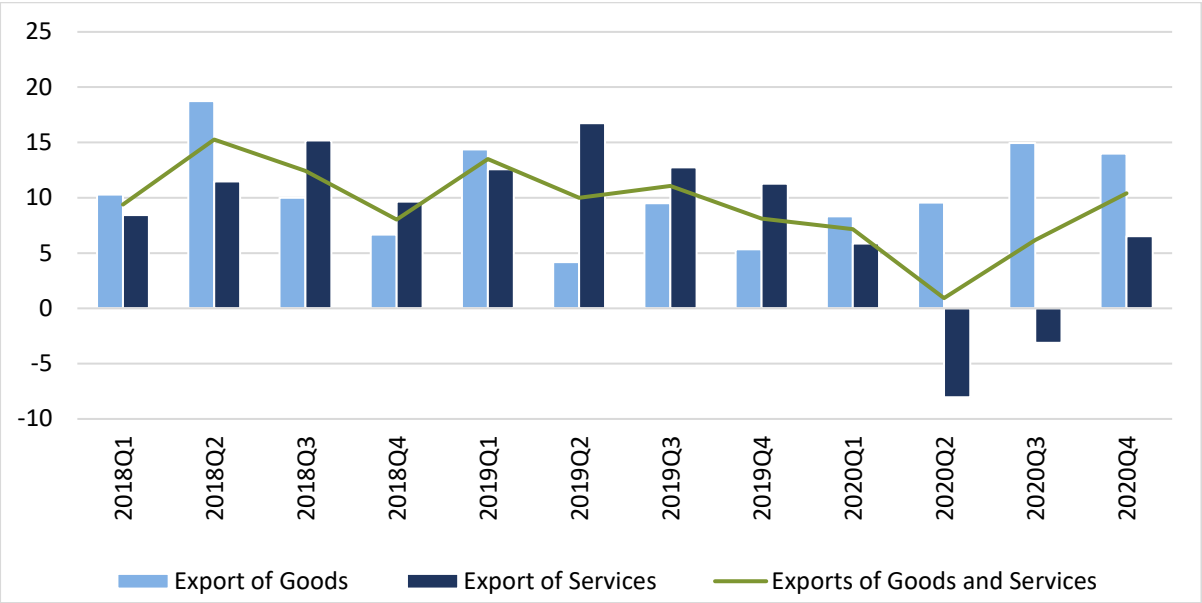
Key Points

- *Exports grew by 6.2 per cent in 2020 compared to 2019.*
- *The main drivers of export growth have been medicinal and pharmaceutical goods and ICT which have grown strongly throughout the pandemic.*
- *Compared to 2019, imports declined by 11.3 per cent. This was linked to a reduction in imports of intellectual property products (IPP).*
- *Irish net exports were €108.96 billion in 2020.*

The robust performance of the Irish traded sector was the reason why Irish GDP performed so well relative to other countries in 2020. Despite the pandemic's negative impact on the economies of many of our trading partners last year, Irish exports grew by 6.2 per cent in 2020 relative to 2019. Imports on the other hand declined by 11.3 per cent between 2019 and 2020. The joint impact of these changes was to increase Irish net exports to €108.96 billion in 2020, an increase of €73.4 billion compared to 2019.

Exports of both goods and services performed well in the final quarter of 2020. Figure 9 shows the annual growth in seasonally-adjusted Irish exports by quarter. In Q4 2020 exports increased by 10.4 per cent annually. This was driven by the strong growth in both services and goods exports with the former increasing by 6.5 per cent and the latter increasing by 14.0 per cent compared to Q4 2019.

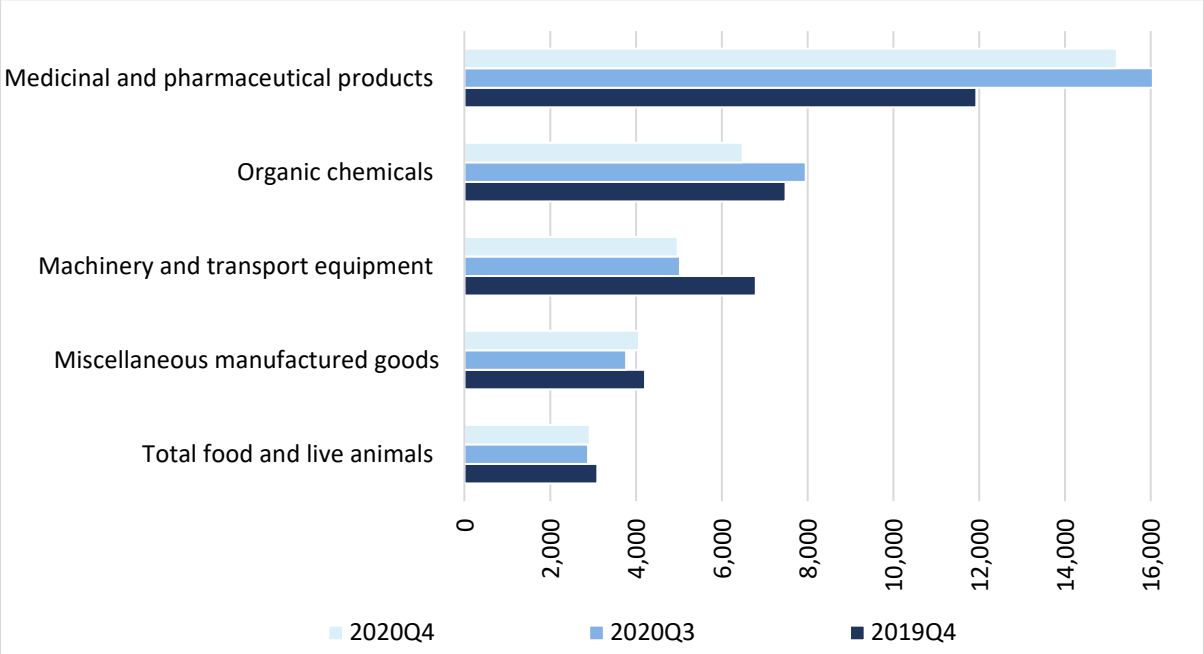
FIGURE 9 SEASONALLY-ADJUSTED EXPORTS: YEAR-ON-YEAR GROWTH (VOLUME, %)



Source: Central Statistics Office.

O'Toole (2020) highlighted that one of the primary reasons for the robustness of Irish exports in early 2020 was the strong performance of medicinal and pharmaceutical products. Figure 10 shows that while exports of this commodity group were down slightly compared to the previous quarter (-5.2 per cent), they registered significant annual growth (27.4 per cent) in Q4 2020. While the strong growth of this commodity sector is undoubtedly a positive for the Irish economy, the fact that this sector is dominated by a small number of multinational corporations highlights the vulnerability of the Irish economy to the individual performance of a relatively small number of companies. It is also important to note that exports of these products may be elevated due to the nature of the pandemic, and once the global health emergency passes it is possible that there will be a reduction in such exports. Between Q3 and Q4 the value of organic chemicals exports declined by 18.4 per cent while the value of exported miscellaneous manufactured goods increased by 8 per cent. Although the value of exports of machinery and transport equipment declined by only 1 per cent compared to Q3 2020, it has declined by 26.8 per cent compared to Q4 2019.

FIGURE 10 GOODS EXPORTS BY COMMODITY GROUP (VALUE, € MILLION)

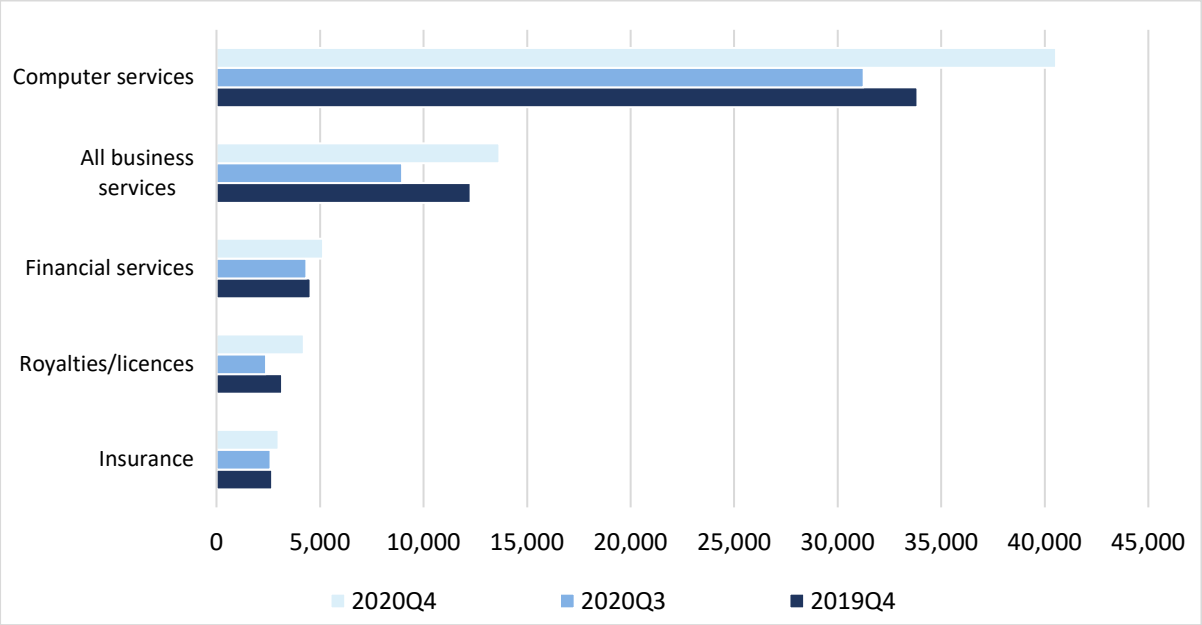


Source: Central Statistics Office.

Service exports performed well over the final quarter of 2020; the largest component of service exports recorded strong quarterly and annual growth. Computer services, which accounted for 57 per cent of the value of total service exports in Q4 2020, grew by 29.7 per cent in Q4 compared to Q3, and 19.8 per cent compared to the same period the previous year. As shown in Figure 11 the performance of service exports is predominantly influenced by the performance of

the computer services sector. Business services also account for a significant proportion of Irish service exports and it also experienced strong growth in Q4 2020. The value of exports in this area increased by 52.4 per cent relative to Q3 2020 and by 11.4 per cent relative to Q4 2019. Financial services, insurance and royalties/licenses each increased annually by 13.1, 11.5 and 33.3 per cent respectively.

FIGURE 11 SERVICE EXPORTS BY COMPONENT (VALUE, € MILLION)

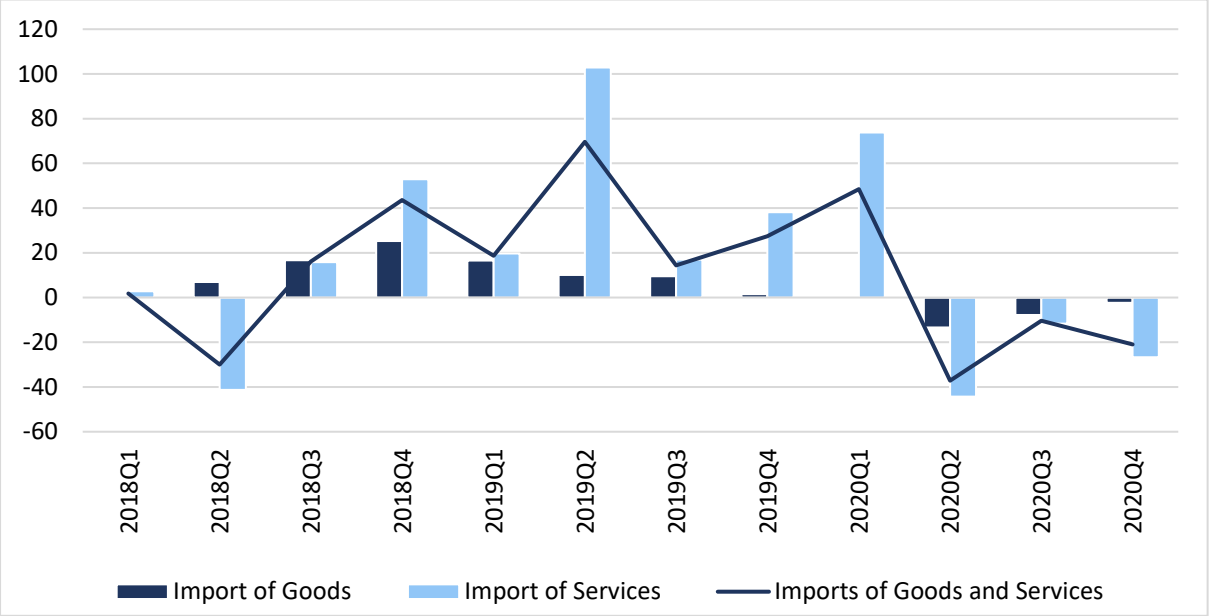


Source: Central Statistics Office.

Figure 12 shows annual import growth remained negative in Q4 2020 as imports of both goods and services declined over the period. Compared to Q4 2019, imports were down by 20.9 per cent, with goods imports declining 2.3 per cent and services declining by 26.6 per cent. The CSO has suggested that the decline in imports in 2020 overall is driven to a considerable extent by a fall in IPP investment relative to 2019.[4]

[4] For more information see: https://www.cso.ie/en/releasesandpublications/ep/p-na/quarterlynationalaccountsquarter42020/internationaltrade.

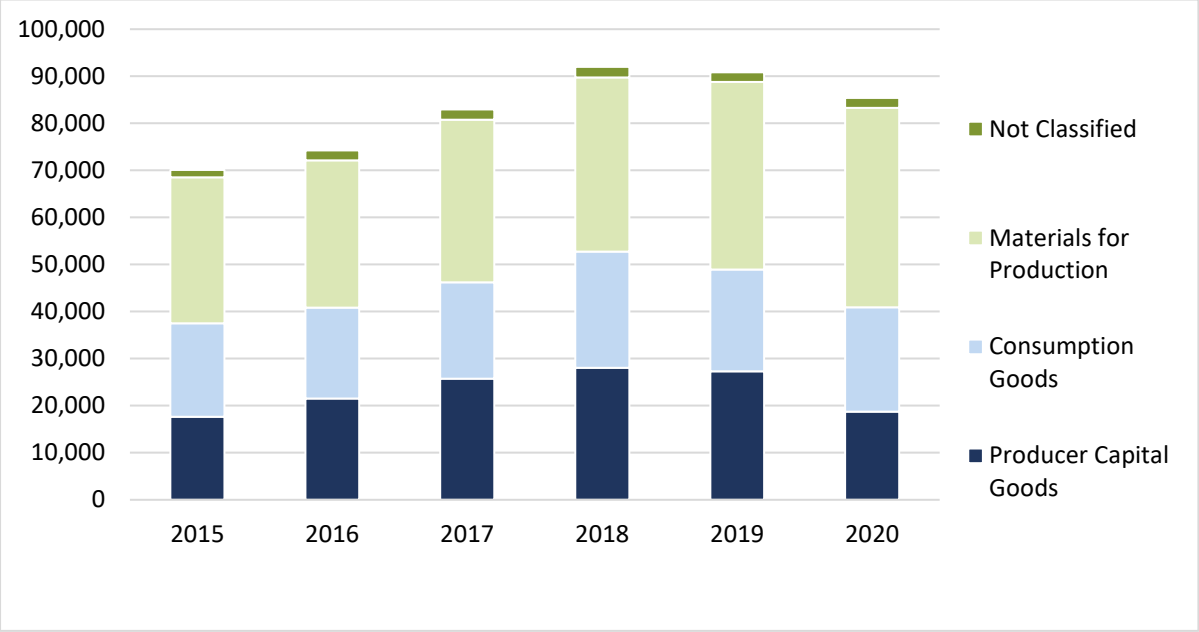
FIGURE 12 SEASONALLY-ADJUSTED IMPORTS: YEAR-ON-YEAR GROWTH (VOLUME, %)



Source: Central Statistics Office.

Figure 13 shows goods imports by main use over the last five years. In 2020 the majority of goods imports fell under the category of materials for production (goods that are imported for use in the production process of Irish firms). Imports for this use increased by 6.3 per cent in 2020 compared to 2019, and were 36.4 per cent higher in 2020 when compared with the 2015 level. Despite the declines in consumption over 2020, imports of consumption goods in 2020 were 2.5 per cent higher than they were in 2019 and 11.8 per cent higher than they were in 2015. Although it was 6.1 per cent higher in 2020 than 2015, there was a large decline (31.5 per cent) in the import of producer capital goods between 2019 and 2020. This reflects a significant fall in investment by firms in Ireland over this period.

FIGURE 13 GOODS IMPORTS BY MAIN USE (VALUE, € MILLION)



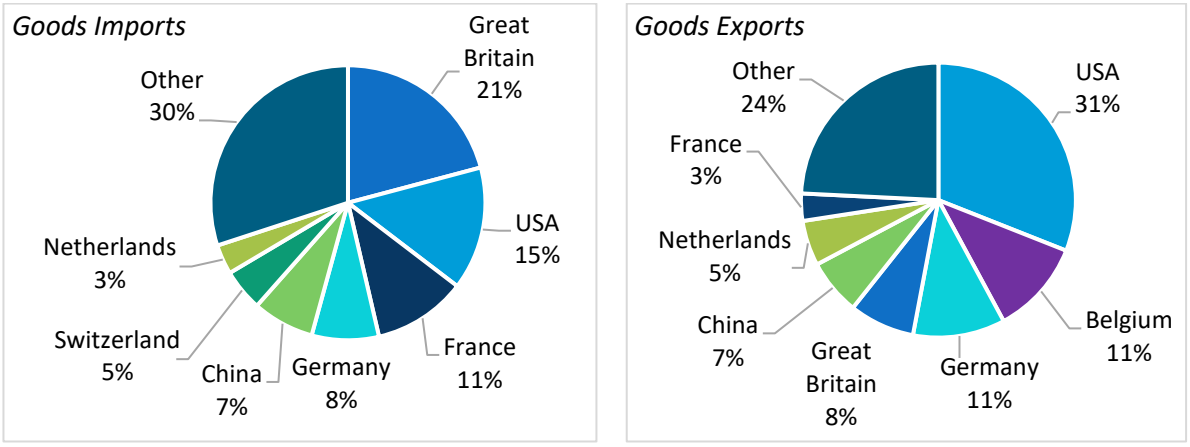
Source: Central Statistics Office.

Figure 14 shows the share of Irish goods imports by country of origin and the share of Irish exports by destination for 2020. The United States was the origin of 21 per cent of Irish goods imports in 2020 and it was the destination for 31 per cent of goods exports. While 21 per cent of goods imports came from Great Britain[5] (GB) in 2020, only 8 per cent of goods exports in 2020 went to GB. France and Germany were among our largest trading partners for both goods imports and exports in 2020. Approximately 7 per cent of both goods exports and imports went to or came from China in 2020. As noted in Euroframe (2021), China has experienced a very strong recovery and has not had a second major wave of infections. Euroframe (2021) expects UK GDP will grow by 3.4 per cent 2021 and that Euro Area GDP will grow by 4.9 per cent in 2021 and 3.1 per cent in 2022.[6] Also, the economic stimulus plan of the new Biden administration enacted by the US house of representatives in early March should provide a significant boost to US economic performance.

5 Great Britain refers to the UK excluding Northern Ireland.

6 Euroframe (2021). *Economic Assessment of the Euro Area – Winter 2020/2021*. Published February 2021.

FIGURE 14 SHARE OF IRISH GOODS IMPORTS (LHS) AND EXPORTS (RHS) BY COUNTY 2020



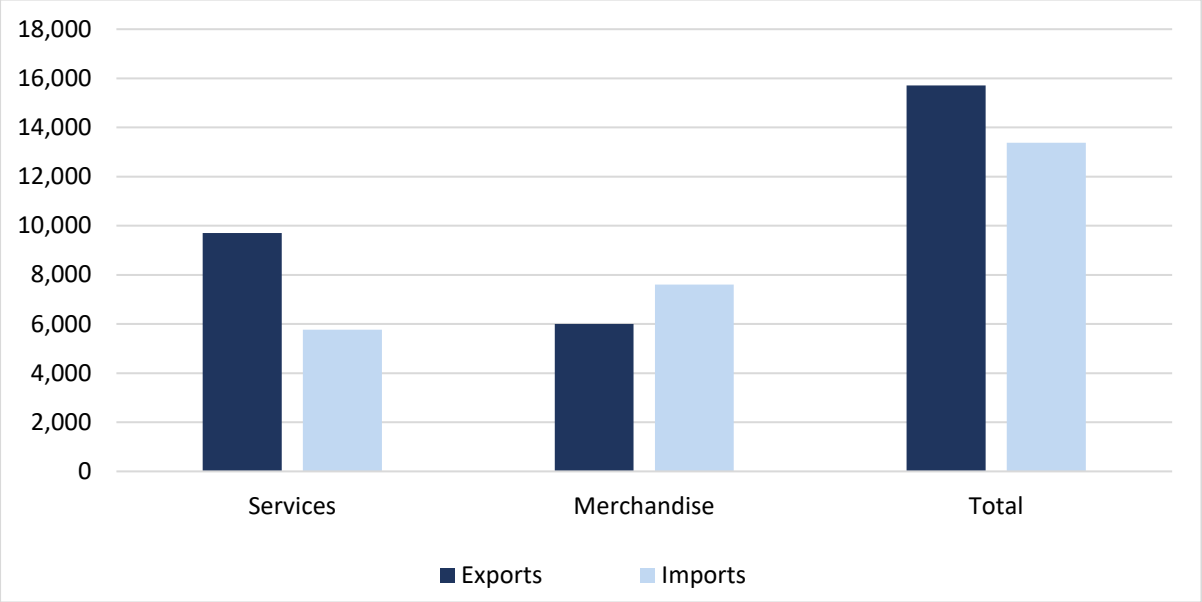
Source: Central Statistics Office.

Figure 15 shows the value of Irish trade with the UK in Q4 2020. In the final quarter of 2020, the value of goods imports from the UK was greater than exports resulting in a trade deficit of €1.6 billion. Exports of services to the UK were greater than imports resulting in a surplus of €3.9 billion. Overall, Irish exports to the UK were greater than imports resulting in a trade surplus of €2.3 billion.

The UK officially left the EU in January 2020 and entered the transition period. At 11pm on 31 December 2020 the transition period ended, and the UK now trades with EU on terms agreed in the trade deal signed on 30 December 2020. However, not all aspects of the trade deal are fully in force at present and the pathway of trade between the UK and Ireland throughout 2021 and beyond will likely be affected by the manner and timing of the escalation of the trade deal's implementation. While there is still a significant degree of uncertainty around this, stricter trade rules will likely have a negative impact on trade. The end of the transition period brought with it the imposition of new barriers, such as additional paperwork and increased Customs checks, on trade between the EU and the UK. Data from January 2021 suggest that UK goods exports to the EU fell by 40.7 per cent while UK goods imports from the EU fell by 28.8 per cent. The reduction in UK goods imports from the EU in January 2021 was driven by a reduction in the importation of goods such as cars and medical and pharmaceutical products (ONS, 2021).[7]

[7] For more information see: UK trade – Office for National Statistics (ons.gov.uk).

FIGURE 15 TRADE WITH THE UK IN Q4 2020 (VALUE, € MILLION)



Source: Central Statistics Office.

As the vaccine is rolled out in many countries this year and the economies of Ireland's largest trading partners are expected to record positive growth, Irish exports should continue to grow positively. As a result, export growth for 2021 and 2022 is forecast at 7.0 per cent. As exports, investment and consumption all pick up next year, imports are also forecast to increase by 9.3 per cent for 2021 while they are expected to increase by 9.0 per cent in 2022.

INVESTMENT

Key Points

- *Investment fell by 32.3 per cent in 2020 compared to 2019 and this was driven by the significant yearly drops in machinery and equipment, and building and construction activity.*
- *Capital investment influenced by Intellectual property products (IPP) declined by €49 billion in 2020.*
- *Modified investment, which is adjusted to avoid the distortions caused by investment in intellectual property and aircraft related to leasing, declined by 3.4 per cent annually in Q4.*
- *We expect approximately 15,000 housing completions in 2021 and 16,000 in 2022.*
- *Investment forecast to grow by 5.8 per cent in 2021 and by 6.8 per cent in 2022.*

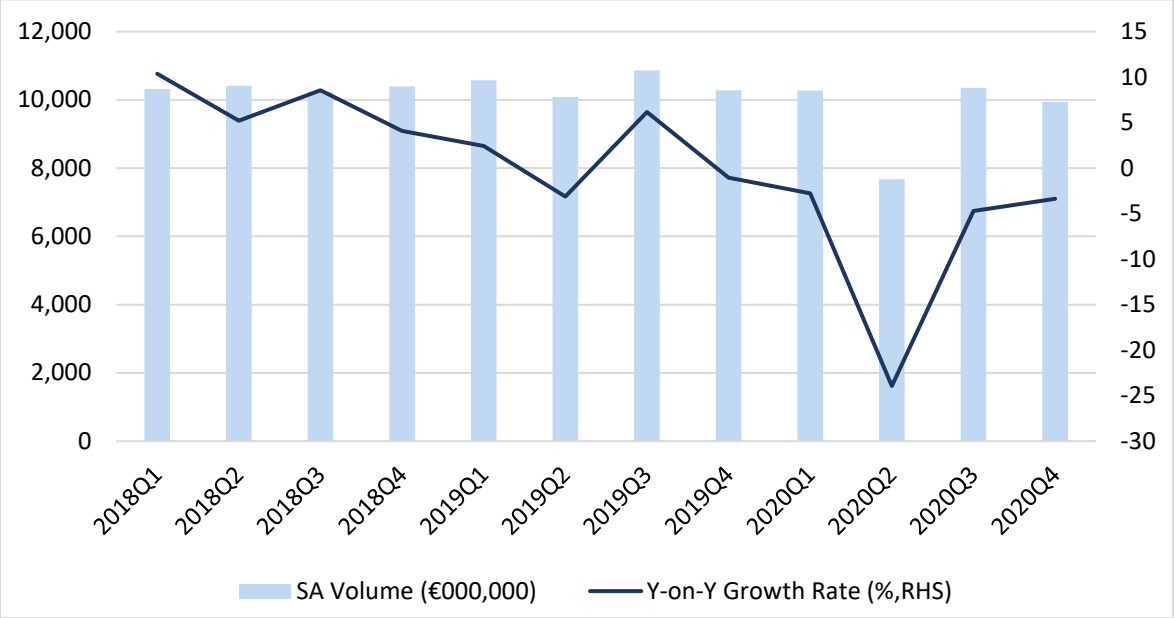
The negative impact of COVID-19 on investment was visible during Q4 2020, as overall Gross Fixed Capital Formation (GFCF) declined by 62 per cent compared to the same period the previous year. This marked the third consecutive quarter where investment growth remained in negative territory, following the 73 per cent and 13 per cent annual declines recorded in Q2 and Q3 2020, respectively. Overall, for 2020 as a whole, GFCF declined by 32.3 per cent. This decline was largely driven by the significant yearly drops in machinery and equipment (-25.2 per cent), and building and construction activity (-9.1 per cent).

However, the well documented distortions in the headline investment figures caused by the operations of large multinational firms (see FitzGerald, 2018; 2020) are the source of increased volatility in the quarterly investment series and mask the developments in the underlying domestic investment behaviour. 2020 again saw evidence of this with the large decrease in headline investment being mainly attributable to the decline of €49 billion in capital investment. This is associated with movements in intellectual property products (IPP).

In order to obtain a better indication of domestic investment activity, the CSO has developed the Modified Domestic GFCF series, which excludes investment in intellectual property and aircraft related to leasing, thus removing a significant element of the distortionary impact. The developments in domestic investment activity are depicted in Figure 16. Following the sharp decrease of 24 per cent in the modified investment series during Q2 2020 (compared to the same quarter of the previous year), the decline in investment activity reduced during the second

half of the year. In particular during Q3 and Q4 when investment declined by 4.7 and 3.4 per cent, respectively. Although the data for most of the subcomponents of investment were not released for this time period, the data available for building and construction activity show a significant pickup, especially in Q4 with a 2.2 per cent annual increase.

FIGURE 16 MODIFIED GROSS DOMESTIC FIXED CAPITAL FORMATION



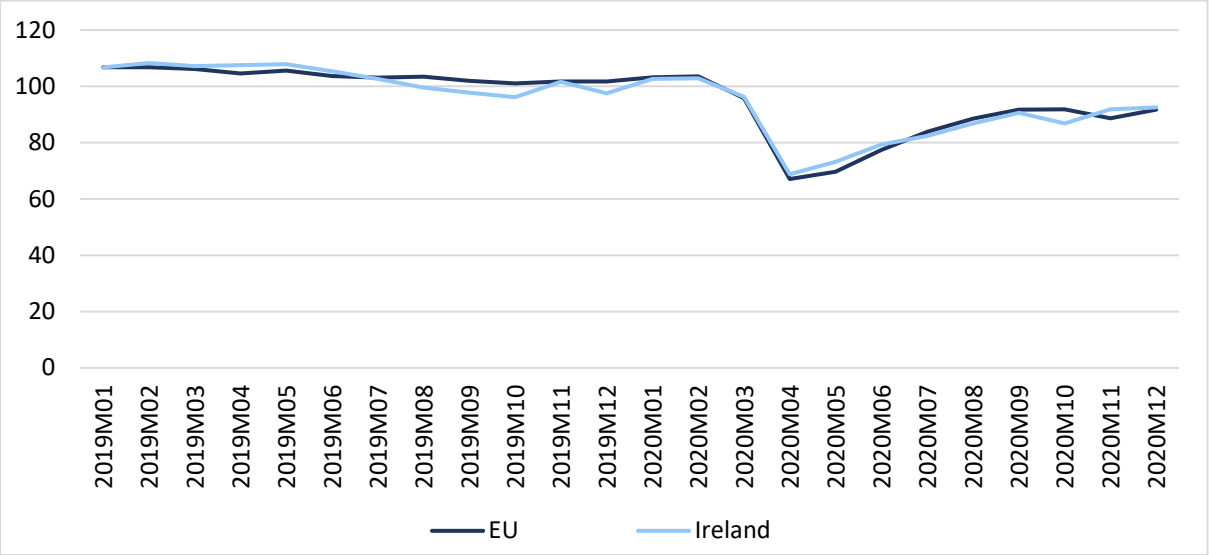
Source: Central Statistics Office.
Note: SA stands for seasonally-adjusted.

To gain insight into how business confidence has been impacted by the pandemic, we draw on the European Commission's Economic Sentiment Indicator (a composite index of five separate indicators related to industry, services, retail, consumers and construction) and the Purchasing Managers Index (PMI) for both the manufacturing and services sectors, presented in Figures 17 and 18, respectively. As is evident from both Figures, the imposition of the first lockdown during March and April 2020 led to a steep decline in all indicators, with the services sector index exhibiting the largest drop. Following the gradual easing of the restrictions, both economic sentiment and the PMI started increasing; however only the manufacturing PMI managed not only to return to, but surpassed, its pre-pandemic level.

The imposition of the new wave of restrictions in September led to a temporary deterioration in economic sentiment, which recovered during the last two months of 2020. In terms of the PMI, the restrictive measures had a far more negative impact in the services sector, while the index of manufacturing shows that the sector, despite an initial decline, remained in an expansionary phase.

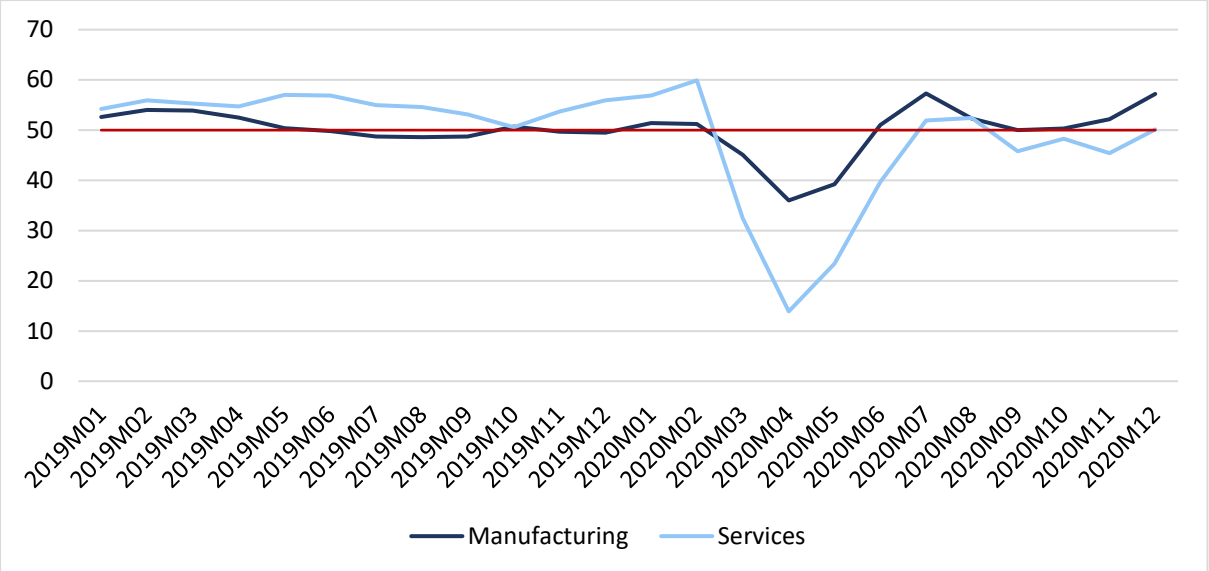
Overall, the end of the year saw significantly improved expectations for both the manufacturing and the services sectors, with the indexes in both sectors recording a strong increase. However, given the apparent strong correlation between the timing of the public health measures and the two indexes, it is expected that both economic sentiment and the PMI (especially that of services) will deteriorate in the first quarter of 2021.

FIGURE 17 ECONOMIC SENTIMENT INDICATOR



Source: European Commission.

FIGURE 18 PURCHASING MANAGERS INDEX



Source: European Commission.

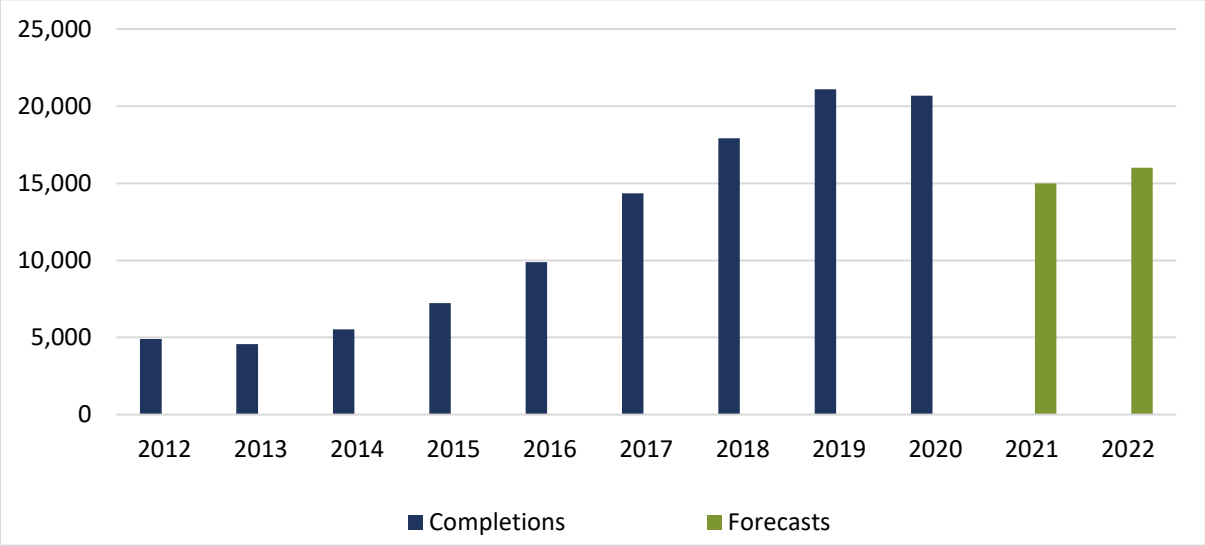
Housing completions

In Q4 2020 there was a significant rise in the number of new housing completions, with 7,400 new residential completions recorded, marking an increase of almost 16 per cent compared to Q4 2019. This led to a total of 20,676 new dwelling completions for 2020, only 1.9 per cent down compared to the 21,087 completions of 2019. As such, it seems that the decision taken in October 2020 to allow work in construction sites to continue contributed to the recovery from the impact of COVID-19 on completions experienced in Q2 2020.

However, the new guidelines for the Level 5 lockdown restrictions introduced in early January 2021, under which most construction work is no longer deemed essential, are likely to have an adverse effect on overall housing supply. If construction work starts again in April 2021, this would imply that for Q1 2021 there will be a considerable reduction in construction output; as a comparison point, the decrease in Q2 2020, when construction work was halted due to the first wave of public health restrictions, was 32.6 per cent.

Additionally, the prevailing environment of heightened uncertainty is likely to lead to a further reduction in investment in new dwellings, especially in the short-run. This decline in supply may further exacerbate the gap with structural demand, an issue analysed in Allen-Coghlan et al. (2020).[8] Under these conditions, we forecast that a total of 15,000 new dwelling completions will be recorded in 2021.

FIGURE 19 HOUSING COMPLETIONS

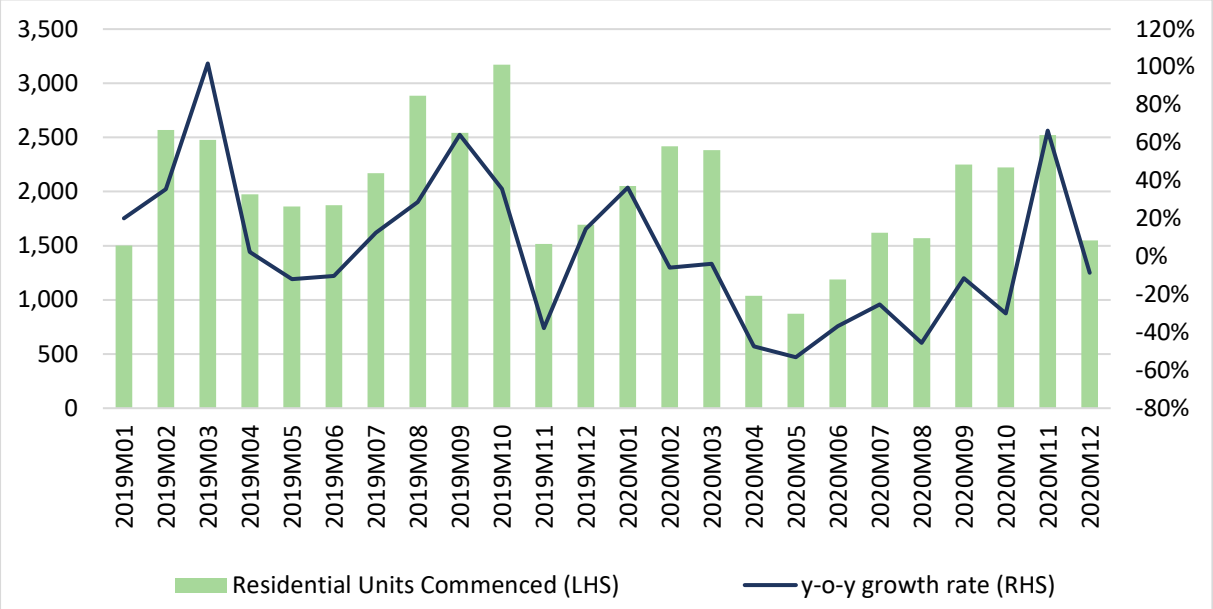


Source: Central Statistics Office.

8 Allen-Coghlan, M., K. McQuinn and C. O'Toole (2020). 'Assessing the impacts of COVID-19 on the Irish property market: An overview of the issues' *Quarterly Economic Commentary,* Autumn: Special Articles.

A first indication of the potential shortages in short-run housing supply is provided by the number of residential commencements. As can be gleaned from Figure 20, despite the mild increase in commencements toward the end of the year, the growth rate of commencements was negative, leading to almost 5,000 fewer commencements in 2020 compared to 2019.

FIGURE 20 RESIDENTIAL COMMENCEMENTS



Source: Housing Agency.

In light of the stricter lockdown restrictions that were put in place in early 2021 and which are envisaged to remain in place until at least the beginning of April 2021, investment activity is expected to be negatively affected during the first quarter of the year.

Under the assumption that the vaccination programme will facilitate the broad relaxation of public health restrictions in the second half of 2021 and that there will not be another Level 5 lockdown this year, we forecast that investment will rebound significantly during the second half of the year. As a result, we expect investment to grow by 5.8 per cent in 2021.

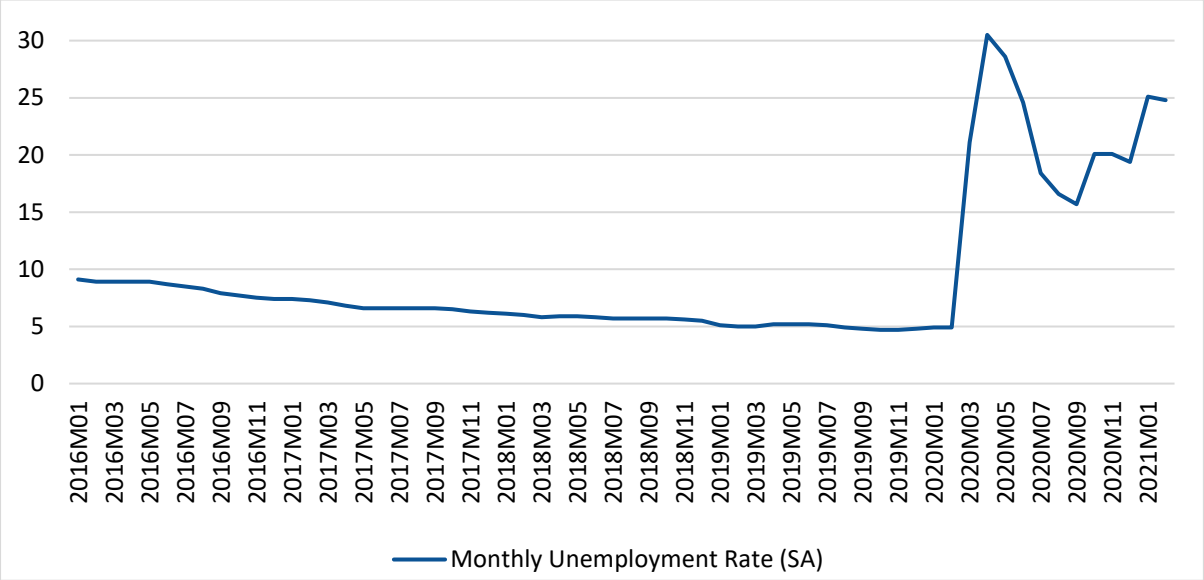
LABOUR MARKET

Key Points

- *The unemployment rate was 24.8 per cent in February 2021.*
- *Approximately 468,850 people claimed the Pandemic Unemployment Payment (PUP) during the first week of March.*
- *Employers received Employment Wage Subsidy Scheme (EWSS) payments for approximately 309,500 qualifying employees in February 2021.*

During the last 12 months, the COVID-19 pandemic has had a substantial impact on the Irish labour market. The significant fluctuations in the unemployment rate since early 2020 reflect the impact of the tightening and loosening of public health restrictions on businesses. The unemployment rate in February 2020 was 4.9 per cent while in February 2021 the COVID-adjusted unemployment rate was 24.8 per cent. The unemployment rate peaked at 30.5 per cent in April 2020. With the loosening of restrictions during the summer of 2020 came a decline in the unemployment rate between May and September 2020. In line with the re-introduction of more stringent public health restrictions, the unemployment rate increased from 15.7 per cent in September 2020 to 20.1 per cent in both October and November. While the unemployment rate fell slightly in December, it increased significantly in January 2021 to 25.1 per cent due to the public health restrictions in place. The average monthly unemployment rate for 2020 was approximately 18.7 per cent. Figure 21 shows the monthly unemployment rate from January 2016 to February 2021.

FIGURE 21 UNEMPLOYMENT RATE BY MONTH (%)

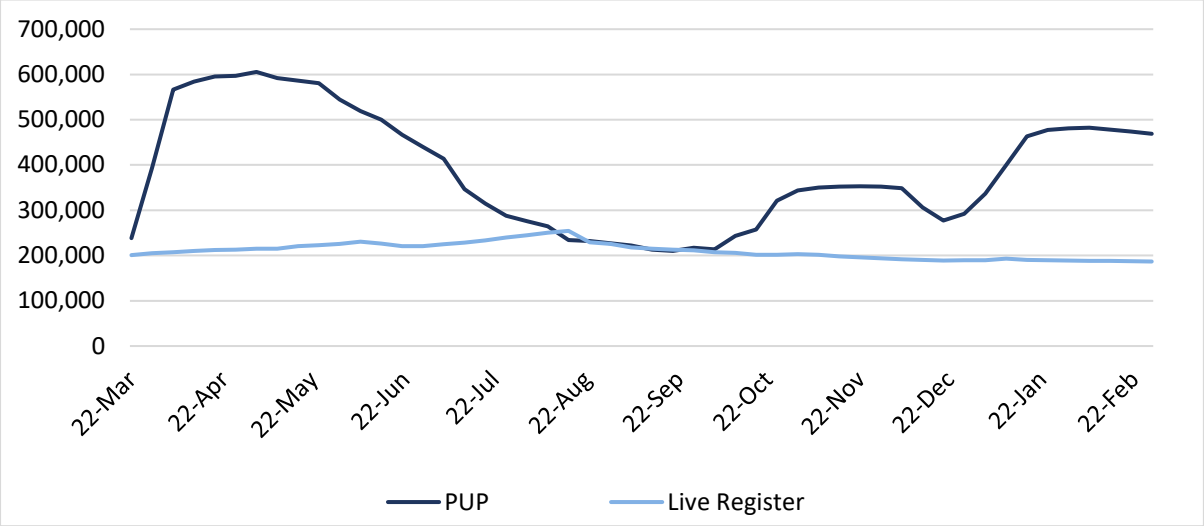


Sources: Seasonally-Adjusted Monthly Unemployment Rate Series and the COVID-19 Adjusted Monthly Unemployment Rate Series. Central Statistics Office.

Note: The COVID-19 Adjusted Monthly Unemployment rate is used from March 2020 onward, rather than the traditional Monthly Unemployment Rate.

Looking at the number of individuals on the Live Register and in receipt of the Pandemic Unemployment Payment (PUP) on a weekly basis can provide further insight into the impact of the pandemic and the public health measures on the number of people without work. Three peaks are evident in the number of people on the PUP and these peaks coincide with the implementation of the strictest public health measures over the last 12 months. The first peak occurred in early May 2020 when the number of individuals in receipt of the PUP was just over 605,000. Restrictions were eased and by the end of September 2020 there were just over 210,000 people in receipt of the PUP. An increase in case numbers prompted the return of more stringent public health restrictions in October 2020. This resulted in the second peak occurring in late November 2020 when over 352,000 people were in receipt of the PUP. While the relaxation of restrictions in December 2020 brought a reduction in the number of PUP claimants, their re-introduction resulted in the third peak in the number of PUP claimants in early February 2021 when over 482,000 were in receipt of the PUP. Figure 22 shows the number of individuals in receipt of the PUP or on the Live Register by week from March 2020 to February 2021.

FIGURE 22 NUMBER OF PEOPLE ON THE PUP AND LIVE REGISTER BY WEEK



Source: Central Statistics Office.

The impact of the pandemic has not been evenly distributed across sectors or age groups with younger workers and public facing sectors faring worse than others. Of those in receipt of the PUP on 2 March 2021, 23.5 per cent were from the accommodation and food sector, 15.9 per cent were from the wholesale and retail trade/repair of motor vehicles sector, and 12.8 per cent were from the construction sector. These three sectors alone account for 52.2 per cent of those PUP recipients. In terms of age, 22.1 per cent of those in receipt of the PUP on 2 March 2021 were aged between 25 and 34 with a further 23.7 per cent under 25.

While the PUP was initially paid at a flat rate of €350, there are now four payment levels (€350, €300, €250 and €203) based on the amount previously earned. Of those in receipt of the PUP on 2 March 2021, 49.2 per cent received €350 while the remainder of recipients were relatively equally distributed across the other three payment levels. Of those who previously worked in the accommodation and food sector, 58.1 per cent received a PUP payment of less than €350 and this highlights the concentration of low paid workers within this sector. Table 2 shows the number of people in receipt of the PUP on 2 March 2021 broken down by age and payment level respectively.

TABLE 2 BREAKDOWN OF PUP RECIPIENTS BY AGE AND PAYMENT LEVEL

Age (Years)	Number ('000)	Percentage
<25	111.1	23.7
25-34	103.6	22.1
35-44	107.1	22.8
45-54	83.9	17.9
55+	63.1	13.5
Total	468.8	100.0

Payment (€)	Number ('000)	Percentage
350	230.5	49.2
300	79.3	16.9
250	76.3	16.3
203	82.8	17.7
Total	468.8	100.0

Source: *Payments Awarded for COVID-19 Pandemic Unemployment Payment and Enhanced Illness Benefit – Statistics*. Published on 2 March 2021 by Department of Social Protection.
Note: Figures refer to those in receipt of the PUP on 2 March 2021.

The level and composition of those employed has also been affected. According to the Labour Force Survey there were an estimated 2,306,200 people at work in Q4 2020. This figure does 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. To address this problem, a COVID-19 adjusted estimate of employment has been produced. The CSO estimates that 1,970,069 persons aged 15 and over were in employment in December 2020 (the end of Q4).[9] This figure represents a decline of 5.2 per cent when compared to the COVID-adjusted level of employment at the end of Q3 2020 (2,078,058 persons), and is 16.5 per cent lower than the level of employment in Q4 2019 (2,361,200 persons).

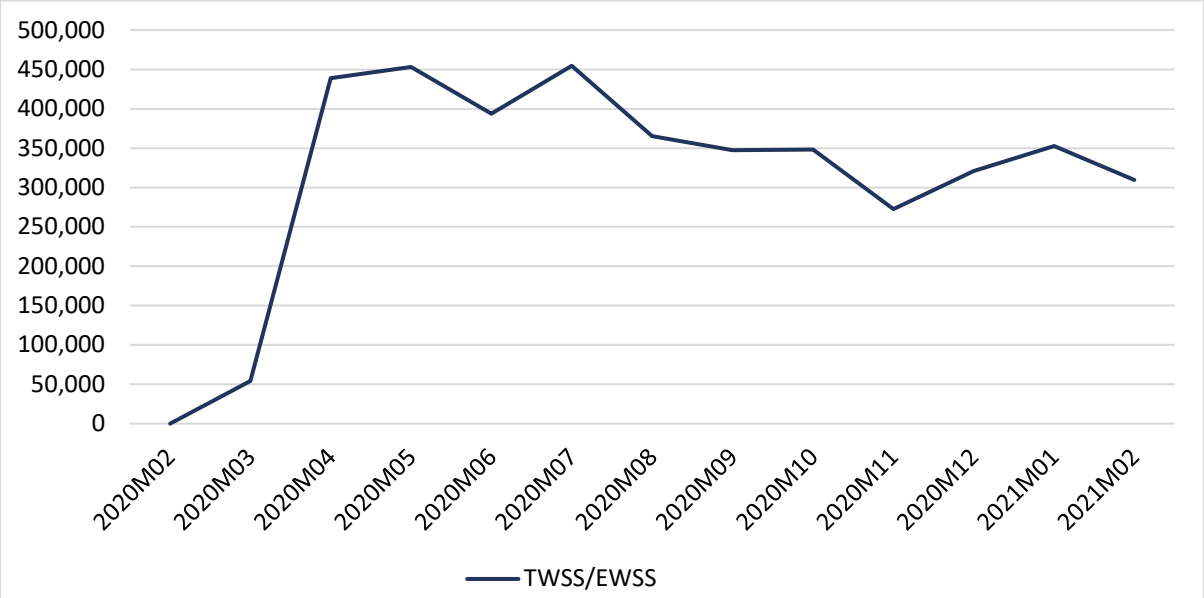
Many of those still working are being supported by a wage subsidy scheme. These schemes allow employees, whose employers were negatively impacted by the pandemic, to be supported directly through their employer's payroll system. The Temporary Wage Subsidy Scheme (TWSS) ran from 26 March 2020 to 31 August 2020. Approximately 365,000 employees were being directly supported by the scheme when it closed in August. The total cost to the Exchequer of operating the TWSS for its duration was just under €2.9 billion. While the TWSS was active, approximately 116,100 people regained employment and transitioned from the PUP to the TWSS. Approximately 22,000 individuals supported by the TWSS lost their jobs and transitioned from the scheme to the PUP. Approximately 260,900 individuals moved from the TWSS to non-TWSS employment.[10] This shows the significant role that wage subsidy schemes played in helping individuals retain/ regain their jobs during the pandemic.

9 For more information see: https://www.cso.ie/en/releasesandpublications/er/lfs/labourforcesurveylfsquarter42020.

10 For more details see: https://www.revenue.ie/en/corporate/documents/research/statistical-overview-of-covid-19-twss.pdf.

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. The EWSS provides a subsidy to qualifying employers based on the number of eligible employees on their payroll. EWSS payments were made for 309,500 employees in February 2021. This is down from 352,500 employees in January 2021. Figure 23 shows the number of individuals on the TWSS from February 2020 to August 2020 and the number of qualifying employees for whom the employer received an EWSS payment thereafter.

FIGURE 23 NUMBER OF EMPLOYEES ON WAGE SUBSIDY SCHEMES BY MONTH



Source: Revenue Commissioners.
Note: EWSS back-payments for 30,700 employees were made with reference to the months of July and August combined but they are not included on this graph.

Recent work by the CSO has highlighted the role that the COVID-19 income supports (PUP, TWSS and EWSS) have played in supporting incomes during 2020.[11] Their work compares the actual changes in earnings/incomes (employment earnings plus selected COVID-19 income supports) with a counterfactual scenario where no COVID-19 income supports were available and individuals did not receive other forms of income support from the Department of Social Protection. In the absence of COVID-19 income supports, median weekly earnings would have fallen by 15 per cent in the year to Q2 2020 and this compares to a drop of only 6.5 per cent when the COVID-19 income supports are taken into account. While this does illustrate the positive role that the COVID-19 income supports have played, it does not take account of the fact that automatic stabilisers such as Jobseeker's Benefit

11 CSO (2020). *Impact of Selected COVID-19 Income Supports on Employees – Insights from Real Time Administrative Sources, Series 1.* Available at: Results and Analysis – CSO – Central Statistics Office.

and Jobseeker's Assistance, although less generous in some circumstances, would have played a similar role.

Table 3 displays the monthly cost to the Exchequer of pandemic-related unemployment and of the accompanying supports in terms of income tax foregone, extra welfare payments (including the PUP) and the EWSS. In the absence of the PUP or the EWSS the monthly net Exchequer cost of the pandemic labour market shock is estimated to be €144 million per 100,000 displaced workers. With the PUP and EWSS in operation this is estimated to increase by €49 million to €193 million per 100,000 displaced workers. This shows that most of the cost of the current suite of policies would have been incurred in their absence. This is because the existing tax-benefit system would have helped stabilise incomes through increased Jobseeker's Benefit or Assistance payments for example. The EWSS also results in higher income tax if employers who receive the subsidy pay employees their pre-pandemic wage.

TABLE 3 THE COST OF COVID-19 RELATED UNEMPLOYMENT IN TERMS OF DIRECT TAX AND WELFARE

	Cost per month for 100k displaced workers (€ million)	
	COVID – no policy response*	COVID – with policy response**
Change in earnings	-215	-155
(a) Change in tax/SIC revenue	-72	-54
(b) Change in welfare expenditure	72	69
Pandemic Unemployment Payment	*0*	*61*
(c) Employment Wage subsidy scheme	0	70
Net Exchequer impact (a-b-c)	**-144**	**-193**

Source: SWITCH v3.1 2021 direct tax and welfare policies applied to 2017 Survey of Income and Living Conditions data, uprated to 2021 income levels.

Notes: *Assumes 50 per cent of jobs supported by the EWSS would have been lost in the absence of this policy.
**Assumes employers who avail of the EWSS pay employees their pre-pandemic wage.
SIC stands for social insurance contributions.

The average monthly unemployment rate for 2020 was 18.7 per cent. We estimate that the unemployment rate in Q4 of 2021 will be approximately 10 per cent with the average unemployment rate for 2021 overall being 16.7 per cent. We believe it is unlikely that the unemployment rate will approach its pre-COVID low of 4.7 per cent until 2023 at the earliest. We forecast that unemployment will average 7.3 per cent for 2022 as we expect growth in consumption, exports and investment to drive an improvement in the labour market.

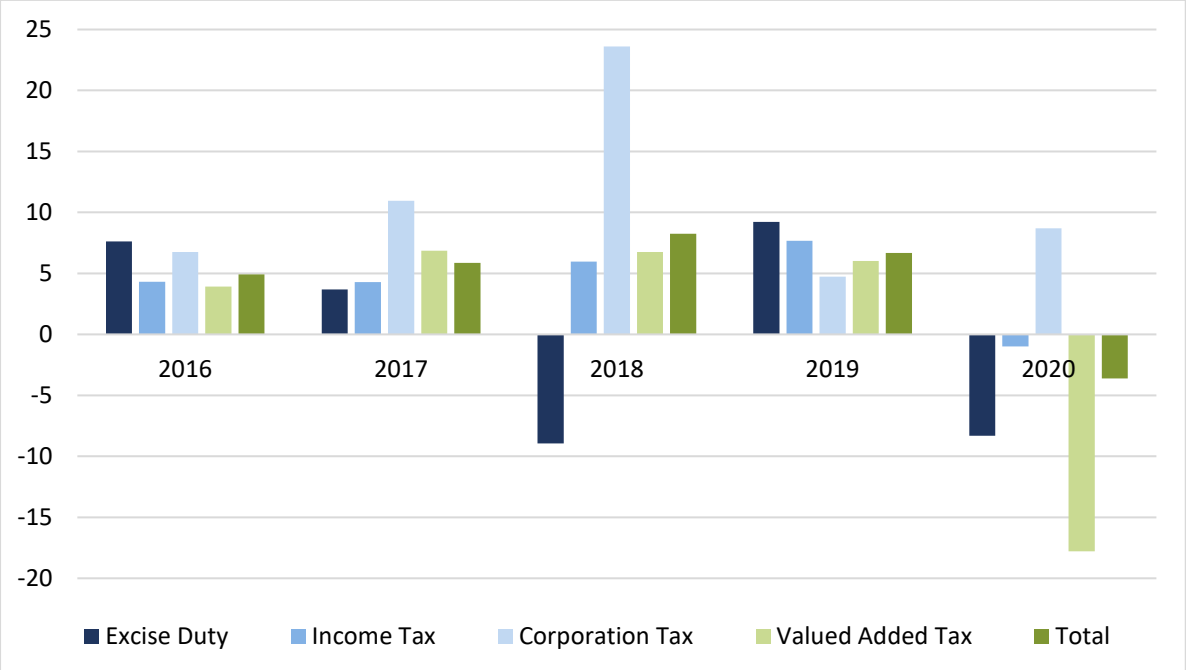
PUBLIC FINANCES

Key Points

- *Given the scale of the Level 5 lockdown, a significant deficit is expected in 2021.*
- *A deficit is likely again in 2022.*
- *An alternative measure of debt sustainability suggests more scope for fiscal policy.*

Figure 24 plots the growth rates for the main taxation items for 2020.

FIGURE 24 ANNUAL CHANGES IN MAJOR TAX SUB-COMPONENTS 2020 (%)



Source: QEC calculations.

While overall taxation receipts declined by just over 3.6 per cent, this must be seen as a relatively benign impact on the public finances given the severity of the economic shock in 2020. Income taxation receipts were only down by 1 per cent for the year confirming the trend noted in *Commentaries* in 2020 which highlighted the disproportionate impact of the economic shock on the lower paid in the economy. Corporation tax receipts continued the trend of recent years with an annual increase of 8.7 per cent. Of the taxation items most impacted, VAT witnessed an annual decline of almost 18 per cent while Customs saw a fall of 20.9 per cent.

While income tax receipts were only down 1 per cent, total PRSI receipts fell by 8.3 per cent in 2020. The rate of decline is greater than the fall in income tax receipts as PRSI is less progressive and captures more of the impact of the job losses during the course of the year.

For 2020, the increased expenditure in areas such as social protection, along with the overall decline in taxation revenues, resulted in a General Government Balance deficit of €19.7 billion or 5.4 per cent of GDP. In 2021, under our scenario that there is a Level 5 lockdown in Q1 2021 with a vaccine being rolled out to the general public in the latter half of the year, we expect most tax headings to register significant growth as can be seen from Table 4. We have a relatively conservative forecast for corporation taxes of zero growth in the present year. This reflects the ongoing concern as to the sustainability of recent increases in this category.

We assume that the Government will continue to provide the income support schemes for the duration of the year. This will require increased levels of Government expenditure again in 2021. Overall, in 2021, we forecast the deficit will be €18.5 billion in 2021 or 4.7 per cent of GDP.

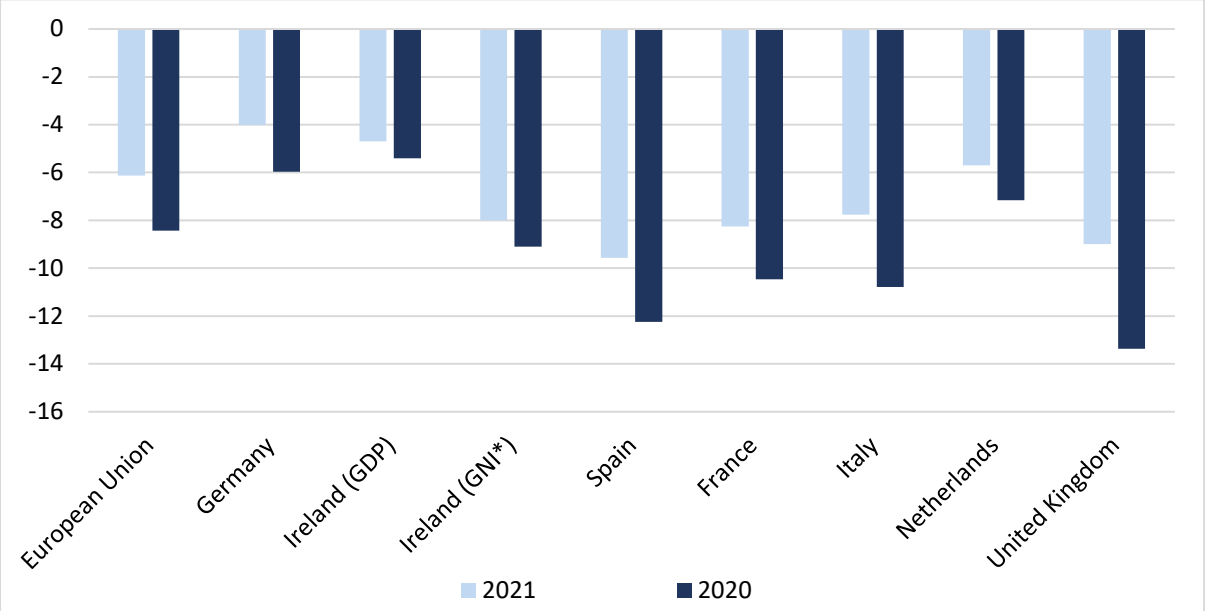
TABLE 4 FORECAST OF KEY TAXATION AGGREGATES IN 2021 (%)

Tax	2020 actual growth (%)	2021 forecast growth (%)
Income	-1.0	4.0
VAT	-17.8	25.0
Corporation	8.7	0.0
Excise	-8.3	15.0
Total	-3.6	8.8

Sources: Department of Finance and QEC.

Figure 25 plots the forecast General Government Balance for both 2020 and 2021 for a select set of European countries. Notwithstanding the fact that Ireland had arguably one of the most restrictive set of public health lockdowns across Europe, our general balance is set to be one of the smallest for both years.

FIGURE 25 FORECAST GENERAL GOVERNMENT BALANCE (% OF GDP) FOR SELECT EUROPEAN COUNTRIES 2020 AND 2021

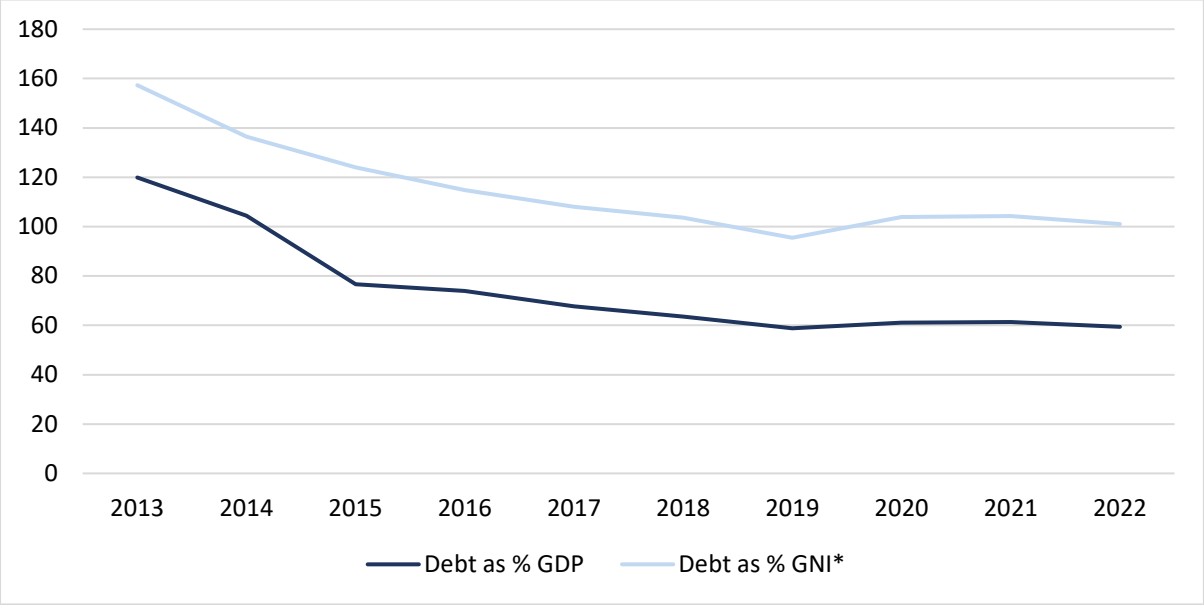


Source: Eurostat.

From a sovereign funding perspective, the National Treasury Management Agency (NTMA) has large cash balances and does not have any bonds maturing in 2021. The Agency expects that the ECB's Pandemic Emergency Purchase Programme (PEPP) along with its pre-COVID Public Sector Purchase Programme (PSPP) will continue to underpin the Irish bond market.

We summarise the resulting implications for our forecasts of the debt-to-output ratios in Figure 26. At the end of 2020, the debt-to-GDP ratio stood at 61 per cent while debt-to-GNI* increased to almost 104 per cent. In 2019, the debt-to-GNI* ratio had fallen to 95 per cent. In 2021 both ratios will increase to 61.3 and 104.2 per cent respectively; however in 2022, we believe the pace of recovery in the domestic economy will cause those ratios to decline marginally to 59.4 per cent of GDP and 101.1 per cent of GNI*.

FIGURE 26 DEBT-TO-GDP AND DEBT-TO-GNI*RATIOS (%)



Source: QEC calculations.

In the previous *Commentary*, a Box by Allen-Coghlan and McQuinn examined the potential sustainability of this debt under plausible future growth scenarios for the economy. That analysis used the standard debt-to-GDP metric in terms of assessing future sustainability issues. In a follow-up Box, Allen-Coghlan and McQuinn assess fiscal sustainability with a different approach, in particular the ratio of real debt interest payments-to-GDP which has recently been advanced by Furman and Summers (2020).[12]

12 Furman, J. and L. Summers (2020). 'A Reconsideration of Fiscal Policy in the Era of Low Interest Rates' Brookings Institute, Discussion Draft.

BOX B AN ALTERNATIVE MEASURE OF DEBT SUSTAINABILITY

A Box in the Winter *Commentary* explored the issue of Irish debt sustainability in the context of the significant deficit run by the Irish government in 2020 in response to the COVID-19 pandemic. Utilising a range of output growth and interest rate scenarios it was shown that even in a situation where growth was below baseline due to the lasting impact of the pandemic, general government debt was sustainable over the medium term in a low interest rate environment. In that analysis the standard debt-to-GDP ratio was used as a gauge for the sustainability of Irish debt levels. This metric is commonly used in the debt sustainability literature with a higher value of the ratio (relative to its historical value and/or that of other countries) indicating a greater risk of default. As well as this, the debt-to-GDP ratio is also a central component of the fiscal rules of the European Union's Stability and Growth pact where a 60 per cent debt/GDP threshold is imposed on Member States.

However, in light of the persistent low interest rates in the Euro Area over the last decade, the relevance of the debt-to-GDP ratio has been called into question. The accommodative monetary policy of the ECB has driven debt service costs of ECB Member States to record low levels. This means that the debt burden for any given value of the debt-to-GDP ratio is less now than it was in the past. For example, the debt-to-GDP ratio for Ireland is estimated to be 61.8 per cent in 2021. In 2009 the debt-to-GDP ratio was at a comparable level of 61.5 per cent. However, while yields on ten-year Irish government bonds averaged around 0 per cent in 2021, in 2009 the same bond yields averaged around 5 per cent. Therefore the Irish government has much greater ability to service its debt in 2021 than in 2009, a result which would not be evident from comparing the debt-to-GDP ratios between the two periods. The Irish State also lost access to sovereign debt markets in 2010 due to the scale of the global financial crisis. Results such as this cast doubt on the validity of using the debt-to-GDP ratio as a measure of debt sustainability, as well as the rigidity of rules that use this metric such as the 60 per cent limit in the Stability and Growth Pact.

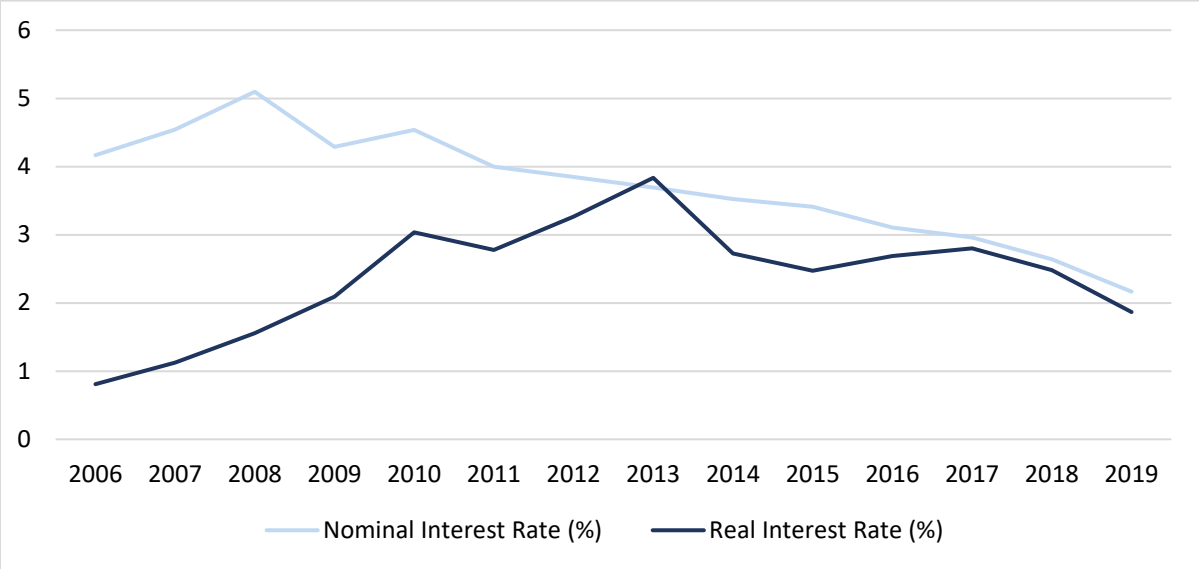
An alternative metric proposed by Furman and Summers (2020) is the real interest payments-to-GDP ratio. This measure of debt sustainability has the advantage over debt-to-GDP in that it explicitly takes into account debt service payments and so measures the affordability of debt to the State in any given period. This measure is specified as per Equation 1:

$$\frac{r_t * D_{t-1}}{GDP_t} = \frac{(i_t - \pi_t) * D_{t-1}}{GDP_t} \qquad (1)$$

Where r_t is the real interest rate in period t, i_t is the nominal interest rate, π_t is the inflation rate, D_{t-1} is the gross national debt at the end of the prior period and GDP_t is the nominal gross domestic product.

The nominal interest rate is the average interest rate to the Exchequer in a given year. As most of the stock of the debt is issued at a fixed rate, an interest rate shock would only apply to a relatively small proportion of the debt. As per Furman and Summers (2020) the inflation rate is taken as the five-year moving average to give a measure closer to the concept of expected inflation. The real interest rate is simply the nominal interest minus the rate of inflation. As can be seen in Figure A both the nominal and real interest rate in Ireland have been in decline since 2013.

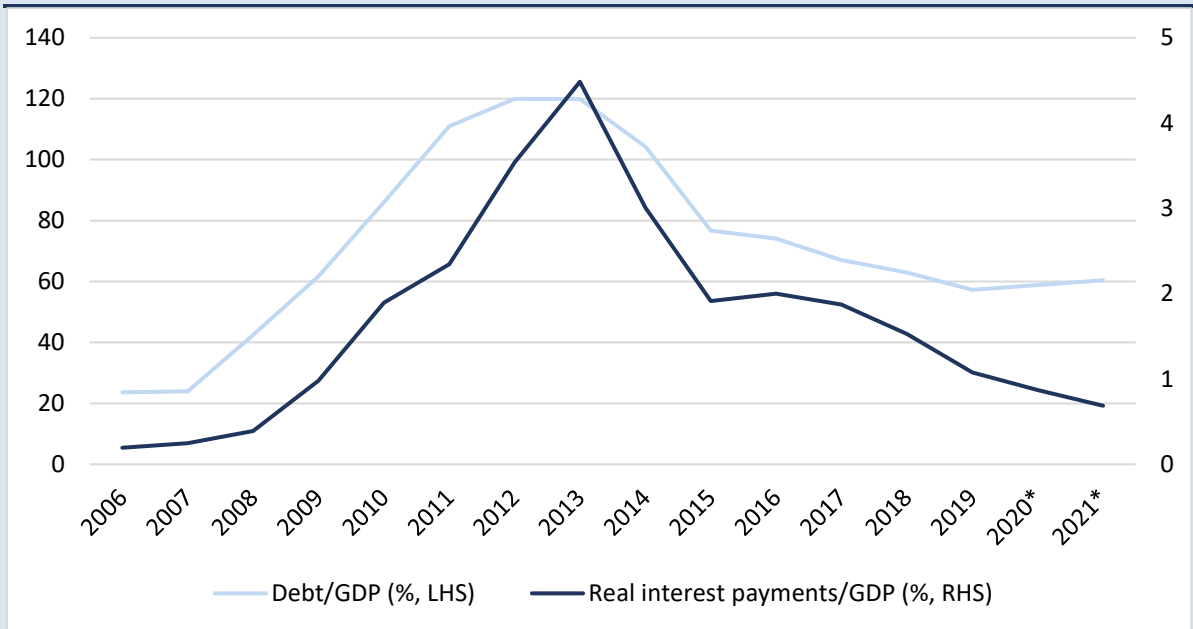
FIGURE A NOMINAL AND REAL AVERAGE INTEREST RATE



Source: Authors' calculations.

In order to estimate Equation (1) for 2020 and 2021 we use GDP forecasts from the latest QEC, gross debt and interest payment forecasts from Budget 2021 and inflation forecasts from the European Commission (averaged over five years). The real interest rates as a share of GDP as well as the debt-to-GDP ratio are presented in Figure B.

FIGURE B REAL INTEREST PAYMENTS AND DEBT-TO-GDP



Source: Authors' calculations.

Pre-2019 both debt/GDP and real interest payments/GDP moved in a similar manner. After the financial crisis the proportion of Irish debt as a percentage of GDP increased rapidly as did the interest payments on that debt. Both of these metrics then started to decline significantly after 2013 as the economy began to recover after the recession. However, in 2020 and 2021 it is clear that there is a diversion between the two measures. While the

debt-to-GDP ratio has increased as a result of the expected large deficits being run by the government in these years, the real interest payments as a share of GDP continue to decline with the ratio expected to decline to its lowest rate since 2008 in 2021. This is as a result of the declining real interest rates on Irish debt in 2020 which are expected to continue into 2021.

While a hard rule has not yet been proposed around the real interest payments-to-GDP measure, it would appear that, based on this approach, the Irish government would have more scope to continue an expansionary fiscal policy than a rule based on the debt-to-GDP ratio. Indeed, given the accommodative monetary policy that has been run by the ECB for the last number of years and the limited scope for further expansionary monetary policy, fiscal expansion may not only be feasible but may be warranted in an environment where economic growth is below potential.

However, the scope for such fiscal expansion is conditional on low interest rates being maintained going forward. Given that the ECB adjusts its monetary policy based on inflation with a target of 2 per cent, the most likely trigger of an increase in interest rates would be an increase in prices across the Eurozone. At the present time inflation remains subdued despite the unprecedented monetary stimulus. Were prices to start increasing and the ECB to roll back some of its accommodative monetary policy[13] then we would likely start to see an increase in the interest rates on Irish government debt, increasing debt financing costs which in turn would limit the scope for fiscal stimulus.

References

Furman, J. and L. Summers (2020). 'A Reconsideration of Fiscal Policy in the Era of Low Interest Rates'. Brookings Institute, Discussion Draft.

This Box was prepared by Kieran McQuinn and Matthew Allen-Coghlan.[14]

[13] The ECB is bound by 'the issuer limit' which refers to the maximum share of an issuer's outstanding securities that the ECB is prepared to buy. The issuer limit of 33 per cent is a means to safeguard market functioning and price formation as well as to mitigate the risk of the ECB becoming a dominant creditor of Euro Area governments.

[14] Note Matthew Allen-Coghlan was an employee of the ESRI when this Box was written.

General Assessment

The sharp rise in COVID-19 infections through late Q4 2020 prompted the Irish authorities to re-impose a Level 5 series of restrictions from 30 December 2020 to 5 April 2021 at the earliest. Compared to the measures that were introduced in September 2020, the latest measures are quite restrictive with all schools closed and most construction,[15] for example, now included in the general shut down.

The significant tightness of the restrictions, along with the relatively long length of their duration, will have an adverse impact on the economic recovery which had been apparent throughout the latter part of 2020. The most obvious manifestation of this is in the labour market where the unemployment rate which had declined to less than 17 per cent in Q3 2020, is now likely to average over 25 per cent in Q1 2021.

The Winter 2020 *Commentary* had envisaged a further series of Level 5 restrictions for six weeks in the first half of 2021 in response to the easing of the measures prior to Christmas 2020. As the current restrictions exceeded our previous expectation, we are now revising downwards our growth expectations for the Irish economy in 2021. We still believe the economy will register positive growth of 4.4 per cent in the present year. The expected path for unemployment in 2021 is also revised upward, albeit marginally. We now expect the unemployment rate to peak in Q1 2021 before falling gradually thereafter. By the end of the year the rate is expected to be just above 10 per cent. All of this assumes that the vaccination programme will facilitate the broad relaxation of public health restrictions in the second half of 2021 and that there will not be another Level 5 lockdown this year.

Our first set of forecasts for 2022 reflect our belief that the Irish economy is well positioned to recover strongly once the threat from COVID-19 recedes significantly. As noted in the Output section, the Irish economy alone amongst European countries experienced an actual positive growth rate in 2020, while the typical contraction for most economies was somewhere in the region of 6 per cent. We believe the Irish economy will grow by 5.2 per cent in 2022 with unemployment falling back to an average of 7.3 per cent for the year. Based on our forecasts, we believe it is unlikely that the unemployment rate will approach its pre-COVID low of 4.7 per cent until 2023 at the earliest.

---

15 Certain types of construction were exempt from the restrictions. These included certain social housing projects and other projects deemed to be essential from a health and education perspective as well as the repair, maintenance and construction of critical transport and utility infrastructure.

A notable feature of the impact of COVID-19 in Ireland has been a very dramatic increase in household savings. With fewer opportunities to undertake expenditure due to public health measures, households have on average been accumulating savings deposits to a greater extent in Ireland than in other European countries. These savings are a potential source of stimulus for the economy when the public health phase of this crisis eases. If households run down these excess savings, we expect consumption to increase. There are a number of uncertainties relating to the extent to which these savings may translate into expenditure which we have noted. In the present *Commentary*, we assume that widescale vaccination will occur by the second half of 2021 and households will begin to run down these savings. This stimulus is likely to continue into 2022.

The nature of the Level 5 restrictions introduced in early 2021 means that the fiscal accounts are likely to be in a more adverse state for the present year than was previously thought. This is because more people are likely to be unemployed for a longer period than was originally forecast. Consequently, we now believe that a deficit of 4.7 per cent or €18.5 billion is likely for the present year. That will result in the debt-to-GDP ratio increasing from 58.8 per cent in 2019 to just over 61 per cent by the end of 2021.

This increase in the debt levels has inevitably given rise to questions as to whether a contractionary fiscal policy will be required to pay for the additional costs of COVID-19 to the Exchequer. While it is still too early to conclusively answer this, a Box in the public finances section by Allen-Coghlan and McQuinn examines an alternative measure of debt sustainability which has recently been suggested in the literature. The ratio of real interest payments to GDP proposed by Furman and Summers (2020)[16] is a measure of debt sustainability. Its main advantage over the traditional debt-to-GDP ratio is that it explicitly takes into account debt service payments and so measures the affordability of debt to the State in any given period. The application in an Irish context in the Box suggests that the Irish government would have more fiscal policy flexibility than if debt sustainability were measured with the debt-to-GDP ratio.

More generally, at a European level there is set to be considerable debate about the future conduct of fiscal policy over the coming months; the EU Commission is set to review the European fiscal framework after the forthcoming German

16 Furman, J. and L. Summers (2020). 'A Reconsideration of Fiscal Policy in the Era of Low Interest Rates' Brookings Institute, Discussion Draft.

elections. Recent comments by Schnabel (2021)[17] are interesting in that regard. Schnabel (2021) calls for unconventional fiscal policies which support the efforts of the European Central Bank (ECB) when inflation is below its target level. She points out that in a European context, increased public investment, for example, has been found to 'crowd in' as opposed to 'crowd out' private investment.

The new European fiscal framework needs to be framed in such a manner which, while ensuring a return to fiscal discipline amongst Member States in the medium term, facilitates increased levels of government investment in key physical and social infrastructure over the same period. Fiscal rules could be formulated which allow for Member State governments to engage in greater capital investment in areas such as social and affordable housing and green technologies on an ongoing basis, but which also ensure that, after the pandemic, current expenditure is maintained at a sustainable level. In considering the response of European fiscal policy, it is worth keeping in mind the scale and scope of the Biden fiscal stimulus outlined recently in the United States.

In terms of the debt-to-GDP ratio, another key issue in an Irish context is which output indicator to use in order to accurately capture the level of domestic economic activity and the economic welfare of those living in Ireland. In a Box in the *Commentary*, FitzGerald follows up a previous paper proposing a new output variable for this purpose; Net National Product (NNP). By moving to NNP, both depreciation of MNEs and non-MNEs is deducted from the overall output level. Detailed data derived from the CSO Institutional Sector Accounts for the individual industrial sectors are then used to add back in the subsequent statistical discrepancy in the National Accounts. FitzGerald estimates, based on the latest data for the institutional sectors, that economic welfare (NNP) in the Irish economy grew on average by 5 per cent per annum over the period 2013 to 2019. While this is somewhat below the average GDP rate for the period (8.6 per cent), it still demonstrates the extent to which the Irish economy had recovered from the global financial crisis (GFC).

A Research Note to the *Commentary* by McQuinn re-examines the relationship between house prices and mortgage credit. The Note updates earlier analysis by Fitzpatrick and McQuinn (2007),[18] which concluded that a mutually reinforcing relationship existed between house prices and mortgage credit in an Irish context. This relationship was central to the emergence of the domestic credit bubble

---

17 Schnabel I. (2021). 'Unconventional fiscal and monetary policy at the zero lower bound', Keynote speech by Isabel Schnabel, Member of the Executive Board of the ECB, at the Third Annual Conference organised by the European Fiscal Board on 'High Debt, Low Rates and Tail Events: Rules-Based Fiscal Frameworks under Stress'.

18 Fitzpatrick T. and K. McQuinn (2007). 'House prices and mortgage credit: Empirical evidence for Ireland', *The Manchester School*, Vol. 75, Number 1, pp.82-103.

preceding 2007. In updating the analysis, McQuinn concludes that the relationship still holds. Furthermore, the analysis also demonstrates that the average mortgage loan issued is approximately 8 per cent below the level suggested by the model. This would suggest that the macroprudential policy regime introduced by the Central Bank of Ireland in 2015 is limiting the increase in the average loan amount to be below that which it otherwise would be. Of course, by restricting the increase in the average loan amount the regulations are then, in turn, restricting the increase in house prices.

Of considerable importance for the provision of credit to the Irish economy, is the long-run structure and composition of the banking sector in Ireland. The recent announcement from Ulster Bank that it is to exit from the provision of banking services in Ireland is a blow to the competitive set up of the industry. Ireland's banking sector is concentrated, and with the loss of Ulster Bank, further competitive dynamics may be eroded. A competitive banking system can help an economy through the provision of sufficient financing at a competitive price for business and households. Policies to facilitate competition in the sector should be explored.

In a recent economic commentary[19] the IMF has pointed to a notable feature of the international COVID-19 crisis, which has been a marked reduction in corporate insolvencies internationally. This dynamic has also been found in Ireland. The extraordinary policy supports and expenditure mitigation measures (such as payment breaks) that have been extended to enterprises have undoubtedly allowed many affected firms to weather the COVID-19 economic storm. The extent to which severely affected firms and industries can recover will depend on many factors but it is likely some economic adjustments will occur and present survival challenges to some enterprises.

19 IMF (2021). *World Economic Outlook Update January 2021*. Available at: World Economic Outlook Update, January 2021: Policy Support and Vaccines Expected to Lift Activity (imf.org).

Research Note

HOUSE PRICES AND MORTGAGE CREDIT: EMPIRICAL EVIDENCE FOR IRELAND – AN UPDATE

Kieran McQuinn[1]

ABSTRACT

In this Note, the results of an earlier paper by Fitzpatrick and McQuinn (2007), which estimates a long-run mutually reinforcing relationship between credit and house prices in the Irish market, are updated. The Note finds that most of the results of the earlier paper, which were estimated over the period 1981 to 1999, also hold when estimated over the longer time period 1981 to 2020. This is somewhat surprising as the period 2000 to 2020 witnessed significant changes in the Irish housing and credit markets. The results also indicate that, post-2018, the actual average mortgage loan amount is somewhat below the value suggested by the model. This may be due to the adoption of a suite of macroprudential policies by the Central Bank of Ireland in 2015.

1. INTRODUCTION

Fitzpatrick and McQuinn (2007) (henceforth FM) provide an important characterisation of the relationship between house prices and mortgage credit in the Irish residential property market. The paper builds on earlier work by McQuinn (2004), which specified a model of Irish house prices. However, the FM model added a credit channel to the housing model and, in particular, examined the possibility of a mutually reinforcing relationship between house prices and mortgage credit. The establishment and quantification of such a relationship was particularly telling, given the subsequent difficulties which arose in the Irish property and banking sectors, with the emergence of a credit-fuelled bubble post-2003. The emergence of this bubble resulted in Irish credit institutions being particularly vulnerable to the international financial crisis of 2007/2008. Indeed, the difficulties in the Irish banking sector were the main reason for the Irish Government entering into a programme of support with the European Union (EU), the European Central Bank (ECB) and the International Monetary Fund (IMF) (commonly referred to as the 'Troika') in October 2010.[2]

The FM model was estimated over the time period 1980 to 1999. Given the developments in the Irish housing and banking sector since then, it is informative

[1] The author is an economist at the Economic and Social Research Institute (ESRI). The author is solely responsible for the views expressed in the paper.

* kieran.mcquinn@esri.ie

to examine how the main results of the model stand up over the longer period 1981 to 2020. Furthermore, can the model yield any insights into the relationship between house prices and mortgage credit in the Irish market today? This is particularly appropriate given the introduction of macroprudential rules by the Central Bank of Ireland in February 2015. These regulations place ceilings on the proportion of mortgage lending at high LTVs and LTIs by domestic financial institutions. The objective of these measures is to increase the resilience of the banking and household sectors to the property market and to try and reduce the risk of bank credit and housing price 'spirals' from emerging in future.[3]

2. MODEL

The FM model can be summarised as follows:

$$P_t = f(Y_t, D_t, C_t, H_t) \quad (1)$$

$$C_t = f(Y_t, r_t, P_t) \quad (2)$$

$$S_t = f(P_t, P_t/B_t, F_t) \quad (3)$$

$$H_t = (1 - \sigma)H_{t-1} + S_t \quad (4)$$

where (1) is an inverted housing demand expression augmented to include a credit channel with house prices P_t being a function of disposable income per capita Y_t, demographics D_t, the average loan amount C_t and the housing stock H_t. The average loan amount (2) is assumed to be a function of income per capita, house prices and the real interest rate r_t. A housing supply function (3) is also included which specifies that actual completions S_t are a function of house prices, house prices deflated by builders' costs B_t and land costs F_t. The system is completed by a perpetual inventory expression (4) for the housing stock.

In the original application, several different estimators were used to deal with the endogeneity issue associated with the credit and house price variables.[4] In particular the Stock and Watson (1993) dynamic ordinary least squares or DOLS approach, which explicitly allows for potential correlation between the explanatory variables and the error process and the Philips-Hansen (1990) fully modified ordinary least squares FM-OLS, which allows for statistical inference within multivariate regressions where the regressors have I(1) processes. The results of these two estimators are then compared with what Hyashi (2000) refers to as static ordinary least squares (SOLS). Given the possibility of

[3] In particular, for non-first-time buyers purchasing a primary dwelling, a limit of 80 per cent LTV will now exist, while lending for primary dwelling purchases above 3.5 times LTI is now restricted to no more than 20 per cent of that aggregate value. The regulations are somewhat more lenient for first-time buyers.

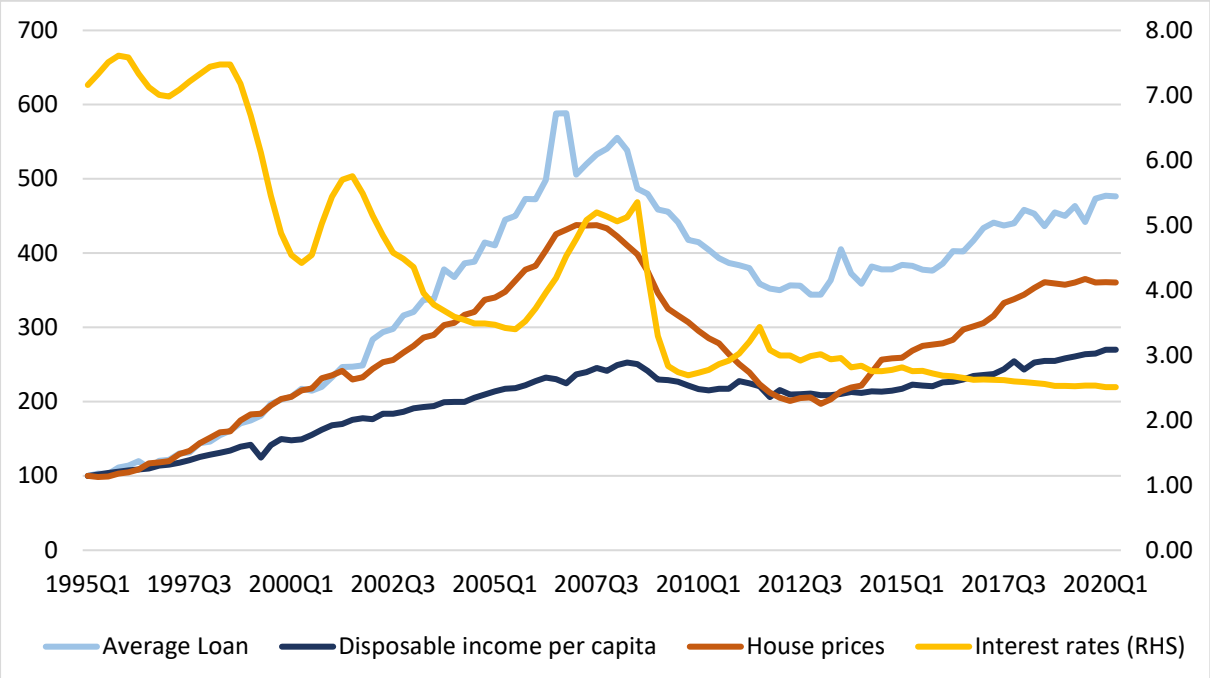
[4] In the present exercise, the same data sources are used as the original model.

endogeneity, no inference on the basis of t-stats is possible with the latter estimator.

3. RESULTS

Figure 1 plots some of the main data used in the analysis.

FIGURE 1 SELECT IRISH HOUSING AND MACROECONOMIC DATA: 1995-2020



Source: Author's calculations.
Note: The average loan size, disposable income and house prices are in index form (1995Q1 = 100). Interest rates are in percentages and can be read on the right-hand axis.

The data are plotted from 1995 to 2020. From both the loan and house price data, the remarkable increase in the period 1995 to 2007 is clearly apparent with the subsequent decline between 2008 and 2013 equally obvious. It is clear that both house prices and average mortgage credit have grown persistently in the period since 2013. What is also evident from the data is, notwithstanding the period after the 2007/2008 crisis, the remarkable improvement in macroeconomic variables over the 1995 to 2020 period. The consistent lowering of mortgage interest rates coupled with the strong growth in income has ultimately fuelled the sustained increase in housing demand over the period.

Table 1 compares the results of the three estimators for Equations (1) and (2) above for the old (1981-1999) and longer (1981-2020) time periods.

TABLE 1 LONG-RUN SINGLE EQUATION FOR HOUSE PRICES AND MORTGAGE CREDIT 1981 TO 1999 AND 1981 TO 2020

	1981-1999 (N=80)					
D. Variable	House Prices (P)			Credit (C)		
	DOLS	SOLS	FM-OLS	DOLS	SOLS	FM-OLS
Y_t	0.914	0.745	0.838	1.04	1.02	1.05
	(5.911)		(4.618)	(2.924)		(6.323)
r_t				0.007	0.009	0.009
				(1.771)		(4.025)
C_t	1.327	1.328	1.315			
	(13.954)		(11.416)			
P_t				0.514	0.519	0.497
				(2.656)		(4.710)
H_t	-1.245	-1.219	-1.209			
	(-14.071)		(-12.332)			
D_t	2.011	2.188	2.229			
	(6.628)		(6.125)			
	1981-2020 (N=162)					
D. Variable	House Prices (P)			Credit (C)		
	DOLS	SOLS	FM-OLS	DOLS	SOLS	FM-OLS
Y_t	0.339	0.269	0.226	1.423	1.364	1.412
	(1.593)		(2.454)	(5.521)		(14.765)
r_t				0.005	0.002	0.003
				(0.593)		(1.162)
C_t	1.068	1.164	1.167			
	(5.722)		(21.077)			
P_t				0.474	0.488	0.468
				(2.727)		(7.195)
H_t	-2.988	-2.857	-3.026			
	(-5.556)		(-13.648)			
D_t	1.648	1.208	1.431			
	(4.240)		(7.012)			

Source: Author's calculations.
Note: T-statistics are in parenthesis. All variables except the real mortgage rate are in logs.

For the 1981 to 2020 time period, focussing on the results for the house prices in the credit regression and for the credit variable in the house price regression, there is a degree of consistency in terms of the scale of the parameter estimates across the different estimators. This mimics the results for the original time period. For the credit variable, the coefficient is between 1.07 and 1.17, while for the house price variable in the credit equation, the coefficient is between 0.47 and 0.49.

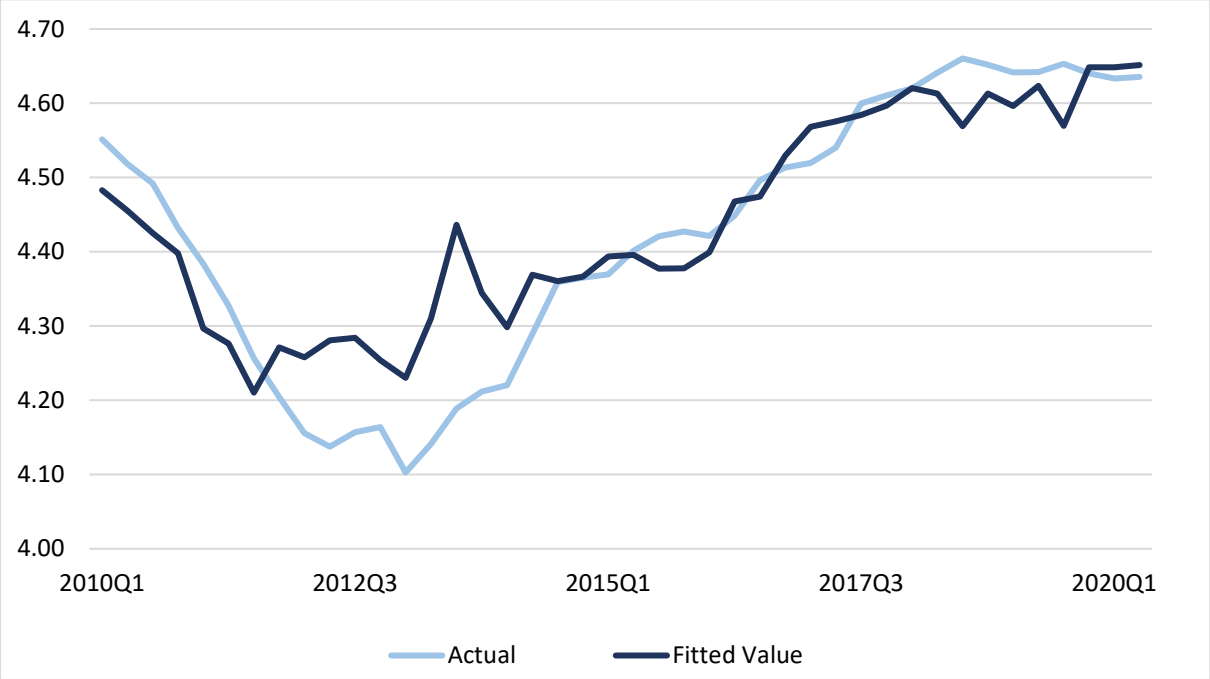
The results also suggest that house prices and credit have similar impacts in the respective equations across the two time periods. In terms of the price variable in

the credit equation, this is almost the same as the coefficient for the earlier period (0.50 to 0.52). For the 1981 to 1999 time period, the credit variable in the house price regression has a coefficient range between 1.32 and 1.33. In both cases, the differences in the coefficient values across the two time periods are not significant.

Among the variables, the income variable both in the house price and the credit regression does have a significantly different size between the two periods. It is somewhat smaller in the subsequent period for the house price regression and somewhat bigger in the credit regression. This underpins the importance of income levels in determining the average mortgage amount since 2000. As income levels are more important in determining credit levels, they remain an important determinant of house prices.

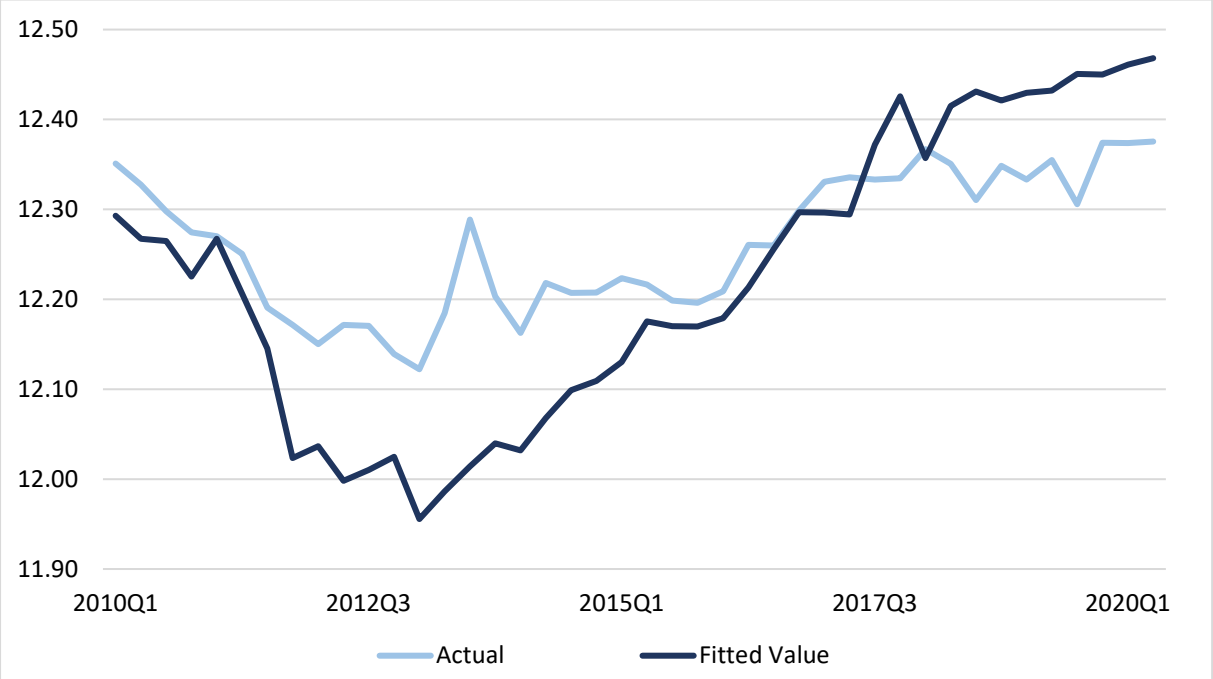
We now examine the actual and fitted values from (1) and (2) in Figures 2a and 2b.

FIGURE 2A RESULTS FROM LONG-RUN HOUSE PRICE MODEL (LOGS): 2010-2020



Source: Author's calculations.

FIGURE 2B RESULTS FROM LONG-RUN CREDIT MODEL (LOGS): 2010-2020



Source: Author's calculations.

The results for the house price model show that house prices have broadly moved in line with what (1) would suggest. For the period 2011 to 2013, actual house price falls exceed those predicted by the model. This is not surprising as the scale of the housing market decline at that stage may have resulted, for example, in a total decline in confidence amongst perspective residential investors. This would cause prices to fall by more than what the model suggests. This could also be the reason why the average loan amount model did not appear to fall by as much as what the decline in house prices, in particular, would suggest for the same period.

However, there is also a divergence between the actual loan amount and the level suggested by the model for the end of the period. From the start of 2018, the model suggests that the average loan amount should be continuing to increase, whereas the actual amount has remained static. On average the actual loan amount is over 8 per cent below the level suggested by the model over the 2018/2020 period. The most obvious reason for this divergence is the introduction in 2015 by the Central Bank of Ireland of a suite of macroprudential measures which limit the amount of mortgage lending at high LTVs and LTIs by domestic financial institutions. It may well be the case that the regulations are limiting the increase in the average loan amount to be below that which it otherwise would be. Of course, by restricting the increase in the average loan amount the regulations are then, in turn, restricting the increase in house prices. The results in Table 1 would suggest, for example, that a 1 per cent increase in the average amount loaned would cause house prices to increase by 1.1 per cent.

4. CONCLUDING COMMENTS

An update of the Fitzpatrick McQuinn (2007) model of house prices and mortgage credit in the Irish market indicates that the key coefficients estimated in the model have remained relatively stable when estimated over a longer time period (1981 to 2020). This is somewhat surprising as the interim period (post-2000) has witnessed one of the largest house price / mortgage credit spirals observed amongst OECD countries.

The results reiterate the notion of a mutually reinforcing relationship between mortgage credit and house prices in the Irish market. This relationship is underscored by a simulation of the model, which reveals that the average loan amount suggested by the model post-2018 is somewhat higher than the actual loan amount. This suggests that the recent macroprudential policy framework introduced by the Central Bank of Ireland is restricting the average loan amount to be less than what it would be if the regulations were not in place.

REFERENCES

Fitzpatrick, T. and K. McQuinn (2007). 'House prices and mortgage credit: Empirical evidence for Ireland', *The Manchester School*, Vol. 75, No. 1, pp. 82-103, 2007.

Honohan, P. (2010). *The Irish Banking Crisis Regulatory and Financial Stability Policy 2003-2008. A Report to the Minister for Finance by the Governor of the Central Bank*.

Hyashi, F. (2000). *Econometrics*, Princeton University Press, Princeton, New Jersey.

McQuinn, K. (2004). 'A model of the Irish housing sector', Central Bank of Ireland Research Technical Paper 1/RT/04.

Philips, P. and B. Hansen (1990). 'Statistical inference in instrumental variables regression with I(1) processes', *Review of Economic Studies*, 57, pp. 99-125.

Stock, J. and M. Watson (1993). 'A simple estimator of cointegrating vectors in higher order integrated systems', *Econometrica*, 61, pp. 783-820.

Whitaker Square,
Sir John Rogerson's Quay,
Dublin 2
Telephone **+353 1 863 2000**
Email **admin@esri.ie**
Web **www.esri.ie**
Twitter **@ESRIDublin**

ESRI ECONOMIC & SOCIAL RESEARCH INSTITUTE