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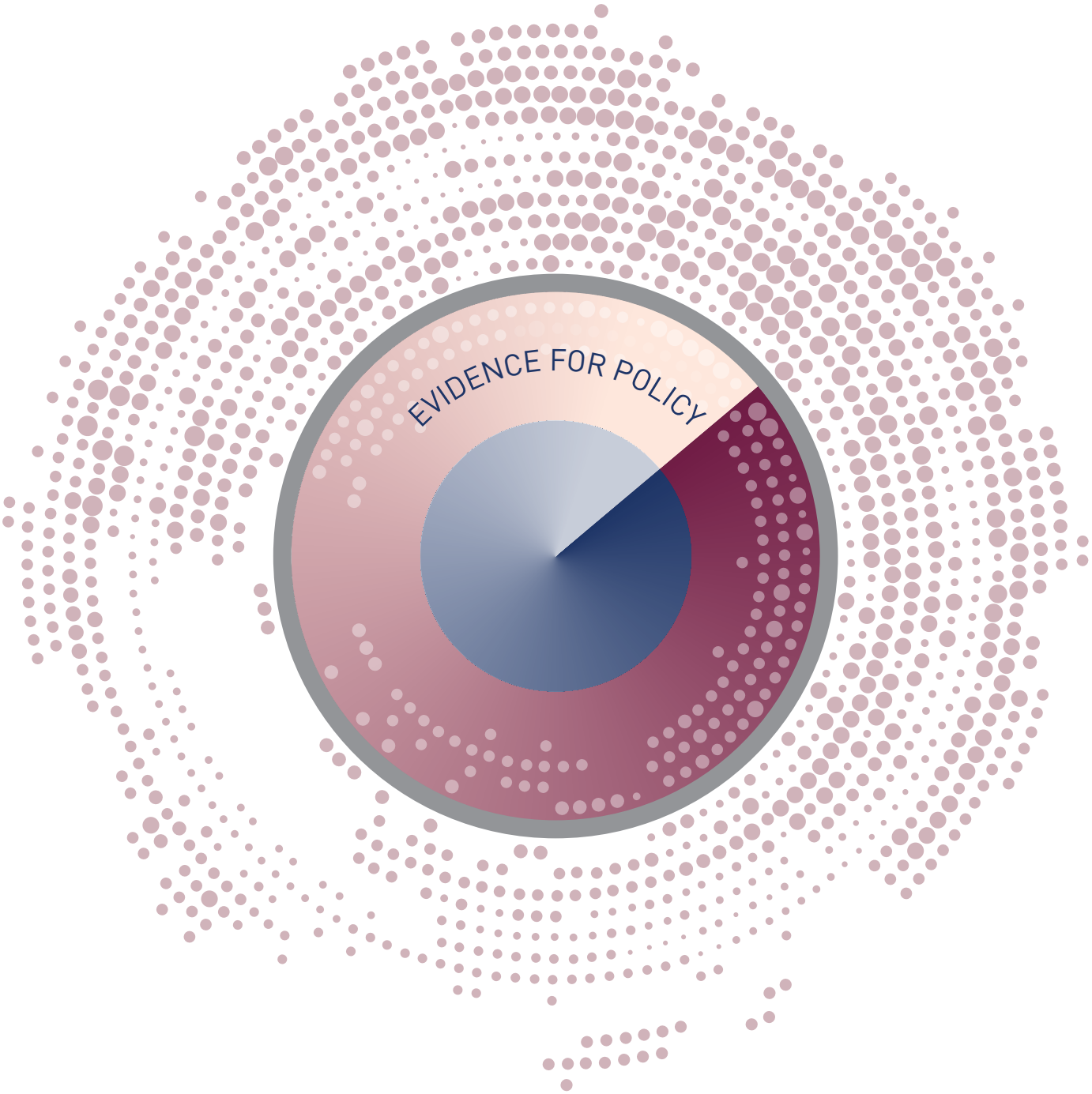
QUARTERLY ECONOMIC COMMENTARY

SUMMER 2018

KIERAN MCQUINN, CONOR O'TOOLE, PHILIP ECONOMIDES AND TERESA MONTEIRO



ESRI ECONOMIC & SOCIAL RESEARCH INSTITUTE

QUARTERLY ECONOMIC COMMENTARY

Kieran McQuinn
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Summer 2018

The forecasts in this *Commentary* are based on data available by 28 May 2018

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

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	2015	2016	2017	2018	2019
Output (Real Annual Growth %)					
Private Consumer Expenditure	4.2	3.3	1.9	2.4	2.5
Public Net Current Expenditure	1.8	5.3	1.8	2.5	3.0
Investment	27.9	61.2	-22.3	13.0	13.4
Exports	38.4	4.6	6.9	5.4	5.2
Imports	26.0	16.4	-6.2	7.0	7.7
Gross Domestic Product (GDP)	25.6	5.1	7.8	4.7	3.9
Gross National Product (GNP)	16.4	9.6	5.2	5.3	3.9
Prices (Annual Growth %)					
Consumer Price Index (CPI)	-0.3	0.0	0.4	0.7	1.1
Growth in Average Hourly Earnings	1.4	1.7	2.0	2.9	3.6
Labour Market					
Employment Levels (ILO basis ('000))	2,058	2,133	2,195	2,248	2,286
Unemployment Levels (ILO basis ('000))	226	195	158	134	120
Unemployment Rate (as % of Labour Force)	10.0	8.4	6.7	5.6	5.0
Public Finance					
General Government Balance (€bn)	-5.0	-1.4	-1.0	-0.8	0.2
General Government Balance (% of GDP)	-1.9	-0.7	-0.3	-0.2	0.1
General Government Debt (% of GDP)	76.9	72.8	68.0	66.6	64.0
External Trade					
Balance of Payments Current Account (€bn)	28.6	9.2	37.1	30.9	25.7
Current Account (% of GNP)	13.9	4.1	15.4	12.2	9.5

Note: Detailed forecast tables are contained in an Appendix to this *Commentary.*

NATIONAL ACCOUNTS 2017

A: EXPENDITURE ON GROSS NATIONAL PRODUCT

	2016	2017	Change in 2017		
	€ bn	€ bn	Value	Price	Volume
Private Consumer Expenditure	96.6	99.7	3.2	1.3	1.9
Public Net Current Expenditure	28.4	29.5	4.2	2.3	1.8
Gross Fixed Capital Formation	87.7	69.4	-20.8	1.8	-22.3
Exports of Goods and Services	335.0	355.4	6.1	-0.8	6.9
Physical Changes in Stocks	2.4	2.4			
Final Demand	**550.1**	**556.5**	**1.2**	**-0.1**	**1.2**
less:					
Imports of Goods and Services	274.4	260.3	-5.2	1.1	-6.2
Statistical Discrepancy	-0.1	-0.1			
GDP at Market Prices	**275.6**	**296.2**	**7.5**	**-0.3**	**7.8**
Net Factor Payments	-48.8	-55.0			
GNP at Market Prices	**226.7**	**241.2**	**6.4**	**-0.2**	**6.6**

B: GROSS NATIONAL PRODUCT BY ORIGIN

	2016	2017	Change in 2017	
	€ bn	€ bn	€ bn	%
Agriculture	3.2	3.3	0.1	2.0
Non-Agriculture: Wages, etc.	80.3	84.4	4.2	5.2
Other	109.1	121.6	12.6	11.5
Adjustments: Stock Appreciation	0.4	0.4		
Statistical Discrepancy	0.1	0.1		
Net Domestic Product	**193.0**	**209.8**	**16.8**	**8.7**
Net Factor Payments	-48.8	-55.0	-6.1	12.6
National Income	**144.2**	**154.9**	**10.7**	**7.4**
Depreciation	62.9	65.5	2.6	4.2
GNP at Factor Cost	**207.1**	**220.4**	**13.3**	**6.4**
Taxes less Subsidies	19.7	20.8	1.1	5.7
GNP at Market Prices	**226.7**	**241.2**	**14.4**	**6.4**

C: BALANCE OF PAYMENTS ON CURRENT ACCOUNT

	2016	2017	Change in 2017
	€ bn	€ bn	€ bn
X – M	60.8	95.2	34.5
F	-47.6	-53.8	-6.1
Net Transfers	-3.8	-4.3	-0.5
Balance on Current Account	**9.2**	**37.1**	**27.9**
as % of GNP	4.1	15.4	11.6

NATIONAL ACCOUNTS 2018

A: EXPENDITURE ON GROSS NATIONAL PRODUCT

	2017	2018	Change in 2018		
	€ bn	€ bn	Value	Price	Volume
Private Consumer Expenditure	99.7	103.1	3.4	1.0	2.4
Public Net Current Expenditure	29.5	30.6	3.5	1.0	2.5
Gross Fixed Capital Formation	69.4	82.4	18.7	5.1	13.0
Exports of Goods and Services	355.4	378.6	6.5	1.1	5.4
Physical Changes in Stocks	2.4	3.0			
Final Demand	**556.5**	**597.8**	**7.4**	**1.7**	**5.6**
less:					
Imports of Goods and Services	260.3	287.7	10.6	3.3	7.0
Statistical Discrepancy	-0.1	-0.1			
GDP at Market Prices	**296.2**	**310.0**	**4.7**	**-0.1**	**4.7**
Net Factor Payments	-55.0	-56.3			
GNP at Market Prices	**241.2**	**253.7**	**5.2**	**-0.1**	**5.3**

B: GROSS NATIONAL PRODUCT BY ORIGIN

	2017	2018	Change in 2018	
	€ bn	€ bn	€ bn	%
Agriculture	3.3	3.4	0.1	2.5
Non-Agriculture: Wages, etc.	84.4	88.9	4.5	5.3
Other	121.6	127.5	5.8	4.8
Adjustments: Stock Appreciation	0.4	0.4		
Statistical Discrepancy	0.1	0.1		
Net Domestic Product	**209.8**	**220.2**	**10.4**	**5.0**
Net Factor Payments	-55.0	-56.3	-1.3	2.4
National Income	**154.9**	**164.0**	**9.1**	**5.9**
Depreciation	65.5	68.1	2.6	3.9
GNP at Factor Cost	**220.4**	**232.0**	**11.6**	**5.3**
Taxes less Subsidies	20.8	21.6	0.8	4.0
GNP at Market Prices	**241.2**	**253.7**	**12.5**	**5.2**

C: BALANCE OF PAYMENTS ON CURRENT ACCOUNT

	2017	2018	Change in 2018
	€ bn	€ bn	€ bn
X – M	95.2	90.7	-4.4
F	-53.8	-55.1	-1.3
Net Transfers	-4.3	-4.8	-0.5
Balance on Current Account	**37.1**	**30.8**	**-6.2**
as % of GNP	15.4	12.2	-2.5

NATIONAL ACCOUNTS 2019

A: EXPENDITURE ON GROSS NATIONAL PRODUCT

	2018	2019	Change in 2019		
	€ bn	€ bn	Value	Price	Volume
Private Consumer Expenditure	103.1	106.8	3.5	1.0	2.5
Public Net Current Expenditure	30.6	31.8	4.1	1.0	3.0
Gross Fixed Capital Formation	82.4	97.3	18.1	4.2	13.4
Exports of Goods and Services	378.6	405.5	7.1	1.8	5.2
Physical Changes in Stocks	3.0	3.0			
Final Demand	**597.8**	**644.5**	**7.8**	**2.0**	**5.7**
less:					
Imports of Goods and Services	287.7	317.2	10.2	2.4	7.7
Statistical Discrepancy	-0.1	-0.1			
GDP at Market Prices	**309.9**	**327.2**	**5.6**	**1.6**	**3.9**
Net Factor Payments	-56.3	-58.4			
GNP at Market Prices	**253.7**	**268.8**	**6.0**	**2.0**	**3.9**

B: GROSS NATIONAL PRODUCT BY ORIGIN

	2018	2019	Change in 2019	
	€ bn	€ bn	€ bn	%
Agriculture	3.4	3.4	0.0	1.4
Non-Agriculture: Wages, etc.	88.9	93.7	4.8	5.4
Other	127.5	136.7	9.2	7.2
Adjustments: Stock Appreciation	0.4	0.4		
Statistical Discrepancy	0.1	0.1		
Net Domestic Product	**220.2**	**234.3**	**14.1**	**6.4**
Net Factor Payments	-56.3	-58.4	-2.1	3.8
National Income	**164.0**	**175.9**	**11.9**	**7.3**
Depreciation	68.1	70.5	2.5	3.6
GNP at Factor Cost	**232.0**	**246.4**	**14.4**	**6.2**
Taxes less Subsidies	21.6	22.4	0.7	3.4
GNP at Market Prices	**253.7**	**268.8**	**15.1**	**6.0**

C: BALANCE OF PAYMENTS ON CURRENT ACCOUNT

	2018	2019	Change in 2019
	€ bn	€ bn	€ bn
X – M	90.7	88.1	-2.6
F	-55.1	-57.1	-2.1
Net Transfers	-4.8	-5.3	-0.5
Balance on Current Account	**30.8**	**25.7**	**-5.2**
as % of GNP	12.2	9.5	-1.9

The Irish Economy – Forecast Overview

With both domestic and external sources of growth registering significant increases, the Irish economy is on course to experience another robust performance in 2018. While the rate of decline in unemployment has slowed marginally over the past six months, the underlying trends in taxation receipts and overall consumer and producer sentiment indicate strong growth in 2018 and 2019. Unemployment is still set to fall below 5 per cent in 2019 with employment likely to exceed 2.3 million in the same year – some 70,000 more people employed than at the peak of the Celtic Tiger period in Q4 2007.

As the budgetary process commences, it is evident the Government has greater discretion in terms of fiscal policy than in previous years. In order to ensure sustainable growth over the medium term, the main challenge is to use these extra resources to address some of the infrastructural deficits which emerged in the post-2008 period without overheating a rapidly growing economy.

To provide some perspective on this crucial policy challenge, in a Box to the *Commentary*, Garcia-Rodriquez examines the implications for key Irish macroeconomic variables of two fiscal scenarios; one which increases Government capital expenditure and another which reduces personal taxation rates. Both scenarios cost the same in terms of the implications for the Exchequer, however they have different impacts for key variables. Overall, the analysis indicates that while economic activity is increased in both cases, the increase in capital expenditure is likely to result in an increase in potential output, whereas a reduction in taxation rates will stimulate consumption levels.

Given the importance of financial cycle developments in the Irish context, we also pay particular attention to the level of credit in the domestic economy. An increasing literature now suggests that both credit and fiscal policy need to be considered in conjunction with each other when evaluating the degree of overheating in an economy. At present, new mortgage lending is rapidly increasing in Ireland following the crisis-related downturn. While this does not yet appear to be unsustainable, the high growth in house prices, coupled with rising average loan sizes, suggest that credit levels are set to continue to increase.

While developments in the international economy are expected to contribute positively to Irish growth, a number of external risks are apparent. Growing political uncertainty in Italy, the exact nature of Brexit and the possibility of

international trade wars could all have an adverse impact on global activity. The Irish economy, given its highly open nature, is especially vulnerable to these developments.

Finally, in another Special Article to the *Commentary*, Fitzgerald (2018) discusses the complications for the Irish National Accounts of the increasingly globalised economy. The paper focuses, in particular, on the challenges posed by the treatment of intellectual capital in national accounting frameworks. Fitzgerald (2018) notes that recent US tax changes could lead to further, significant international movements of intellectual property related assets, with countries such as Ireland potentially impacted.

The International Economy

Global economic activity is expected to grow strongly according to the IMF's most recent economic outlook report.[1] In particular, growth in both the US and Asia surpassed expectations for the first quarter of 2018. In comparison, Europe has experienced a minor downturn in growth for the first quarter. Risks to the global outlook include increased geopolitical tensions and a notable trend towards protectionist policies. Given that much of recent global growth is attributed to increased levels of trade and foreign investment, an increase in protectionism could see global growth rates falling short of the expected 3.9 per cent increase in 2018 and 2019.

The Euro Area shows initial signs of a slight slowdown in Q1 2018; this is reflected in soft indicators such as consumer sentiment and industrial production which are not growing as strongly as the same period last year. Annual GDP growth rates in Q1 2018 in Germany, France and the Netherlands fell to 1.6, 1.9 and 2.8 per cent respectively, supporting the view that the region may be experiencing a minor slowdown in economic activity. Although developments in the labour market performance and consumer sentiment still indicate growth in 2018, the increased risks of US trade tariffs and the recent bout of adverse weather across the continent appear to have contributed towards a slight downturn in activity. As of March 2018, unemployment has fallen to 8.5 per cent for the Euro Area with rates ranging from lows of 2.2 per cent in the Czech Republic to highs of 20.8 per cent in Greece.

The ECB continues its asset purchasing programme, and aims to do so until inflation approaches target rates. Inflation in the European Union fell to 1.5 per cent in Q1 2018, having risen by 1.8 per cent for Q1 2017. While an unwinding of the extraordinary monetary policy measures of the ECB is set to commence quite soon, policy rates are unlikely to increase in the short term. Some commentators, such as Wren-Lewis (2018),[2] suggest that monetary policy may have reached its limit in terms of inducing inflationary pressure and that of fiscal policy should be used instead. However, the consensus concerning the need for governments to achieve balanced budgets means fiscal policy is unlikely to be used in such a manner. FocusEconomics' consensus forecast for the Euro Area estimates GDP growth of 2.3 and 2.0 per cent for 2018 and 2019, respectively.

1 IMF, *World Economic Outlook Updat*e, April 2018.

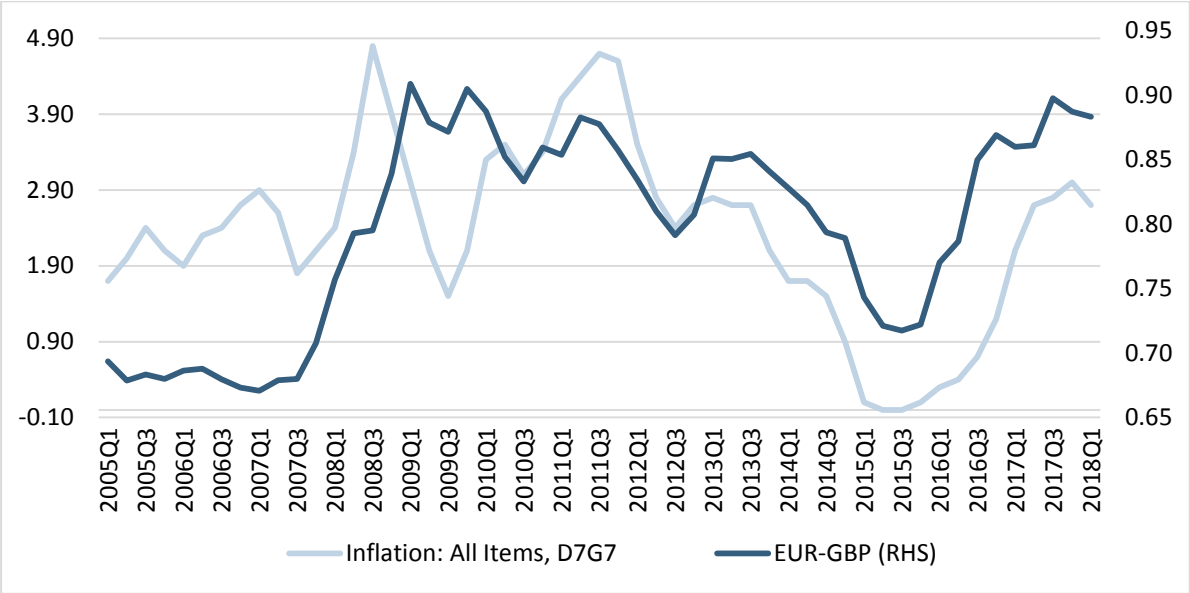
2 Wren-Lewis, S. (2018). 'Fiscal policy remains in the Stone Age', https://mainlymacro.blogspot.ie/2018/05/fiscal-policy-remains-in-stone-age.html.

In Q1 2018, UK GDP grew by 0.1 per cent on a quarterly basis. Downward trends in UK GDP growth are likely to persist for the year. Both NIESR and the IMF have revised downwards their forecasts, with 2018 annual growth expected to reach between 1.4 to 1.5 per cent. This is after 1.8 per cent growth in 2017.

As can be seen in Figure 1, UK inflation rates are closely correlated with changes in the Euro to Pound Sterling exchange rates. UK inflation has subsided marginally in Q1 2018 to 2.7 per cent, coinciding with a moderate appreciation in the Pound. August is likely to see an increase in the Bank of England's official interest rate in order to supress inflationary pressures further.

The UK unemployment rate fell to 4.2 per cent in Q1 2018. However, decreases in average weekly hours worked per employee indicate the rise in employment may not be as significant as movements in headline unemployment rates suggest. Between 2000 and 2014, 0.8 per cent of employees worked on zero-hour contracts. In recent years, this share has risen to 2.8 per cent of employment (from 225,000 individuals to 901,000) as of June 2017. The increasing prominence of zero-hour contracts as a form of employment coupled with declines in average weekly hours worked suggest recent reductions in the unemployment rate may be hiding a decreased level of job quality in the UK's labour market.[3]

FIGURE 1 QUARTERLY INFLATION AND EUR-GBP EXCHANGE RATE, Q1 2005 – Q1 2018



Source: Eurostat and ONS databases.

[3] ONS (2018). 'Contracts that do not guarantee a minimum number of hours: April 2018'.

US growth rates surpassed expectations in Q1 2018, yielding an annualised real GDP growth rate of 2.3 per cent. Personal consumption of goods saw a contraction (-0.24 percentage point contribution to growth), though increased levels of investment and government spending more than compensated for this. As of April 2018, the US unemployment rate declined to 3.9 per cent. Various measures of inflation suggest the US economy is approaching the 2 per cent target rate of the Federal Reserve,[4] while the Reserve has publically stated inflation shows no signs of 'running away'. The official interest rate was increased to 1.75 per cent as of March 2018. The Congressional Budget Office recently raised forecasts of US debt, increasing to 110.4 per cent of GDP by 2022 following the introduction of major tax reforms in 2018.

An ageing population and thus shrinking future labour supply continue to impact on the growth potential of the Japanese economy. For the first time in over two years, the Japanese economy showed a quarter-on-quarter contraction in GDP of 0.2 per cent. As of April 2018, annualised inflation stood at 0.6 per cent, decreasing further when excluding volatile food and energy prices. Despite extensive monetary stimulus by the Bank of Japan, the economy has struggled to meet the targeted 2 per cent inflation. Japan's trade outlook remains strong, however, after the lower house passed the newly named 'Comprehensive and Progressive Agreement for Trans-Pacific Partnership', which is expected to come into effect by the end of next year.

China experienced annual growth of 6.8 per cent in Q1 2018. Unemployment in China has been revised upwards to 5.1 per cent following the implementation of a higher quality of measurement through the use of household surveys. Investment growth has moderated as the Chinese government restricts credit expansion and shadow banking activity through structural reform in the financial sector. Increased trade tensions with the US combined with the current fragility of the Chinese financial sector are the outstanding risks to future growth.

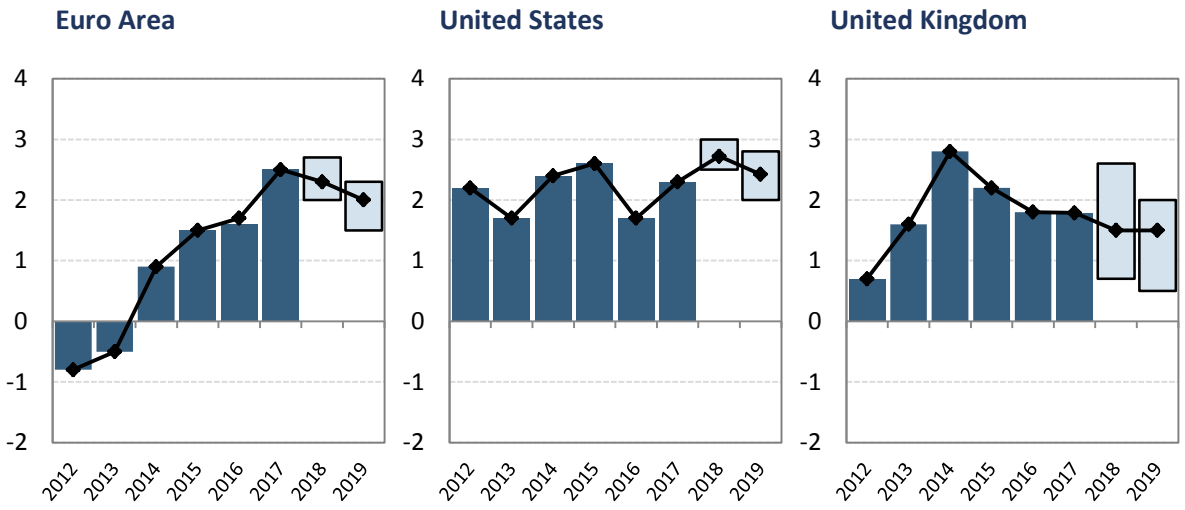
More generally, other economies have continued to benefit from improved global demand with world trade volumes expected to increase by 5.1 per cent in 2018. Revisions to the IMF's global outlook remain positive for Asian economies, with growth averaging 6.5 per cent in 2018.

Figure 2 summarises the forecasts for GDP growth produced by the major institutions of their respective economies. The outlook overall continues to

[4] Price Indexes for Personal Consumption Expenditures average 1.8 per cent inflation for Q1 2018 while CPI excluding food and energy indicates a slightly higher rate of 1.9 per cent growth for Q4 2017. When including food and energy, inflation rises to 2.3 per cent though this measure is far less preferable instrument when establishing long-run forecasts, given its volatility. *Sources:* U.S. Bureau of Labor Statistics and U.S. Bureau of Economic Analysis.

remain positive over the next two years, with the majority of experts adding upward revisions to forecasts for both the Euro Area and the United States. HM Treasury growth projections were revised downwards to a median of 1.5 per cent for the UK in 2018. Forecasts for 2019 also remain unchanged at 1.5 per cent.

FIGURE 2 REAL GDP GROWTH (% CHANGE, YEAR-ON-YEAR)



Sources: FocusEconomics, IMF, OECD, HM Treasury and Federal Reserve.

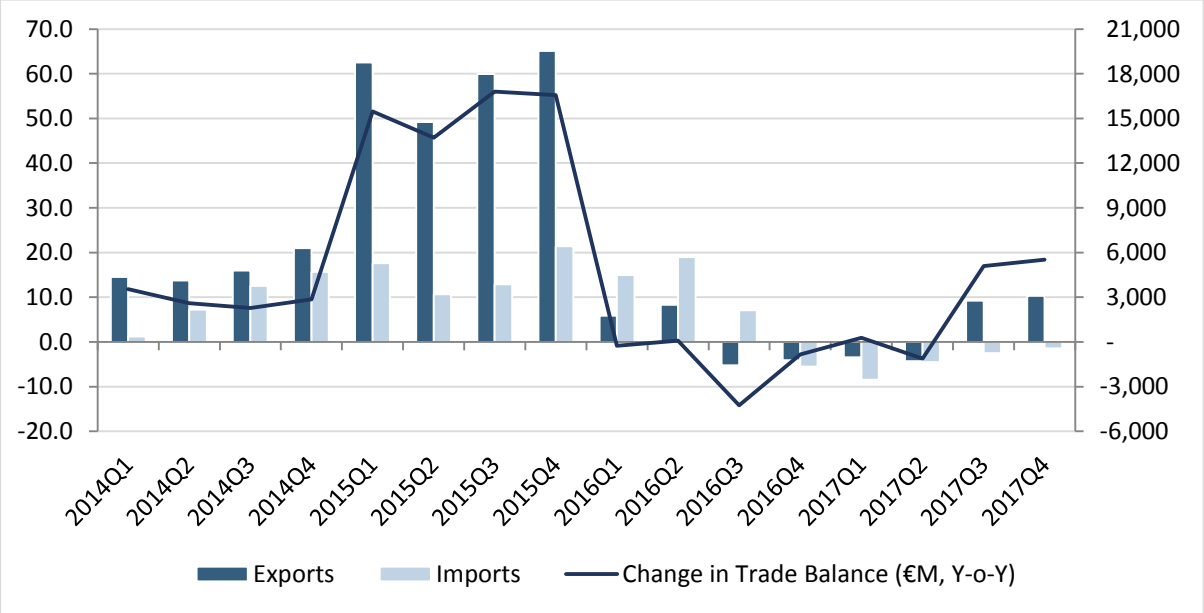
IMPLICATIONS FOR IRISH EXPORTS, IMPORTS AND THE BALANCE OF PAYMENTS

Goods

Recent trade of goods data suggest exports have not only grown faster than imports in 2017, but that Irish imports have fallen consecutively for three quarters relative to the same periods in 2016. In Figure 3, Q4 2017 saw an annual growth rate of 10.3 for total Irish exports while imports fell by 1.4 per cent. However, the Irish trade outlook is heavily influenced by the manner in which foreign-owned Irish resident firms manage their global supply networks. However, a different picture emerges when only goods which cross the Irish border are considered, hence excluding ownership trade of goods (e.g. contract manufacturing, merchanting).[5]

[5] For further details on ownership trade, see CSO's 'Explaining Goods Exports and Imports 2012-2016'.

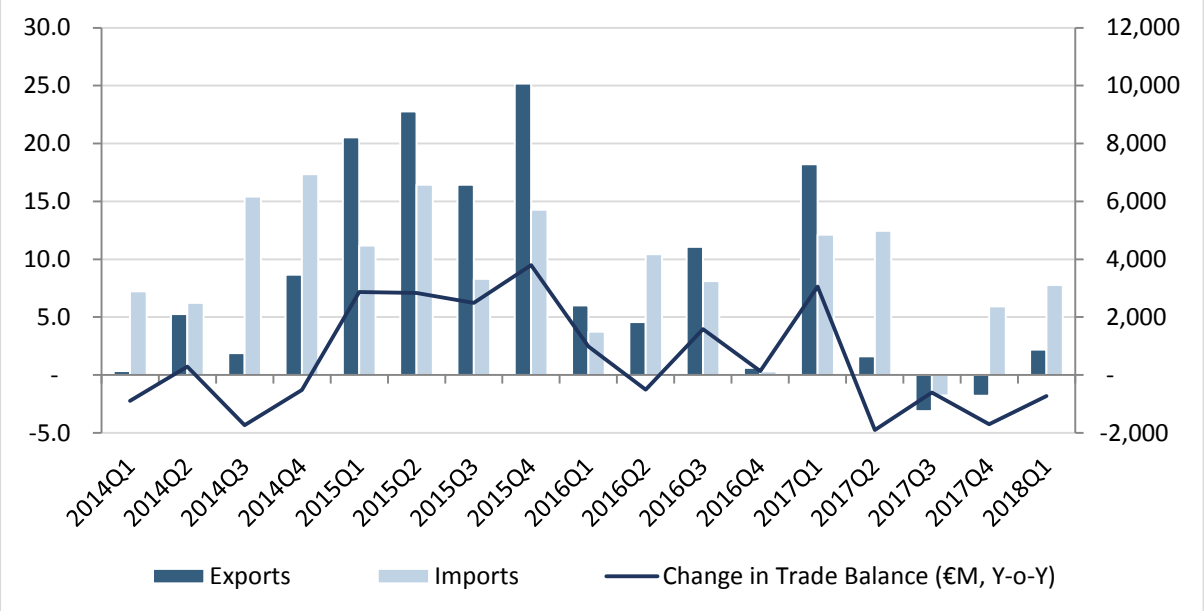
FIGURE 3 ANNUAL GROWTH RATE (%) IN TOTAL IRISH EXPORTS AND IMPORTS OF GOODS



Source: Central Statistics Office.

Growth in cross-border imports of goods exceeds that of exports, resulting in a persistently decreasing trade balance. For example, between March 2017 and 2018, the trade surplus for cross-border goods fell from €14.2 billion to €13.5 billion. Figure 4 highlights this recent trend in cross-border goods, where consistently greater import growth has led to the deterioration of the trade surplus since Q2 2017.

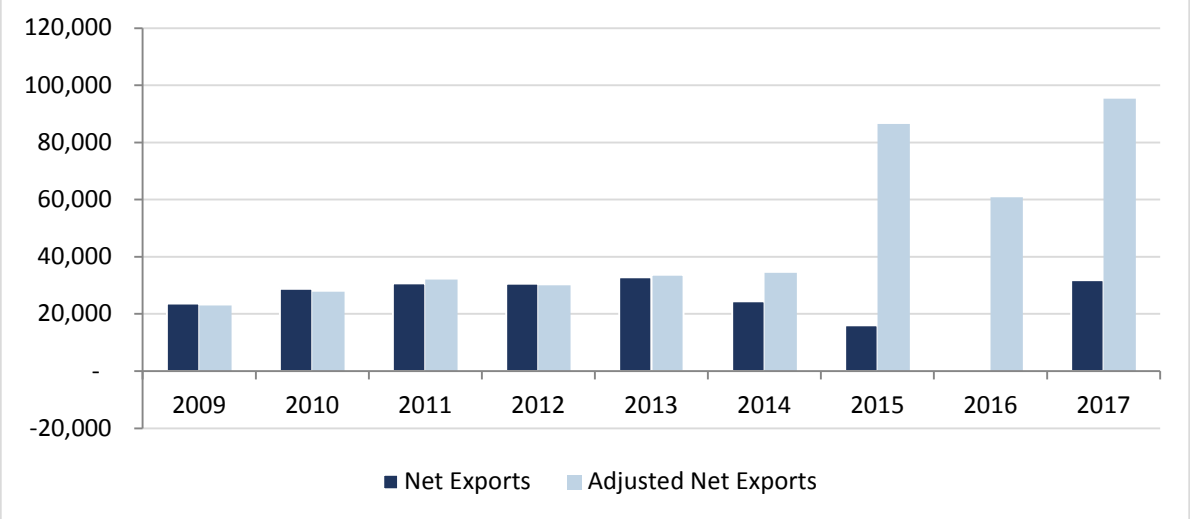
FIGURE 4 ANNUAL GROWTH RATE (%) IN CROSS-BORDER IRISH EXPORTS AND IMPORTS



Source: Central Statistics Office.

In considering Ireland's trade performance, the *Commentary* focuses on three categories; cross-border goods trade, ownership goods trade and services trade. For 2017, cross-border goods represent approximately 35 per cent of total Irish exports but this share has been declining in recent years. Services trade represents the largest portion of Irish exports at roughly 40-45 per cent. The remaining category, ownership goods, captures the exchange of goods outside of Ireland's borders that fall under the ownership of Irish-resident firms. This represented 5 per cent of total exports in 2013 before rising sharply to an average of 23 per cent over the last three years. Sixty-five per cent of imports are service-based. Imports of cross-border goods represent another 30 per cent of the total amount. Figure 5 compares trade balances including and excluding ownership trade. Given that ownership only plays a significant role in exports, major headline figures for the Irish trade balance appear heavily inflated relative to actual domestic activity.

FIGURE 5 CROSS-BORDER AND ADJUSTED NET EXPORTS OF GOODS AND SERVICES (€ MILLION)

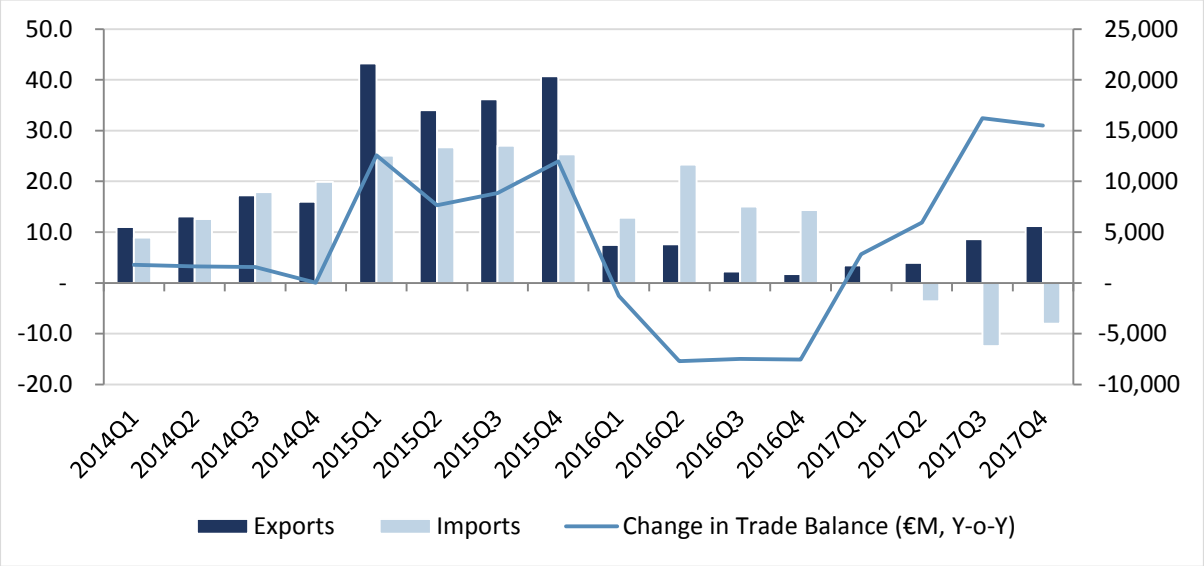


Source: Central Statistics Office, QEC calculations.
Note: Adjustments to net exports account for ownership trade of goods. This includes, but is not limited to, forms of goods for processing, such as contract manufacturing, and merchanting, i.e. the purchase and resale of goods which do not enter the merchant's economy.

Services

Separating ownership trade from total goods helps explain the strong growth in exports, however it does not provide as much insight into the 5.1 per cent fall in imports of goods and services in 2017. Relative to 2016, service imports fell by 6.9 per cent during 2017. Given that almost 70 per cent of total Irish imports are based on the purchase of these foreign services, even marginal declines can have a significantly positive effect on the trade surplus. This explains the majority of the increase in Ireland's trade surplus, as reflected by Figure 6. In Q4 2017, the trade surplus was increased by €10 billion due to the services trade.

FIGURE 6 ANNUAL GROWTH RATE (%) IN TOTAL IRISH EXPORTS AND IMPORTS



Source: Central Statistics Office.

Focusing on the components of cross border trade for Q1 2018, exports increased year-on-year by €1.4 billion (4.3 per cent). Exports of chemicals and related products contributed the most towards the trade surplus, rising by €3.8 billion (21.7 per cent). Exports of machinery and transport equipment experienced the largest decline, falling by €2.5 billion (39.2 per cent). Relative to Q1 2017, goods imports rose annually by €0.7 billion (3.7 per cent). Medicinal and pharmaceutical products rose by €1.1 billion (63.3 per cent). A decline in machinery and transport equipment contributed towards a €0.5 billion decrease in imports (6.6 per cent) between the same periods.

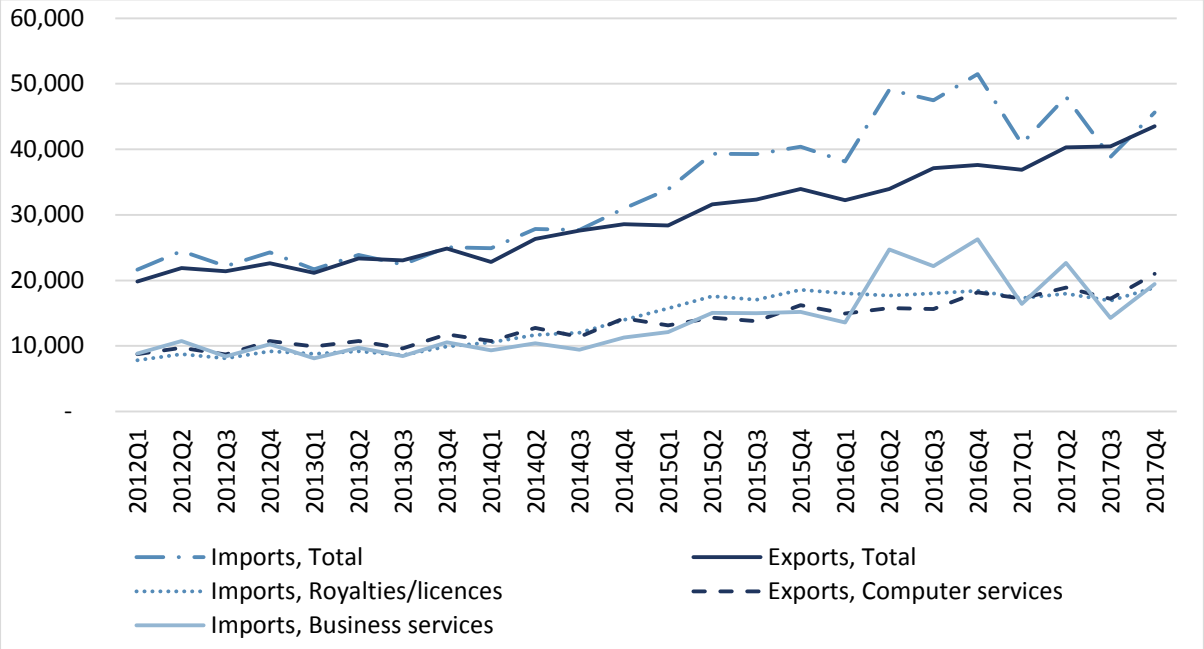
Thirty per cent of total Irish goods exports went to the US in Q1 2018. Belgium's 13.8 per cent share of Irish exports, driven primarily by organic chemical products, has overtaken the UK's share which fell to 11.4 per cent. Enterprise Ireland (2017) highlights Belgium's status as a hub for the processing of intermediate goods, which are likely behind this increased share.[6] The UK remains Ireland's primary source of imports, representing almost a quarter of total goods imports between January and March. In terms of flows, imports of goods from the UK rose by 8 per cent, likely fuelled by the recent weakness of the Pound Sterling. In a previous *Commentary*, Lawless and Morgenroth (2018) quantify the risks of such a high concentration of UK imports on Irish household expenditure, should major tariffs come into effect following Brexit.[7] The share of goods imports from the rest of the world decreased slightly from 39.2 per cent in Q1 2017 to 38.6 per cent the following year.

6 Enterprise Ireland (2017). 'Going Global, Exporting to Belgium & Luxembourg, Guide for Clients'.

7 Lawless, M. and E. Morgenroth (2018). 'Brexit and Irish Consumers', *Quarterly Economic Commentary*, Spring 2018.

Computer services accounted for almost half of Irish service exports in 2017, an annual increase of 15.1 per cent. Recent strong growth in ICT sector employment levels suggests this trend is likely to persist throughout 2018. Regarding service imports, royalties, licenses and business services formed 83 per cent of services imports in 2017. Royalties/licenses fell annually by 1.4 per cent while business service imports decreased by 16.1 per cent. Among the different categories of business services, research and development experienced the largest decrease, falling by 43.1 per cent in 2017 (from €47.1 billion to €26.8 billion). Figure 5 illustrates how both exports and imports in the services industry have doubled since 2012.

FIGURE 7 EXPORTS AND IMPORTS OF SERVICES (€ MILLION)



Source: Central Statistics Office.

Table 1 highlights how annual changes in these exports and imports between regions remain relatively stable. In terms of trade with the UK, exports of chemicals and related products saw a 12 per cent fall compared to the same period last year. Trade in machinery with European countries experienced a major fall in both exports and imports, at 28 and 29 per cent respectively. Overall trade with the US remained relatively fixed, however major compositional changes occurred within Irish-US trade. For example, the export of food and live animals fell by just under 50 per cent.

TABLE 1 JANUARY-MARCH ANNUAL CHANGE (%) IN GOODS EXPORTS AND IMPORTS FOR THE UK, THE US AND THE REST OF EU FOR MAJOR COMMODITIES

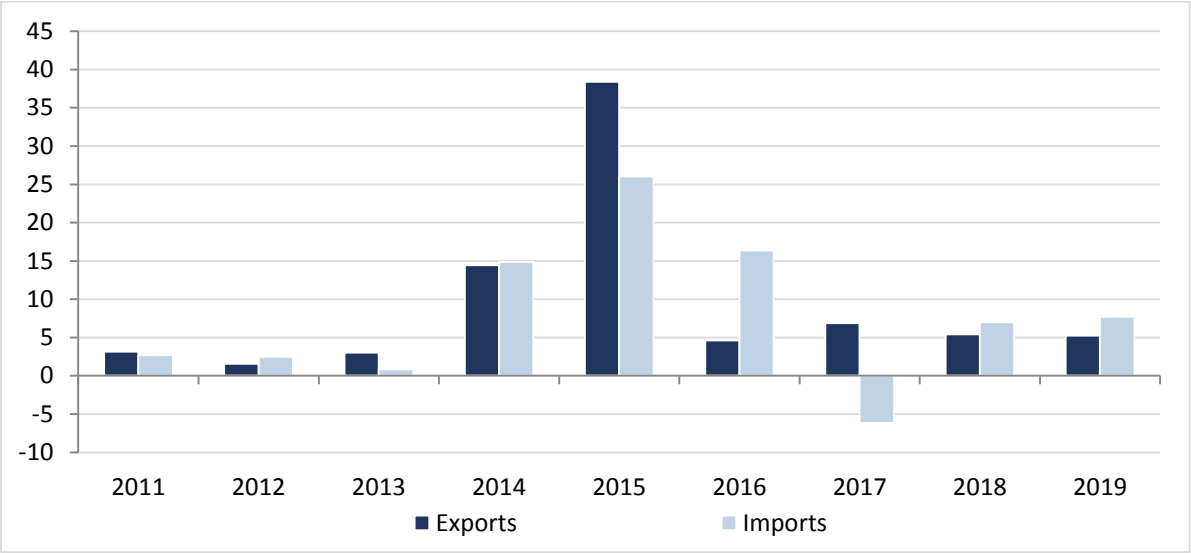
	Exports	Imports
Total – UK	**2**	**8**
Food and live animals	4	4
Chemicals and related products	12	3
Machinery and transport equipment	-20	8
Miscellaneous manufactured articles	9	0
Total – Rest of EU	**7**	**3**
Food and live animals	8	5
Chemicals and related products	18	74
Machinery and transport equipment	-28	-29
Miscellaneous manufactured articles	-2	-3
Total – US	**0**	**-1**
Food and live animals	-49	35
Chemicals and related products	24	-17
Machinery and transport equipment	-60	10
Miscellaneous manufactured articles	-1	0

Source: Central Statistics Office.

To summarise, annualised growth rates varied significantly across various trade categories. In Q1 2018, cross-border trade exports and imports increased by 2.2 and 7.8 per cent respectively. As of Q4 2017, exports of ownership trade increased by 9.3 per cent while imports decreased by 50.1 per cent. The net import of services shrank due to exports increasing by 15.9 per cent in tandem with imports decreasing by 11.6 per cent.

Due to the recently volatile nature of ownership trade in goods as well as services, forecasts in the *Commentary* continue to be based upon trends in trade patterns linked to underlying Irish economic activity. In Figure 8, our 2018 export forecast has been adjusted to 5.4 per cent growth while imports are forecast to grow by 7.0 per cent. For 2019, exports and imports are expected to grow by 5.2 and 7.7 per cent respectively. A reduced trade balance has been forecast in 2019 due to expectations of strong growth rates in private consumption, which will likely result in continued increases in demand for imported goods and services.

FIGURE 8 IMPORT AND EXPORT GROWTH (2017-2019 FORECASTS)

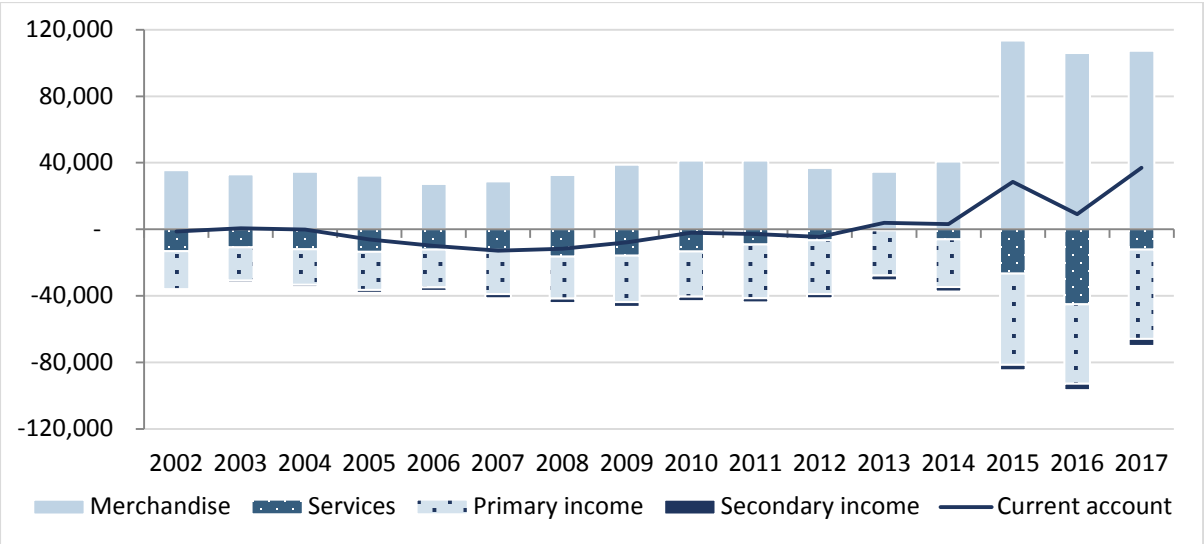


Source: *QEC* calculations.

Current Account

The current account balance combines trade balances with international net income flows. In Ireland's case, outflows of income generally moderate the major trade surpluses arising from positive net exports. Figure 9 decomposes the current account into goods, services, primary and secondary income. Compared to 2016, the current account as a percentage of gross domestic product has almost quadrupled in size. This increase in the current account balance is primarily the result of an improvement in goods trade persisting since 2015. Primary income – income from loans and investments – has maintained large outflows over the past three years but grew only slightly in 2017.

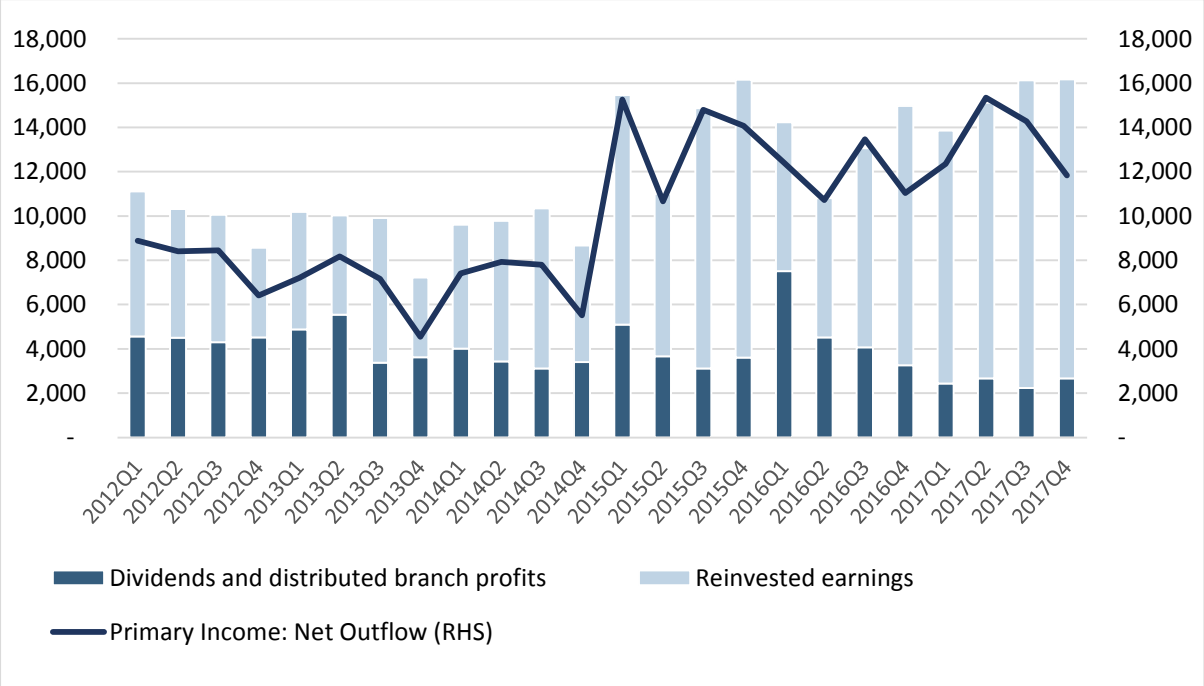
FIGURE 9 CURRENT ACCOUNT BALANCE, ANNUAL (€ MILLION)



Source: Central Statistics Office.

Similar to the sudden increase in the trade surplus of goods, net outflows of primary income have been at record levels for the past three years. The main determinant of primary income outflows is income on equity which itself is a combination of net operating surplus and investment income. These retained profits are then used either to pay dividends towards shareholders or as a source of reinvestment into the enterprise. In 2013 the outflows of equity income accounted for €22 billion of primary income's €27 billion net outflow. As of 2017, primary net outflows rose to €53 billion, of which €43 billion was linked to income on equity. Figure 10 displays how these outflows of profits were split between dividends and reinvested earnings between 2012 and 2017.

FIGURE 10 DIRECT INVESTMENT INCOME ON EQUITY, QUARTERLY (€ MILLION): Q1 2012 – Q4 2017



Source: Central Statistics Office.

The Domestic Economy

OUTPUT

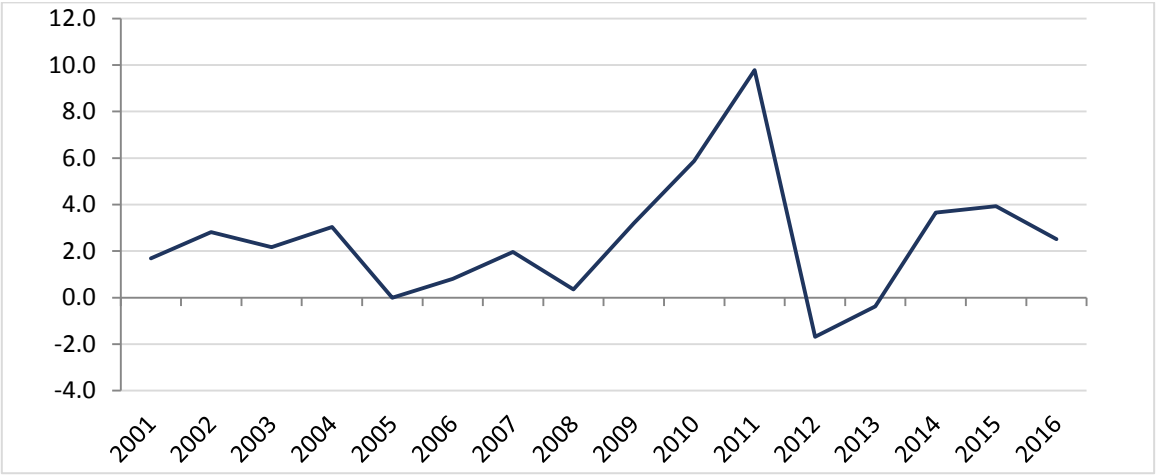
The domestic section of the *Commentary* is organised as follows; we initially review the outlook for output growth before discussing developments in the Irish monetary and financial sectors. Prices and earnings in the economy are then discussed, followed by a review of demand-side factors such as consumption and housing market issues. On the supply side, we then examine developments in investment and the labour market before concluding with an analysis of the public finances.

The likely strong performance of the Irish economy in 2018 is due to both domestic and external factors. Consumption and investment, which have both been significant determinants of Irish growth over the past few years will continue to increase, while the improvement in global economic conditions, observed over the past year, will result in increased demand for domestically produced goods and services. Recently the CSO, as part of its productivity in Ireland series,[8] released estimates of labour and multi-factor productivity for the Irish economy over the period 2000 to 2016. Importantly, the data are presented for 'foreign-owned multinational enterprise dominated sector' and for 'other sectors excluding the foreign-owned multinational enterprise dominated sector'. In Figure 11, the growth rate in labour productivity for the other sectors is presented.

Apart from the 2011 figure, the series suggests a credible rate of productivity growth for the Irish economy; in the initial years of the Celtic Tiger, productivity rates are quite significant, while the growth rates decline towards the 2007/2008 period. In the initial phases of the present recovery, productivity rates are quite pronounced, as the economy recovers sharply. The heightened productivity growth rate for 2011 may be a temporal issue due to the sudden and significant increase in unemployment in the Irish labour market at that time.

[8] See www.cso.ie/en/releasesandpublications/ep/p-pii/productivityinireland2016/ for details.

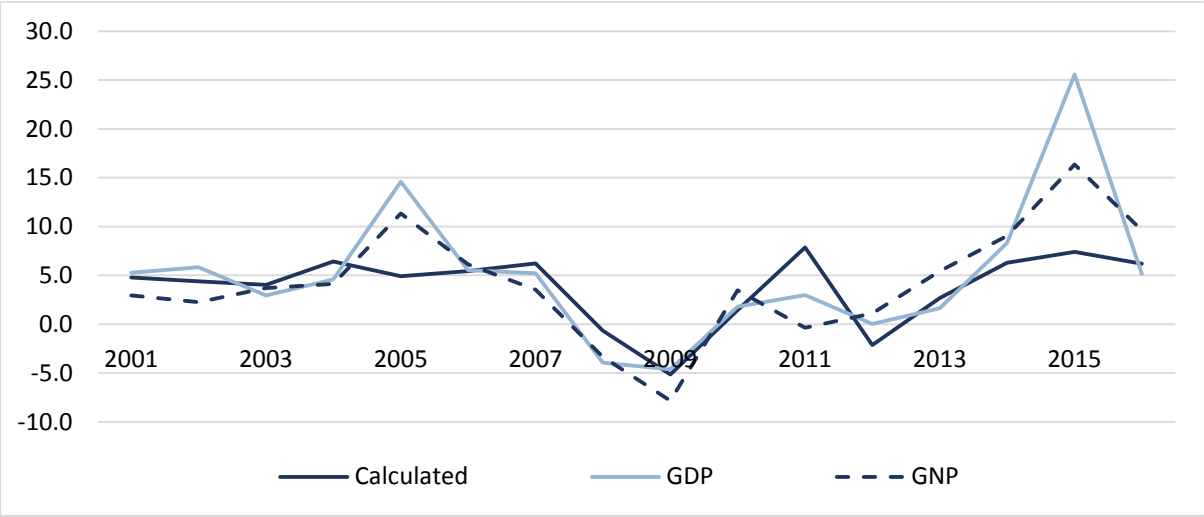
FIGURE 11 LABOUR PRODUCTIVITY GROWTH RATE (%) FOR 'OTHER SECTORS EXCLUDING THE FOREIGN-OWNED MULTINATIONAL DOMINATED SECTOR'



Source: *QEC* calculations.

The previous *Commentary* called for the preparation of a separate set of National Accounts in order to fully understand developments in the domestic economy. With the new domestic sector productivity publication from the CSO, it is interesting to combine the growth in labour productivity presented above with the observed increase in employment in the Irish labour market over the similar period (2001-2016). This growth rate 'Calculated' is then compared with GDP and GNP growth in Figure 12.

FIGURE 12 ALTERNATIVE OUTPUT GROWTH RATES (%) FOR THE IRISH ECONOMY: 2001-2016



Source: QEC calculations.

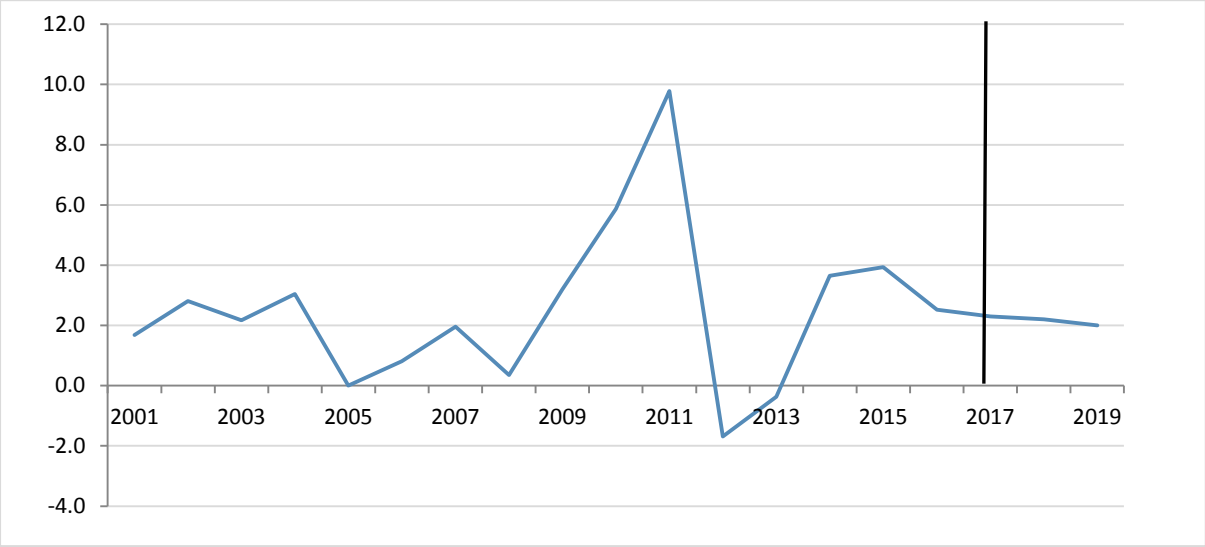
As can be seen from the Figure, the calculated growth rate is more stable than both GDP and GNP in the Irish case and as such is more plausible. It suggests the economy is experiencing significant growth up to 2016 but not the exceptional

rates indicated by the more familiar GDP/GNP concepts. While foreign companies do contribute considerably to Irish economic output, in particular through wages and salaries and corporation tax payments, company specific strategies for some large MNEs distort the productivity figures considerably. The calculations indicate the importance of splitting out economic data between the foreign-owned multinational enterprise sector and the rest of the economy.

Ideally, productivity estimates for the foreign-owned multinational sector should be split between those firms which engage in 'distortionary' transactions and the rest of the sector.

One issue with using micro-level estimates of productivity to generate macro-level forecasts is the timeliness issue in terms of availability of such granular estimates. Therefore, if we were to forecast the future level of labour productivity by assuming that the rate of productivity growth declines marginally over the period 2017-2019, we would get the following:

FIGURE 13 ACTUAL AND FORECAST LABOUR PRODUCTIVITY GROWTH RATE (%) FOR 'OTHER SECTORS EXCLUDING THE FOREIGN-OWNED MULTINATIONAL DOMINATED SECTOR'



Source: QEC calculations.

Combining those forecasts with our forecasts for employment growth in the economy over the same period (2018-2019), indicates that the Irish economy would grow by 4.6 and 3.7 per cent respectively in 2018 and 2019, which is almost exactly in line with our current forecasts of output growth.

The increase in the amount of fiscal space available to the Government for Budget 2019 will likely see an array of pressures on the public finance front. To

provide some perspective on this, in the following Box by Garcia-Rodriguez, the potential implications of two fiscal scenarios are examined using COSMO.

BOX 1 MACROECONOMIC EFFECTS OF THE NATIONAL DEVELOPMENT PLAN AND POTENTIAL ALTERNATIVES

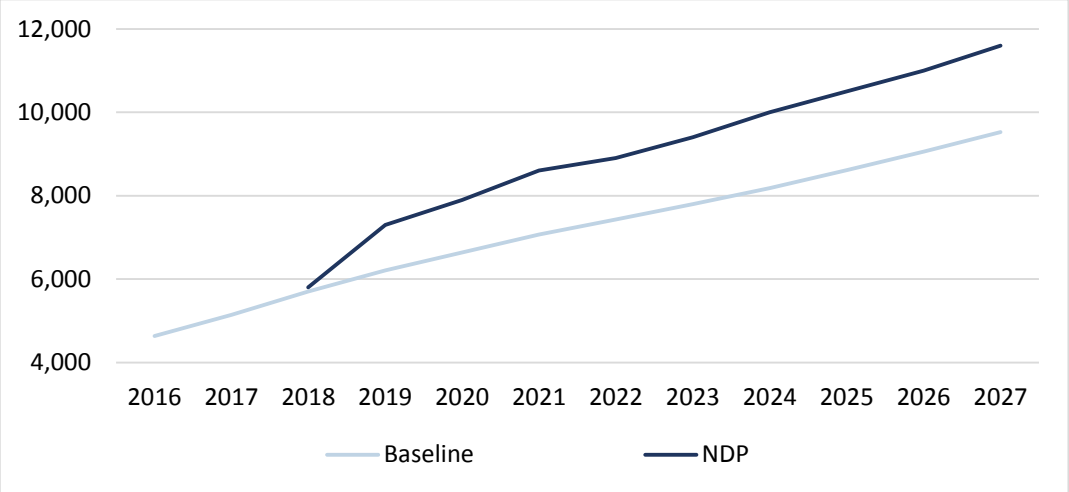
Introduction

The recent *Stability Programme Update 2018*, published in April, set out the Government's intentions to increase public capital investment. This commitment was first introduced in the Capital Plan in 2015, which set out a six-year framework for investment in Ireland up to 2021. According to the Government, the motivations for this increase in public investment are:

1. To address some of the infrastructural deficits which emerged after the financial crisis, when annual general government Gross Fixed Capital Formation fell from a peak of €9.7 billion in 2007 to €3.5 billion in 2012; and
2. To equip Ireland with the necessary tools to face potential challenges related to demographic change, regional imbalances or climate change.

More recently, the Capital Plan has been updated and upgraded with the publication of the *National Development Plan (NDP) 2018-2027*. Over the period, an estimated €116 billion is proposed in total investment. In addition, the NDP introduces a large expansion of the initial commitments of the Capital Plan, as the expected total increase in public investment for the 2018-2021 period is around 40 per cent greater than what was initially projected under the Capital Plan in 2015.

FIGURE A PUBLIC INVESTMENT ON THE BASELINE AND PROJECTED ON THE NATIONAL DEVELOPMENT PLAN (€ MILLION)



Given these significant fiscal commitments over the medium term, it is informative to quantify the impact of alternative uses of public funds at this point. In particular, the

recent improvement in the fiscal accounts has led some commentators to argue for reductions in personal taxation rates. As some households are still recovering from the post-2007/2008 downturn, it has been suggested reductions in personal taxation rates could consolidate the economic recovery.

It is particularly appropriate to compare the contrasting impact of these fiscal scenarios at a time when the economy is growing strongly and concerns have been raised as to the possibility of 'overheating' or unsustainable growth emerging.[9] Therefore, using the macroeconometric model, COSMO, we project the effects on key economic variables of the following scenarios:

1. The application of the NDP; and
2. A reduction in income tax rates.

The results are quantified relative to a baseline level. Importantly, the income tax reduction is modelled such that the impact on the public finances, in terms of the aggregated Government balance over the period 2018-2027, is comparable to that of the NDP scenario. To examine the implications for the public finances, we also examine the combination of both scenarios.

Methodology

This exercise will therefore compare the macroeconomic effects of the public investment increase with those of a reduction in income tax. The public investment increase will be modelled by substituting the path of investment in the original COSMO baseline presented in the Economic Outlook[10] with the path described in the NDP. Both paths can be observed in Figure A. As we can see, with respect to the baseline, the NDP scenario results in an acceleration of projected investment at the beginning of the period, particularly during 2019, and a return to the previous projected growth rate after 2021. For simplicity, we assume that the income tax rate is reduced in 2018 and kept constant during the period of the analysis.

One complication is that as the tax cut impacts economic activity and, in particular, the tax base associated with disposable income, its impact on the government balance can only be assessed after the simulation. To make both shocks comparable, then, we must proceed sequentially, re-running the exercise and adjusting the size of the tax cut until we obtain an impact on the public finances for the income tax shock which is similar to that of the public investment increase. After performing this exercise, we conclude that a reduction of the average effective income tax rate of 1.2 percentage points between 2018 and 2027 will produce the same impact on the government balance comparable to the investment path projected in the NDP.

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9 See www.oecd.org/eco/outlook/economic-forecast-summary-ireland-oecd-economic-outlook.pdf for example.

10 See Bergin, Adele, Abian Garcia-Rodriguez, Niall Mc Inerney, Edgar Morgenroth (2016). 'Chapter 1: Baseline: Methodology, Assumptions and Projections', in *Ireland's Economic Outlook: Perspectives and Policy Challenges*; Bergin, Adele, Edgar Morgenroth, Kieran McQuinn (eds.). ESRI Forecasting Series.

TABLE A DEVIATIONS FROM BASELINE FOR THE PUBLIC INVESTMENT INCREASE AND THE INCOME TAX CUT SCENARIOS

	Public Investment Increase			Income Tax Cut		
Percentage deviation from Baseline Level, Average:	**2018-2022**	**2023-2027**	**Average**	**2018-2022**	**2023-2027**	**Average**
Gross Domestic Product at Basic Prices	0.7	1.4	1.1	0.3	1.0	0.7
Potential Output	0.5	1.7	1.1	0.3	0.9	0.6
Gross Value Added at Basic Prices, Trade Sector	0.0	0.0	0.0	0.1	0.7	0.4
Gross Value Added at Basic Prices, Non-Traded Sector	0.7	2.1	1.4	0.7	1.7	1.2
Total Investment	1.6	4.7	3.2	0.9	2.7	1.8
Personal Consumption of Goods and Services	0.6	1.3	0.9	1.0	1.6	1.3
Employed Persons	0.8	1.8	1.3	0.5	1.1	0.8
Disposable Income	0.7	1.4	1.0	1.2	1.8	1.5
Exports	0.0	0.0	0.0	0.1	0.8	0.5
Deviations from Baseline, Average	**2018-2022**	**2023-2027**	**Average**	**2018-2022**	**2023-2027**	**Average**
Personal Consumption Deflator	0.0	0.0	0.0	-0.1	0.0	0.0
Unemployment Rate	-0.5	1.0	-0.8	-0.2	-0.6	-0.4
General Government Balance, % GDP	-0.3	-0.6	-0.5	-0.4	-0.6	-0.5
Deviation from Baseline, End of Period:	**2020**	**2023**	**2027**	**2020**	**2023**	**2027**
General Government Debt, % GDP	0.4	1.6	3.7	1.3	2.7	4.4

Results

The results of both scenarios, according to the COSMO model, result in additional economic activity. In the case of public investment, more investment increases the capital stock of the economy, therefore pushing up potential output, which helps growth in the long run. In the labour market, employment is above baseline levels, particularly in the public sector, and unemployment consequently falls below its baseline level. The combination of more employment and more productive workers, due to the rise of capital intensity of the economy, helps to push up wages, which in turn increases consumption above its baseline level. Therefore, the impact on the economy is mainly through the non-traded sector because of the acceleration in internal demand, with a negligible effect on the traded sector.

For the income tax shock, on the other hand, the most immediate effect of the decrease is the positive impact on disposable personal income. Consumption and savings both increase due to the changes in income levels. The increase in consumption pushes up internal demand, leading to an increase in employment and total wages. Increasing incomes and production naturally lead to an increase in GDP above its baseline level.

In the labour market, we observe more employment and a reduction in the unemployment rate as a result of the income tax reduction. The reaction of prices for both shocks is essentially flat.

TABLE B DEVIATIONS FROM BASELINE FOR THE JOINT PUBLIC INVESTMENT INCREASE AND INCOME TAX CUT SCENARIO

	Public Investment Increase		
Percentage deviation from Baseline Level, Average:	**2018-2022**	**2023-2027**	**Average**
Gross Domestic Product at Basic Prices	1.1	2.5	1.8
Potential Output	0.8	2.6	1.7
Gross Value Added at Basic Prices, Trade Sector	0.1	0.7	0.4
Gross Value Added at Basic Prices, Non-Traded Sector	1.5	4.1	2.8
Total Investment	2.6	8.4	5.5
Personal Consumption of Goods and Services	1.6	3.1	2.3
Employed Persons	1.3	2.8	2.1
Disposable Income	1.9	3.3	2.6
Exports	0.1	0.8	0.5
Deviations from Baseline, Average	**2018-2022**	**2023-2027**	**Average**
Personal Consumption Deflator	0.0	0.1	0.0
Unemployment Rate	-0.7	-1.6	-1.2
General Government Balance, % GDP	-0.8	-1.2	-1.0
Deviation from Baseline, End of Period:	**2020**	**2023**	**2027**
General Government Debt, % GDP	1.7	4.1	7.8

If we compare the variation with respect to the baseline of both shocks, we observe that increasing public investment has a more positive effect on economic growth than the reduction in income tax. The effect is also larger on potential output, as expected; increasing investment reinforces the capital stock but also labour, through increased economic activity. The positive impact on employment is larger again in the NDP scenario, consequently leading to a larger fall in the unemployment rate. On the other hand, we observe that in the tax cut scenario, despite a smaller increase in total employment, total consumption is actually higher with respect to the baseline than is the case in the other scenario. The larger effect is a consequence of the direct impact that the tax cut has on disposable income.

The COSMO model also allows us to observe the projected results of introducing both the investment plan and the income tax reduction at the same time. The results of this exercise can be observed in Table B. As expected, the effects on the economy are approximately the combination of the two individual scenarios considered before, although there is some additional impact on the non-traded sector and total investment. The result overall is a strong stimulus in terms of the impact on economic activity, with robust increases on GDP, potential output and employment. On the other hand, the public finances are naturally affected, with government debt as a share of GDP almost 8 percentage points above baseline levels, despite the strong increase in economic activity.

These results are subject to some caveats. First, COSMO does not explicitly model a 'productivity channel', where public investment improves the overall behaviour of the economy by raising its productivity. The analysis focuses on the impact of public investment on the economy through its effect on internal demand, as opposed to potential long-term benefits due to improvements in infrastructure. Second, and related to the previous point, the final effects of the considered policies would be heavily dependent on the actual details of the policies. This caveat is particularly true for the investment plan.

Conclusion

In conclusion, both scenarios result in a variety of impacts. Whereas the public investment scenario results in the larger positive impact on economic activity and employment, the tax cut produces a larger increase in consumption and a more balanced impact in sectoral terms. As previously mentioned, the details of the investment plan will be a key element in terms of its overall impact. A well targeted plan based on productivity-enhancing initiatives could result in an even more positive impact for the investment scenario. Such a plan also has the benefit of being versatile in meeting alternative policy objectives such as regional development which a policy focussed on reductions in taxation rates cannot. Finally, given the strength of recent economic activity, special care needs to be exercised in using fiscal policy to stimulate economic growth at this point.

References

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

Bergin, A., A. Garcia-Rodriguez, N. McInerney and E. Morgenroth (2016). 'Chapter 1: Baseline: Methodology, Assumptions and Projections', in *Ireland's Economic Outlook: Perspectives and Policy Challenges*; Bergin, A., E. Morgenroth and K. McQuinn (eds.). ESRI Forecasting Series.

This Box was prepared by Abian Garcia-Rodriguez.

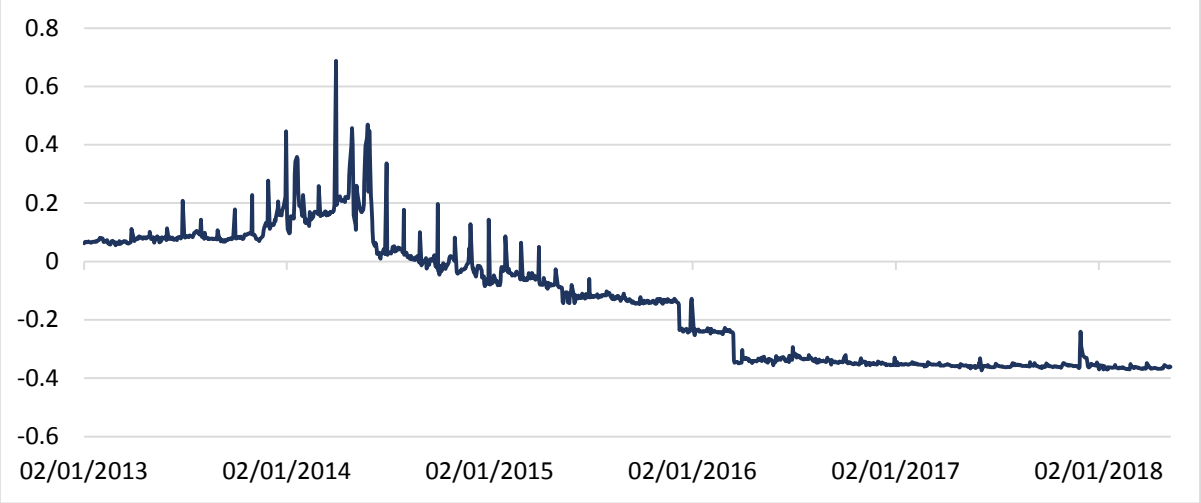
MONETARY AND FINANCIAL CONDITIONS

International monetary environment

Following the volatility in global equity markets observed earlier in the year, financial conditions internationally have stabilised in recent months. The well signalled nature of increases in US policy rates, as well as the ongoing accommodative monetary policy in Europe and Japan, continue to provide a low and stable cost of finance internationally. More specifically in a European context, the ECB's negative policy rate position is ensuring that yields on overnight

interest rates (Figure 14) continue to provide a stabilising factor for market stresses and provide significant low cost funding to financial institutions.

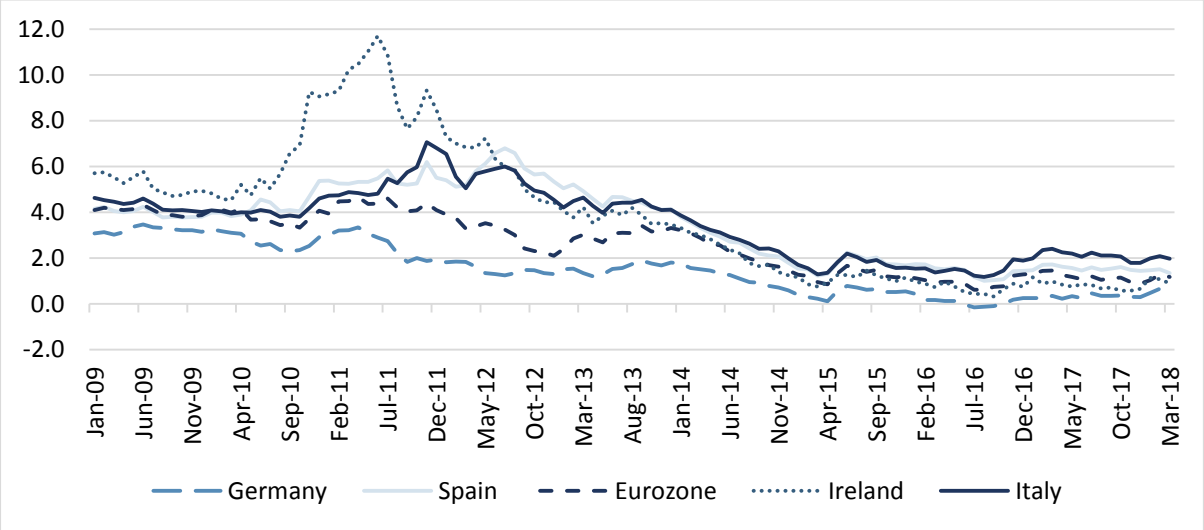
FIGURE 14 DAILY EURO OVERNIGHT INDEX AVERAGE – EONIA RATE (%)



Source: European Central Bank, Statistical Data Warehouse.

For Ireland, the low cost of financing on European markets, and in particular the ECB's public sector asset purchase programme, have ensured that the cost of borrowing for the Exchequer has been reduced. Indeed the cost of financing for Irish bonds has declined, to stand at just under 1 per cent for a ten-year placement. Given the high debt levels which the Irish Exchequer is servicing, the low cost of financing has been essential in underpinning the economic recovery. In the medium term, as the ECB begins to unwind its extraordinary monetary policy measures, the cost of financing will rise. This could pose a considerable risk for Ireland and, where possible, locking in long-term funding at the current low rate levels would be a prudent course of policy action.

FIGURE 15 10-YEAR GOVERNMENT BOND YIELD (%)

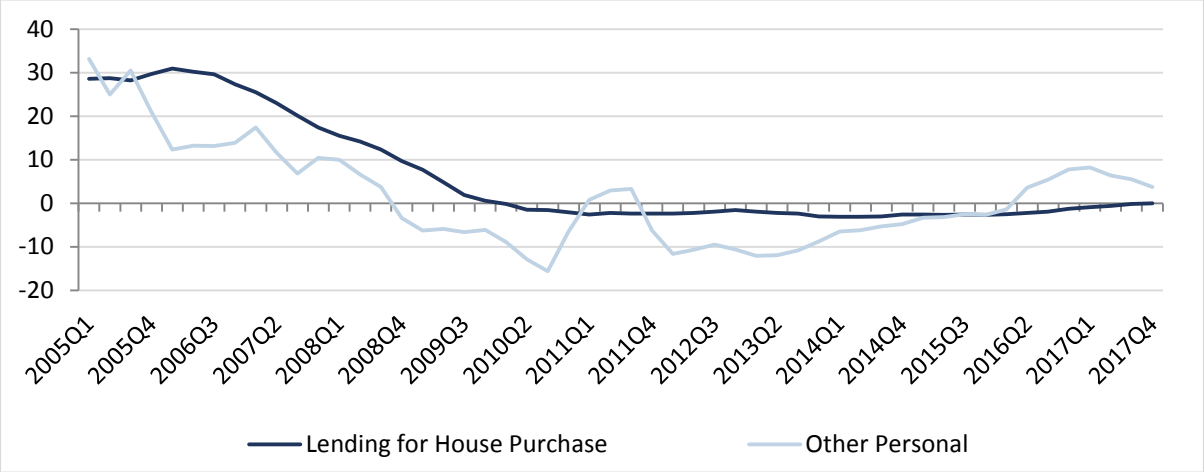


Source: Federal Reserve Bank of St. Louis database.

Household credit and the mortgage market

While the scars of the financial crisis still remain in the Irish mortgage market, recent data would point towards a normalisation of activity. Figure 16 presents the growth rates of credit to households from Irish resident credit institutions. The data are split by loans for house purchase and other personal loans (auto finance, credit cards, student loans etc.). For the first time since 2009, the stock of outstanding household credit has stopped falling. It must be noted however that household debt remains high and, with the end of deleveraging and household debt potentially beginning to rise again, this represents a material risk in terms of households' vulnerability to economic shocks. Non-mortgage credit continued to expand in Q4 2017 at an annualised rate of 3.7 per cent. This continues the decline in the growth rate from the high point of 8.2 per cent in Q1 2017.

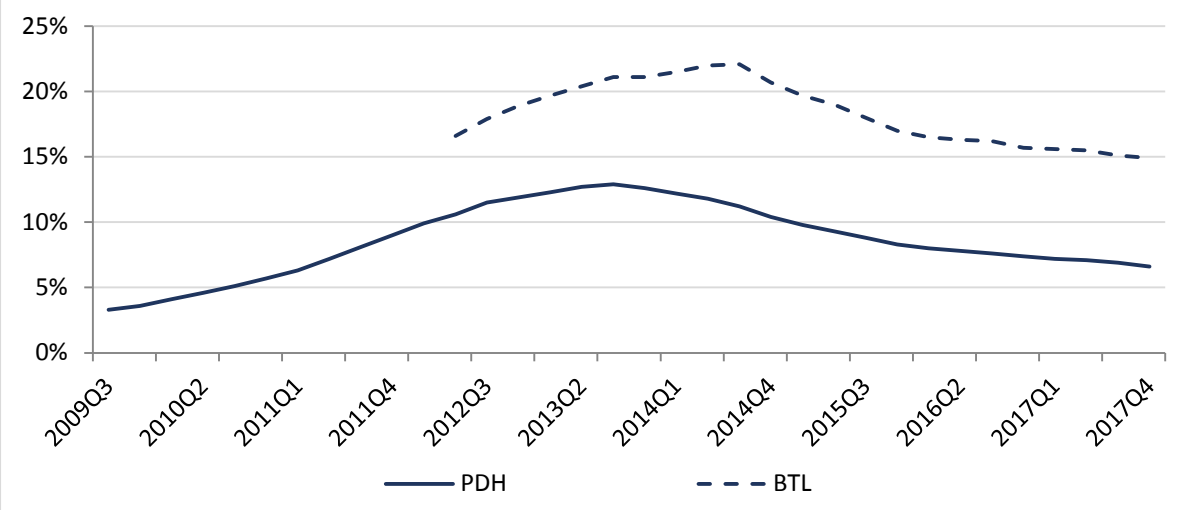
FIGURE 16 GROWTH RATES OF CREDIT TO HOUSEHOLDS (%)



Source: Central Bank of Ireland, Credit, Money and Banking Statistics.
Notes: Data are taken from Central Bank of Ireland data release A.18, Growth rates series codes 777 and 1,252.

As the decline in the level of credit to households appears to have ended, the share of mortgages in arrears also continues to fall. The improvement in the labour market as well as increasing house prices are both factors in determining a lower arrears rate. As of Q4 2017, the share of loans in arrears stood at 6.6 per cent, down marginally on the previous quarter and down from 7.4 per cent year-on-year. This constitutes a total of 9.8 per cent of the balance of outstanding private dwelling home (PDH) mortgages. The default rate on buy-to-let (BTL) loans has also reduced but remains high. A challenge remains in dealing with the relatively high share of loans in very deep arrears. In general for the Irish financial sector, dealing with long term arrears cases, especially those where no borrower engagement has been forthcoming, remains a significant challenge.

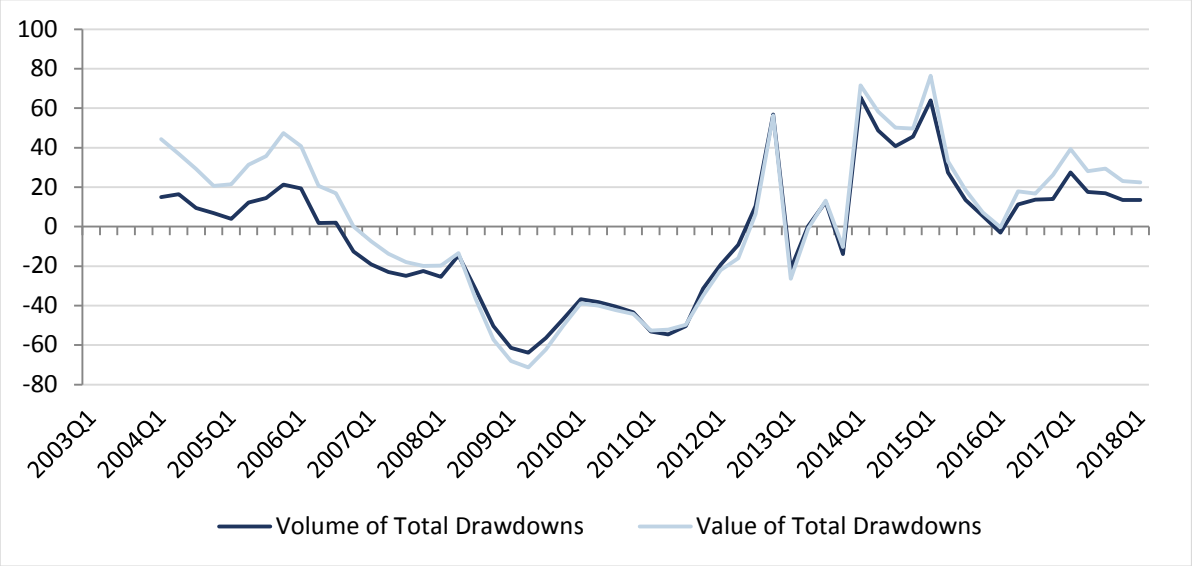
FIGURE 17 IRISH HOUSEHOLD MORTGAGE ACCOUNTS IN ARREARS BY TYPE OF LOAN (%)



Source: Central Bank of Ireland, Mortgage Arrears Statistics.
Notes: PDH refers to private dwelling houses loans while BTL are buy-to-let loans. Arrears if greater than 90 days past due payments.

In terms of new mortgage lending, the sharp increase in house prices in the past number of months has begun to coincide with a significant increase in mortgage lending. In Q1 2018, the volume of new mortgage drawdowns increased by 13.5 per cent year-on-year while the value of mortgages increased by 22.4 per cent. The relatively higher growth rate in the value relative to the volume of loans represents the fact that borrowers are drawing down larger and larger loans in an environment where house prices are increasing. The average loan size for mortgages was €224,818 in Q1 2018, which is 88 per cent of the peak value in Q1 2008.

FIGURE 18 YEAR-ON-YEAR GROWTH RATE OF NEW MORTGAGE DRAWDOWNS (%)

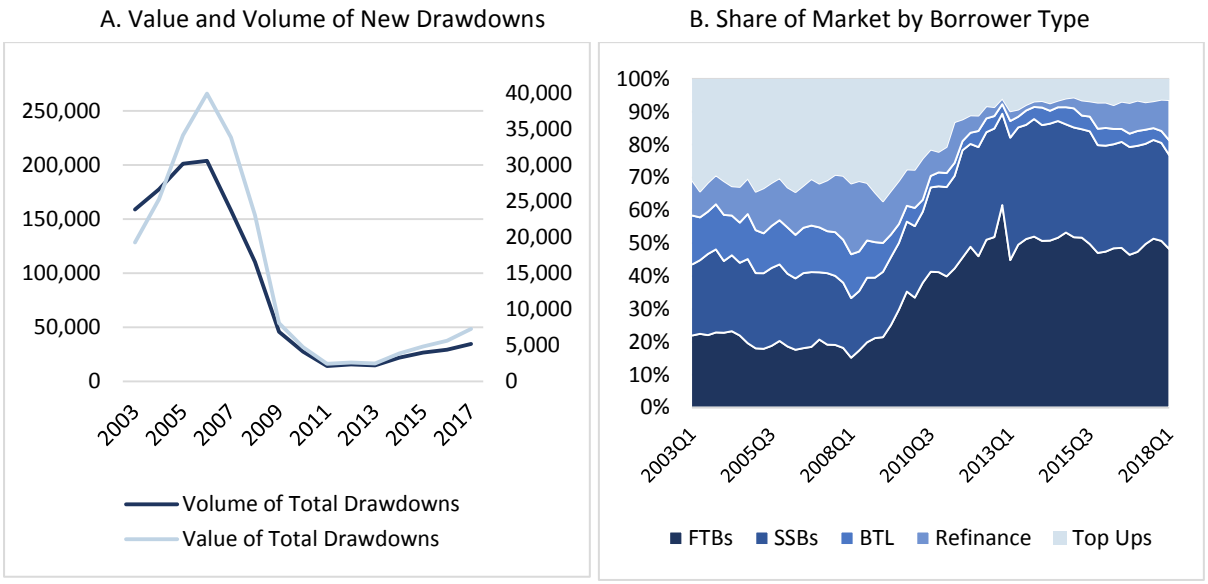


Source: Banking and Payments Federation Ireland.

With double-digit increases in mortgage lending and house prices, and with a rapidly expanding domestic economy, it is imperative to establish whether such developments are an early sign of overheating in the market or represent sustainable market dynamics.

In assessing this issue, three salient points arise. First, the value and volume of new mortgages may be rapidly growing but remain low in historical terms. The number of new loans is well below the annualised figure for 2003, the earliest available data and a year which pre-dates some of the most excessive credit boom years that followed.

FIGURE 19 TOTAL NEW DRAWDOWNS OVERVIEW (VALUE AND VOLUME), 2003-2018



Source: Banking and Payments Federation Ireland.
Note: FTBs (First Time Buyers), SSBs (Second and Subsequent Buyers), and BTL (Buy-to-Lets).

Second, the majority of loans are now accounted for by First Time Buyers and Second Time Buyers with few top-ups or buy-to-let loans. Research for Ireland and other countries indicates that investment loans are a higher credit risk (Lydon and McCarthy, 2013;[11] Haugwhout et al., 2011;[12] Lee, 2013[13]). The lower share of buy-to-let loans and top-ups suggests a more stable basis for current new lending. However, it should be noted that recently, a number of buy-to-let lenders are advertising credit on interest-only terms for the first time since the crisis. Interest-only loans have been shown to carry a heightened credit risk (Kelly et al., 2014).[14] A substantial rise in interest-only credit for investment purposes, if it materialises, could heighten the riskiness of new lending. Furthermore, as an indication of heightened buy-to-let lending, two new financial institutions have submitted data to the Central Bank under the macroprudential framework indicating for the first time that they are lending more than €50 million per annum (see Kinghan et al., 2018).

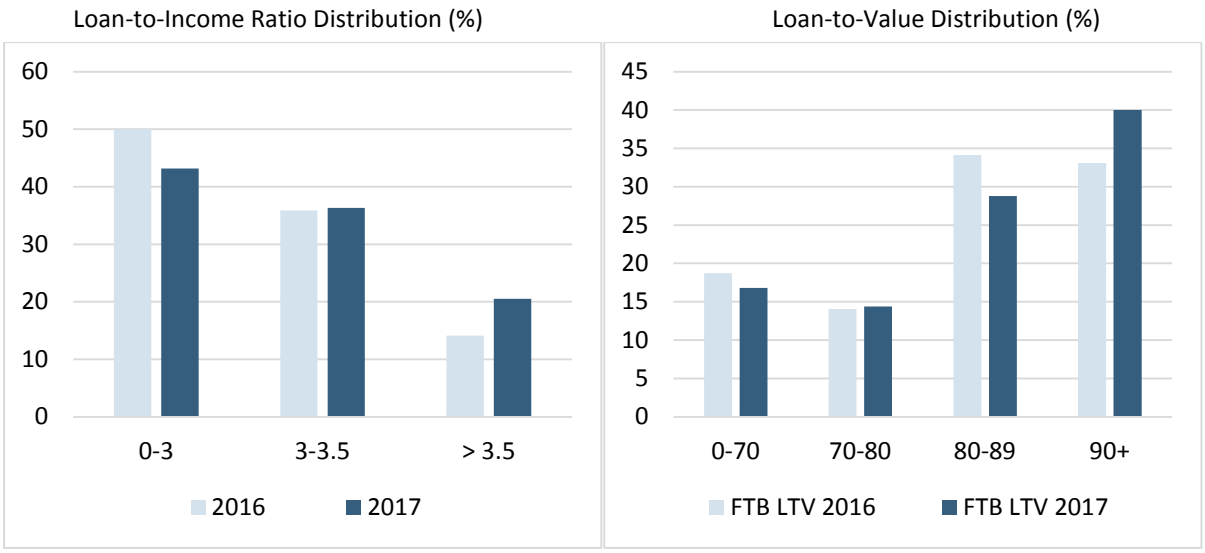
11 Lyndon, R. and Y. McCarthy (2013). 'What Lies Beneath? Understanding Recent Trends in Irish Mortgage Arrears', *The Economic and Social Review*, 44, issue 1, https://EconPapers.repec.org/RePEc:eso:journl:v:44:y:2013:i:1:p:117-150.

12 Haughwout, Andrew, Donghoon Lee, Joseph Tracy and Wilbert van der Klaauw (2011). 'Real estate investors, the leverage cycle, and the housing market crisis', No 514, Staff Reports, Federal Reserve Bank of New York, https://EconPapers.repec.org/RePEc:fip:fednsr:514.

13 Lee, Donghoon, Christopher Mayer and Joseph Tracy (2012). 'A New Look at Second Liens', No 18269, NBER Working Papers, National Bureau of Economic Research, Inc, https://EconPapers.repec.org/RePEc:nbr:nberwo:18269.

14 Kelly, Jane, Gerard Kennedy and Tara McIndoe-Calder (2014). 'Interest-only mortgages in Ireland', No 05/EL/14, Economic Letters, Central Bank of Ireland.

FIGURE 20 THE FIRST TIME BUYER CREDIT CREEP



Source: Banking and Payments Federation Ireland.

Thirdly, as house prices increase at a faster pace than incomes and wealth accumulation, borrowers are likely to have to draw down larger and larger loan sizes. Using data from Kinghan et al. (2018) on the distribution of mortgage credit conditions in Ireland, it can be seen that FTB LTV and LTI ratios have been increasing with more loans originating at the maximum allowable under the current macroprudential framework. Indeed, the increase of FTB credit conditions towards the upper limit of the macroprudential framework highlights the importance of the regulations and their ability to ensure that house prices do not decouple from incomes and other housing market fundamental variables. Indeed, Keenan and O'Brien (2018) explore the determinants of new mortgage lending as a ratio of disposable income as an early warning indicator of stress in the mortgage market. Their estimates suggest that new lending in Ireland is currently in line with fundamentals but that any substantial increase in the coming years could become unsustainable.

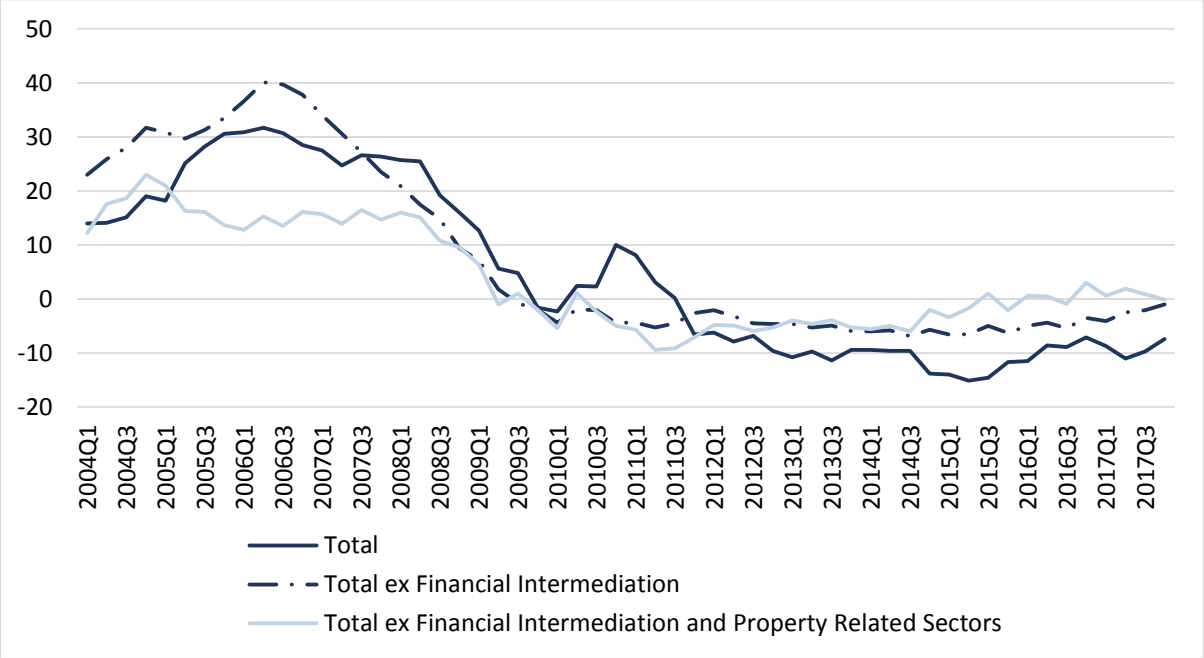
At present, the low level of transactions in the mortgage market, the concentration of lending towards non-investment borrowers, and the relatively strict credit conditions under which loans are being originated suggest the risks from new lending activity are contained. However, legacy issues remain and, with leverage levels rising, the impact of an interest rate reversal or other external shock could have a negative impact on credit performance. Furthermore, any protracted continuation of rapid lending growth could lead to a build-up of new systemic vulnerabilities. Within this context, anticipatory policy action, such as

the recent suggestions around raising the counter-cyclical capital buffer in a pre-emptive fashion,[15] would be prudent and appropriate.

Trends in the SME and corporate credit market

Turning to the provision of credit to non-financial corporations, the overall stock of credit is continuing to decline, down by -7.4 per cent in Q4 2017 year-on-year. Credit to firms outside the financial and property related sectors, which can be termed as finance for the real economy, grew through most of 2017 but fell back slightly in the final quarter.

FIGURE 21 GROWTH RATES OF CREDIT TO PRIVATE SECTOR ENTERPRISES (%)



Source: Central Bank of Ireland, Credit, Money and Banking Statistics.

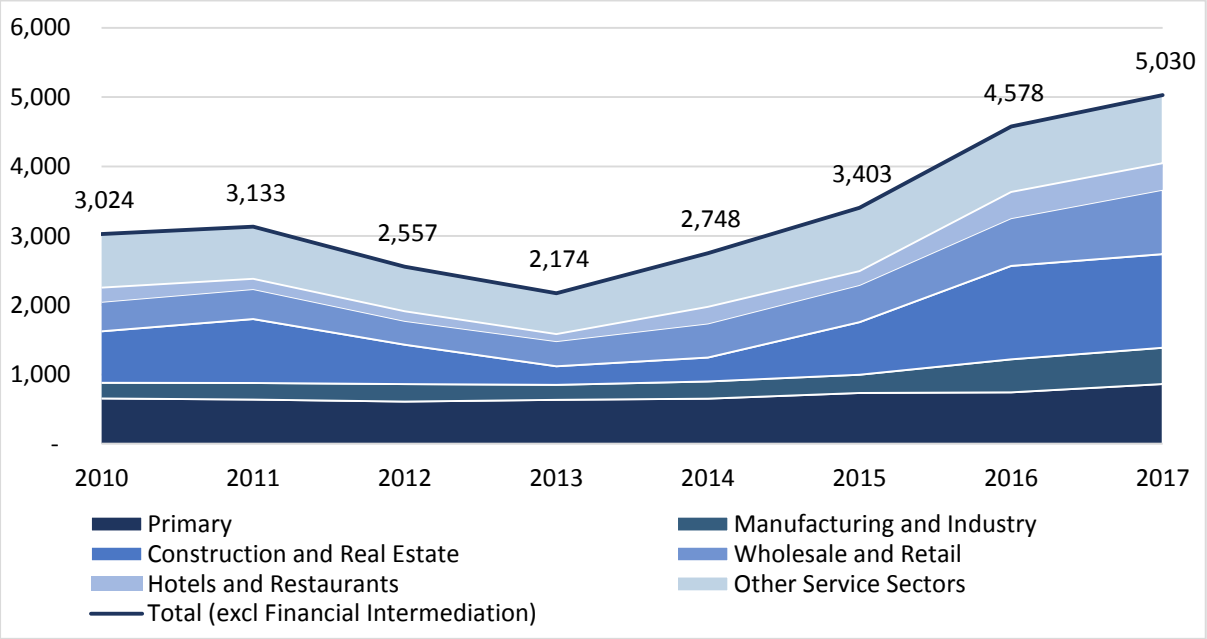
Notes: Data are taken from Central Bank of Ireland data release A.14, Growth rates series codes 17, 17.1 and 17.2.

Another aspect of new lending that provides a guide to the health of the domestic economy is lending to small business. Since 2013, total annual gross new lending to SMEs has grown steadily. For 2017, total new lending amounted to just over €5 billion, up from €4.5 billion in 2016 representing a 10 per cent increase year-on-year. The increase in the level of new lending for SMEs is consistent with the deepening of the domestic recovery and the normalisation of activity in the banking sector.

[15] Donnery, S. (2018). 'When is the time right? Macroprudential Policy and the Cycle', speech to Maynooth University, May, 2018: www.centralbank.ie/news/article/when-is-the-right-time-macroprudential-policy-and-the-cycle-deputy-governor-donnery-31-May-2018.

While the sectoral distribution of credit growth has been broad-based, new lending flows to the wholesale and retail sector have been growing in a particularly rapid manner (approximately 35 per cent year-on-year). The wholesale and retail sector is particularly reliant on the domestic economy and it is unsurprising that credit to this sector is recovering as the domestic economy grows rapidly.

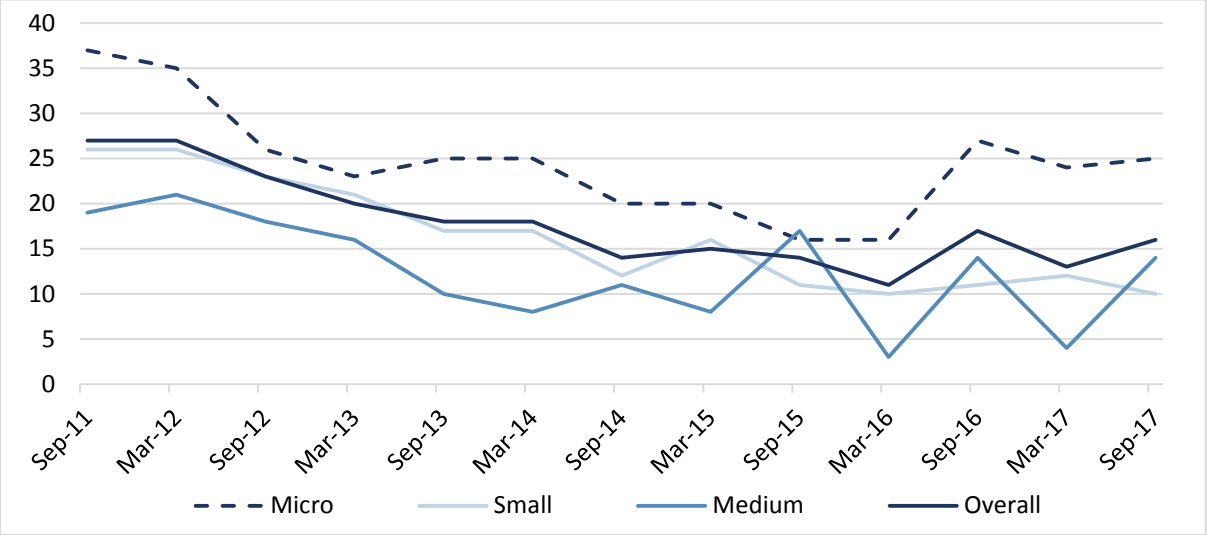
FIGURE 22 ANNUAL NEW LENDING TO IRISH SMES BY SECTOR (€ MILLION)



Source: Banking and Payments Federation Ireland.

While the level of new lending has grown year-on-year, survey data on rejection rates for bank finance across SMEs point to diverging trends in the ease of credit access. Figure 23 presents the average rejection rate for SMEs seeking finance separately for micro-, small- and medium-sized firms. While in general credit availability has improved over time, since mid-2016 micro-sized firms have experienced a tightening of credit conditions with rejection rates rising, which may point to uncertainties in bank lending following the outcome of the Brexit referendum in the UK. In summary, it appears that credit flows are returning to the SME sector but financing availability has tightened moderately for the smallest firms.

FIGURE 23 AVERAGE REJECTION RATE FOR SMES SEEKING FINANCE (%)

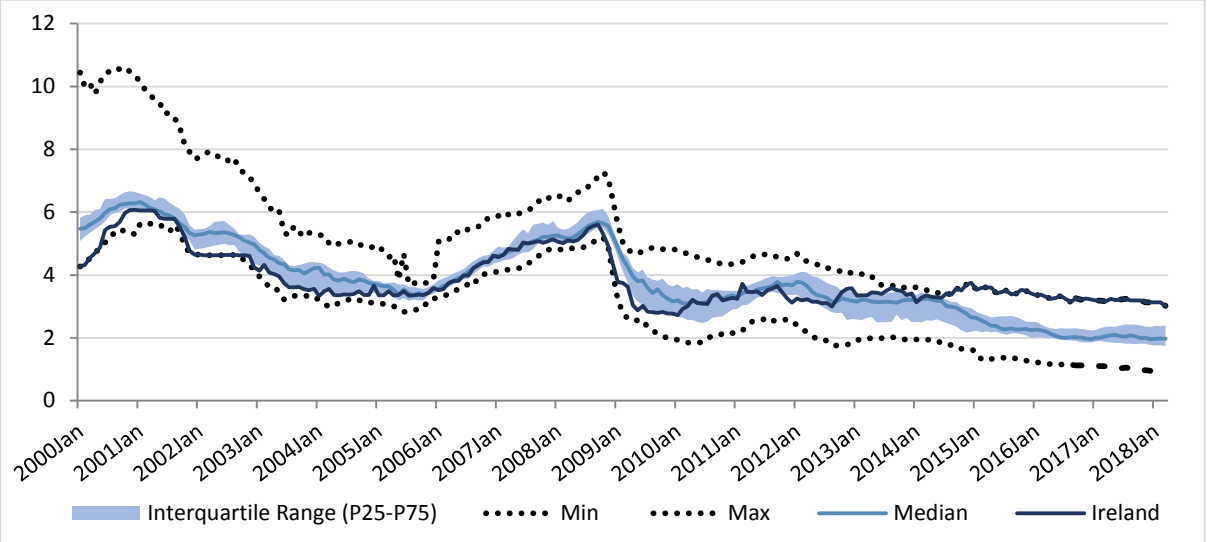


Source: Banking and Payments Federation Ireland.

Interest rates and the cost of finance

The cost of finance in Ireland for both corporate and household credit is high by European standards. More recently, some reductions in lending rates are occurring. The standard variable rate on new mortgage loans in Ireland stood at 3.31 per cent as of Q1 2018; this is down slightly year-on-year from 3.38 in Q1 2017. However, comparing Irish new house purchase loans relative to other Eurozone economies, it can be seen that interest rates on mortgages in Ireland remain the highest of comparator countries (Figure 24).

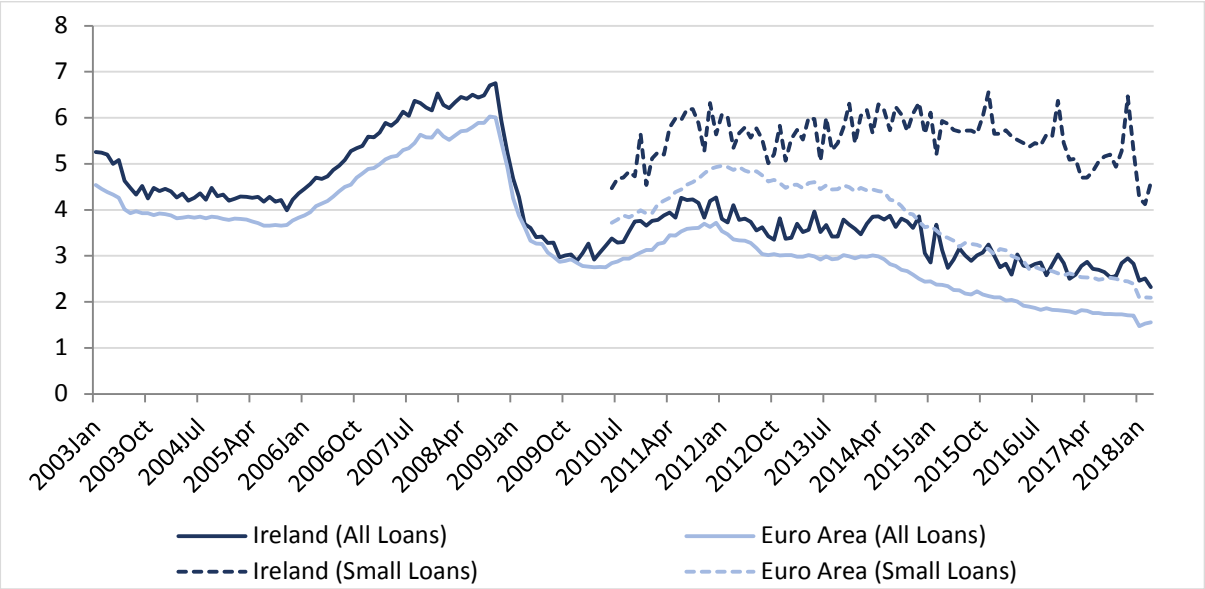
FIGURE 24 INTEREST ON NEW HOUSE PURCHASE LOANS TO HOUSEHOLDS – EUROPEAN COMPARISON (%)



Source: ECB MFI data.
Notes: Countries included are: AT, BE, EE, ES, FI, FR, IE, IT, LT, NL, PT, SI. These countries are selected due to data availability. Data differ between this chart presented and the text as the ECB comparison data include restructured mortgages whereas the new business SVR is only for new drawdowns.

A similar picture emerges in relation to corporate interest rates. Figure 25 presents the interest rates on new business loans for non-financial corporates in Ireland relative to the average for the Eurozone. Two series are presented: 1) covering all loans and 2) capturing loans of less than €250,000 which is used as a proxy for loans for SMEs. In March 2018, the average rate on new loans for all Irish corporates was 2.32 per cent and the Eurozone average was 1.56 per cent. For small Irish corporate loans, the interest rate in June 2017 was 4.59 per cent compared to the Eurozone average of 2.09 per cent. Interest rates are down year-on-year for small corporates but remain considerably higher than for their European peers.

FIGURE 25 INTEREST RATES ON NEW CORPORATE LOANS – EUROPEAN COMPARISON



Source: ECB MFI data. Small loans refer to loans less than €250,000.

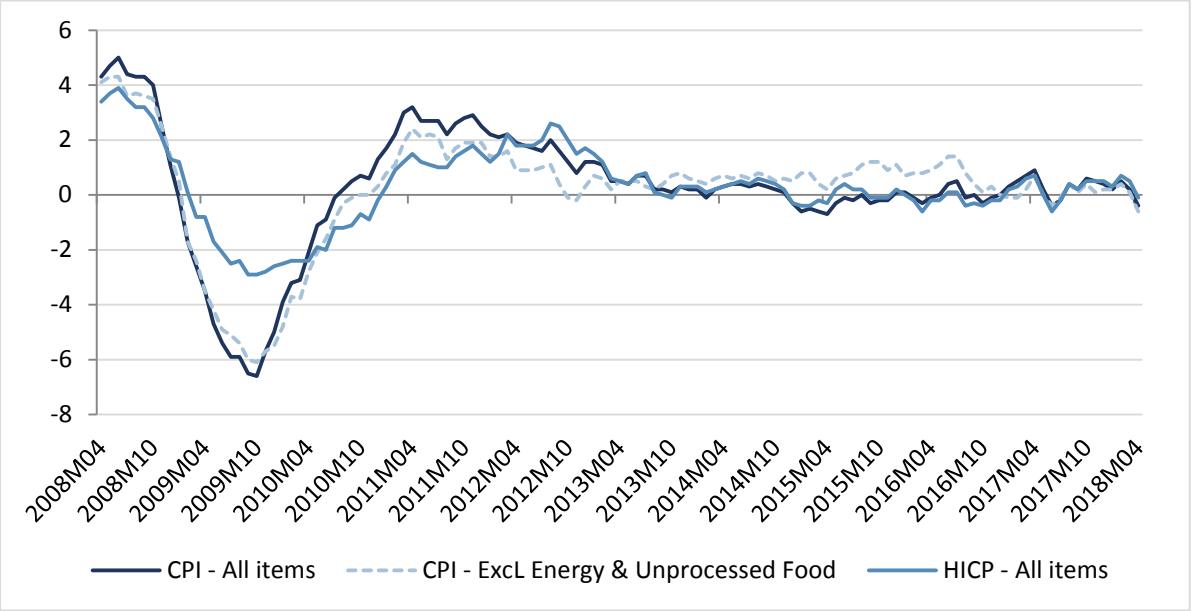
PRICES AND EARNINGS

The Consumer Price Index (CPI) indicates inflation has remained low in the year to Q1 2018, averaging 100.4 index points, relative to 100.1 index points for the same period last year. Figure 26 highlights a persistently low inflation rate across three different measures. In fact, the most recent data for April 2018 indicate a falling price level with prices inclusive of all items over the last 12 months averaging a decline of 0.4 per cent. When excluding energy and unprocessed food, this measure falls even further at 0.6 per cent.

While overall inflationary pressures are low, there is some variation across different groups of products and services. In Q1 2018, increasing prices were evident in the following areas: housing, water, electricity, gas and other fuels (+4.1 per cent), restaurants and hotels (+2.2 per cent) and education (+1.6 per cent). Other goods in the economy continue to experience declines in price. In

Q1 2018, prices fell annually by 3.0 per cent in clothing and footwear. Furnishings, household equipment and routine household maintenance has experienced the strongest scale of deflation, down 3.8 per cent relative to the previous year. As of April, the Harmonised Index of Consumer Prices (HICP) fell annually by 0.1 per cent. For Q1 2018, the HICP rose annually by 0.5 per cent resulting in the Irish economy experiencing one of the lowest rates of inflation across the EU28.

FIGURE 26 ANNUAL GROWTH IN INFLATION (%)



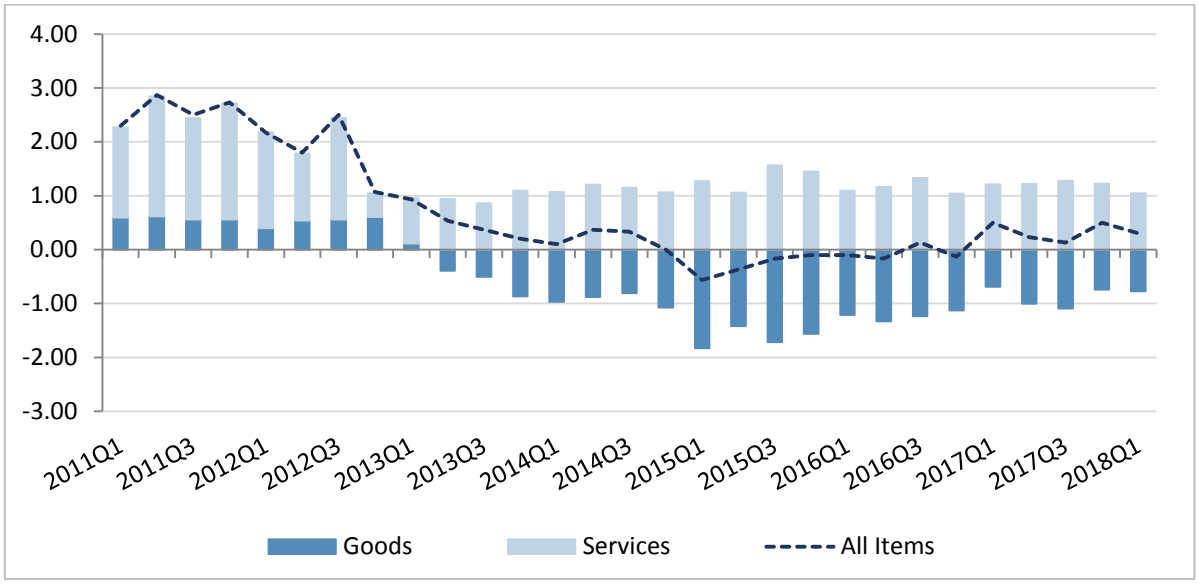
Source: Central Statistics Office.

The difference in price trends between the goods and services sectors is quite apparent. The underlying trends in the CPI (Figure 27) for Q1 2018 indicates service prices have averaged a 1.1 per cent annual increase while the price of goods has fallen by 0.8 per cent. Examining the CPI of goods reveals that, as of April 2018, prices have fallen to levels last seen in late 1999.

Given our current forecasts of further reductions in unemployment rates, accelerated wage growth, and thus increased private consumption expenditure, it is expected that the disinflation experienced by certain goods will dissipate through 2018. In 2019, the exact nature of Brexit could have a significant impact on inflation; Lawless and Morgenroth (2018) suggest the imposition of potential tariffs between the UK and the EU and other trade restrictions could cause the domestic CPI to rise between 2 and 3.1 per cent.[16]

[16] Lawless, M. and E. Morgenroth (2018). 'Brexit and Irish Consumers', *Quarterly Economic Commentary*, Spring 2018.

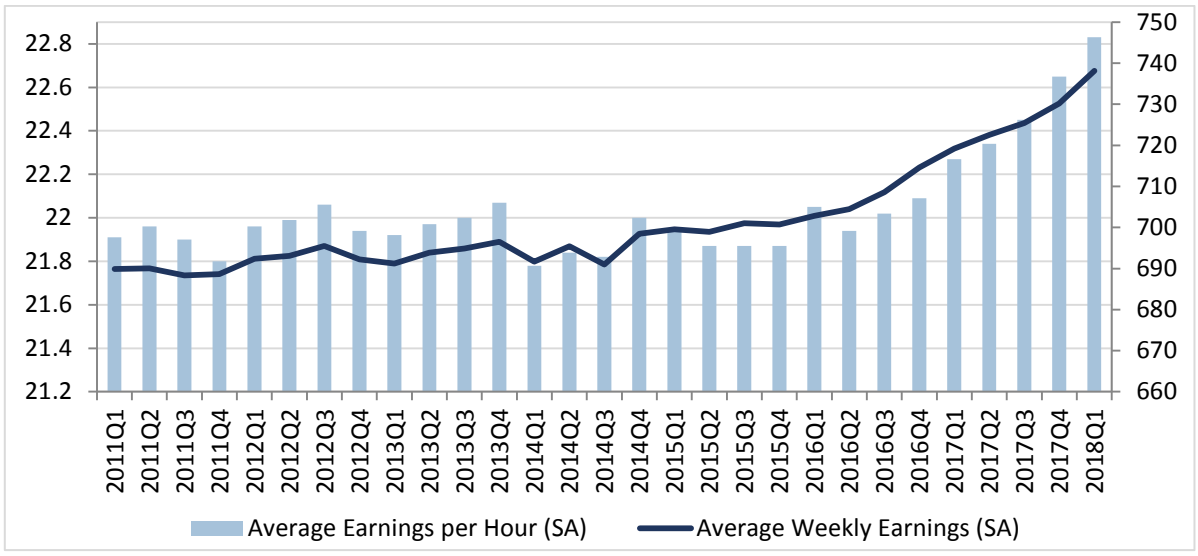
FIGURE 27 DECOMPOSITION OF ANNUAL (%) CPI GROWTH INTO GOODS AND SERVICES GROWTH



Source: Central Statistics Office.

In Q1 2018, seasonally-adjusted Average Hourly Earnings increased by 0.8 per cent compared to the previous quarter. On an annual basis, earnings increased by 2.5 per cent, to €22.83 per hour. The largest increase for the quarter was observed in the ICT sector, rising annually by 6.4 per cent (an additional €1.87 per hour). Other notable increases occurred in financial, insurance and real estate activities (+4.1 per cent) and education (+5.2 per cent). Figure 28 highlights an acceleration in the growth of earnings occurring in more recent quarters. As of Q1 2018, average weekly earnings reached €738.14, representing a 2.6 per cent increase from €719.2 in Q1 2017.

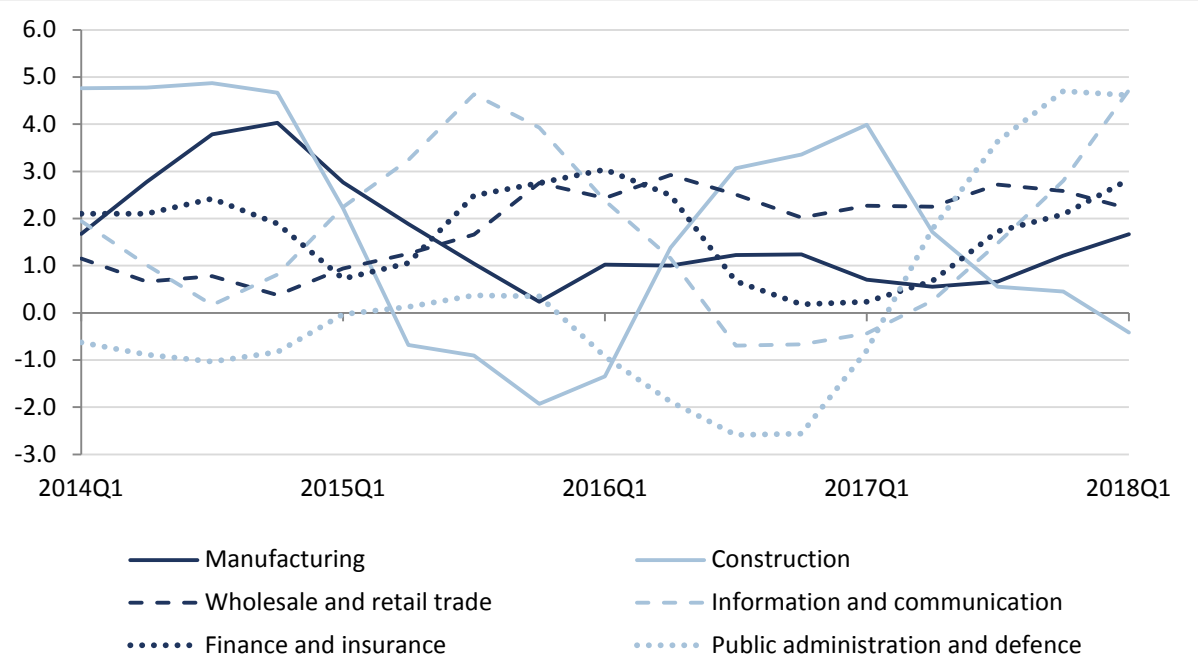
FIGURE 28 TRENDS IN AVERAGE EARNINGS PER WEEK AND PER MONTH (€)



Source: Central Statistics Office.
Note: The y-axis on the LHS scale has a very low range of values.

Figure 29 presents the four-quarter rolling average growth rate in earnings by sector. As of Q1 2018, a positive trend persists with overall earnings increasing by 2.4 per cent compared to the same period last year. The largest annual gains occurred within public administration and ICT sectors, rising by €41.77 and €50.43 respectively. A worldwide shortage of STEM workers suggests recent increases in the growth of ICT wages and employment are also likely to persist throughout 2018.[17] While the majority of sectors experienced improvements, those employed in construction saw a minor decrease in average weekly earnings of 0.4 per cent.

FIGURE 29 FOUR-QUARTER ROLLING AVERAGE GROWTH BY SECTOR IN WEEKLY EARNINGS



Source: Central Statistics Office.

In light of the *Commentary*'s forecast of strong domestic demand and the continued positive developments in the labour market performance, both wages and prices are expected to increase over the next two years. Consumer prices are expected to increase moderately by 0.7 per cent in 2018, followed by 1.1 per cent in 2019. Earnings are forecast to rise by 2.9 per cent and 3.6 per cent for the same periods, meaning real wage growth is likely to continue rising as the economy approaches full employment levels.

[17] Collins McNicholas Recruitment and HR Services Group (2016). 'Information & Communication Technology', *Labour Market Review.*

TABLE 2 INFLATION MEASURES

	2016	2017	2018	2019
	Annual % Change			
CPI	0.0	0.3	0.7	1.1
Growth in Average Hourly Earnings	1.7	2.0	2.9	3.6

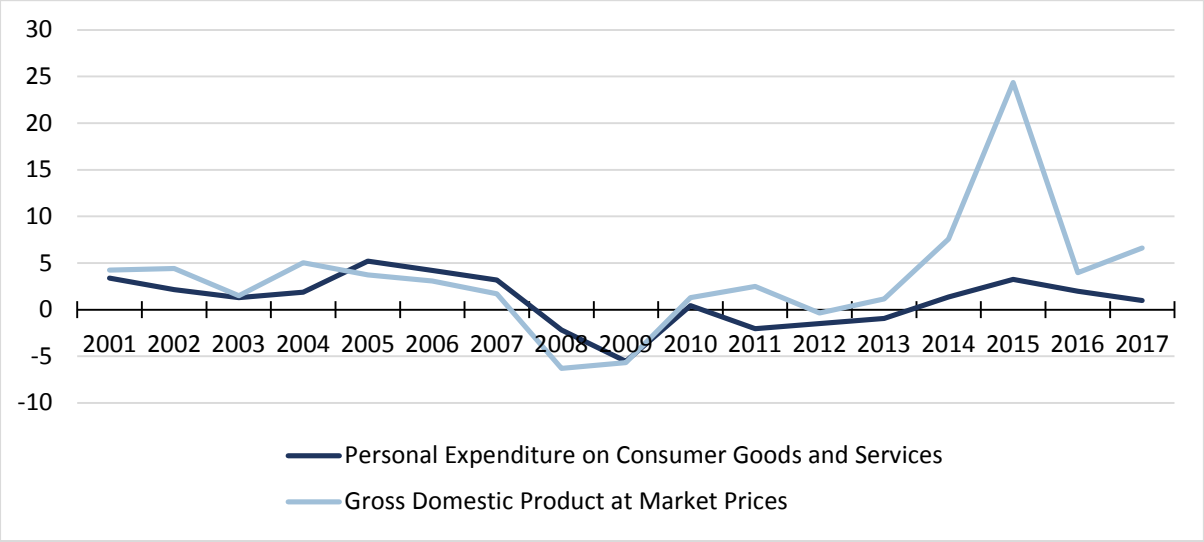
Sources: Central Statistics Office and ESRI forecasts.

DEMAND

Household sector consumption

Given the ongoing difficulties associated with estimates of Irish output levels, household consumption expenditure[18] is, therefore, a better indicator for describing the material wellbeing of the Irish population. Figure 30 highlights the discrepancy between the year-on-year growth rates of GDP per capita and household consumption expenditure per capita. Growth in GDP per capita exhibits not only higher volatility but also a slightly different trend, particularly since 2015. Despite growing positively in 2017, household consumption expenditure growth rate has slowed down relative to 2015 and 2016. GDP growth however, accelerated in 2017 relative to 2016.

FIGURE 30 GDP PER CAPITA AND PERSONAL CONSUMPTION ON GOODS AND SERVICES PER CAPITA, YEAR-ON-YEAR CHANGE (%)



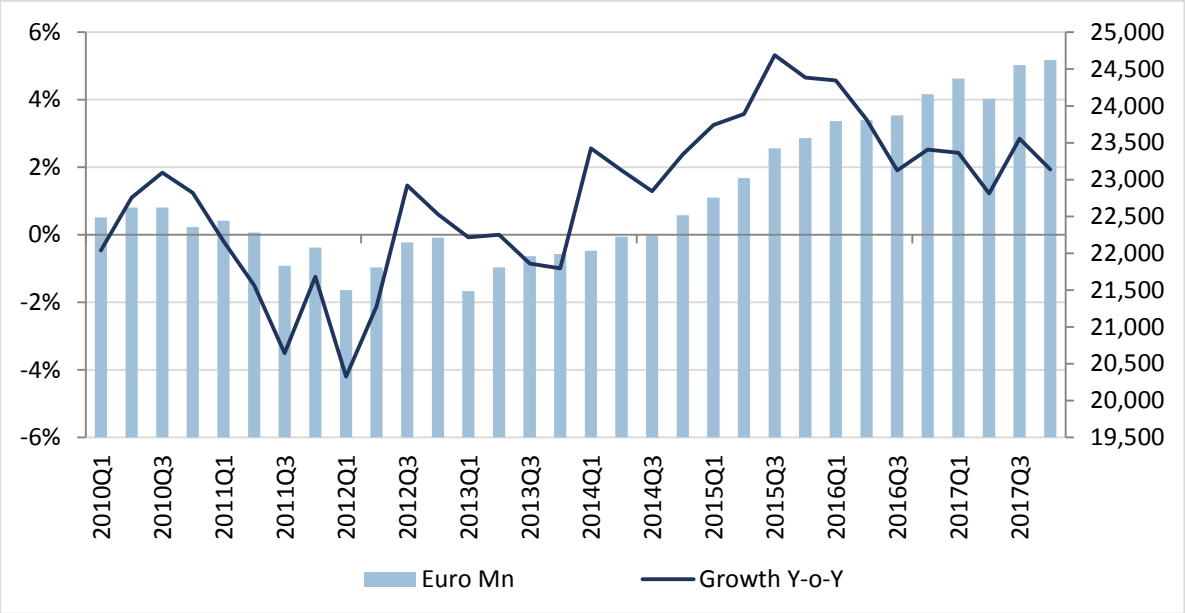
Source: Central Statistics Office.
Note: Quarterly National Accounts at Constant Market Prices and Seasonally Adjusted.

In 2017, household consumption expenditure continued to benefit from the ongoing improvements in the labour market. The last quarterly National Accounts

[18] Expenditure on goods and services that are purchased by individuals.

show that, on an annualised basis, personal consumption expenditure increased by 2.8 per cent in Quarter 3, 2017 and 1.9 per cent in Quarter 4, 2017. On a quarter-on-quarter basis, consumption spending increased by 1.9 per cent and 0.3 per cent, respectively. The persistent fall in unemployment, increase in disposable incomes and an improvement in household balance sheets have all provided a supportive context for household spending. Although no data are available for 2018, the rising consumption pattern is likely to have continued, albeit at a slower pace.

FIGURE 31 QUARTERLY PERSONAL CONSUMPTION ON GOODS AND SERVICES – CONSTANT MARKET PRICES AND SEASONALLY ADJUSTED



Source: Central Statistics Office.

Retail sales can be used as a leading indicator for consumption. This provides a snapshot of what goods and services households are purchasing. Table 3 presents retail sales for selected items in terms of the annual growth rate in the volume of sales. For all businesses, retail sales are up 1.1 per cent in the year to the first quarter of 2018. If motor sales are excluded, sales are up by 4.5 per cent.

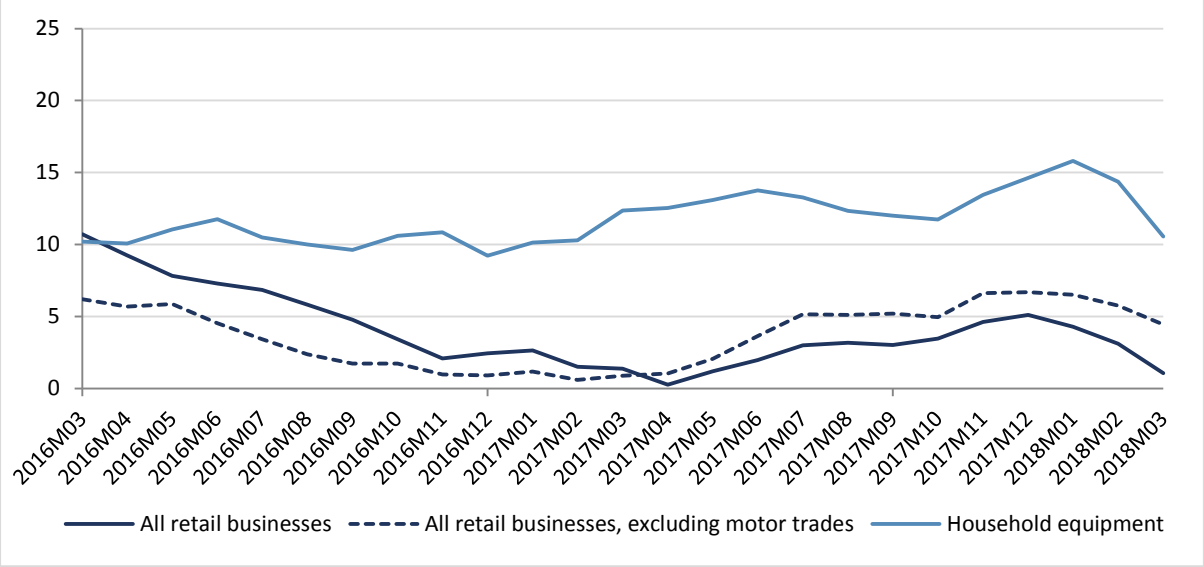
TABLE 3 GROWTH IN SELECT RETAIL SALES (VOLUME) ITEMS (Q1 2018)

Retail Business – NACE REV 2	Volume of Sales
	Annual % change
Motor trades	-3.3
Non-specialised stores (excluding department stores)	5.6
Department stores	4.8
Clothing, footwear and textiles	2.7
Furniture and lighting	9.2
All businesses excl. motor trades	4.5
All businesses	1.1

Source: Central Statistics Office.

Sales were boosted by home improvements (furniture and lighting are up by 9.2 per cent year-on-year) which seems to be closely related to the recovery in the housing market. The overall trends in retails sales are displayed in Figure 32. This chart presents a three-month rolling average of retail sales for total sales, sales excluding the motor trade, and for household equipment. Sales of housing equipment[19] experience high growth rate (10.6 per cent in May), compared with other retail sales. Despite remaining strongly positive, retail sales (both including and excluding motor sales) seem to have slowed down since the beginning of the year.

FIGURE 32 GROWTH IN RETAIL SALES INDEX VOLUME ADJUSTED (BASE 2005=100), THREE-MONTH ROLLING AVERAGE (%)

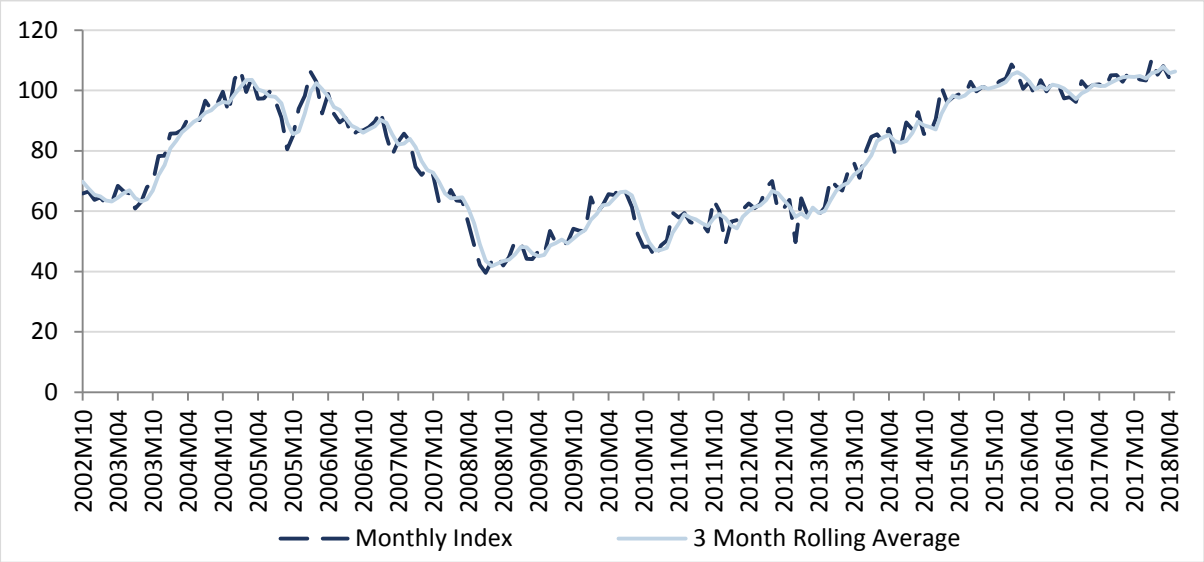


Source: Central Statistics Office.

[19] This includes furniture and lighting; hardware, paints and glass and electrical goods.

Figure 33 presents the ESRI/KBC Consumer Sentiment Index which tracks the monthly views of households on their current and future economic perspectives. The three-month rolling average index reached its highest value in May 2018 (107.9 index points). Despite falling slightly in April 2018 (-2.0 per cent from March), the index rose in May by 0.5 per cent. Since 2013 the ESRI/KBC Consumer Sentiment Index has followed an overall positive trend. One of the main determinants of this is the strengthening of households' views on their personal financial outlooks relative to 12 months ago.

FIGURE 33 ESRI/KBC CONSUMER SENTIMENT INDICATORS



Source: ESRI/KBC.

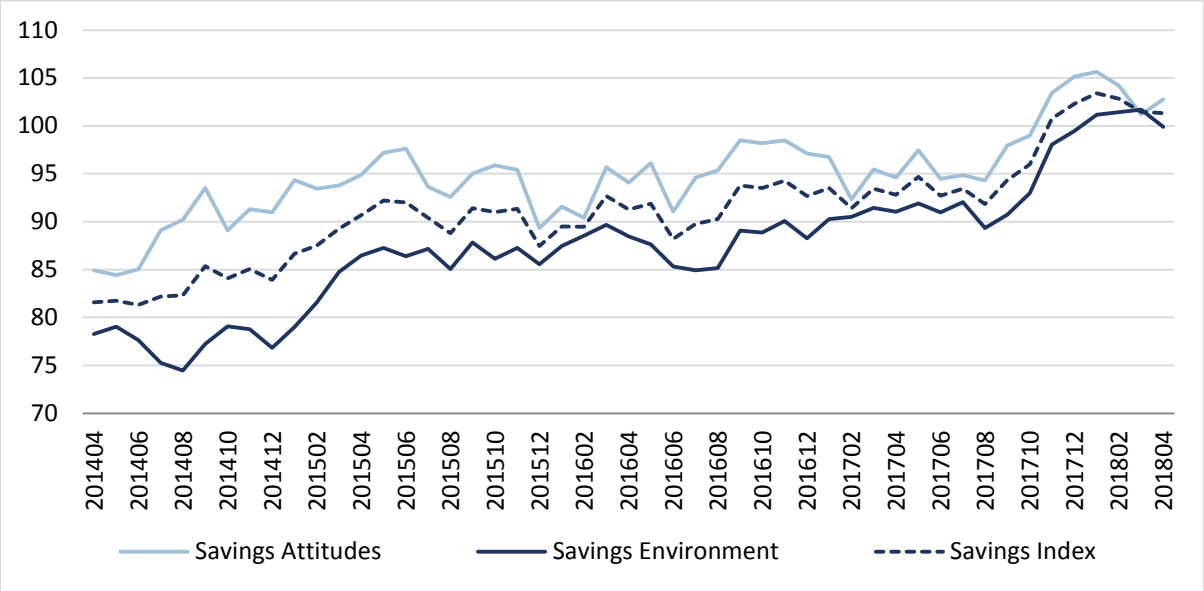
In addition to understanding trends in consumer sentiment, further insight into Irish households' appetite for spending and views on economic activity can be drawn from their savings behaviour. Figure 34 displays the three-month rolling average of ESRI/Bank of Ireland Savings Index, which measures Irish peoples' sentiment towards savings. The overall Index had been rising since August 2017, while it dropped slightly in March and remained stable in April 2018. Relative to April 2017, the overall Savings Index is up by 9.2 per cent.

The two sub-indexes that compose the Savings Index are the Savings Attitudes and the Savings Environment. The three-month average of the Savings Attitudes Index[20] increased by 8.6 per cent to 103 points in April 2018, from 95 points in April 2017. This increase was mainly driven by a heightened satisfaction with the

[20] The Savings Attitude Index is built on two questions which ask respondents about their saving behaviour and how they feel about the amount they save.

amount saved (+13.6 per cent). The Savings Environment Index[21] increased by 9.7 per cent in April 2018 as views on both the present (+8.5 per cent) and future (+10.9 per cent) savings landscape improved. To explore the impact of Brexit on households' savings, in April 2018 the Bank of Ireland and the ESRI undertook a bespoke survey module of the regular Savings Index. We found that few Irish households were saving to prepare for Brexit. The rise in savings rates observed over the past 12 months does not appear to have been driven by the impact of the UK's exit from the European Union.

FIGURE 34 SAVINGS INDEX AND SUB-INDEXES, THREE-MONTH ROLLING AVERAGE



Source: ESRI/Bank of Ireland.

The overall position of Irish households' net worth, which is the stock of financial and housing assets minus the stock of liabilities, is presented in Figure 35. Irish household net worth grew by 2.1 per cent in Quarter 4, 2017 relative to Quarter 3, as loan repayments reduce the stock of outstanding liabilities (-0.8 per cent) and rising asset prices (+1.7 per cent) raise the total value of domestic balance sheets. Net worth is now at the highest level (€726.8 billion) since the Q2 2007 peak of €719.6 billion. A large proportion of the increase in Q4 2017 was driven by a rise in the housing stock of €8.5 billion. Financial assets rose by €5.1 billion and liabilities declined by €1.2 billion in the Q4 of 2017 relative to Q3 2017.

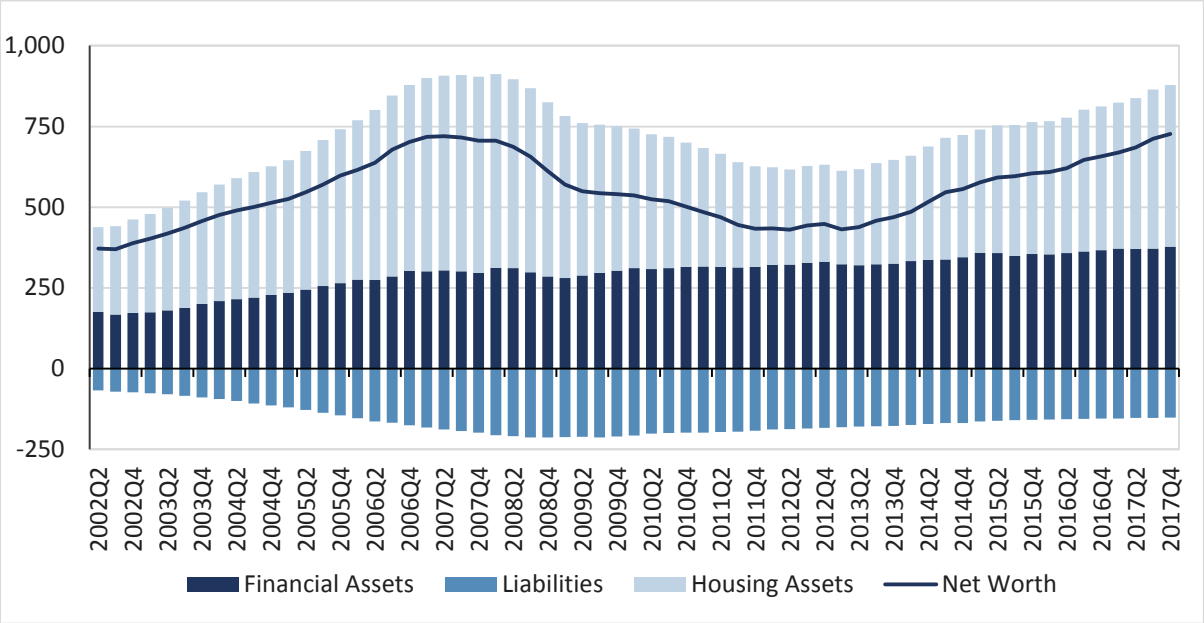
Household net worth decreased considerably during the financial crisis as housing assets fell sharply in value. In the second quarter of 2012, net worth was at

[21] The Savings Environment Index is built on two questions which ask whether or not respondents believe that the current period is a good time to save and whether or not they believe that in six months' time it will be a good time to save.

€430 billion and housing assets were worth €295 billion. In the fourth quarter of 2017, total net worth was up by 69.0 per cent and housing assets by 69.8 per cent. While improving, financial assets are up only by 17.2 per cent relative to Q2 2012 and liabilities are down by 19.0 per cent. Therefore, the improvement in overall net worth is driven to a large extent by the recovery in the housing market.

Although, overall net worth in Q4 2017 is above the Q2 2007 peak level by 1.0 per cent, housing assets are 16.9 per cent lower in value now compared with 2007. Financial assets are 23.9 per cent higher than at the peak level and liabilities are 19.5 per cent lower in value terms.

FIGURE 35 IRISH HOUSEHOLD NET WORTH (€ BILLION)



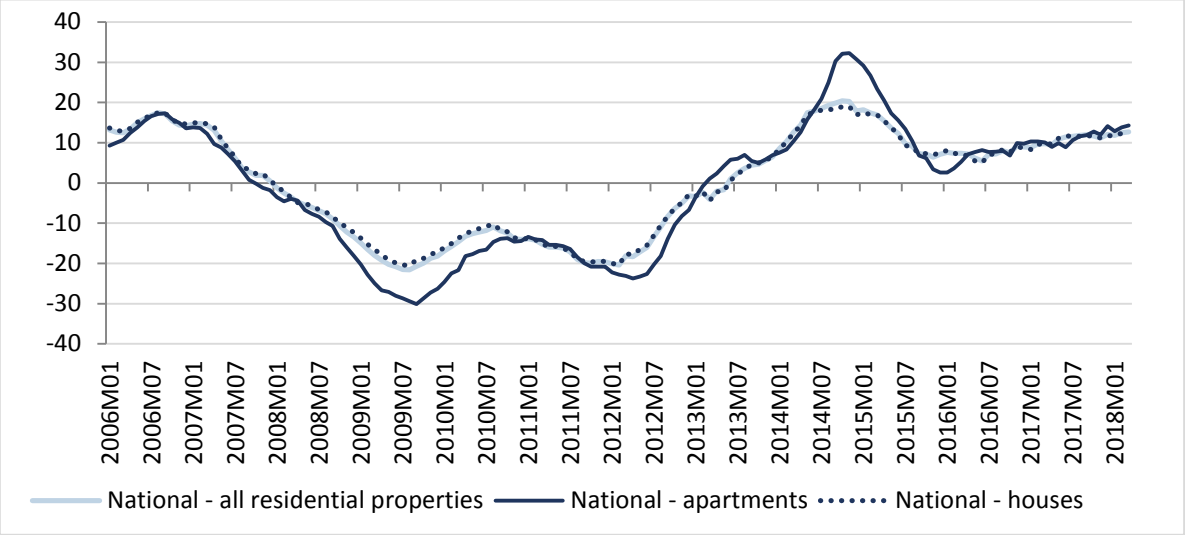
Source: Central Bank of Ireland, Quarterly Financial Accounts.

Property market developments

National property prices started to accelerate during the second half of 2016 and reached double digit growth rates in May 2017. Growth in property prices continued to pick up into 2018. Figure 36 plots the year-on-year growth rates in residential property prices by property type. In March 2018 prices increased by 12.7 per cent year-on-year, the fastest growth rate since May 2015. This compares with an increase of 9.8 per cent in the year to March 2017 and an increase of 7.4 per cent in the year to March 2016. National property prices still remain 21.6 per cent lower than the peak reached in May 2007.

In the year to March 2018, the price of apartments grew by 14.3 per cent year-on-year and the price of houses increased by 12.5 per cent. The faster pace of apartment prices was mainly driven by developments in the Dublin market.

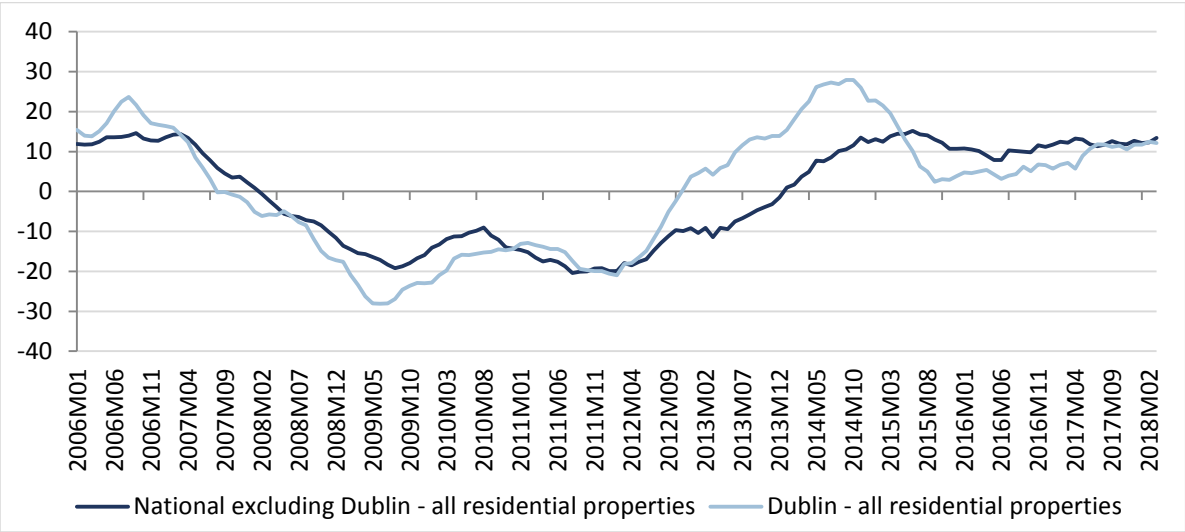
FIGURE 36 ANNUAL HOUSE PRICE GROWTH (%) BY DWELLING



Source: Central Statistics Office.

Property price developments for Dublin and the rest of Ireland are presented in Figure 37. Early 2015 price growth in Dublin was much faster than outside the capital. However, in 2016 prices in the rest of the country began to grow sharply, posting double digit growth almost every month. By the end of 2017, growth rates in Dublin and in the rest of Ireland began to converge.

FIGURE 37 ANNUAL HOUSE PRICE GROWTH (%) BY REGION



Source: Central Statistics Office.

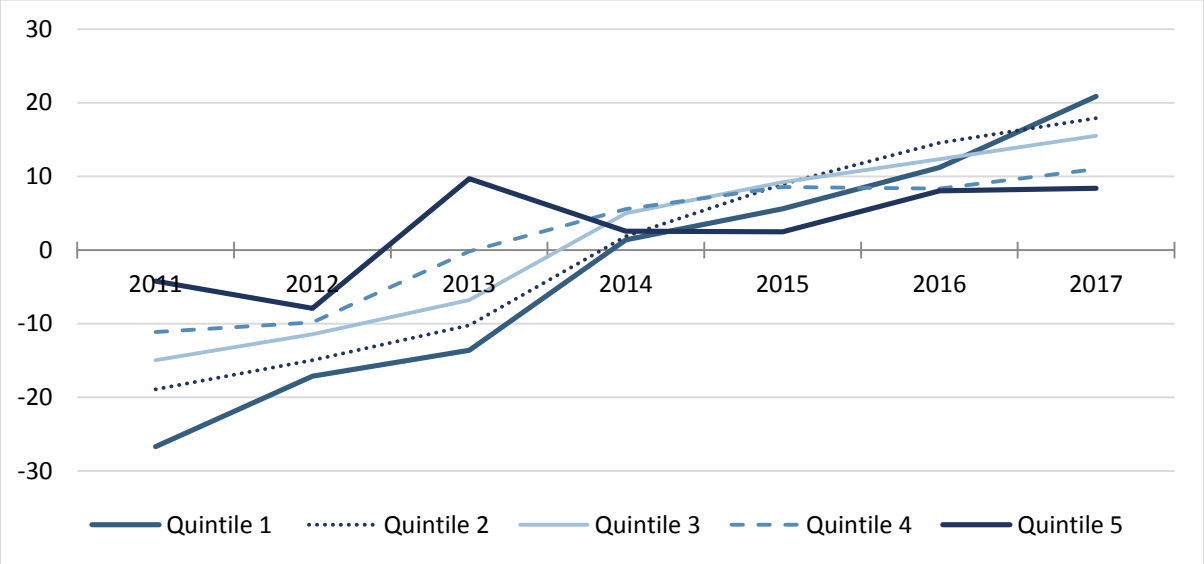
In March 2018, Dublin property prices grew by 12.1 per cent and prices in the rest of the country increased by 13.4 per cent. The price of apartments in Dublin grew by 13.9 per cent and by 13.4 per cent outside the capital.

The current high prices reflect a substantial shortage of houses in the Irish market. Although prices are still below those in the 2007 peak, the sustained growth poses significant affordability issues, particularly for low income earners in the Dublin market.

Rising house prices are more likely to affect those at the bottom of the income distribution, for whom it is harder to obtain a mortgage and for whom housing costs have a much larger weight in the household budget. Figure 38 shows the growth rate in the prices of residential properties purchased (registered at the Property Services Regulatory Authority) per quintile. While this analysis does not control for the quality of the properties, it does show how prices across the house price distribution evolve across time. Although we cannot establish a direct relationship between the people at the bottom of the income distribution and the income of people who purchased the houses, we can infer that the houses bought at the bottom (top) of the house price distribution were more likely to be bought by people who are at the lower (higher) end of the income distribution. The sharper growth rates in prices at the lower end of the distribution does suggest that affordability pressures are increasing on a relative basis for those at the lower end of the income distribution.

Overall, it seems that house prices in the 1st quintile are more elastic, i.e. they are more sensitive to changes in the housing market and overall economy than prices in the 5th quintile. During the downturn in the housing market, house prices in the bottom quintile fell the most: -26.7 per cent in 2011 and -17.1 per cent in 2012 (-4.2 and -7.9 in the top quintile, respectively). As the housing market recovers, house prices in the bottom quintile increase more than those at the top end of the distribution. In 2016, house prices in Quintile 1 increased by 11.2 per cent and prices in Quintile 5 increased by 8.0 per cent. In 2017, they increased by 20.8 per cent and 8.4 per cent, respectively.

FIGURE 38 ANNUAL GROWTH (%) IN AVERAGE PURCHASED PROPERTY PRICES, PER QUINTILE



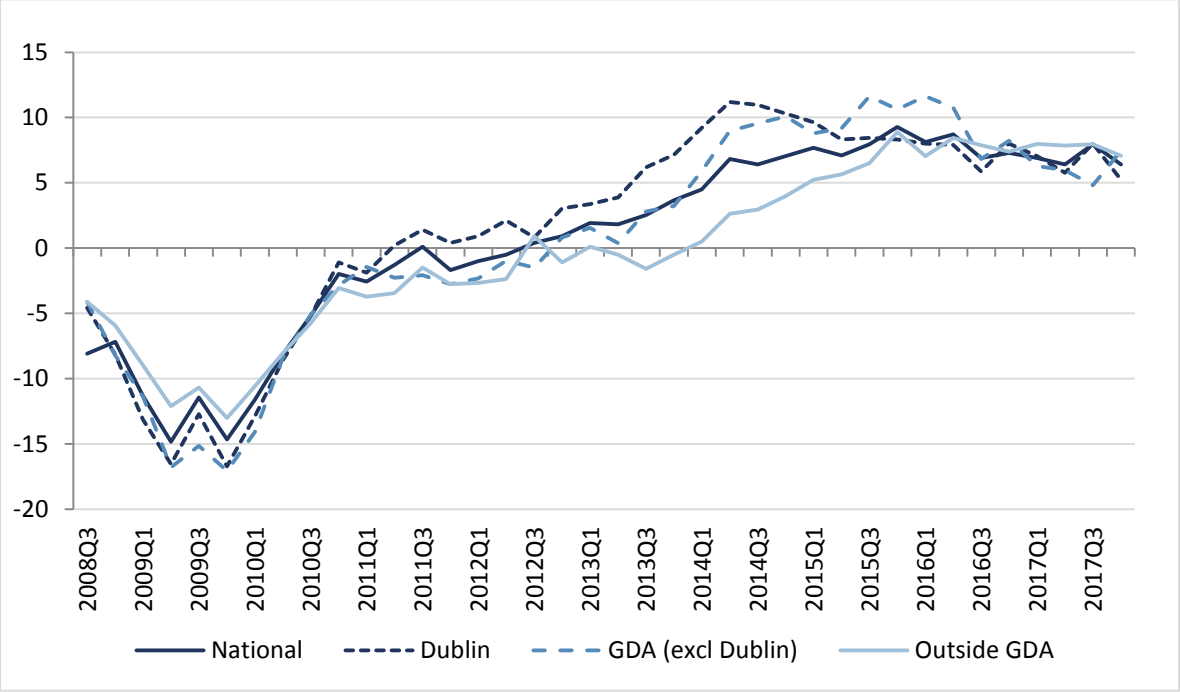
Source: Property Price Register.
Notes: Properties without full market price information were dropped. This analysis does not control for the characteristics and qualities of the properties sold, only takes into account the distribution of prices.

Rents are also continuing to increase in the Irish market. The national standardised average rent at the end of Q4 2017 (€1,054) is already above that of the previous peak in Q3 2007 (€988).

National rents in Quarter 4, 2017 increased by 6.4 per cent on an annual basis, continuing the rise that has been observed since early 2013, as can be seen from Figure 39. Nevertheless, this represents a slowdown when compared to Q3 2017 (8.0 per cent) and Q4 2016 (7.3 per cent).

After a steep increase of rents in Dublin in Quarter 3, 2017 (8.0 per cent year-on-year) the growth rate in Quarter 4, 2017 slowed down to 5.2 per cent year-on-year. Rents in the Greater Dublin Area (excluding Dublin) accelerated to 7.5 per cent year-on-year and rents outside the Greater Dublin Area grew by 7.1 per cent in Quarter 4, 2017. Since mid-2016 rents in Dublin are above the pre-crisis peak experienced in Quarter 4, 2007. As housing supply continues to be below estimates of structural demand, upward pressures in the rental market are expected to continue.

FIGURE 39 RESIDENTIAL TENANCIES BOARD NATIONAL RENTAL INDEX (BASE Q3 2007 = 100), ANNUAL PERCENTAGE CHANGE



Source: Residential Tenancies Board (RTB).
Note: GDA stands for Greater Dublin Area.

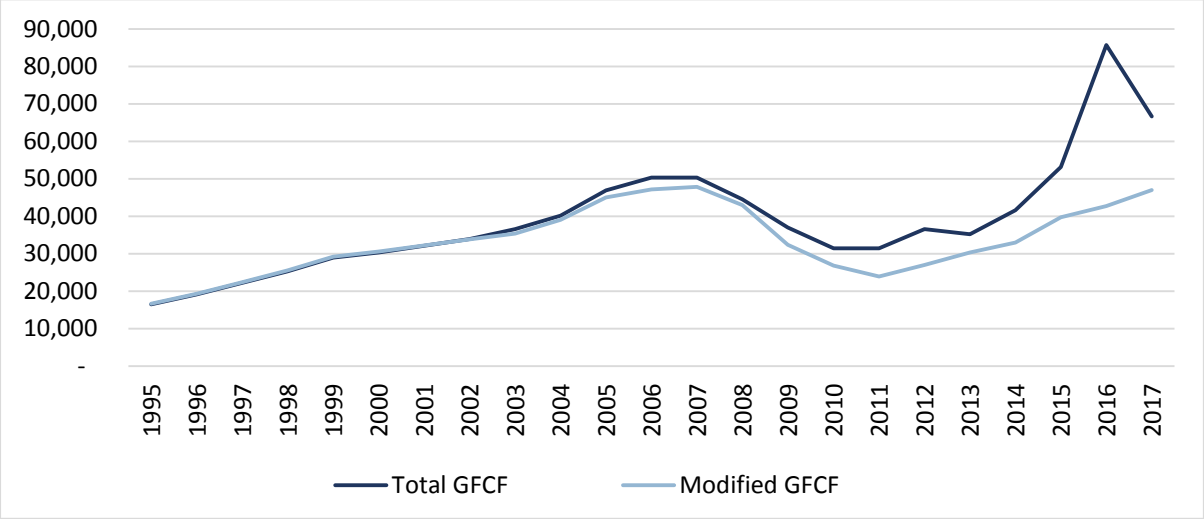
SUPPLY

Investment

A hallmark of Ireland's recent strong economic growth has been a considerable pick-up in investment. While the distortionary effects of large multinational operations pose difficulties in interpreting the aggregate flows, underlying modified investment (which removes assets transactions relating to aircraft leasing and research and development related intellectual property imports) arguably provide a more accurate assessment of investment patterns in the real economy. Figure 40 presents annual aggregate Gross Fixed Capital Formation and the CSO modified series.[22] Both series have risen rapidly in recent years with both the modified and non-modified investment levels at or above their pre-crisis peak by 2017.

[22] As the 2017 National Accounts have yet to be published, to get aggregate figures we have summed the quarterly data.

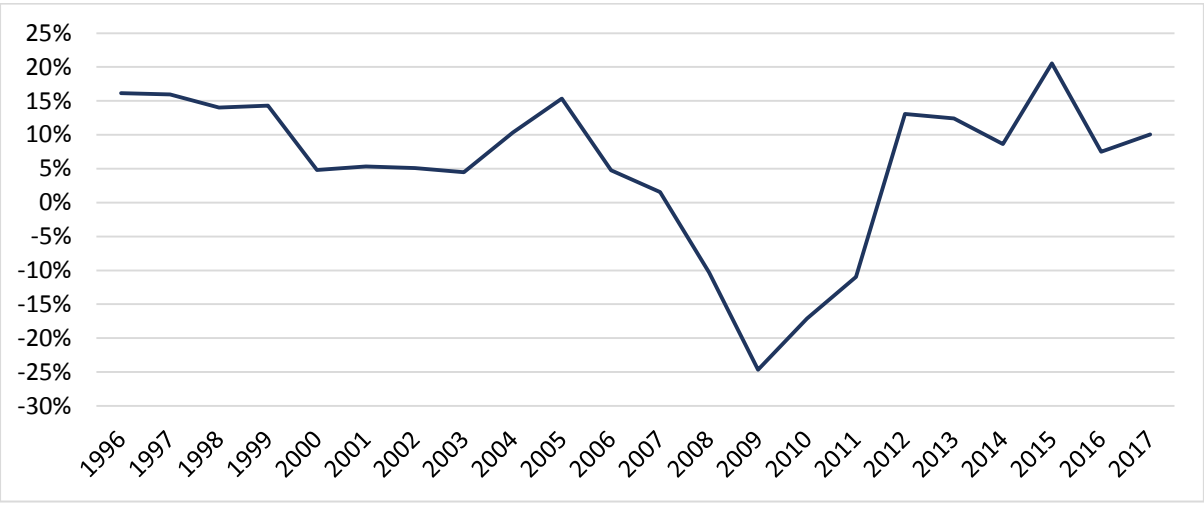
FIGURE 40 ANNUALISED INVESTMENT AND MODIFIED INVESTMENT – CONSTANT MARKET PRICES (€ MILLION)



Source: Central Statistics Office, Quarterly National Accounts Data.

To evaluate the trend over time in investment, Figure 41 presents the growth rate of the modified series. Recent growth has been particularly strong. On an annual basis, growth in investment was 10 per cent in 2017 on the back of robust growth of 8 per cent in 2016. Given the open and globalised nature of the Irish economy, much of the stimulus for increased capital formation has come from the cyclical recovery in the international economy. However, the improving domestic economic position is also now beginning to feed through into additional capital formation, in particular through building and construction activity.

FIGURE 41 GROWTH RATE IN MODIFIED INVESTMENT – CONSTANT MARKET PRICES (%)

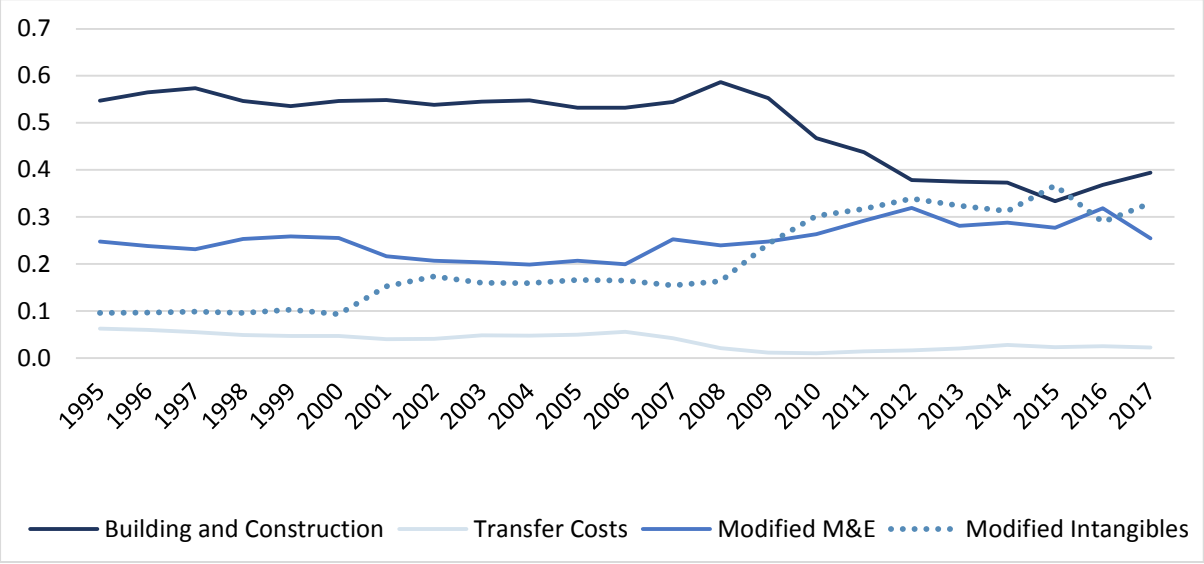


Source: Central Statistics Office, Quarterly National Accounts Data, Release Annex Table 4E.

Given the continued increase in investment the question arises as to whether such investment is sustainable or poses an economic risk due to potential overheating. A notable feature of Irish capital formation in recent years has been the changing composition of the assets which are being accumulated. In the Celtic Tiger and credit boom phases of Irish economy development, investment in building and construction accounted for over 50 per cent of capital formation. However, in recent years, there is a pronounced shift towards investment in intangibles as well as a rise in investment in machinery and equipment. Accounting for up to 15 per cent of investment during the period 1995-2008, the share of investment made up of intangible assets now stands at over 30 per cent. While the recent surge in intangibles reflects some company specific strategies, an increase can still be seen in the modified CSO series which is more reflective of the actual productive use of capital in Ireland.

While part of the change may be attributed to the rebalancing of capital formation following the construction bust, the deeper structural change in industrial activity towards investment in non-physical assets and service industries using intangible capital is undoubtedly, also a relevant consideration. This structural change has important implications for economic activity as well as our understanding of how investment spending is determined and financed in the economy. For example, intangible assets typically carry a different financing requirement which may alter the relationship between credit and output in these sectors.

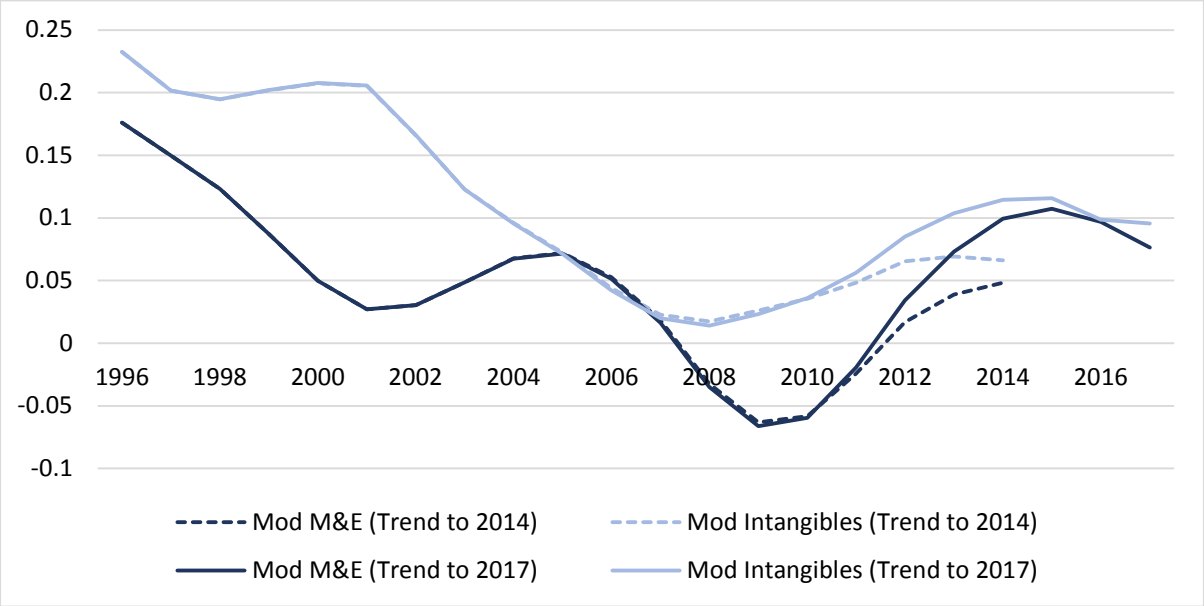
FIGURE 42 TREND IN SHARE OF INVESTMENT BY ASSET TYPE – CONSTANT MARKET PRICES (%)



Source: Central Statistics Office, Quarterly National Accounts Data.

As intangibles have become a larger component of Irish investment, and machinery and equipment investments are driven increasingly by large multinationals, understanding trend growth rates in these series becomes important for forecasting and analytical purposes. Figure 43 presents the growth rate in the trend level of investment for machinery and intangibles over the period 1996-2017 using a simple Hodrick-Prescott filter.[23] Two versions are presented: one for the full period and a second which stops the trend calculation at 2014 to avoid the recent fluctuations. For recent years, trend growth rates are between 5-10 per cent suggesting that, regardless of the potential for major volatility coming from global corporation activities, we should expect strong growth in both these investment items in the coming years. However, in a Special Article to this *Commentary*, FitzGerald (2018) notes the highly globalised nature of intangible investment and the ability of global firms to separate the returns from IP from domestic capital and labour inputs into production. This complicates the relationship between sectoral output and investment in the Irish economy.

FIGURE 43 TREND GROWTH IN INTANGIBLES AND MACHINERY – CONSTANT MARKET PRICES (%)



Source: Authors' analysis using CSO data. Lambda set at 6 for annual data.
Note: Mod M&E is modified machinery and equipment.

Despite the growth in investment at an aggregate level, recent research indicates lower rates of fixed asset formation amongst domestic firms. Lawless et al. (2018)[24] investigate whether Irish SMEs are investing in line with their economic fundamentals and find an investment gap of approximately 30 per cent in 2016.

[23] The Hodrick-Prescott filter is a statistical transformation that removes the cyclical component of a time series from raw data.

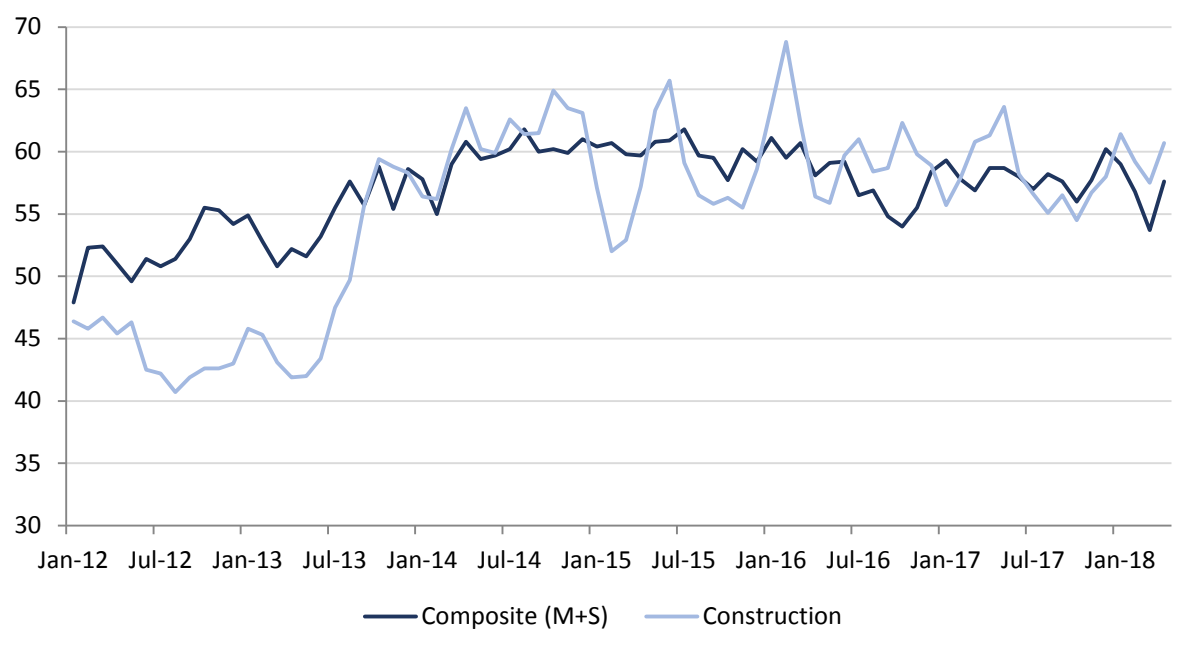
[24] Lawless, M., C. O'Toole and R. Slaymaker (2018). 'Estimating an SME investment gap and the contribution of financing frictions', ESRI Working Paper, WP589.

Further research by Papa et al. (2018)[25] show that productivity levels in Irish firms are considerably lower than their foreign counterparts. Coupling low investment with a productivity gap, it is clear that domestic companies in Ireland have scope to expand investment to boost productive capacity.

Business sentiment

To capture the current expectations of enterprises in relation to their investment plans, the Markit Purchasing Managers' Index provides real time insight into activity in the manufacturing, services and construction sectors. It is shown in Figure 44. A reading above 50 indicates an expansion. Throughout 2017, and into 2018, the purchasing managers' expectations have been improving, reflecting the buoyancy of the domestic economy and the improvement in business conditions. Some moderation in March 2018 may reflect concerns around global trading conditions given the heightened possibility of protectionist policies being adopted, particularly by the US.

FIGURE 44 BUSINESS AND CONSTRUCTION PMI FOR IRELAND



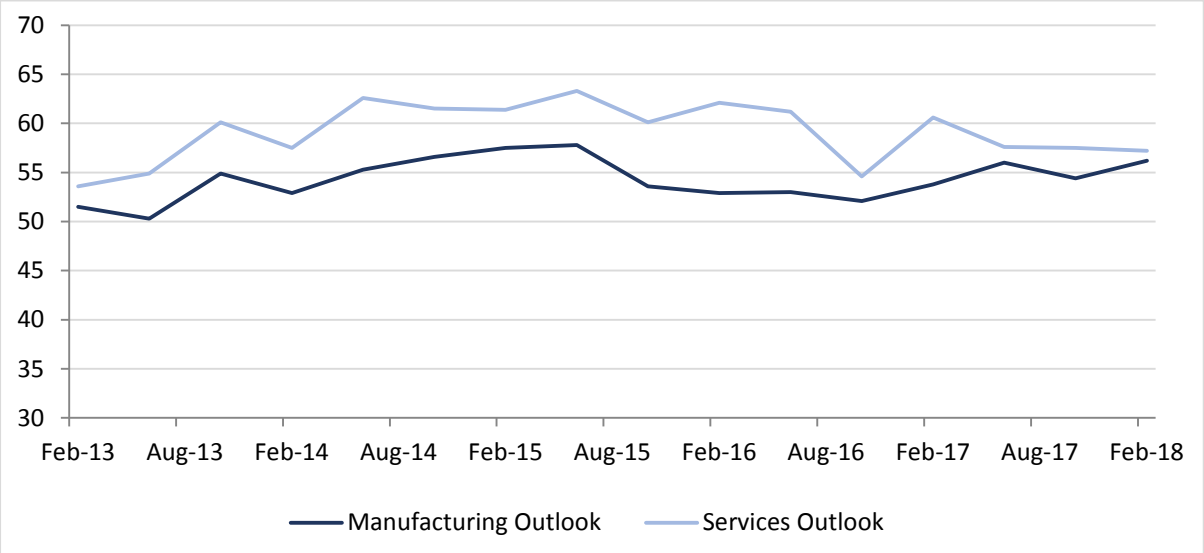
Source: Markit Purchasing Managers' Index.

Figure 45 presents the forward looking indicators of purchasing activity in the Markit index. We present data for both manufacturing and services to provide a broad based review of trends in purchasing activity. As before, levels of the Index above 50 indicate an expansion in activity. It is clear that all sectors are in

[25] Papa, J., L. Rehill and B. O'Connor (2018). 'Patterns of Firm Level Productivity in Ireland', Department of Finance Technical Working Paper.

expansionary territory throughout the period. For services, 2017 saw a softening of forward looking purchase planning, and this has continued into 2018. In terms of the rate of growth, the moderation towards the end of 2017 in the manufacturing sector has recovered in early 2018. More generally, the forward looking indicators point towards a positive and stable outlook in terms of business activity.

FIGURE 45 FORWARD LOOKING INDICATORS FOR PURCHASING ACTIVITY



Source: Markit Purchasing Managers' Index.

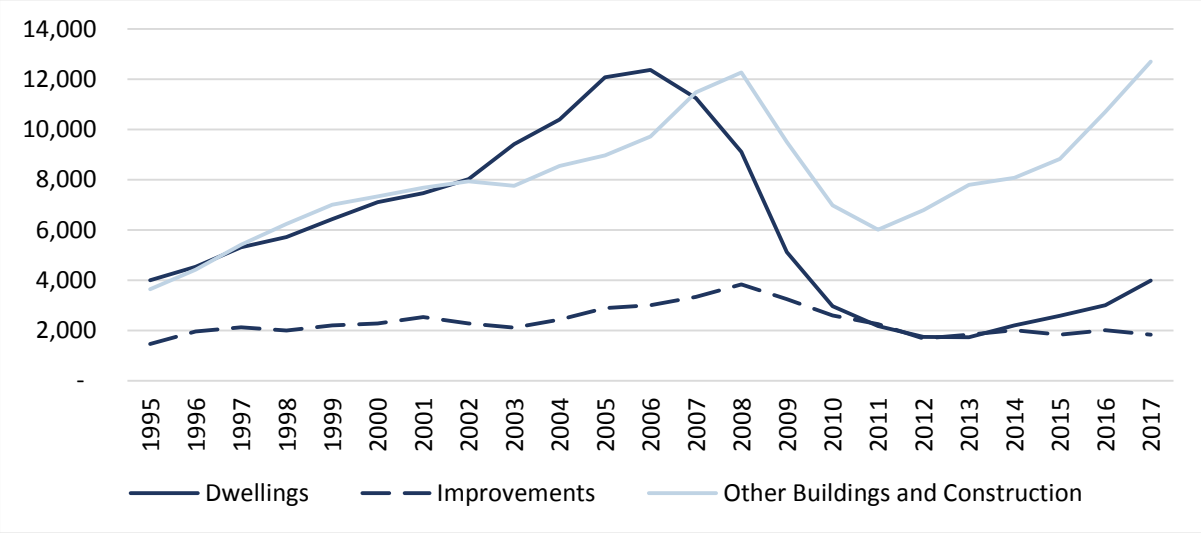
Building investment and housing completions

Construction investment in Ireland has recovered strongly in the past two years. This has been mainly driven by investment in other building and construction activities which has overtaken dwellings as the largest investment component. Other building and construction relates to commercial property and infrastructure (including roads, rail etc). The level of investment in this asset class has surpassed its peak pre-crisis level. As public infrastructure investments have not followed a rapid trajectory, much of the growth in this area can be attributed to the buoyant commercial property sector. Such rapid investment in this area poses a potential risk of overheating and a subsequent reversal in prices if the level of activity and transactions cool.[26] Indeed, recent price trends in this area point towards a very rapid deceleration from 2015 levels. This may suggest a softening of demand-side pressures.

[26] The Central Bank published data on CRE value changes as part of the CCyB public dataset.

On the residential front, dwelling investment has grown rapidly in the past two years in line with the recovery in residential construction. It is expected such growth will continue given the acknowledged undersupply of housing.

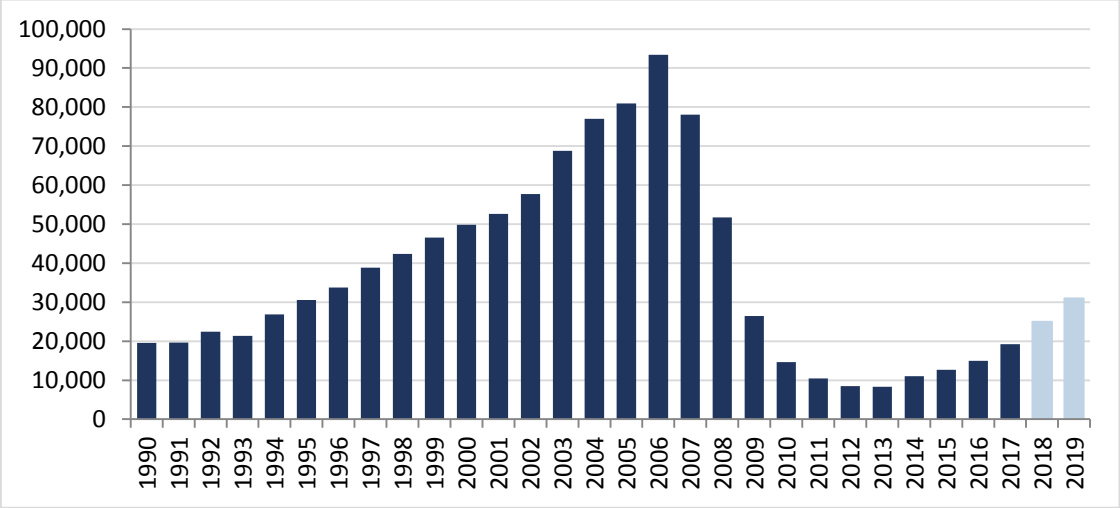
FIGURE 46 INVESTMENT: BUILDING AND CONSTRUCTION BY ASSET TYPE – CONSTANT PRICES (€ MILLION)



Source: Central Statistics Office, Quarterly National Accounts Data.

Underpinned by strong housing demand, we expect housing completions to grow strongly this year. We expect housing completions (as measured by electricity connections) to reach 25,000 units in 2018, growing again to 31,000 in 2019. Despite the difficulties in forecasting the intangible and machinery items in investment, we maintain an optimistic position for overall investment in 2018 and 2019 given the relative buoyancy in the domestic economy. In particular, we expect annual average growth in investment of 13 per cent in 2018 and 13.4 per cent in 2019.

FIGURE 47 ANNUAL HOUSING COMPLETIONS (2018-2019 FORECASTS) – TO 2017 ACTUAL



Source: Department of Environment and *QEC* Forecasts.

LABOUR MARKET

The Irish labour market continues to perform strongly in 2018; the unemployment rate is reaching pre-crisis levels and wages are beginning to increase. Overall, inflation remains low and the growth in wages has been moderate. In the medium term, there is room for increasing the labour force[27] and employment among the less educated, which would help potential output in the economy to grow.

Unemployment

While the Live Register is not a precise measure of unemployment,[28] as it includes part-time and some seasonal and casual workers, it is one of the most up-to-date and detailed labour market measures.

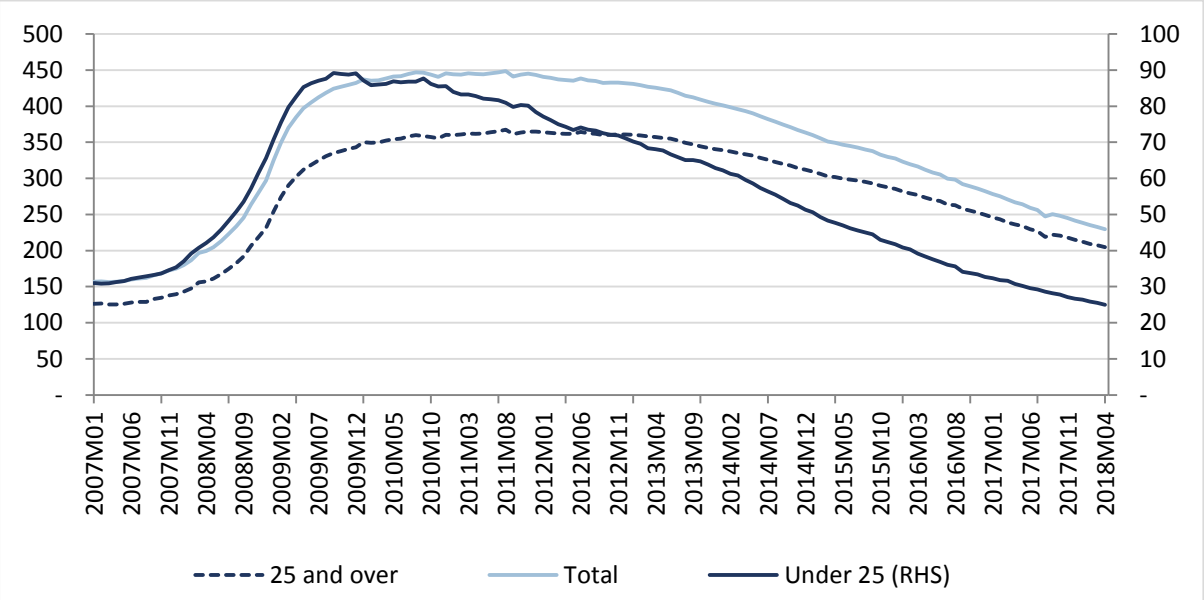
The figures for the first four months of 2018 show that the downward trajectory of people on the Live Register continued. On a seasonally-adjusted basis, the Live Register recorded a monthly decrease of 3,100 (-1.3 per cent) in April 2018, resulting in a seasonally-adjusted total of 229,600 people out of work. This represents an annual decrease of 37,800 (-14.0 per cent). As can be seen from Figure 38, the number of persons on the Live Register in April 2018 (229,600) is still above the 2007 lowest level (156,300) but well below the 2011 peak (448,700).

27 Particularly of women and the disabled. See *Quarterly Economic Commentary*, Spring 2018.

28 The Live Register provides a monthly series of the numbers of people registered for Jobseekers Benefit, Jobseekers Allowance or other statutory entitlements at the Irish Department of Social Protection.

About 25,000 people under 25 years old were registered in April 2018, this represents a fall of 2.0 per cent relative to March 2018 and of 18.6 per cent relative to April 2017. It is the lowest number recorded on the Live Register among the young since February 2001.[29] The number of people above 25 years in the Live Register in April 2018 was around 212,000, down by 1.3 from the previous month and 13.3 from April 2017.

FIGURE 48 NUMBERS ON THE LIVE REGISTER ('000) BY AGE: JANUARY 2006 TO JANUARY 2018



Source: Central Statistics Office.

Since 2012[30] the Live Register publishes detailed data on the duration of the registries, which can be used has a proxy for short- and long-term unemployment (Table 5). While short-term unemployment had the largest decline in the Live Register during the initial phase of the economic recovery, since mid-2015 long-term unemployment has been falling more rapidly. On a yearly basis, long-term unemployment fell by 17.1 per cent in January 2018 and short-term unemployment fell by 13.7 per cent.

In September 2014, about 48.2 per cent of the unemployed were long term, the highest number in the 2012-2017 period. This compares with 41.5 per cent in April 2018. Despite the considerable improvement in recent months, about 23.9 per cent of the unemployed are in very-long-term-unemployment (three years or more). In April 2018, the greater proportion of the very-long-term-unemployed were men (61.7 per cent) whose last held occupation was in the craft and related

[29] The Population aged less than 25 years in 2002 was around 1.47 million according to the 2002 Census and in 2016 was about 1.58 million according the 2016 Census.

[30] With occasional breaks in the data.

sector (26.3 per cent) and plant and machine operatives (19.8 per cent). About 25.4 per cent of all the very-long-term-unemployed are concentrated in the Dublin area alone.

Being unemployed for a very long time can have scarring effects on an individual; it might not only lead to the loss of human capital and self-confidence but also discourage workers out of the labour force.[31] These are the workers for whom reintegration in the labour market is the most difficult. Despite a supportive policy context, as well as the economic recovery, Ireland's rate of long-term unemployment remains high by European standards.

TABLE 4 PERSONS ('000) ON THE LIVE REGISTER CLASSIFIED BY DURATION

	2014 M09		2018 M04	
	('000s)	%	('000)	%
All durations	369.8		223.6	
Under 1 year	191.5	51.8	130.9	58.5
1 year and over	178.3	48.2	92.7	41.5
1 year – less than 2 years	48.8	13.2	24.9	11.1
2 years – less than 3 years	30.3	8.2	14.3	6.4
3 years and over	99.2	26.8	53.5	23.9

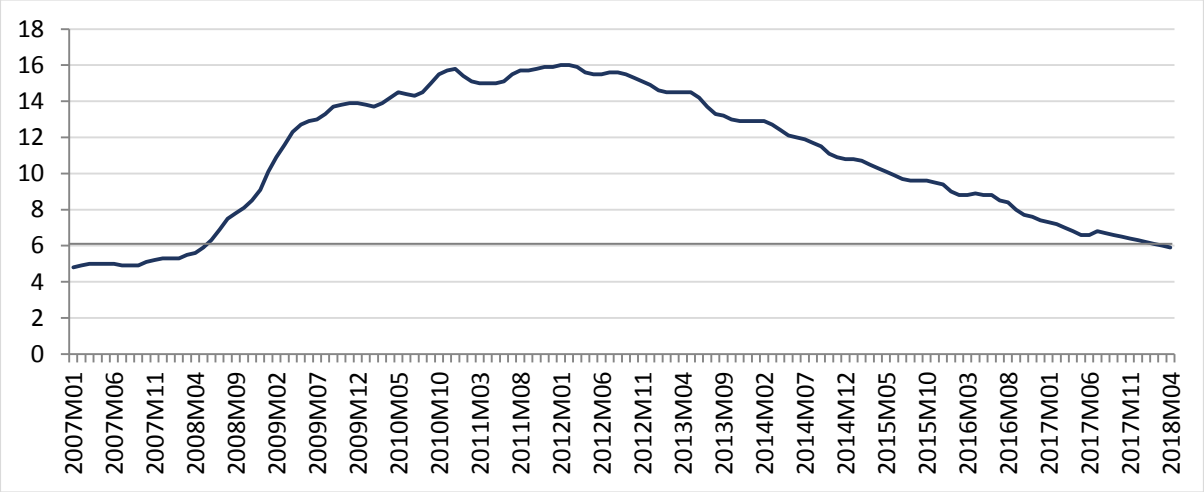
Source: Live Register, Central Statistics Office.

In terms of the last occupation held by those on the Live Register in April 2018, the occupational group with the largest number of people on the Live Register is still the craft and related sectors. However, this sector did register the largest decrease over the past year (-17.9 per cent). Based on the CSO's Monthly Unemployment publication,[32] the seasonally-adjusted unemployment rate fell to 5.9 per cent in April 2018. This is the first time since May 2008 that the unemployment rate fell below 6.0 per cent.

[31] Edin, Per-Andres and Magnus Gustavsson (2008). 'Time Out of Work and Skill Depreciation.' *Industrial Labor Relations Review*, 61(2): 163-180.
Abraham, Catharine G., Kristin Sandusky, John Haltiwanger and James R. Spletzer (2016). 'The Consequences of Long Term Unemployment: Evidence from Matched Employer-Employee Data,' Working Papers 16-40, Center for Economic Studies, U.S. Census Bureau.

[32] Unemployment rate is based on LFS data (which replaced the old QNHS), with Live Register data used to adjust trends for periods for when no LFS data are available.

FIGURE 49 SEASONALLY-ADJUSTED UNEMPLOYMENT RATE BY MONTH (%)



Source: Labour Force Survey, Central Statistics Office.

Employment

The most recent seasonally-adjusted figures for employment in the Irish economy are from the last quarter of 2017. While data for 2018 are as yet unavailable, the positive trend in employment is likely to have continued, although at a slower pace than in 2017. In the year to the fourth quarter of 2017, 66,500 jobs were added (+3.1 per cent), bringing the number of persons in employment to 2,225,100. The largest year-on-year growth rates were recorded in the administrative and support service activities (+15.0 per cent), construction (+9.5 per cent) and the accommodation and food service activities (+8.7 per cent) sectors.

After a period of continued growth, employment in the Irish economy is approaching its previous 2007 peak level (2,237,200) and more workers are moving from part-time to full-time employment. In the fourth quarter of 2017, full-time (seasonally-adjusted) employment increased by 89,900 (+5.4 per cent) year-on-year to 1,761,800. Full-time employment now accounts for 79.2 per cent of total employment, this compares with 81.1 per cent in the Q4 2007 peak and 74.8 per cent in the Q3 2013 downturn. On the other hand, part-time employment fell by 23,000 (-4.7 per cent) to 461,500 and now accounts for 20.7 per cent of total employment.

Overall employment rates[33] (67.7 per cent) are still below the 2007 levels (71.8 per cent) but above those in the early 2000s (64.5 per cent). Nonetheless, there are considerable disparities between gender and skills groups (Table 5 and Table 6). Employment rates are particularly low among the low educated (36.9 per

[33] Defined as the proportion of the working age population that is in employment.

cent) and they remain significantly below the 2000 and 2007 employment rates (48.1 and 52.4 per cent respectively).

Across all the educational levels, the gender gap in employment rates has been closing. In 2000, the gap in employment rates between men and women was 22.5 percentage points, in 2007 the gap was 17.5 percentage points and in 2017 it was 10.6 percentage points. While this signals positive developments in the labour market, employment rates among less educated females within the labour force are considerably lower; only 25.6 per cent of women with lower secondary education or less are in employment, 20.3 percentage points below the rate for men with similar education levels. The gender gap in employment rates decreases as the level of education increases; 80.9 per cent of women with tertiary education are in employment compared with 88.8 of men.

TABLE 5 EMPLOYMENT RATES (15-64 YEARS) BY GENDER AND EDUCATIONAL ATTAINMENT LEVEL (%)

Gender	Education levels	2000	2007	2017
Total	All Education levels	64.5	71.8	67.7
	Lower secondary or below	48.1	52.4	36.9
	Upper secondary and post-secondary non-tertiary	72.6	76.8	67.9
	Tertiary	86.5	86.7	84.5
Male	All Education levels	75.7	80.4	73.0
	Lower secondary or below	62.8	65.0	45.9
	Upper secondary and post-secondary non-tertiary	84.3	86.9	75.4
	Tertiary	91.2	91.4	88.8
Female	All Education levels	53.2	62.9	62.4
	Lower secondary or below	31.7	37.4	25.6
	Upper secondary and post-secondary non-tertiary	61.9	66.8	60.2
	Tertiary	81.3	82.8	80.9

Sources: Labour Force Survey, Central Statistics Office, Eurostat.

Overall employment rates in Ireland are similar to the average among European Union countries. Employment rates among the young (15-24 years) and the older (55-64 years) are higher in Ireland than the EU average, although prime age workers (25-54 years) face lower employment rates. The difference in employment rates between people with lower secondary education or less and upper secondary or tertiary education are considerably higher in Ireland (31.0 percentage point gap between lower secondary or below and upper secondary and 47.6 between lower secondary or below and tertiary) when compared to the EU average (25.4 and 38.5 percentage points). This is particularly true among young adults; the gap between low education and tertiary education is 68.3 percentage points in Ireland, while in the EU it is 42.0 percentage points.

TABLE 6 2017 EMPLOYMENT RATES BY AGE GROUP AND EDUCATIONAL (%), IRELAND AND EU28

		Ireland	EU
All Education levels	Total (15-64 years)	67.7	67.6
	From 15 to 24 years	40.0	34.7
	From 25 to 54 years	77.9	79.6
	From 55 to 64 years	58.6	57.1
Lower secondary or below	Total (15-64 years)	36.9	45.5
	From 15 to 24 years	10.3	18.9
	From 25 to 54 years	53.9	62.0
	From 55 to 64 years	46.3	42.3
Upper secondary and post-secondary non-tertiary	Total (15-64 years)	67.9	70.9
	From 15 to 24 years	54.0	46.1
	From 25 to 54 years	74.5	81.1
	From 55 to 64 years	61.4	59.0
Tertiary	Total (15-64 years)	84.5	84.0
	From 15 to 24 years	78.6	60.9
	From 25 to 54 years	87.1	88.1
	From 55 to 64 years	70.1	72.5

Sources: Labour Force Survey, Central Statistics Office, Eurostat.

While Ireland performs well in terms of educational attainment, with one of the highest levels of tertiary qualifications in the EU,[34] the disparities in the employment rates[35, 36] and other labour market outcomes across individuals with different educational attainments could be suggestive of a skills mismatch in the Irish economy.[37] This might be related to the change in the composition of economic activity since the pre-financial crisis years. Employment in the construction sector remains 42.6 per cent below its peak level in 2007 and employment in the information and communication sector is up by 33.1 per cent over the same period. Employment in administrative and support services was also particularly hit by the crisis and still remains significantly below its peak level. Employment in education services, on the other hand, seems to have grown significantly over recent years.

The National Skills Bulletin 2017[38] finds that skills shortages exist for certain occupations across all sectors, although many of these are small in magnitude or

34 European Commission, 2017. 'Country Report Ireland – including an in-depth review on the prevention and correction of macroeconomic imbalances', Brussels, 7.2.2018, SWD (2018) 206 final.

35 Skills mismatch measured according to European Commission methodology; European Commission (2015). 'Measuring Skills Mismatch', European Commission Analytical Web Note 7/2015).

36 See McGuinness, S., P., Konstantinos and P. Redmond (2017). 'How Useful Is the Concept of Skills Mismatch?,' IZA Discussion Papers 10786, IZA) which addresses the shortcomings of this measure.

37 IMF (2018). 'Ireland : Selected Issues', *Country Report* No. 17/172, International Monetary Fund.

38 Report by the Skills and Labour Market Research Unit (SLMRU) in SOLAS on behalf of the National Skills Council. The Bulletin is based on data held in the SLMRU National Skills Database, spans 130 occupational groups and examines a range of labour market indicators.

in niche areas. The report highlights challenges in areas such as ICT, engineering, healthcare, business and finance.

Recent qualitative market-based survey data also provide some indication of skills shortages. According to the Hays Ireland Salary and Recruiting Trends 2018 guide, more than three-quarters of Irish companies have experienced a 'moderate' or 'extreme' skills shortage in 2017 – the majority in ICT, life sciences and construction. Some of these shortages are being met through migration and investment in training and education.

While Ireland does not exhibit human capital deficits, skill shortages in fast-growing sectors are starting to emerge and challenges to the employment of low skilled individuals persist.

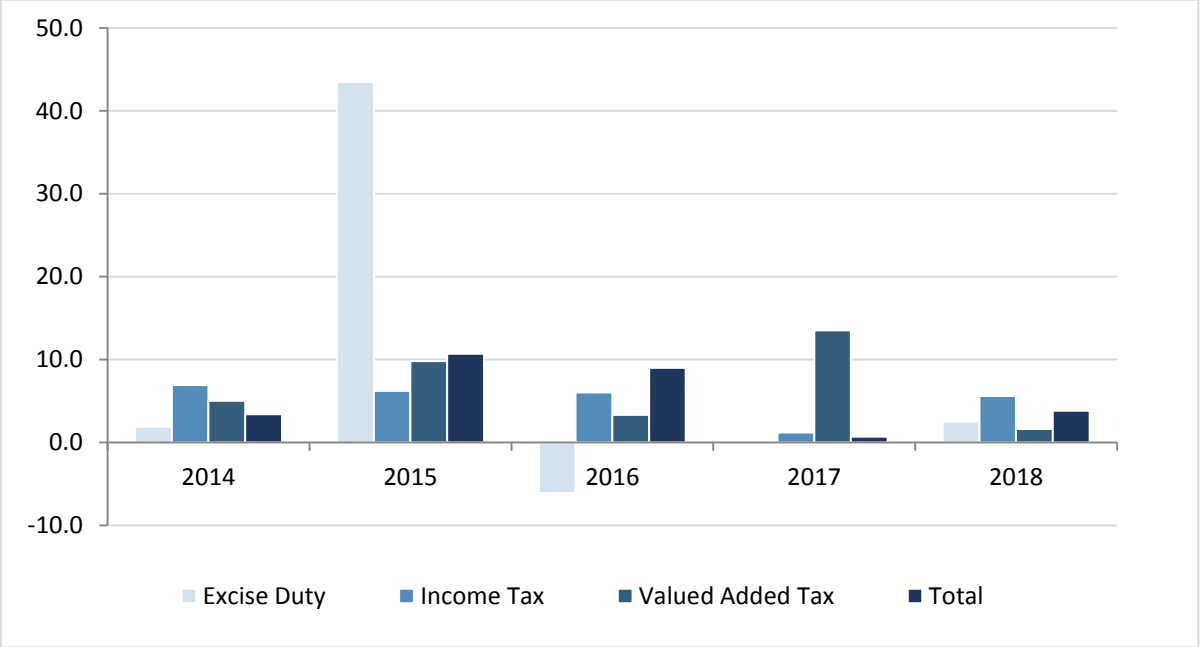
Labour market forecasts

As the Irish economy is approaching full employment (around 5 per cent) we continue to expect the unemployment rate to decline, but at a slower pace than in the previous quarters. Given the latest review of the CSO labour market figures, we believe that the unemployment rate will average 5.6 per cent through 2018 and 5.0 per cent through 2019. Employment is set to exceed 2.25 million by the end of 2018 and to increase to 2.29 million by the end of 2019.

PUBLIC FINANCES

Exchequer receipts for the first five months of 2018 illustrate that the public finances continue to demonstrate resilient growth into the present year. Overall, taxation receipts are up almost 3.6 per cent compared with the same time in 2017, with income tax growing by 5.8 per cent over the period. Figure 50 summarises the annual changes in some of the main tax sub-components over the period 2014 to the present.

FIGURE 50 ANNUAL CHANGES IN MAJOR TAX SUB-COMPONENTS (%)



Source: *QEC* calculations.

While VAT receipts have only witnessed a relatively modest increase for the current year at 1.6 per cent, pay related social insurance, which is closely correlated with developments in the labour market, saw an increase of 4.7 per cent for the opening five months of the year compared with the same period in 2017.

In Table 7 the latest trends in actual Government expenditure are compared with the profile or expected levels for the current year.

TABLE 7 ACTUAL AND PROFILE GROSS GOVERNMENT EXPENDITURE: JANUARY – APRIL (€ MILLION)

Current		Capital	
Actual	Profile	Actual	Profile
18,084	17,892	1,132	1,398

Source: QEC calculations.

On the current side, it can be seen that both actual and expected expenditure are quite close, however there is somewhat of a difference between the actual and expected capital expenditure. The difference can be traced to expenditure on 'Housing Planning and Local Government' where actual expenditure for the year to date is €207 million – somewhat less than the expected amount of €365 million. If this trend continues for the year, it may indicate that the Government

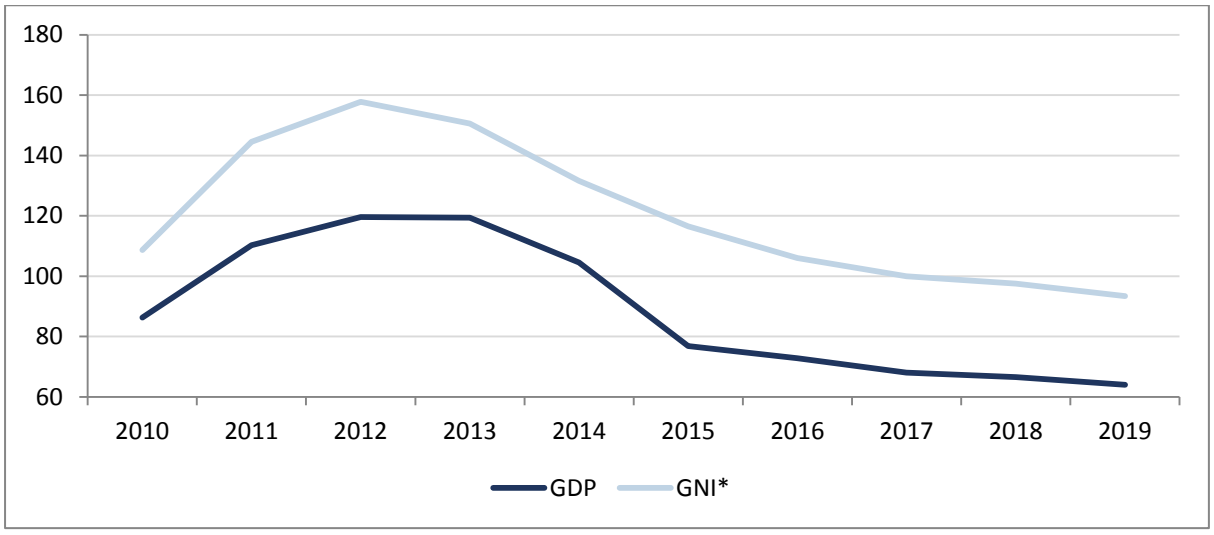
is encountering difficulties in spending allocated resources for one of the most pressing current social and economic issues – the provision of social housing.

A notable increase in expenditure for the year to date is the higher EU budget contribution, which is primarily as a result of Ireland's increased share of the EU budget obligations. As the fastest growing economy in the EU over the past number of years, it is inevitable that Ireland's contribution would increase; however the issues surrounding the National Accounts, outlined in the Special Article by FitzGerald (2018), may be distorting the scale of the contribution.

The issues concerning the National Accounts are also impacting the degree of fiscal space available to the Government. Because of the recent very high growth rates in GDP and based on the agreed methodology of the European Union, the output gap estimated for Ireland is strongly positive this year. The resulting structural deficit means that Ireland is now unlikely to formally exit the medium-term objective (MTO), the preventive arm of the Stability and Growth Pact, until 2019 and not 2018 as previously expected. This means that while there is an increase in the fiscal space available to the Government, it is not as large as previously envisaged.

Figure 51 presents the debt ratio for both GDP and the new GNI* measure. Given GNI* is a more appropriate measure of the welfare of Irish inhabitants, the higher levels of indebtedness noted by this measure point to the potential vulnerabilities if the cost of borrowing were to rise.

FIGURE 51 DEBT-TO-GDP AND GNI*RATIOS (%)



Source: *QEC* calculations.

General Assessment

Most key domestic economic indicators for 2018 suggest the Irish economy looks set to register another strong performance in the present year. While the pace of decline in unemployment has slowed to some degree, taxation receipts across all the major headings, along with other sentiment indicators, indicate that economic activity is still increasing significantly. The relatively strong performance of the global economy also ensures that external demand for goods and services produced in Ireland has increased somewhat in 2018.

The ongoing resurgence of the Irish economy serves as the important backdrop to the formulation of the budgetary process. The recent publication of the stability programme update details the outline of the Government's fiscal strategy for the coming years. This comes at a time when the discretion available to the Government in terms of 'fiscal space' is increased considerably relative to previous years. As noted in previous Commentaries, this greater discretion applies at a time when the foremost policy challenge is transitioning the economy from the substantial rates of growth synonymous with an economy experiencing a rapid recovery to more sustainable rates of growth over the medium term.

It is clear that there are growing demands on the public purse; the Government formally launched the National Development Plan earlier in the year where significant increases in capital expenditure are envisaged over the medium term. Also, the significant hardship experienced by many in the aftermath of the 2007/2008 financial crisis has resulted in some calls now for reductions in rates of personal taxation.

To inform some of this discussion, in a Box in the present *Commentary*, Garcia-Rodriguez uses the ESRI structural model of the Irish economy, COSMO, to examine the implications of two different but related fiscal scenarios, both of which would cost the Exchequer approximately the same amount. Garcia-Rodriguez compares the impact of an increase in capital expenditure associated with the recent National Development Plan (NDP) with a reduction in personal taxation rates on a number of key economic variables. In particular, the Box focuses on the impact of the two scenarios on economic activity.

Overall both scenarios increase the level of activity in the economy and result in a sharper decline in unemployment relative to the baseline scenario. The results suggest that while the increase in public investment leads to a more positive

impact on economic activity and employment, the tax cut produces a greater increase in consumption and a more balanced impact in sectoral terms. The full impact of the investment scenario will be heavily dependent on the details of any such plan, however focussing on investment does have the advantage of being able to target a number of different policy objectives such as regional development. A universal reduction in taxation rates clearly does not have that versatility in terms of meeting multiple policy goals.

From a more general perspective, it is clear that the investment scenario increases economic activity through rising potential output levels, whereas the impact of the taxation scenario mainly operates via increasing consumption. Given the very strong domestic performance at present, it is imperative that fiscal policy does not risk overheating the domestic economy. Therefore, given the Government's commitment to the NDP in the medium term, it would appear there is little or no scope for taxation policy to additionally stimulate the Irish economy.

Continuing on the theme of the public finances, in a Special Article to the *Commentary*, Doorley, Callan, Regan and Walsh (2018), using the SWITCH model, examine the tax treatment of pension contributions. They simulate a number of reforms to the current tax treatment of pensions including a halving of the cap on tax relief and a switch to a standardised rate of relief. The scenarios suggest that up to 46 per cent of the total cost of tax relief on pension contributions could be saved before behavioural responses are allowed for. In all scenarios, richer households lose the most from any reform but losses are minimal in the case of altering the cap on tax relief. In the case of standardisation of tax relief, richer households lose much more than poorer ones leading to a convergence in the distribution of gains from tax relief.

Given the role that developments in credit markets played in conjunction with fiscal imbalances, a growing literature (Borio et al., 2016)[39] assesses the impact of financial booms and busts – financial cycles – on fiscal sustainability. In an Irish context, it is particularly important to examine the inter-relationship between fiscal sustainability and the financial cycle at any point in time. At present, as noted in the monetary and financial section, mortgage credit levels are growing significantly. While overall stocks of credit are still significantly below pre-2008 peak levels, it is evident that increasing house prices, coupled with growing levels of disposable income are likely to see further increases in the extension of such credit. This likely increase in future household credit levels is a further reason for the Government to exercise caution in the formulation of fiscal policy.

[39] Borio, C., M. Lombardi and F. Zampolli (2016). 'Fiscal sustainability and the financial cycle', Bank for International Settlements, BIS Working Paper No. 552.

The ongoing political difficulties in forming an Italian Government and the increase in popularity of parties there who are sceptical about the European Union is a potential risk to the Irish economy. Continued uncertainty as to the future of the European Union, whether through Brexit or issues in other Member States, highlights the exposed nature of the Irish economy to external trade. This exposure is further accentuated given the present volatile trade relations between the US and China. As noted in previous Commentaries, any reduction in global economic activity has a direct impact on the domestic economy.

In a further Special Article to the *Commentary* Fitzgerald (2018) discusses the complications for the Irish National Accounts of the increasingly globalised economy. Although this issue has received considerable attention recently, Fitzgerald focuses, in particular, on the challenges posed by the treatment of intellectual capital in national accounting frameworks. The sheer scale of this factor of production allied to the ease with which it can be transferred across countries, especially in response to changes in taxation treatments, can result in substantial variations in year-to-year values in the National Accounts of particular countries. To more accurately capture how changes in the economy impact on the welfare of Irish residents, Fitzgerald (2018), similar to what was argued for in the previous *Commentary*, calls for the preparation of a satellite set of Irish National Accounts.

The recent publication by the CSO of 'Productivity in Ireland 2016' provides a highly important breakdown of productivity developments in the Irish economy between the foreign and the domestic dominated sectors. This enables trends in labour and multi-factor productivity to be compared between the foreign-owned multinational enterprise dominated sector and for other sectors excluding the foreign-owned category. As demonstrated in the Output section of the *Commentary*, combining labour productivity rates in the non-foreign owned sector with observed increases in employment results in an estimate of output growth, which appears more plausible than headline GDP and GNP figures. Therefore, the provision of a more granular breakdown in economic data between the foreign dominated and the indigenous sectors of the domestic economy is essential in understanding how changes in key economic variables impact the livelihoods of Irish residents.

DETAILED FORECAST TABLES

FORECAST TABLE A1 EXPORTS OF GOODS AND SERVICES

	2016	% change in 2017		2017	% change in 2018		2018	% change in 2019		2019
	€ bn	Value	Volume	€ bn	Value	Volume	€ bn	Value	Volume	€ bn
Merchandise	194.1	0.1	2.9	194.3	4.1	3.1	202.3	5.9	3.3	214.2
Tourism	4.7	5.5	4.2	4.9	3.0	3.0	5.1	3.2	3.2	5.3
Other Services	136.3	13.8	13.3	156.2	14.2	13.4	171.5	14.4	13.5	186.3
Exports of Goods and Services	335.0	6.1	6.9	355.4	6.6	5.4	378.8	7.1	5.2	405.8
FISM Adjustment	0.0			0.0			-0.2			-0.2
Adjusted Exports	335.0	6.1	6.9	335.4	6.5	5.4	378.6	7.1	5.2	405.5

FORECAST TABLE A2 INVESTMENT

	2016	% change in 2017		2017	% change in 2018		2018	% change in 2019		2019
	€ bn	Value	Volume	€ bn	Value	Volume	€ bn	Value	Volume	€ bn
Housing	5.2	26.7	16.0	6.6	67.1	24.8	11.0	23.6	21.1	13.6
Other Building	10.3	22.3	18.7	12.6	26.6	20.0	15.9	28.7	22.0	20.5
Transfer Costs	1.1	0.9	-1.1	1.1	9.2	3.0	1.2	9.2	3.0	1.4
Building and Construction	17.7	21.4	15.8	21.5	37.7	20.1	29.6	25.7	20.5	37.2
Machinery and Equipment	70.0	-33.6	-31.6	46.4	13.8	10.1	52.8	13.9	10.2	60.2
Total Investment	87.7	-20.8	-22.3	69.4	18.7	13.0	82.4	18.1	13.4	97.3

FORECAST TABLE A3 PERSONAL INCOME

	2016	% change in 2017		2017	% change in 2018		2018	% change in 2019		2019
	€ bn	%	€ bn	€ bn	%	€ bn	€ bn	%	€ bn	€ bn
Agriculture, etc.	3.2	2.0	0.1	3.3	2.5	0.1	3.4	1.4	0.0	3.4
Non-Agricultural Wages	80.3	5.2	4.2	84.4	5.3	4.5	88.9	5.4	4.8	93.7
Other Non-Agricultural Income	22.5	29.2	6.6	29.0	20.9	6.1	35.1	21.4	7.5	42.6
Total Income Received	105.9	10.2	10.8	116.7	9.1	10.6	127.4	9.7	12.4	139.7
Current Transfers	23.6	0.3	0.1	23.6	-7.8	-1.8	21.8	-2.4	-0.5	21.3
Gross Personal Income	129.5	8.4	10.9	140.4	6.3	8.8	149.2	7.9	11.8	161.0
Direct Personal Taxes	29.4	4.2	1.2	30.6	3.8	1.2	31.8	3.4	1.1	32.9
Personal Disposable Income	100.1	9.6	9.6	109.8	7.6	3.4	117.4	9.1	10.7	128.1
Consumption	96.6	3.2	3.1	99.7	3.4	3.4	103.1	3.5	3.6	106.8
Personal Savings	3.5	185.0	6.5	10.0	41.8	4.2	14.2	49.9	7.1	21.3
Savings Ratio	3.5			9.1			12.1			16.7
Average Personal Tax Rate	22.6			21.8			22.1			20.3

FORECAST TABLE A4 IMPORTS OF GOODS AND SERVICES

	2016	% change in 2017		2017	% change in 2018		2018	% change in 2019		2019
	€ bn	Value	Volume	€ bn	Value	Volume	€ bn	Value	Volume	€ bn
Merchandise	88.2	-1.4	-4.3	86.9	7.2	5.0	93.2	5.9	7.0	98.7
Tourism	5.6	4.9	1.9	5.9	4.7	3.2	6.2	5.4	3.8	6.5
Other Services	180.6	-7.3	-10.0	167.4	12.7	8.4	188.8	12.5	8.2	212.4
Imports of Goods and Services	274.4	-5.2	-6.2	260.3	10.7	7.0	288.1	10.2	7.7	317.6
FISM Adjustment	0.0			0.0			-0.4			-0.4
Adjusted Imports	274.4	-5.2	-6.2	260.3	10.6	7.0	287.7	10.2	7.7	317.2

FORECAST TABLE A5 BALANCE OF PAYMENTS

	2016	2017	2018	2019
	€ bn	€ bn	€ bn	€ bn
Exports of Goods and Services	335.0	355.4	378.8	405.8
Imports of Goods and Services	274.4	260.3	288.1	317.6
Net Factor Payments	-47.6	-53.8	-55.1	-57.2
Net Transfers	-3.8	-4.3	-4.8	-5.3
Balance on Current Account	9.2	37.1	30.8	25.7
As a % of GNP	4.1	15.4	11.8	9.1

FORECAST TABLE A6 EMPLOYMENT AND UNEMPLOYMENT, ANNUAL AVERAGE

	2016	2017	2018	2019
	'000	'000	'000	'000
Agriculture	113.3	110.6	114.7	114.7
Industry	394.7	411.6	427.0	437.8
Of which: Construction	118.9	128.4	140.1	148.3
Services	1,618.2	1,664.9	1,706.2	1,733.4
Total at Work	2,133.3	2,194.5	2,247.9	2,286.0
Unemployed	194.8	157.8	134.3	119.6
Labour Force	2,327.9	2,353.3	2,382.2	2,405.6
Unemployment Rate, %	8.4	6.7	5.6	5.0

Special Articles

THE TAX TREATMENT OF PENSION CONTRIBUTIONS IN IRELAND[1]

Karina Doorley, Tim Callan, Mark Regan and John R. Walsh*

ABSTRACT

Tax treatments of pensions vary widely across countries. This paper examines the current tax treatment of pension contributions in Ireland and some widely discussed alternatives, including equalising the tax relief available to low and high earners. The analysis takes into account both explicit contributions in the private sector, and the implicit value of publicly funded pensions.

INTRODUCTION

Most OECD countries are facing the 'twin challenge of ensuring both the adequacy and financial sustainability' of their pension systems (OECD, 2014). Ageing populations, falling fertility rates and stagnating employment levels mean that funding the income of the elderly by using taxes paid by the working age population is becoming more and more difficult. Similar pressures affect Ireland although its relatively high fertility rate does afford some advantage compared to many European countries.

Calls for reform of both public and private pension systems in Ireland have been frequent over the last decades and have come from many sources. The OECD, while acknowledging that Ireland is better positioned than many countries, recommends that Ireland 'continue to adapt and fine-tune its pension system so that it can provide affordable and adequate benefits to Irish retirees in the long term'. Collins and Hughes (2017) also call for reform of the pension system, questioning the effectiveness of the current set of policy instruments focused on getting people to save for their retirement. Reform of State pension entitlement is already under way. The retirement age has increased from 65 to 66, and further increases – to 67 in 2021 and 68 in 2028 – have been announced and passed in legislation.

[1] This paper represents a development of work initially conducted for the Pensions Council. We thank the Council for initiating this project, and Council members Helen McDonald and Shane Whelan for helpful comments. We thank Gerry Reilly and the SILC team at the CSO for access to SILC data on which the SWITCH tax-benefit model is based.

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State pensions in Ireland are not earnings related. As a result, the attainment of adequate replacement of employment income depends, for those on middle and higher incomes, on being supplemented by private pensions. Policy instruments which can encourage such private sector provision include both tax incentives and, potentially, legislative provisions regarding the availability of pension schemes to employees, and the manner of their operation. These can range from making membership of a pension scheme mandatory, to arrangements by which membership is automatic unless individuals opt out of the scheme.

In this paper we focus on the tax treatment of pension contributions, which forms an important element of the overall tax treatment of pensions through pension contributions, investment income from pensions, and pensions in payment. This is a partial view of the overall territory, but offers some new insights. It does not lead directly to policy recommendations; several other factors would need to be taken into account in order to reach such conclusions.

There is wide variation the tax treatment of pension contributions across countries. Whitehouse (1999 and 2000) sets out four distinct options, characterised by whether or not contributions, pension fund income, and payments of pensions are taxable (T) or exempt (E). The current tax treatment of pensions in Ireland can be characterised as broadly following the principle that contributions are exempt from income tax. Pension fund income, which is the investment income derived from them, is also exempt, while income received from a pension is taxable in the normal way. Such an approach is not uncommon internationally and is labelled EET as contributions are Exempt, investment income is Exempt, and pensions in payment are Taxed. In the Irish system, there is a deviation from the strict EET framework, as lump sum payments at retirement are also exempted from tax. Whitehouse characterises EET as an expenditure tax, which could also be achieved under a TEE regime, taxing contributions on entry, but leaving pension fund income and pensions in payment exempt from tax. About half of the countries surveyed by Whitehouse (2000) had tax regimes which approximated an expenditure tax, or were more favourable to pensions than that.

However, the other half of the countries surveyed had tax treatments closer to the comprehensive income tax approach, either TTE or ETT. Given this wide variation in country practice, there is no single standard approach to the tax treatment of pensions which commands universal acceptance. Our analysis focuses solely on potential changes to the tax treatment of contributions. Thus, in the Irish context, we can contrast the impact of the current system – with

pension contributions exempt from tax – with alternatives where pension contributions are fully subject to tax, or have more restricted relief (e.g., through standardisation or hybridisation of the relief). It is not within the scope of this paper to move further to a full consideration of a move from EET to TEE (the prepaid expenditure tax) or TTE (one version of the comprehensive income tax). Nevertheless, the insights from this partial analysis of changes to the tax treatment of pensions may be of assistance in the broader debate regarding the tax treatment of pensions and alternative means (such as auto-enrolment) for the encouragement of pension savings.

The Irish system exempts private pension contributions from income tax through its EET approach. EET systems are generally considered to result in higher pension contributions than TEE (Taxed, Exempt, Exempt) systems (Armstrong, 2015).There is limited evidence that this kind of tax relief is cost effective in incentivising individuals or households to save for retirement. Rather, findings from international policy reforms indicate that when these incentives are introduced or removed, households divert private savings into pension contributions or vice versa (Attanasio and Rohwedder, 2003; Attanasio et al., 2004; Chetty et al., 2014). Benjamin (2003) estimates that one-quarter of the savings under the US scheme known as 401(k) represents new national savings. In addition to this, households who normally save the most were found to be largely contributing funds that they would have saved anyway. This suggests that tax incentives for pension contributions face a 'deadweight' problem, whereby they subsidise savings that would have taken place anyway and this seems to be particularly so for those at higher incomes.

As the tax relief afforded in Ireland is at the individual's marginal tax rate, this makes it more beneficial to those with higher earnings. Potential paths to restructuring tax incentives for pension contributions were discussed in the Green Paper on Pensions (Department of Social and Family Affairs, 2007). Among other reforms suggested, equalising the tax relief available to low and high earners was considered in order to increase the financial incentive for low earners to make pension contributions. Callan et al. (2009) and Collins and Hughes (2018) also discuss the distributional implications of the provision of tax relief at the individual's marginal tax rate: the research reported here provides a more up-to-date picture, and examines the distributional implications of a move to alternative forms of tax relief such as standard rating of the relief.

Pension funds are exempt from income and capital gains tax while pension income is subject to partial taxation on withdrawal from the fund. Estimates of the revenue foregone due to tax relief on pension contributions are available from The Revenue Commissioners but should be interpreted with some caution.

These estimates quantify the revenue foregone from exempting pension contributions from taxation, without adjustment for the change in pension contribution and investment behaviour that such a switch would result in. Nevertheless, the TET system provides a useful benchmark system against which we measure some reform scenarios – but the TET system is *not* proposed here as a policy reform. According to the Revenue Commissioners (2013), comparing the current EET Irish system with a hypothetical TET system yields a revenue foregone figure of approximately €1.3 billion.

In this report we:

- Quantify the cost of tax relief on private, occupational and public pension contributions relative to a scenario with no tax relief on pension contributions (i.e. a TET scenario). These calculations are on a similar basis to those undertaken by Revenue, and subject to the same limitations and qualifications;
- Simulate the cost of changing the structure of tax relief by simulating a lower cap on tax relief and by investigating a standard rate relief and a hybrid rate relief;
- Simulate the distributional consequences of such reforms;
- Discuss potential behavioural responses to any reforms.

THE IRISH PENSION SYSTEM

The Irish public pension system consists of a basic public pension, complemented by a means-tested non-contributory pension. There is no earnings-related pillar or any mandatory occupational or personal pension. This makes voluntary contributions to private pension plans a very important overall component of retirement income. However, more than 50 per cent of workers do not make private pension contributions or do so during only part of their working careers (OECD, 2014).

In a measure designed to promote complementary pension participation, contributions made by employees to public, private or occupational pension schemes are deductible for income tax purposes and tax relief is applied at the individual's marginal income tax rate. The amount of employee contributions that can be tax-relieved is limited to an age-related percentage amount of the employee's remuneration. Since 2011, tax-relievable contributions are subject to an annual earnings cap of €115,000 (€150,000 in 2010 and €250,000 prior to that). Employer contributions are also deductible in computing the employer's profits.

Pension fund investments are generally exempt from tax on their capital gains and income. A temporary pension levy (introduced in 2011) taxed the entire accumulated fund but was phased out in 2016. Pension income is taxable on withdrawal as income at the individual's marginal income tax rate although individuals can take tax-free lump sums. Debate about the tax treatment of pensions sometimes refers to the idea that the EET system involves a 'deferral' of taxation to the final stage, when pensions are in payment. Whelan and Hally (2018) argue that Ireland's current, broadly EET system recoups a rather small proportion of the tax which would be raised under an alternative TTE system. Essentially, this contrast is between the higher revenue from a comprehensive income tax system (TTE), and the lower revenue from an expenditure tax approach (EET or the prepaid expenditure tax TEE). Cremer and Pestieau (2016) note that 'the optimal policy is in general neither TEE nor TTE and which of these regimes is preferable is not clear'.

METHODOLOGY

SWITCH

Our analysis uses SWITCH, the ESRI tax-benefit model, linked to data from SILC (Survey of Income and Living Conditions), the Central Statistics Office's (CSO) main survey of household income.[2] SILC is an annual survey conducted since 2003 by the CSO in order to obtain information regarding the income and living conditions of Irish households. It is the Irish component of an EU-wide survey which aims to capture information on poverty and social exclusion across Europe. The survey is cross-sectional and also has a panel dimension with households surveyed annually. The SWITCH database is currently based on a pooled sample of households from the 2013 and 2014 waves of SILC.[3] The SWITCH database contains almost 8,000 households or over 20,000 individuals.

SWITCH simulates the disposable income each family would obtain under the current set of income tax and social welfare policies as well as in a counterfactual 'what-if' scenario. For this analysis, SWITCH is used to simulate:

- disposable income in the 'baseline' scenario, i.e. using the existing 2017 tax and benefit rules;
- disposable income in the absence of any tax relief on pension contributions;
- disposable income under alternative tax treatments of pension contributions.

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2 See Callan et al. (2013) for a full description of the model.

3 The sample of households used to construct the SWITCH database contains all households from the 2014 survey, and all additional households from the 2013 survey that were not interviewed in the 2014 survey. This ensures that households that were interviewed for both the 2013 and 2014 waves of SILC are present only once in the SWITCH database.

Estimating pension contributions

SILC data contain information about the existence and amount of pension contributions made by an individual from their last wage, including amounts paid to personal pension plans such as Retirement Annuity Contracts (RACs) and Personal Retirement Savings Accounts (PRSAs). For current purposes – the examination of tax relief related to pension contributions – we judge that it is best to exclude the 'Pension-related Deduction' (PRD) from the analysis. PRD was introduced in March 2009 for public service employees. The deduction is calculated on gross income and is treated as a pension contribution with tax relief provided at the marginal rate. However, the deduction does not affect the overall threshold levels for tax relief on pension contributions. We exclude PRD from the analysis because PRD is not, in fact, a contribution which increases an individual's pension entitlement. In our view, it is more correctly treated as a mechanism designed to reduce payroll costs and net wages. The PRD is paid by the employee, this attracts a tax relief, and the net impact is a saving to the State and a reduction in disposable income. The level of PRD was chosen with the level of State saving, and hence reduction in disposable income, in mind. If the tax status of PRD were changed so that it no longer attracted tax relief, then the desired outcome could have been achieved with a smaller PRD contribution. This element does not really belong in the broader debate about the treatment of genuine pension contributions, which do raise retirement income.

For those who indicate that they make a contribution from their wage, we take the reported amount, less any PRD. For those who report that they make a contribution from their wage, but do not report the amount of the deduction, we assume a contribution equal to the average contribution within their age group[4] and income quartile. There is no direct information on the amount of contributions by employers. Employer contributions are, therefore, imputed for those individuals who are covered by an occupational pension. Employer contributions are calculated as 8 per cent of employee gross earnings for all employees who contribute to a pension and state that their employer also contributes. This method is in line with how the Central Statistics Office estimates employer pension contributions. It also brings the total (employee + employer) average contribution to around 15 per cent, which was found to be the approximate average in previous work on this topic (Callan et al., 2008). Self-employed pension contributions are reported in the data and relate to contributions to individual private pension plans.

We distinguish between public and private sector workers using the individual's self-reported status. The public sector scheme is designed on a pay-as-you-go

[4] The age groups include: <30; 30-39; 40-49; 50-59; >=60.

basis and therefore not funded on explicit contributions. However, we attribute value to the government's implicit contribution. The rationale for this is explained more fully in Callan et al. (2007), and a similar point is also made by the Irish Association of Pension Funds IAPF (2008). If explicit contributions made by employees and employers were to become taxable at any point, then the tax-free status of the State's implicit contribution would lead to a horizontal inequity. The accrual of pension benefits would be similar to 'benefit-in-kind' for public sector workers and the question of how to value and tax this benefit would arise. In our work, we try to incorporate the value of the implicit public service pension contributions in a similar way to the explicit contributions of employers and employees in the private sector. The Report of the Public Service Benchmarking Body (2007) includes a special study on the relative value of public and private sector pensions.[5] Based on this, we assign an implicit employer contribution from the State of 20 per cent of gross income, minus employee contributions.[6]

RESULTS

Scale of pension tax relief

We begin by examining the aggregate extent of tax relief as estimated by SWITCH. In order to do so, we adopt the same framework as in Revenue estimates of the cost of pension tax reliefs i.e. the scale of tax relief is measured by the increase in revenue attained by moving from an EET system to a TET system. This analysis is a purely technical construct: it does not imply that a TET system is an appropriate one. It gives some information, but not a complete picture, of the changes involved in moving to a TEE (prepaid expenditure tax) or a TTE (comprehensive income tax) system.[7] More specific potential reforms, which have been considered in the Green Paper on pensions (DSP, 2007) are examined in the next section.

Table 1 shows the total cost of tax relief on private pension contributions i.e. the additional cost of an EET system compared to a TET system. We focus on simulations for 2017 but also report simulations from 2013 which can be compared to the latest publicly available Revenue Commissioners' data. In 2017, the cost of tax relief on pension contributions is estimated to be in the region of €2.2 billion. Of this figure, most of the cost relates to tax relief on employee

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5 The introduction of the Single Public Service Pension Scheme for new entrants to the public sector from 2013 will affect the implicit contribution rate of the State for those subject to it. While this could be addressed in further work, the main impacts are well captured in the current analysis attributing the 20 per cent contribution to all staff, because the numbers of new entrants since 2013 is small in data collected in 2013 and 2014.

6 If we were to include PRD in the contribution of the public sector employee, the amount of the imputed government contribution would decrease mechanically as it is calculated as 20 per cent of gross employee income minus employee contributions. This alternative method would result in no overall change to the total cost of tax relief or to its distributional implications.

7 As noted earlier, these characterisations of potential future systems are related to arguments concerning the extent of 'deferred taxation'.

contributions (€729 million) and government contributions (€778 million), but employer contributions also account for €541 million, and the cost of tax relief on pension contributions of the self-employed is estimated at around €185 million.

TABLE 1 ALTERNATIVE ESTIMATES OF TAX RELIEF ON PENSION CONTRIBUTIONS

	SWITCH 2013	SWITCH 2017	Revenue Commissioners 2013
Employee Contributions	653	729	552
Employer Contributions	486	541	497
Personal Pensions	155	185	211
Sub-total	*1,295*	*1,455*	*1,260*
Government Contributions	764	778	
Overall Total	*2,058*	*2,232*	

Source: SWITCH 2013 results based on 2013 policies used with 2013 SILC. SWITCH 2017 results based on 2017 policies used with pooled 2013-2014 data. Revenue Commissioners figures taken from Revenue Commissioners on-line statistics (https://www.revenue.ie/en/corporate/documents/statistics/tax-expenditures/costs-tax-expenditures.pdf).

TABLE 2 ESTIMATES OF TAX RELIEF ON PENSION CONTRIBUTIONS BY SECTOR

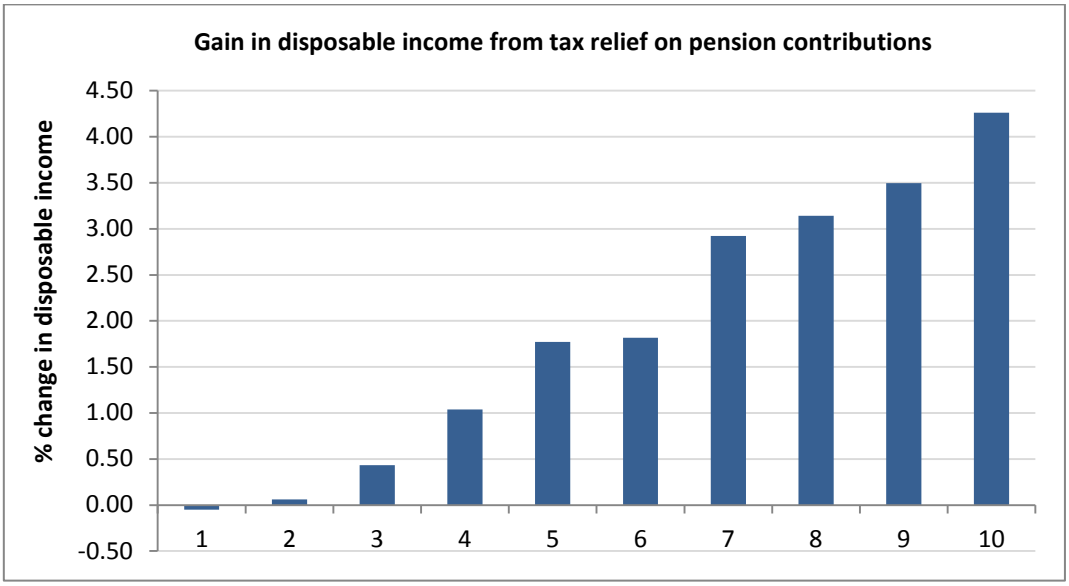
	SWITCH 2017
Private sector (employee + employer)	935
Public sector (employee + government)	1,112
Personal pensions	185
Total	2,232

Source: SWITCH 2017 results based on 2017 policies used with pooled 2013-2014 data.

We can also look at the split of tax relief between the public and private sector. Table 2 shows that employee and employer tax relief in the private sector accounts for almost half of the total cost at €935 million. Tax relief on employee and government contributions in the public sector account for a further €1.1 billion.

From our simulations, we can also identify how gains from this tax relief are distributed. Figure 1 shows the pattern of gains and clearly indicates that higher earners benefit more from tax relief on pension contributions than lower earners. The top four deciles of the income distribution gain between 3-4.5 per cent of disposable income due to tax relief on pension contributions. Gains are more modest around the middle of the income distribution (1-2 per cent) and there is virtually no impact for the bottom three deciles. This pattern of gains is similar to that reported by Collins and Hughes (2017) for employer and employee pension contributions.

FIGURE 1 THE DIFFERENCE IN HOUSEHOLD DISPOSABLE INCOME BY DECILE DUE TO TAX RELIEF ON PENSION CONTRIBUTIONS



Source: Authors' own calculations using SWITCH 2017 policies linked to pooled 2013-2014 SILC data.

Lastly, Table 3 looks at the pattern of gains by family type. Overall, tax relief on pension contributions leads to an average gain of around 2.6 per cent of household disposable income. However, this gain is not uniform across household types. Dual earner couples (with and without children) gain the most (around 4 per cent of disposable income) followed closely by employed lone parents (4 per cent); single earner couples with children (2.5 per cent) and without children (2.9 per cent); and single employed individuals without children (2.8 per cent). Altogether, around 65 per cent of all households would lose in excess of 2.5 per cent of their disposable income on average if tax relief on pension contributions was abolished.

TABLE 3 THE DIFFERENCE IN DISPOSABLE INCOME BY HOUSEHOLD TYPE IN THE ABSENCE OF TAX RELIEF ON PENSION CONTRIBUTIONS

	Baseline	Proportion of the population
Dual Earner Couple with Children	4.3	9.1
Dual Earner Couple without Children	4.1	5.0
Employed Lone Parent	4.0	5.1
Single Earner Couple without Children	2.9	5.6
Single Employed without Children	2.8	32.5
Dual Earner Couple with Relative Assisting	2.7	0.3
Single Earner Couple with Children	2.5	8.3
Retired Couple	0.4	8.5
Single Retired Tax Unit	0.0	10.1
All Other Tax Units	0.0	9.6
Non-Earning Lone Parent	0.0	1.7
Non-Earning Couple (>= 1 UE) with Kids	0.0	0.5
Non-Earning Couple (>= 1 UE) no Kids	0.0	0.3
Single Unemployed without Children	-0.1	3.3
All	2.6	100.0

Source: Baseline figures represent the 2017 situation compared to a situation with no tax relief on pension contributions.

Reform

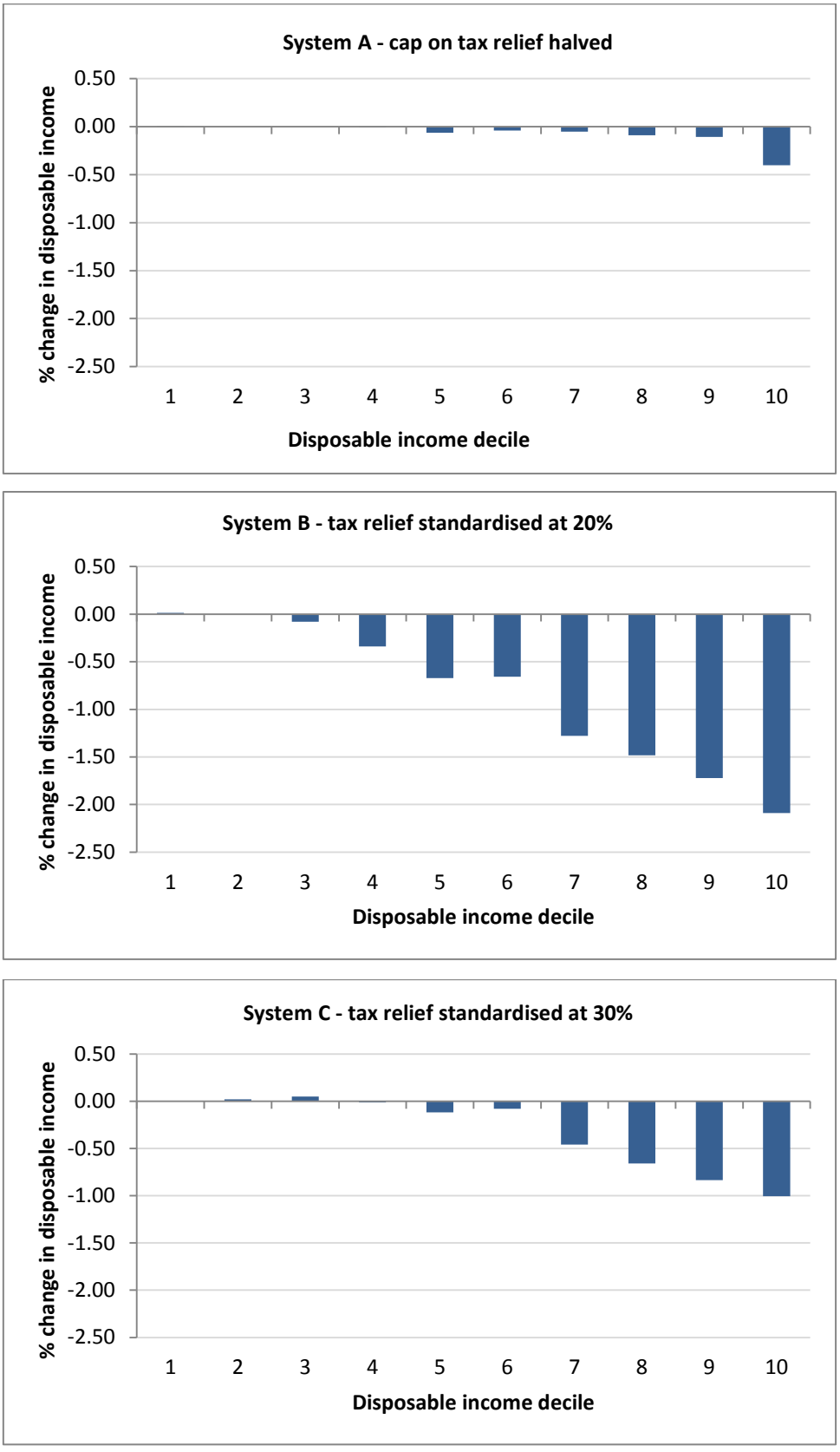
We consider three potential reforms to the policy of tax relief on pension contributions. In System A, the cap on tax relief for pension contributions is halved from €115,000 to €57,500. In System B, tax relief is granted at the standard rate only, i.e. 20 per cent rather than the marginal tax rate of the individual. In System C, tax relief is granted at a hybrid standardised rate of 30 per cent. The cost of each of these systems is set out in Table 4. System A costs just 5 per cent less than the baseline 2017 system. Systems B and C, which standardise the rate of relief at 20 per cent and 30 per cent respectively, result in higher savings. These amount to 46 per cent of the total cost of tax relief for System B and 19 per cent for System C.

TABLE 4 ESTIMATES OF THE CHANGE IN THE COST OF TAX RELIEF ON PENSION CONTRIBUTIONS

	System A	System B	System C
Change in tax relief on pension contributions (€ million)	-114	-1,022	-420
	-5%	-46%	-19%

Source: All costs are calculated relative to a system with no tax relief on pension contributions. System A halves the cap on tax relief from €115,000 to €57,500. System B and System C introduce standardisation of tax relief on pension contributions at 20 per cent and 30 per cent respectively.

FIGURE 2 **THE DIFFERENCE IN HOUSEHOLD DISPOSABLE INCOME BY DECILE DUE TO ALTERNATIVE SYSTEMS OF TAX RELIEF ON PENSION CONTRIBUTIONS**



Source: Authors' own calculations using SWITCH 2017 policies linked to pooled 2013-2014 SILC data

Figure 2 shows how disposable income by decile changes under the three alternative systems of tax relief on pension contributions. In System A, which decreases the cap on tax relief, there is little change to the distribution of tax relief on pension contributions. There are small losses for the top three deciles of disposable income but little change elsewhere in the income distribution. In System B, which standardises tax relief at 20 per cent, gains from tax relief on pension contributions are lower at all deciles (except Decile 1) but there is convergence in gains across the income distribution as richer households lose more than poorer households. The same logic applies to System C, which standardises tax relief at 30 per cent. In System C, households in the upper half of the income distribution lose compared to the baseline scenario but losses are not as large as with standardisation at 20 per cent (System B) because the rate at which the tax relief rate is standardised is higher. By standardising tax relief at 30 per cent (System C), the gains of the top four deciles of the income distribution fall while the gains to the lower half of the income distribution are largely unchanged.

Table 5 shows how the gains from tax relief on pension contributions by family type change in the three reform scenarios. Changes in these gains are modest in System A with most household types losing between 1 per cent and 7 per cent of disposable income compared to the baseline. System B and System C result in larger losses in comparison to the baseline. In System B, the households who benefit from tax relief on pension contributions lose just under half of this benefit compared to the baseline. In System C, most households who benefit from tax relief lose between 15-20 per cent of the benefit. There are no household types which stand out as losing relatively more or less than others in these reform systems.

TABLE 5 THE CHANGE IN DISPOSABLE INCOME BY HOUSEHOLD TYPE RESULTING FROM ALTERNATIVE SYSTEMS OF TAX RELIEF ON PENSION CONTRIBUTIONS

	System A %	System B %	System C %	Proportion of the population
Dual Earner Couple with Children	-5	-47	-20	9.1
Dual Earner Couple without Children	-7	-47	-20	5.0
Employed Lone Parent	-4	-45	-17	5.1
Single Earner Couple without Children	-5	-42	-14	5.6
Single Employed without Children	-4	-47	-21	32.5
Dual Earner Couple with Relative Assisting	-2	-43	-16	0.3
Single Earner Couple with Children	-7	-43	-15	8.3
Retired Couple	-1	-40	-11	8.5
Single Retired Tax Unit	0	-27	9	10.1
All Other Tax Units	0	0	50	9.6
Non-Earning Lone Parent	0	0	0	1.7
Non-Earning Couple (>= 1 UE) with Kids	0	0	0	0.5
Non-Earning Couple (>= 1 UE) no Kids	0	0	0	0.3
Single Unemployed without Children	0	-100	-100	3.3
All	-5	-46	-19	100.0

Source: All figures show differences in disposable income compared to the 2017 system of tax relief on pension contributions.

Behavioural effects

So far, our analysis has refrained from discussing behavioural changes to any reform of the tax treatment of pensions. However, individuals may well react to a reform by increasing or decreasing the level of their contribution, thus changing the overall cost or saving from the reform. The literature indicates that these effects are likely to be small. Policy reforms which require individuals to actively change their contributions in order to benefit are likely to have a low response rate and, of those who respond, these are more likely to shift money destined for pension contributions to another savings account (which may also be used as a form of retirement income) rather than stop saving for retirement altogether (Attanasio et al., 2004; Chetty et al., 2014). As such, tax incentives for pension contributions face a substantial 'deadweight' problem, of subsidising savings that would have taken place anyway. This is particularly true for higher earners. As the reforms discussed in this report mainly affect the amount of tax deductible by higher earners, we might expect small behavioural responses from this group, who can be expected to decrease their pension contributions in response to the reform (thus increasing the total State savings from the reform). However, this decrease in pension contributions is likely to be at least partly offset by an increase in other types of saving.

CONCLUSION

This report has re-examined the cost of tax relief on pension contributions compared to a benchmark scenario in which pension contributions are taxed both on the way in and on the way out of pension funds, as is done in Revenue costings. This analysis shows that the SWITCH model, using pooled data from the CSO's Survey on Income and Living Conditions for 2013 and 2014, broadly replicates the scale of pension tax relief identified by Revenue – around €1.3 billion annually – and confirms that most of the gains from tax relief on contributions are concentrated in the upper half of the income distribution. Dual earner couples gain the most, followed by employed lone parents, single earner couples and single employed individuals without children.

Taking into account the government's financial support of public sector pensions – which constitutes a 'benefit-in-kind' to public sector employees - increases the estimated cost of tax relief on pension contributions by almost €0.8 billion annually. The cost of tax relief on public sector pensions, given the addition of these implicit employer contributions by the government, accounts for more than half of the total cost of tax relief on pension contributions.

Given the wide variation across countries in the tax treatment of pensions (see, for example, Whitehouse, 1999), there is no single tax treatment which can be identified as commanding universal acceptance as a standard. Our analysis focuses on the first-round implications (before any responses in savings or labour supply behaviour) to some widely discussed potential changes in the tax treatment of pensions (Department of Social and Family Affairs, 2007).

Using SWITCH, we simulate a number of reforms to the current tax treatment of pensions including a halving of the cap on tax relief and a switch to a standardised rate of relief of 20 per cent or 30 per cent. These scenarios result in savings of between 5 and 46 per cent of the total cost of tax relief on pension contributions before behavioural responses. In all scenarios, richer households lose the most from any reform but losses are minimal in the case of altering the cap on tax relief. In the case of standardisation of tax relief, richer households lose much more than poorer ones leading to a convergence in the distribution of gains from tax relief.

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NATIONAL ACCOUNTS FOR A GLOBAL ECONOMY: THE CASE OF IRELAND[1]

John FitzGerald*

ABSTRACT

Globalisation is affecting the way economic activity is reflected in the National Accounts. Intellectual property, which is now part of the capital stock, interacts with the choice of global firms as to their legal structure, producing different national accounting outcomes for individual countries. This is but one manifestation of the challenges that a global economy presents for national accounting. Using the example of Ireland, consideration is given to the data needed to meet the needs of users of National Accounts. In particular, more information is required to separately identify all the activity of multinational enterprises and domestically owned firms. This paper suggests a set of satellite accounts for Ireland that would show how changes in the economy affect the economic welfare of Irish residents.

1. INTRODUCTION

This paper considers some of the problems for users of the current system of National Accounts due to the globalisation process. The inclusion of intellectual capital in the capital stock in the latest System of National Accounts (SNA 2008) further complicates a situation that was already difficult. While this note concentrates on the problems using data for Ireland, many of the same problems affect users of National Accounts for other economies, albeit to a lesser extent (Avdjiev et al., 2018; Wright and Zucman, 2018).

The National Accounts were originally developed for a pre-Second World War economy where goods and services were produced within individual countries without substantial inputs from abroad. The modern world, where goods and services for final demand are produced in stages across a range of countries

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involving a complicated supply chain, poses special problems for National Accounts.

The growth in the importance of intellectual property (IP) as a key input in the production of some goods and services has further complicated things. These problems are aggravated by the operation of US tax law.

The importance of foreign Multinational Enterprises (MNEs) in the Irish economy, especially US owned MNEs, and their concentration in certain key sectors where IP is crucial, means that the Irish National Accounts face special problems of interpretation.

In the case of Ireland, the problems with the National Accounts have manifested themselves in a particularly remarkable way, giving rise to a growth in real GDP in 2015 of over 25 per cent that was clearly 'incredible'. The fact that it was incredible reflects a problem with the underlying accounting framework, not with a failure to apply the accounting standards.

National Accounts were developed to meet a range of needs of policymakers in managing a modern economy. For example, national accounting data are required by those responsible for fiscal policy to understand what is happening on the domestic labour market and also the level of utilisation of physical capital located in Ireland. They also need to know how much of the output in Ireland represents a benefit to Irish residents.

While many countries have standardised on SNA 2008 (ESA 2010), the failure to implement it globally gives rise to a mismeasurement of global GDP: the movement of major economic activity to Ireland in 2015, as measured by SNA 2008, does not appear to have been counterbalanced by a corresponding fall elsewhere. This lack of consistency poses problems for international comparisons outside the EU.

There are also special problems in interpreting the current account of the Balance of Payments as a result of the unfolding of the globalisation process. The current account of the Balance of Payments is a key indicator of the sustainability of the current level of economic activity in an economy, but the standard treatment under SNA 2008 renders it totally ineffective as an indicator for a country such as Ireland.

In seeking to find a solution to the Irish problems the best approach would be to modify the ESA/SNA to ensure that it provided appropriate data for policymakers in all jurisdictions. However, this is clearly not going to happen in the foreseeable future. Instead Ireland and other countries affected in a similar manner will have to persevere in producing an appropriate framework of satellite accounts that provides a sensible depiction of what is happening in the domestic economy. While most external users will continue to use GDP for international comparisons, an alternative domestic framework providing more appropriate indicators of domestic economic activity, could, if suitably explained, be used by those interested in economic policy in Ireland, and also by those abroad interested in the Irish economy. However, it would be beneficial if a similar supplementary framework of accounts was adopted by other countries, particularly those affected by the problems discussed in this paper.

Where problems will arise will be with EU aggregates, such as Euro Area GDP, which is affected by the discontinuities in the accounts for Ireland. In 2015 the exceptional growth in Irish GDP added 0.5 percentage points to the Euro Area growth rate. International agencies such as the ECB, DG Ecfin, the IMF, etc., will need to adjust for such discontinuities.

Section 2 of this paper discusses the needs of users of National Accounts. The failure of the current system of accounts to meet these needs underpins the discussion in the rest of the paper.

Section 3 considers how we model output in a global world. The complexity of modern supply chains poses special problems in developing National Accounts for very open economies. The evolving model of world production requires a development in the way the National Accounts measures an economy. In particular, a new set of satellite accounts needs to handle the returns on IP capital, which can be located anywhere in the world, in an appropriate manner. It also needs to focus on the utilisation of labour and physical capital located in a country.

Section 4 describes the National Accounting significance of the legal structures used by MNEs in operating in different economies. Any new system of satellite accounts needs to be robust to changes in the legal structure of large companies or changes in tax law.

Section 5 sets out the problems posed for the Irish National Accounts as a result of globalisation and Section 6 outlines some possible solutions to the problems identified in this paper. Conclusions are reached in Section 7.

2. WHAT IS THE PURPOSE OF COLLECTING NATIONAL ACCOUNTS?

The National Accounts are designed to present a picture of an economy that can be useful to those managing that economy or working in that economy. The way the accounts are defined and presented should take account of the needs of users and the purpose for which they will be used.

Fiscal and monetary policy

Since the national accounting framework was first developed, the National Accounts, in particular the key aggregates, have been an essential tool for those responsible for fiscal and monetary policy. In the case of fiscal and monetary policy it is very important to understand the state of the economic cycle using national accounting data.

In addition, in preparing a Budget, governments need to understand, not just the overall level of output, but also what is happening on a range of other important national accounting aggregates. This is essential in assessing tax revenue for the coming year, and also in understanding the pressures on expenditure.

Both for fiscal and monetary policy it is, therefore, necessary to have at least one or two key aggregates that represent the level of real activity in the domestic economy – the economy for which the policymakers are responsible.

Fiscal rules, such as the Stability and Growth Pact and its successor depend on GDP being a meaningful indicator of domestic activity. For countries such as Ireland, an alternative set of measures is needed on which to base fiscal rules.

In managing monetary policy the behaviour of Central Banks is often characterised using a Taylor rule. Under such a rule monetary policy is tightened as actual output rises above potential output. However, such a rule depends on the availability of reliable measures of domestic output.

To support policymakers, national accounting aggregates must be consistent over time**.** Discontinuities, for whatever reason, make it impossible to determine the

growth rate at the point of discontinuity. In addition, to understand the behaviour of the economy and to calibrate policy interventions correctly it is essential to have consistent time series for the National Accounts that can be used for research and related modelling.

A second requirement for the National Accounts aggregates is that they reflect the level of physical activity in the economy being regulated by the fiscal or monetary policy authorities. The data must show developments in the domestic labour market and the domestic market for physical capital. The data could well prove misleading if they cover physical activity that takes place in other economies. SNA 2008/ESA 2010 does not ensure that the output covered by the key aggregates, such as GDP, is appropriately aligned with the jurisdiction of individual fiscal or monetary policy authorities.

The proposed approach would mean that the real activity of subsidiaries of domestic multinationals should be included in the output of the economies where the subsidiaries employ labour and physical capital. In turn, domestic activity for Ireland should include the real activity of subsidiaries of foreign owned multinationals that takes place in Ireland.

Broader economic policies

A second major role for the National Accounts is to provide appropriate information to governments on how an economy is behaving, where growth is coming from, where output is being sold etc. This information is needed to support governments in developing policy across a wide range of different fields.

Policymakers are primarily concerned with output and activity physically located in the country over which they have jurisdiction. For example, if a significant part of the output attributed to Ireland is produced in Asia with Asian labour and Asian physical capital, this will be of little concern to domestic policymakers. It is only in so far as the activities of such businesses directly affect those who are living in the country for which the accounts are prepared, that the accounts will be useful.

As discussed later, the accounts for Ireland, prepared under SNA 2008/ESA 2010, do not meet either of these two requirements. In Ireland the problem arises in trying to identify what part of the activity being measured in the accounts directly benefits those living in Ireland.

The current account of the Balance of Payments was one of the key indicators showing that the growth in activity in Ireland (and a number of other EU economies) was unsustainable in the last decade. However, because of the effects of globalisation on the accounts today, the current account of the Balance of Payments no longer signals the gap between savings and investment of Irish agents. It is clear that such an indicator is essential for the safe management of a modern economy.

Informing citizens and companies in the economy about what is happening

The considerations here are very similar to those for policymakers. Citizens and companies need information on what is happening in an economy in so far as it will affect them. In an economy with large foreign MNE activity this means that the attention should be more focussed on GNI and Net National Income (NNI) rather than on GDP.

For this broader audience it is even more important that the development of the economy, as manifested in the accounts, is clearly explained. There will also be a need to concentrate on one or two key aggregates when communicating with a very wide audience.

Tax base

The National Accounts data, in particular GNI, are used as a tax base in calculating Budgetary Contributions to the EU. For this purpose they should include activity that benefits those living in a country, even if much of the related activity does not take place in that country. Because Ireland benefits from the corporation tax paid by foreign MNEs operating in Ireland, it is appropriate that their profits, on which Irish corporation tax is paid, should be included in the base for EU taxation.

International comparability

A further very important use of National Accounts data is to provide international comparisons between economies. For this purpose it is essential that the data are prepared on the same accounting basis across countries. Currently all EU countries use SNA 2008/ESA 2010, which facilitates comparisons within the EU. However, because countries are affected in different ways by the process of globalisation, if there are anomalies in how the accounting standards treat certain items, it may affect the usefulness of the data for comparative purposes.

Where the inadequacies of SNA 2008 require the development of satellite accounts, as discussed in this paper, it would be better that they were done on a consistent basis across countries. If each country develops its own system of satellite accounts, policymaking at an EU level would be less transparent. To the extent that SNA 2008 is not fully implemented in some non-EU countries this makes international comparisons with non-EU countries more difficult.

3. MODELLING OUTPUT

When National Accounts were first developed in the 1930s it was not unreasonable to consider the world as being made up of a series of national economies which undertook limited trade in final goods. However, since the Second World War, major changes in the world economy, especially the freeing of trade, have changed this situation so that for some purposes national economies, in the sense of the 1930s, have been transformed into subsectors of a global economy.

It can be useful to consider these and other changes within an encompassing model of world production. In this model the choice of the location for production by a stylised world firm (or myriad of firms) is made so as to minimise the world firm's cost of production. In the 1930s each firm chose capital, labour and materials in each separate national economy to minimise the cost of production of national output. Domestic production was primarily directed at satisfying domestic demand.

However, with the freeing of trade, the world firm(s) can choose to locate some of the production process of a good (or service) in one country and then combine the components produced in one country with labour and capital in another location to produce a final good. In this case the production of the final good in a country will be undertaken using domestic capital and labour, combined with materials for further production that are produced in another location. Where final products consist of components from many countries, the cost of production in an individual country can influence domestic value added (GDP) in two ways:

- First the relative cost of production in one country compared to the rest of the world will affect the location where the final good will be produced, hence affecting domestic value added (GDP).
- Secondly, changes in relative factor prices within a country can also affect domestic value added by causing the world firm to produce more or less of that final good in the relevant country by varying the share of material inputs, many of which may be imported – the substitution effect of changes in relative prices.

This model encompasses behaviour such as outsourcing, modelling it as a function of the changes in the cost of domestic inputs relative to the cost of materials produced abroad. As a result, as discussed below, the effect of changes in the relative cost of domestic inputs on domestic value added must include both the substitution of gross output in a particular economy for similar output elsewhere, and also the substitution of domestic inputs (labour and capital) by material inputs, which are generally imported.

$$C_w = f(c_I, c_R, t) \tag{1}$$

The approach taken in the traditional National Accounts of the 1930s assumed a model where the production of goods on a worldwide scale can be characterised by a cost function (1) where the cost of world output, *Cw*, is a function of the unit cost of production in an individual country c_I relative to the rest of the world, c_R, and technical progress, t.[2] Then the share of world output Q_W that is located in the individual country *i*, Q_I, (2) is a function of the unit cost of production in country *i*, c_I, relative to the unit cost of production in the rest of the world, c_R, and technical progress, *t*.

$$\frac{Q_I}{Q_W} = f\left(\frac{c_I}{c_R}, t\right) \tag{2}$$

$$c_i = \frac{C_i}{Q_i} = f(p_l, p_k, p_m, t) \tag{3}$$

The unit cost of production in country *i* is defined in Equation (3) as a function of the price of labour, p_l, the cost of capital, p_k, the price of inputs of goods and services, p_m, and technical progress, *t*. From this equation the share of each of the factors of production – labour, capital and materials – in domestic output can be determined.

For this model to be a valid representation of the economy of country *i*, a number of assumptions are necessary, including the assumption of constant returns to scale.

For a national output aggregate to be valid for any country it must be weakly homothetically separable from output in all other countries (Denny and Fuss, 1977; Pindyck, 1979). This allows a two-stage optimisation procedure where firms in individual countries choose the optimal mix of inputs to use to produce

[2] The exposition here is based on Bradley and FitzGerald, 1988.

national output. Then the share of world output to be produced in country *i* is a function of the unit cost of production in country *i* relative to the unit cost of production in all other countries.

The assumption of weak homothetic separability means that changes in relative prices of factors of production within one country, which do not affect the overall cost of production in that country, will not affect the mix of inputs used to produce a good in another country. In other words, in producing a good or service it is not possible to freely mix factor inputs from different countries in different proportions to produce a final good or service. This is a world where the supply chain does not spread across different countries but inputs are sourced nationally. While this restriction may have seemed realistic in the 1930s, in a modern world the restrictions are no longer valid.

The freeing of trade in the post-war world saw trade expanding rapidly, not just in final goods and services, but also in inputs used in the production process. This has gradually resulted in the complex supply chains which underpin modern production. This development gives rise to many of the problems with the National Accounts for countries such as Ireland, which are small but fully integrated into the global supply chain.

Because of the ability to shift production between countries, the effects of reaching full employment or full utilisation of fixed capital in a particular economy can be rather different from that in a closed economy world. Instead of factor prices rising rapidly in the face of high levels of capacity utilisation, it is possible to shift some of the production process elsewhere. This has implications for fiscal and monetary policy.

A second assumption of the standard production model is that capital is located in a particular country and used for production in that country. It also assumes that the marginal product of capital (and of other factors) is diminishing. However, intellectual property, which is now, appropriately, included as an element of the capital stock, has rather different characteristics. It may be technically located in one country (and receive its returns in that country), while it may be used to produce output world-wide. As Haskel and Westlake, 2017, emphasise, intellectual property (IP) is highly scalable: the same ‘quantity’ of IP can be used to produce a million or a billion smartphones. As a result, this type of capital does not fit easily into the traditional model of production or into the traditional National Accounts framework; the marginal product of IP is not diminishing. Also it can be used across many different countries.

$$C = f(K_p, p_{il}, p_{ik}, p_{jl}p_{jk} \dots\dots p_r, t) \quad (4)$$

Today the choice facing the world firm(s) may be better represented by Equation 4 which relaxes the assumption of weak homothetic separability between factors in individual countries. Instead the world firm(s) can choose to mix the factors from different countries *i*, *j*, etc. in a complicated supply chain. Raw materials p_r are located independently of where the production takes place. Also, in the modern world the stock of IP, K_p is increasingly separable from all other factors of production. It can be located anywhere in the world.

The returns on IP are separable from the returns to the other factors. This means that the inclusion of the returns to IP in a particular economy may not reflect the returns to that factor as used in that economy. National output, as understood when the National Accounts were first developed, no longer exists as a separable aggregate. The attribution to Ireland of the returns to IP owned by foreign MNEs in Ireland is very seriously distorting the traditional measure of national output. That is because the returns to IP arise from the use of the IP to produce goods in Asia, not Ireland.

However, while such a model better represents a global world, it has been necessary to impose significant restrictions to make it tractable for economic analysis. Nonetheless it is important that the data provided by the National Accounts reflect the complex decision-making process which determines the global location of output and the utilisation of factors in individual countries.

The theoretical model has important implications for the users of National Accounts and for the information they need to obtain from the accounts.

Instead of concentrating on national output (GDP) which includes the returns to IP capital, fiscal and monetary authorities need to focus on the utilisation of 'domestic' factors of production, physical capital[3] and labour, located in an individual economy. Focusing on the utilisation of domestic factors of production also deals with the problem that in a modern economy, with complicated supply chains, domestic factors of production are not weakly separable from factors of production in other countries.

[3] This includes the physical capital owned by foreign MNEs that is located in a particular economy.

This suggests that a lot more information is required on the income and output side of the accounts to understand what is happening to the utilisation of 'domestic' factors of production and where growth in an economy is actually arising. The returns to labour and physical capital, wages, and profits before and after depreciation, need to be separately identified for each sector. Separately identifying the returns to IP capital will not be feasible. Instead, companies where the returns to IP capital dominate profits from using physical capital (foreign MNEs in the Irish context) will need to be separately identified. Finally, because policymakers are also interested in the income available to domestic residents, the contribution of firms to Net National Income (NNI) needs to be identified by sector.

4. LEGAL DISTINCTIONS MATTER

Two legal issues have a significant effect on how the operations of MNEs are reflected in National Accounts. The first concerns the legal form used by an MNE operating in a country other than its home location. The second is how the company is affected by tax law, in particular how US companies are affected by US tax law.

Legal structure

For over a century many companies have moved from operating on a purely national scale to operating in two or more different countries. This 'globalisation' can occur in different ways. Initially a company may buy services or inputs from firms in other countries. A second stage may involve the establishment of a subsidiary in one or more foreign countries making the company a Multinational Enterprise (MNE). A third approach, which has become more popular in recent decades, is to contract with foreign firms to manufacture goods on behalf of the MNE in factories owned by independent companies in foreign locations.

Where firms buy goods or services abroad this appears in the National Accounts as imports and exports in a straightforward manner. The output in the foreign location is included in that country's GDP.

Before the freeing of trade the establishment of a foreign subsidiary was often the only way to move into a new market, bypassing tariff barriers. It allowed companies to exploit their intellectual property on a wider scale in the face of major restrictions on trade.

Today, for many MNEs, this approach remains a vital stage in establishing an integrated supply chain. Whereas initially the production process may have been replicated in different locations to avoid tariffs, today the different stages in the supply chain may be undertaken by subsidiaries located in different countries around the world to minimise the world cost of production.

In setting up a subsidiary in a country, an MNE establishes a legal presence there. The physical capital and labour used by the subsidiary is clearly part of the stock of physical capital and labour in the country where the subsidiary is located. As a result, the activity of the subsidiary is recorded as part of the activity in the country where it is located: the GVA, physical investment, employment, the wage bill, profits and depreciation are all included in the detailed National Accounts for the country where the subsidiary resides.

The relationship of a subsidiary in another country with the parent MNE, wherever it is located, is reflected in a transfer of the after-tax profits earned by the subsidiary to the parent, a flow of factor income which represents a wedge between GDP and GNI. Even if temporarily retained in the origin country, this payment is treated as being accrued to the MNE parent in the period in which it is earned. There may also be other intra-company transfers which affect the National Accounts. For example, royalties may be paid for use of the parent company's IP. Also parts or services may pass from one subsidiary to another, appearing as exports and imports.

A third approach to operating on a global scale involves an MNE contracting with a company in another country to have goods or services produced for it. In this case the MNE provides the IP but the local company owns the capital and employs local labour. Because the work is done on contract for the MNE, the goods or services produced by the local company are owned by the MNE from the initiation of the production process.[4] The goods (or services) are recorded as an export from the country where the MNE that owns the goods resides, not from the country where they were manufactured. Also imported inputs used in the process are recorded as imports in the country where the MNE that owns the goods resides. The operating surplus, over and above the payments to the local

[4] For example, while small relative to the total output of the Irish pharmaceutical sector, there has been contract manufacturing work done in Ireland for foreign pharmaceutical companies. In this case the drug is shipped in powder form to an Irish company to be pressed into tablet form. The powdered drug is, at all times, owned by the foreign company contracting with the Irish company so that it is not considered as being produced in Ireland. Rather, for national accounting purposes, only the payment to the Irish company for the services is included in exports. Meanwhile, the gross flows of the drug are included in the trade statistics.

producer, is recorded as output in the country where the MNE that owns the IP is located.[5]

Thus there is a very different national accounting treatment for goods or services physically produced in a country depending on the legal arrangements between the MNE and the local company.

The decision by MNEs to go the contract manufacturing route may be due to uncertainty about how well a subsidiary company may be treated in the host country's legal system or by its administration.[6] Local entrepreneurs may be favoured in many ways. Also the MNE may be concerned that, if IP is transferred to a subsidiary, it might not be protected by the host country legal system.

For whatever reason, contract manufacturing tends to be used by IT companies with large IP having goods manufactured in countries such as China. The subsidiary route is favoured in cross border activities by MNEs, such as German or Japanese MNEs producing cars and other goods, in particular where the subsidiaries are located in OECD countries.

The fact that the distinction between manufacture by a subsidiary and manufacture on contract makes a big difference to the national accounting treatment of MNE activity leaves open the possibility of future big discontinuities in the National Accounts for individual countries. If the legal framework changed to make establishing a subsidiary preferable in certain major Asian economies, such as China, the MNEs currently operating contract arrangements could suddenly change their legal form. This could result in a large amount of what is treated as output in Ireland, or elsewhere, suddenly being included in the National Accounts for the Asian country where the physical manufacturing takes place. The relocation of output in the accounts would be replaced by a transfer to the MNE, wherever it is headquartered, of after-tax profits as part of factor income. Similarly, a shift of production from China to a country, such as India, where establishment of subsidiaries is preferred, could also see a major change in output in the country where the MNE's head office is located, such as Ireland. While these cases would give rise to significant discontinuities in GDP, they should not affect NNI (Net National Income).[7]

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5 Thus the operating surplus on manufacturing "Donald Trump" ties in China in 2015 would have been treated as US GDP, in spite of the fact that they were manufactured in China on contract.

6 For example, foreigners may be subject to arbitrary charges.

7 As discussed later, the treatment of depreciation of IP of MNEs can seriously distort GNI.

While the current approach to recording activity in SNA 2008, if applied across the world, will consistently record world GDP, it poses many problems for the key users of the data. It means that GDP and also, as is outlined later, GNI may not provide a good guide for policymakers. In addition, if the SNA is not correctly applied in all countries by their national accounting authorities, world GDP and GNI may be incorrect and subject to discontinuities as MNEs change their legal structure.

As was discussed in the previous section, what is needed is a set of satellite accounts identifying the returns to domestic factors of production, distinguishing between foreign MNEs and the rest of the economy. Unlike the current situation with GDP and GNI, NNI arising by sector, derived in this way, will be unaffected by changes in MNEs' legal structures in third country locations.

Tax law

A number of the problems with the Irish National Accounts arise from how US tax law affects the behaviour of US MNEs. The problems are much less in dealing with MNEs originating in other countries such as Germany, France, or the UK. The key difference is that, until now, US tax law meant that all profits of US firms, wherever earned, were taxable eventually in the US. However, until now, US firms were allowed to defer repatriating profits and so 'temporarily' avoid paying the US tax liability. This has proved especially important for firms with large IP, such as firms in the IT sector.

The changes in US tax law in 2017 are significant and may lead to further movement, especially changes in the country in which firms locate their IP. The requirement that the US owners of IP held abroad pay a minimum tax rate of 10 per cent could see further major relocation of such IP, possibly to Ireland. However, we do not consider how the recent US changes in tax law may affect the National Accounts in the future in any detail.

TABLE 1 SHARE OF GROSS OPERATING SURPLUS IN GVA, BY COUNTRY OF OWNERSHIP, %

	2008	2009	2010	2011	2012	2013	2014	2015
Germany	34.4	31.8	41.6	40.5	53.4	NA	59.2	36.3
France	53.3	42.0	56.0	71.5	47.1	NA	60.3	58.7
UK	38.1	34.1	32.9	46.6	43.4	NA	49.3	38.2
US	79.8	80.1	81.1	82.6	82.8	NA	85.6	94.4
Japan	62.8	69.3	62.6	74.5	70.9	NA	82.7	84.0
Other foreign	58.3	54.9	62.2	63.3	66.6	NA	54.5	80.2
Ireland	28.1	31.2	32.6	35.4	35.4	NA	37.9	44.7

Source: Eurostat Structural Business Statistics.

Since 1956, Ireland has operated a low rate of corporation tax which was gradually extended to cover all activity undertaken in Ireland.[8] This has made it attractive for some MNEs to adjust their global structure so that a larger share of their global profits is earned in Ireland and subject to Irish corporation tax (Conroy, et al., 1998). Such a transfer of profits is reflected in the gross operating surplus of firms so that it represents a high share of their value added in Ireland.

Table 1 shows the Gross Operating Surplus (GOS) of subsidiaries of foreign MNEs operating in Ireland as a share of Gross Value Added (GVA), and a comparable figure for Irish firms. The shares for German, UK and Irish firms are rather similar. The share for French subsidiaries in Ireland is a bit higher. However, the profit share for US firms is exceptionally high, and also very high for other non-EU firms, including Japanese firms. After the relocation to Ireland of IP by US owned MNEs in 2015, the profit share for such firms approached 95 per cent of value added.

These data suggest that for MNEs owned in the EU, domestic tax law in the country where the MNEs are resident makes shifting of profits to an offshore location, such as Ireland, difficult. Alternatively the nature of their business may also make the separation of the returns to IP (which can be relocated) from other profits difficult.

After the relocation to Ireland of IP in 2015 by one or more US firms, two-thirds of the gross operating surplus arising in Ireland was attributable to US firms and under 10 per cent to firms from other foreign countries. By contrast, only 6 per cent of employment in Ireland was in US owned companies.

[8] In 1956 the law was changed to exempt profits earned from exporting from corporation tax. In 1980 this exemption was replaced by a 10 per cent rate of tax on all manufacturing firms. In the 1990s a 12.5 per cent rate was gradually applied to all sectors of the economy, being fully implemented by 2003.

The obvious conclusion from Table 1 is that US tax law has resulted in US companies transferring substantial profits to Ireland whereas, in the case of MNEs from other counties that account for the bulk of employment by MNEs in Ireland, they have not transferred much of their global profits to Ireland because of the nature of their business or because of the way the tax law is implemented in the country where the MNEs are headquartered.

The importance of tax law in determining the shifting of profits on US MNEs' IP highlights the need to separately identify foreign MNEs' activities in the output and income tables of the National Accounts.

5. IRISH NATIONAL ACCOUNTING ISSUES

Ireland joined the EU in 1973 and, since that date, the economy has become increasingly globalised. There have been a series of important developments as a result of globalisation which have affected the economy and its portrayal in the National Accounts over the subsequent 45 years.

The first development was the important role played by the low rate of corporation tax in attracting foreign MNEs to establish subsidiaries in Ireland. In turn they tended to be highly profitable, with some firms – especially from the US – transferring profits to Ireland.

The direct benefit for people living in Ireland from the activity of foreign owned MNEs is the wage bill and the corporation tax paid in Ireland (the contribution to NNI). The profits, after tax, flow back to the foreign owners of MNE subsidiaries in Ireland. Thus GDP, which includes the profits of the MNEs, is not as good a measure of the economic welfare of those living in Ireland as GNI, which excludes the after-tax profits.

By the end of the 1970s there was very substantial manufacturing activity undertaken in Ireland by foreign owned MNEs. The attraction of Ireland for MNEs derived from their ready access to the wider EU market, the fact that labour costs were significantly lower than elsewhere in the EU, a stable business environment and a low corporate tax rate.[9] As a result of the low corporate tax rate there was a significant incentive for MNEs to move profits to Ireland through transfer pricing (Conroy et al., 1998). As a result, the profits earned by MNEs have

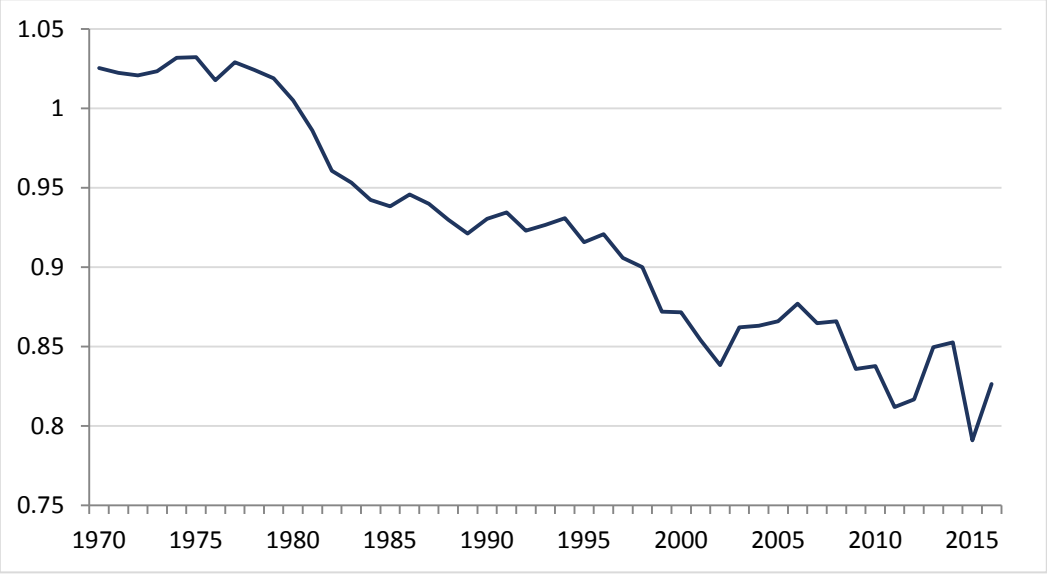
[9] Up to 1980 a zero rate of corporate tax applied to profits deriving from exports.

represented an increasing share of GDP over time, driving a growing wedge between GDP and GNI.

As shown in Figure 1, whereas in the early 1970s GNI was higher than GDP, by 1980 GNI was 5 per cent less than GDP as a result of the outflow of profits of MNEs. This gap between the two has widened over time and, since 2009, GNI has generally been less than 85 per cent of GDP.

In the 1970s the profits recorded as flowing out of the country were actual remittances, but there was a growing build-up of accrued profits, especially among US MNEs. This was not recognised in the National Accounts until 1984, when the profit outflows were shown on an accruals basis for the first time (Honohan, 1984). This resulted in a substantial upward revision in the deficit on the current account of the Balance of Payments, with serious implications for economic policy. (The deficit on the current account of the Balance of Payments was revised upwards from 12.5 per cent of GDP to over 15 per cent for 1981).

FIGURE 1 RATIO OF GNI TO GNP, CURRENT PRICES



Source: CSO National Income and Expenditure, 2016 and CSO Historical National Accounts.

More recently the National Accounts for Ireland have been significantly affected by a range of other factors arising from globalisation: the growth in activity by redomiciled PLCs; changes in patents of pharmaceutical companies; the growth of a large aircraft leasing sector; and, finally, the inclusion of IP in investment, interacting with changes in ownership of this IP (de Haan and Haynes, 2018).

National accounting rules have significantly affected how these developments have been represented in the National Accounts: in some cases their treatment in the accounts means that GNI, rather than GDP, is a reasonable measure of the income and welfare of those living in Ireland. However, the growth of redomiciled PLCs, and of the ownership of IP by MNEs located in Ireland has, in more recent years, also seriously affected the usefulness of GNI for the purposes for which National Accounts are used by policymakers.

A number of the problems with the Irish National Accounts have been discussed in earlier papers:

- Over the last few years a number of companies (referred to as redomiciled plcs) have relocated their headquarters to Ireland without generating any real activity in the economy in terms of employment or purchases of domestic inputs. The retained income of these companies adds to GNI while the income is actually attributable to the foreign owners of the companies. This means that GNI is no longer an appropriate measure of the income available to Irish residents. FitzGerald (2013b) and Avdjiev et al. (2018) discuss this issue in detail and the latest data for the net income of these firms are shown in Table 2.

TABLE 2 NET INCOME OF REDOMICILED PLCS AS % OF GNI

2008	2009	2010	2011	2012	2013	2014	2015	2016
0.2	1.1	3.7	4.0	5.0	4.2	4.1	2.3	2.5

Source: www.cso.ie/en/releasesandpublications/in/rpibp/redomiciledplcsintheirishbalanceofpayments.

- The pharmaceutical sector has grown in importance in the economy since the 1990s with the vast bulk of the output coming from foreign owned MNEs. By 2010 the sector accounted for almost 10 per cent of GDP. These firms are generally highly profitable, reflecting the huge IP involved in developing their products. This IP is protected by patents which have a limited life. When important drugs fall out of patent it can distort the figures for GDP. This problem was discussed in detail in FitzGerald, 2013a.
- Over the last 15 years aircraft leasing has expanded dramatically in Ireland, with most of the major MNEs engaging in this business having subsidiaries in Ireland. The national accounting treatment of this activity has been discussed in detail in FitzGerald, 2015. The CSO has recently published fairly comprehensive data on the sector, as shown in Table 3.

TABLE 3 AIRCRAFT LEASING SHARE OF KEY NATIONAL ACCOUNTS AGGREGATES, 2016, %

	%
Wage Bill	0.3
Gross operating surplus	4.7
Corporation Tax	2.5
GDP	3.0
GNI	0.2
Depreciation	8.1
Capital Stock, 2014	15.6

Source: www.cso.ie/en/releasesandpublications/ep/p-ali/aircraftleasinginireland2007-2016.

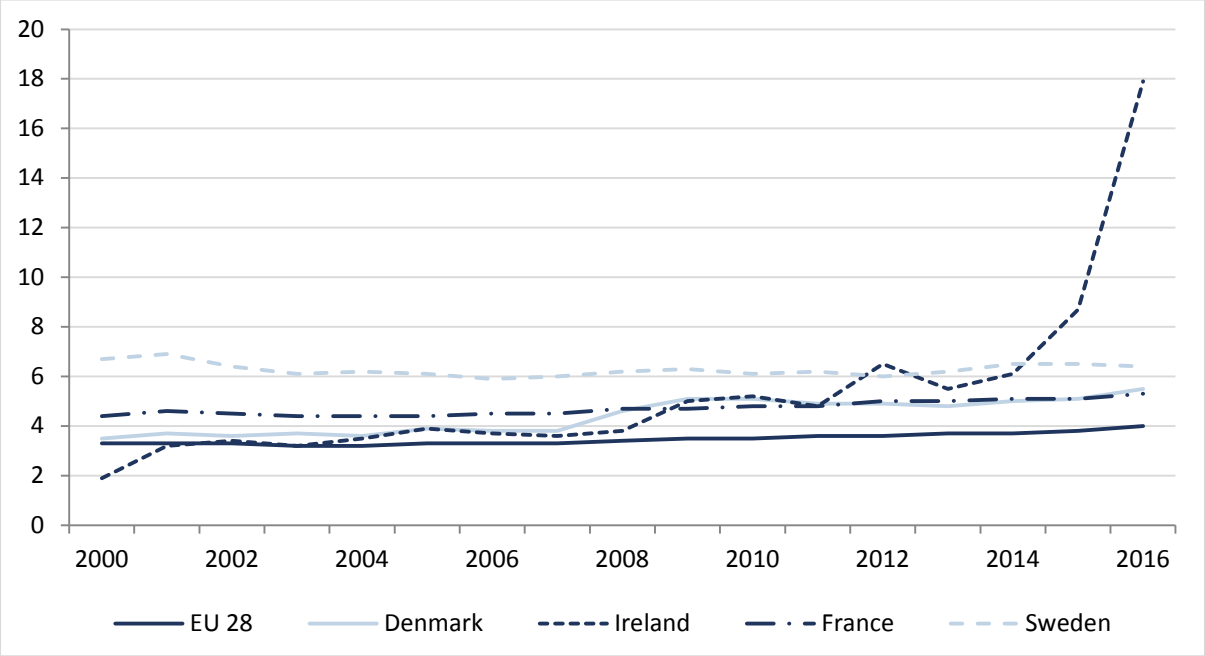
IP and contract manufacturing

The scalability of IP capital means that it can be, and has been, used to produce very large output of phones and computers. A second aspect of IP capital is that it can be exploited by workers (and physical capital) located in different jurisdictions than where the IP capital is itself located; it is separable from the other factors of production. This is very different from other capital, where the equipment has to be physically present in the country where the production takes place.

While IP plays a very important role in many industries, the Information Technology (IT) sector appears to be unusual in the extent to which the IP is separated in terms of geographical jurisdiction from the related physical production. The pharmaceuticals sector, which is also an important part of the Irish economy, and where production is dominated by foreign MNEs, uses very extensive IP in producing its output. The IP is either located in Ireland, where the production takes place, or is licensed by the Irish subsidiary from the parent MNE, appearing as an import of services. Thus the IP in pharmaceuticals is more closely associated with where the goods themselves are actually produced.

In the case of some key IT sector firms in Ireland, they have used contract manufacturing to undertake the production of their products, such as smartphones and computers. This contract manufacturing does not involve the transfer of the IP or the licensing of the IP to the contract manufacturer. As discussed in Section 4, this contrasts with the situation where a firm uses a subsidiary abroad, licensing the IP to that firm.

FIGURE 2 INVESTMENT IN INTELLECTUAL PROPERTY AS A % OF GDP



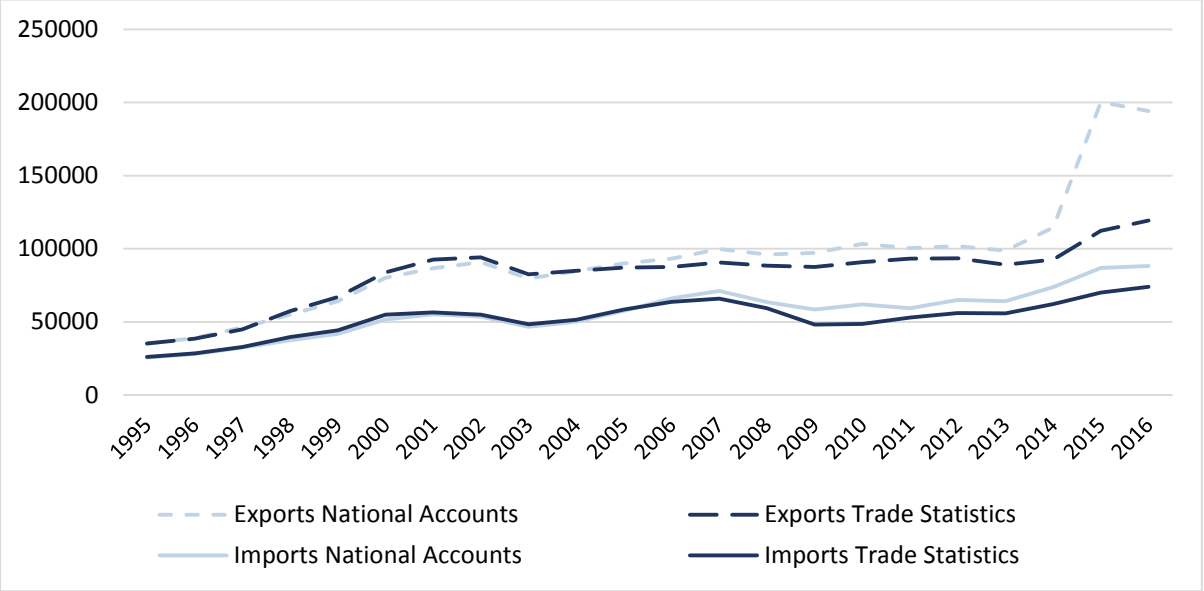
Source: Eurostat.

Since the early 2000s, there has been extensive investment in intellectual property by foreign MNEs. Figure 2 shows investment in IP as a percentage of GDP for Ireland and the other EU countries where it is also important. In the case of Ireland this investment represented between 3 per cent and 4 per cent of GDP for much of the last decade, rising to 5 per cent in 2009. The vast bulk of this investment was not produced in Ireland but was imported. The investment in IP is being undertaken by foreign MNEs who choose to operate in Ireland through subsidiaries of their parent companies.

The biggest shock to the Irish National Accounts in recent years has come from the once-off movement to Ireland in 2015 of IP owned by foreign MNEs. Because it was a relocation of the firms it did not show up in investment; instead the transfer shows up in the financial account of the Balance of Payments. This transfer of IP capital amounted to between €250 billion and €300 billion, increasing the domestic capital stock by 40 per cent in that year. The increase in the capital stock also amounted to over 100 per cent of Irish GNI.[10] In addition to the transfer of ownership of IP, there has been major additional investment in IP in 2015 (10 per cent of GNI) and in 2016 (21 per cent of GNI), which is also reflected in services imports of IP. As a result, the capital stock rose by another 10 per cent in 2016.

[10] It also represented over 2 per cent of US GNI.

FIGURE 3 TRADE ON A NATIONAL ACCOUNTS AND TRADE STATISTICS BASIS, € MILLION



Source: National Income and Expenditure and Quarterly National Accounts and Trade Statistics.

This movement of firms and their IP to Ireland was also associated with dramatic changes in the output recorded in the Irish National Accounts. The newly relocated firms used their IP located in Ireland in other countries, such as China, to produce IT products such as smartphones and computers. These operations were undertaken in the third countries on a contract basis rather than through a wholly owned subsidiary. The Asian firms undertaking the manufacture were paid a fee for the work, which covered the cost of the physical capital and the labour used in the production process. The difference between this payment to the firm manufacturing the goods and the value of the product produced (the profit on the goods), which embodied the parent firm's IP, is then considered as output in Ireland.

The fact that the actual manufacture took place in a third country and that the goods produced never pass through Ireland is irrelevant from the point of view of the National Accounts. What is crucial in determining where this output is located in the accounts is the ownership of the goods produced. If they had been produced by a subsidiary then the output, including the profit related to the IP, would have been located where the goods were physically produced. The profits would then have been remitted to the parent company, appearing as a factor flow in the National Accounts, but not in GDP.

Instead, the profit of the company owning the IP, which is the 'pure' return on the firms' IP, is treated as output in Ireland, and the full value of the goods

produced in the third country is treated as an export from Ireland in the National Accounts. This has seen a huge difference open up between the merchandise export figures on a trade statistics basis and the same item in the National Accounts (Figure 3).

In the National Accounts the relocation of these firms to Ireland accounted for much of the very large increase in real GDP in 2015 of 26 per cent. Obviously this increase in the output of the foreign MNEs, which is primarily reflected in an increase in their profits, only benefits those living in Ireland to the extent that corporation tax is paid in Ireland on those profits.[11]

GNI is arrived at by deducting the profits of the MNEs, after depreciation, as they are treated as being accrued to the foreign parent whether or not they are actually remitted in the year in question. However, because of the presence of these MNEs' very large stock of IP in Ireland, from 2015 depreciation accounted for by large foreign MNEs jumped from under €6 billion in 2014 to €29 billion in 2015 and €33 billion in 2016.[12] This massive rise in depreciation in 2015 accounted for much of the increase in GNI of around 16 per cent in that year. However, because the depreciation on the capital stock of foreign-owned MNEs does not benefit domestic residents, the resulting growth in GNI in no way reflects the change in welfare of Irish residents.

GNI was used by policymakers as a good indicator of what was happening to domestic economic activity over the last 30 years. However, as a result of these changes, it is no longer fit for this purpose.

As discussed later, to deal with this problem, the Irish Central Statistics Office (CSO) has introduced an 'adjusted' GNI, referred to as GNI*, which excludes the depreciation on foreign-owned IP and leased aircraft, and also makes an adjustment for the profits of redomiciled PLCs (CSO, 2017). Alternatively, Net National Income, which grew in nominal terms by around 10 per cent in 2015, would be an appropriate variable for domestic policymakers to target if it were also adjusted for the profits of redomiciled PLCs. However, in the case of both NNI and GNI* the CSO has not yet developed these series on a constant price basis.

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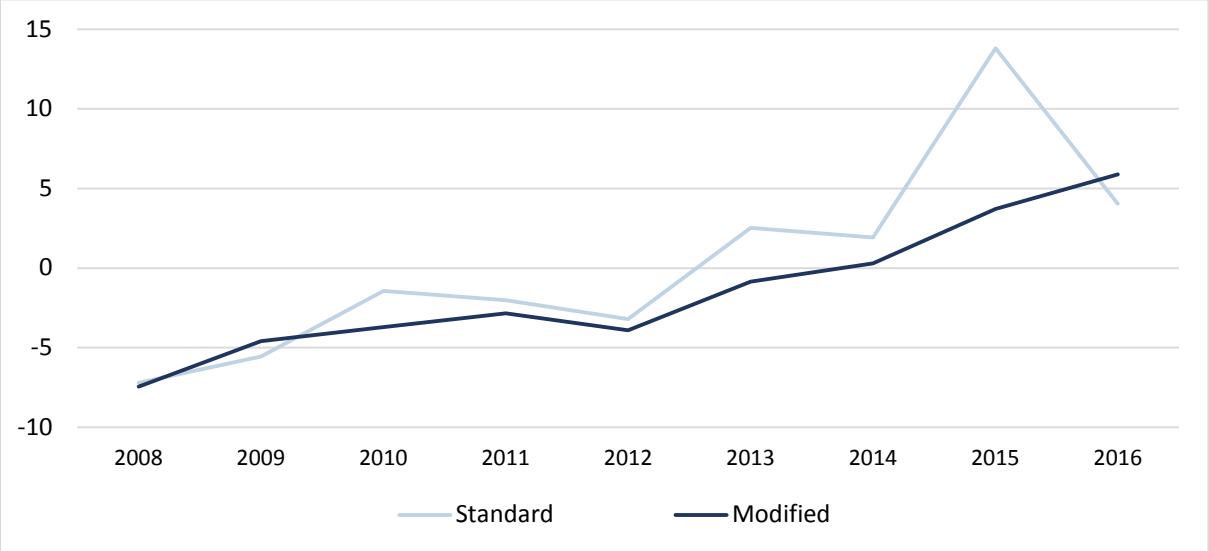
11 Because Ireland's contribution to the EU Budget is based on GNI, part of the increase in corporation tax was offset by an increase in the EU budgetary contribution.

12 www.cso.ie/en/media/csoie/newsevents/documents/seminars/globalisationinireland/Multinationals_in_the_Institutional_Sector_Accounts_-_Peter_Culhane,_CSO.pdf.

While the effects of the large IP related activity of foreign MNEs on the output side of the National Accounts is confined to the gross operating surplus in the sectors where these companies operate, the effects on the expenditure side of the account are more complex.

Investment in IP and aircraft for leasing accounts for a substantial share of total investment. The CSO publishes a figure for modified total domestic demand which excludes these components of investment. It gives a better picture of domestic demand of Irish residents.

FIGURE 4 CURRENT ACCOUNT OF THE BALANCE OF PAYMENTS, % OF GNI



Source: www.cso.ie/en/releasesandpublications/in/acabi/amodifiedcurrentaccountbalanceforireland1998-2016.

However, it can be very difficult to unscramble what is happening on trade: it is affected by the import of the IP and aircraft for leasing that are included in investment. There are also large amounts of contract manufacturing affecting both imports and exports. There are substantial services imports and exports in respect of the licensing of IP, and there is the repatriation of profits by foreign MNEs and the profits of redomiciled PLCs. This has made it very difficult to determine the contribution from trade with the outside world to domestic economic welfare.

Because of the complexity of the relationship between the domestic economy and the rest of the world, much of which arises from the effects of a large foreign MNE presence, it is also difficult to interpret the current account of the Balance of Payments.

As discussed already, the activities of redomiciled PLCs have served to artificially boost the surplus (reduce the deficit) on the current account of the Balance of Payments in recent years. The massive increase in depreciation in 2015 on the IP of foreign MNEs in Ireland also greatly magnifies the surplus. The gross operating surplus of these foreign MNEs includes the depreciation. While the net operating surplus, after tax, flows back out in factor income, this is not the case for the depreciation. Instead the write down in the value of the assets in Ireland is reflected in the financial accounts of the Balance of Payments. As shown in Figure 4, the effect of this relocation in 2015 was to produce a massive surplus on the current account reflecting the depreciation on the IP that relocated to Ireland. This makes the balance on the unadjusted current account useless for monitoring internal pressures in the Irish economy.

To deal with this problem the CSO has issued an adjusted current account balance as shown in Figure 4. This excludes imports of aircraft for leasing, imports of IP, depreciation on these two items and the profits of redomiciled PLCs. This provides a more realistic picture of the balance between savings and investment in the Irish economy. However, further work may be needed before this is a fully appropriate indicator.[13] In the next iteration the CSO will exclude exports of IP.

Problem for policymakers

The wide-ranging and complex effects of globalisation on the Irish National Accounts have made it very difficult for policymakers to understand what is really going on in the economy. During the recent crisis years the headline indicators of GDP and GNI, which are normally targeted by policymakers, were seriously distorted by the changing effects of globalisation on the economy. Today there are concerns as to how rapidly the economy may be approaching capacity. However, the problems with available national accounting data make it very difficult to assess the urgency with which corrective action should be taken.

[13] Coffey (2017). http://economic-incentives.blogspot.ie/2017/10/the-current-account-where-do-we-stand.html.

TABLE 4 KEY NATIONAL ACCOUNTS AGGREGATES, GROWTH RATE NOMINAL AND REAL, %

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Current Prices										
GDP	6.6	-4.8	-9.4	-1.5	2.6	2.1	2.7	7.9	34.7	5.2
GNI	5.1	-4.6	-12.5	-1.3	-0.6	2.7	6.8	8.3	24.9	9.9
GNI*	5.1	-4.9	-13.6	-4.2	-1.0	1.3	7.5	8.0	11.9	9.4
Constant Prices										
GDP	5.2	-3.9	-4.6	1.8	3.0	0.0	1.6	8.3	25.6	5.1
GNI	3.5	-3.3	-7.6	3.3	-0.4	1.0	5.2	8.9	16.4	9.4

Source: CSO: National Income and Expenditure, 2016.

Table 4 shows the growth rate from 2007 for certain key aggregates in current and constant prices. (The adjusted GNI figure, GNI*, is not yet available in constant prices.) While GNI* in nominal terms is only a partial solution to the problems of interpretation arising from globalisation, it is a better guide to growth in the domestic economy than the more traditional measures of GDP and GNI.

As shown in the Table, GNI* shows a markedly different path than GNI or GDP from 2010 onwards. At the height of the crisis in 2010 it suggests that the economy was performing worse than would have been understood using GNI or GDP. It also suggests that the robust recovery may have begun in 2013 rather than in the second half of 2012. Finally, it provides a picture of a more stable, but still very rapid, rate of growth between 2014 and 2016, in contrast to the unbelievable picture from GDP and GNI. However, even GNI* looks to be on the high side, given what has been happening on the labour market.

Wider implications of developments in Ireland

Obviously the problems in interpreting the National Accounts for Ireland, identified in this section, are of primary concern to Irish policymakers. However, some of the changes in 2015 are big enough to be noticeable in the accounts for other larger economies, such as the US. Guvenen, et al. (2017) have considered how US output may be under-recorded as a result of the operation of US MNEs that own large IP. Given the size of the relocation to Ireland in 2015, and the fact that the companies involved were almost certainly US based, the changes in key Irish aggregates can also usefully be considered in terms of how the US National Accounts might have been affected if the relocation had been to (or from) the US.

TABLE 5 CHANGES IN SOME KEY IRISH NATIONAL ACCOUNTS AGGREGATES, % OF IRISH AND US GDP

	Ireland	Ireland	US	Change in Ireland as % of	
	2015, Change € m	2014 € m	2014 € m	Ireland	US
GDP	50,000	194,537	13,118,250	25.7	0.4
Exports	66,075	219,786	1,786,676	30.1	3.7
Depreciation	23,861	29,486	2,068,497	80.9	1.2

Source: Author's estimates.

Table 5 gives an estimate of the change in Ireland in 2015 of nominal GDP, exports and depreciation as a result of the relocation to Ireland of companies with very large IP. The increase in output attributed to Ireland added almost 26 per cent to nominal GDP. If the subsidiaries relocating to Ireland had instead relocated to the US it would have added 0.4 per cent to US GDP.

Similarly, the increase in exports of goods produced on contract in Asia amounted to 30 per cent of Irish exports, and would have amounted to almost 4 per cent of US exports. Finally, the increase in depreciation added around 80 per cent to the Irish aggregate and the change was equivalent to 1.2 per cent of the relevant US aggregate.

6. SOLUTIONS

The difficulties caused by the process of globalisation for national accounting obviously differ from one country to another. However, many of the problems faced in accounting for the Irish economy are faced by other economies, albeit generally to a lesser extent. To meet the needs of users of National Accounts significant additions are needed to the current standard accounting framework.

Both Eurostat and the CSO will, as the law requires, continue to produce the National Accounts on the SNA 2008/ESA 2010 basis. This means that the headline GDP figure will not be amended but will continue to be affected by the actions of MNEs that are resident in Ireland. However, while the law requires accounts to be produced on this basis, and these accounts must be used for certain administrative purposes in the EU, there is no restriction on the CSO (or Eurostat) from producing additional 'satellite' accounts, which could better meet the needs of most users of national accounting data.

In the case of Ireland, the CSO has already introduced a number of innovations dealing with some of the problems identified earlier in this paper. However, it would be beneficial for users of the Irish National Accounts if a comprehensive framework of satellite accounts could be developed that dealt with the aspects of the globalisation process that have already been identified as problematic for the standard accounting presentation. A range of suggestions is made in CSO, 2017.

The supplementary accounts that are needed should have a number of characteristics:

- Ideally they should be developed to meet the needs of all economies, to ensure transparency.
- They should provide a consistent treatment of economic activity over time. Serious discontinuities can pose major problems for policymakers.
- They should provide a good representation of the economic welfare of those living in a country.
- It is important that they are publishable without infringing on the confidentiality of data on individual companies (and households). This is a problem for small economies like Ireland. The supplementary accounts need to be robust: possible future changes in location by MNEs (or domestic firms) should not prevent the continuing publication of the series on confidentiality grounds.
- They should not be affected by changes by MNEs in the precise legal framework they use in the country where their goods or services are physically produced.
- The supplementary accounts need to deal with the problems affecting both the National Accounts and the Balance of Payments

There is unlikely to be a single framework of satellite accounts that will meet all these requirements. As the process of globalisation evolves, new problems will arise and new solutions will be needed.

This paper first considers three minor adaptations of the existing framework which would be helpful. It then sets out a simple set of indicators that could usefully be developed to provide additional information for users. Finally it considers features of a more detailed disaggregation of the SNA 2008 accounts that would provide a satisfactory framework for understanding the Irish economy.

Adapting the current accounts

As outlined above, the very extensive aircraft leasing business, which makes a small contribution to Irish GNI, greatly complicates some aspects of the National Accounts due to very large gross flows it generates. It is likely that the standard financial accounting treatment of this business may change in the coming years, with implications for the National Accounts. This would involve essentially treating this business as a financial sector enterprise.

In the aircraft leasing business planes are provided to airlines under a legal agreement that is rather similar to a mortgage. The planes are financed by loans, with the planes themselves as collateral. In the case of mortgages on houses the investment in the housing and the stock of housing is recorded in the National Accounts in the country where the houses are located and used, not where the banks providing the finance reside. However, in the case of aircraft they are currently recorded in the accounts of the country where the leasing company is located.

The possible change in financial accounting would see the aircraft recorded as the asset of the airline that is the lessee and the relationship with the leasing company would then be treated as a purely financial relationship. The fees received by the leasing company would be a service export from the country where the leasing company resides. This would eliminate the large investment, capital stock and depreciation from the Irish accounts, leaving the domestic value added by the leasing companies.

In the case of foreign MNEs that produce goods or services in Ireland, all of their after-tax net operating surplus is accrued as a factor outflow in the year in which it is earned, irrespective of whether a dividend is paid to the parent company. If a similar treatment were applied to the redomiciled PLCs, with their retained profits being accrued as a factor outflow, this would remove another anachronism from the Irish National Accounts.

Connolly (2018) suggests that some of the problems arising from the relocation of firms with a major stock of IP could be better handled in the long run if they were treated as financial enterprises; the ownership of the IP has been separated from its use and the owner in Ireland receives income in respect of this asset, just as an investment company receives income from its assets. As with a change in the treatment of the aircraft leasing companies, this could greatly simplify the National Accounts, especially of smaller economies such as Ireland where substantial IP is located. However, the downside is that at a global level it might

not adequately capture the key role that such IP plays in the global production process. It is a stock of capital that has been produced and must be located in some jurisdiction to be included in global measures.

Additional indicators

The CSO, as recommended in CSO, 2017, has introduced an adjusted GNI figure, referred to as GNI*, in its latest set of National Accounts. This measure adjusts GNI to exclude the depreciation of IP and leased aircraft and the retained profits of redomiciled PLCs. To date it is only available at current prices, which means that it cannot yet be used directly for fiscal policy purposes.

While this indicator is potentially more useful than GNI, it could need further changes if globalisation affected the economy in new ways. For example, if the pharmaceutical sector were to fully separate its IP capital from production, and locate such IP in Ireland, this would need a further change in GNI*.

GNI* is designed to mimic GNI as it is measured in many other countries. This should facilitate its use in Ireland for international comparisons. However, as it is a measure only used in Ireland it will not be universally understood. Thus the measure currently lacks transparency for international users.

Even within the current ESA 2010 data, Net National Income (NNI) is less affected than GNI by the problems that surfaced with the Irish National Accounts for 2015. The bulk of the activity of the MNEs that shifted to Ireland is effectively excluded from these aggregates, including the huge effect on depreciation. This may make it more useful than GNI*, which only excludes some of the depreciation of foreign MNEs.

However, NNI has, until now, only been available on a current price basis for Ireland, though the CSO plans to address this problem in future publications. In addition, it includes the retained profits of redomiciled PLCs. The exclusion of this latter item from NNI would produce a very useful variable for Ireland but, like GNI*, it would also not be well understood internationally.

The other problem with NNI is that, while it is included in the standard framework of National Accounts, little attention is given to it internationally, making it much less useful for the purpose of international comparisons. Part of the problem may lie with the fact that, while the CSO has done detailed work on

measuring depreciation, many other jurisdictions have paid less attention to this issue: as a result, GNI and GDP are considered a more reliable indicator of economic activity internationally.

The second essential indicator that is required is one for the balance on current account of the Balance of Payments. The two problems with the current measure for Ireland relate to the treatment of depreciation by foreign MNEs and redomiciled PLCs' retained profits. The CSO has recently published an adjusted current account figure for the Balance of Payments which excludes these items. However, further work may be needed on this measure. In particular, if depreciation of some major foreign owned MNEs is excluded, should depreciation of other foreign MNEs be similarly treated?

Satellite accounts

The effects of globalisation on the Irish economy permeate many of the items of the National Accounts. This makes it very difficult to understand developments in the economic welfare of those living in Ireland or to establish the productive capacity of the Irish economy. Even if one or two high level indicators of growth are used, such as GNI* or NNI, it is still exceptionally difficult to understand where this growth is occurring in the economy. Detailed knowledge of what is happening in the economy is vital for economic policy; it was part of the original justification for developing National Accounts.

Even before the latest difficulties with the Irish data, arising from relocation of IP, there were increasing problems in identifying where growth was arising in the Irish economy. While the foreign owned MNE sector contributes hugely to exports and industrial output, the sector also has massive imports and the very large profits from the sector flow back out of the economy. Thus, while the contribution of the MNE sector to the economy is undoubtedly very positive, it is difficult to identify just how much of the growth in the real economy in recent years has come from this sector and how much has come from domestic firms.

It is essential for economic policy that satellite accounts are provided to the standard National Accounts, identifying the contribution of different sectors to growth. Here this report concentrates on the additional information needed on the output and income side of the accounts.

Any new presentation of national accounting data must also ensure that confidential information on individual companies is not disclosed. This constraint

is important in determining the appropriate level of sectoral detail to present. If the sectoral breakdown is too fine then individual large companies may be easily identified. However, if there is inadequate sectoral detail it will be very difficult to understand what is driving change in the economy. While a particular level of sectoral disaggregation may be possible today without disclosing confidential information, new companies, or closure of existing companies, may make such a level of sectoral detail impossible in the future. Thus in choosing the appropriate level of sectoral disaggregation to use it should be robust to movement of companies in the future.

In the latest release of their Institutional Sector Accounts the CSO gives separate details for foreign MNE firms covered by their 'Large Cases Unit'. This shows the contribution of these firms to NNI – their wage bill and the corporation tax they pay. It also shows their depreciation and operating surplus. The CSO has also published data at current and constant prices on GVA arising in much of the foreign owned MNE sector and the rest of the economy at an aggregate level.[14] However, this release provides no information on either sectoral detail or on the breakdown between GOS, depreciation and the wage bill. The CSO has also derived experimental data on aggregate employment and wages in MNEs and the rest of the economy.

If these published statistics were greatly expanded to give sectoral detail and if the coverage of foreign MNEs was consistent (and complete) across the different publications, it would give a much better picture of where output, which contributes to NNI, is arising in the economy.

[14] www.cso.ie/en/releasesandpublications/er/gvafm/grossvalueaddedforforeign-ownedmultinationalenterprisesandothersectorsannualresultsfor2016. However, the coverage of MNEs is not complete so there may be some mismatch with the firms covered by the Large Cases Unit.

TABLE 6 ALTERNATIVE PRESENTATION

		e.g. Manufacturing		
		Total	Foreign	Domestic
Current prices	GVA Factor cost			
	Gross operating surplus			
	Wages			
	Stock adjustment			
	Non-Product Taxes			
	GDP Basic prices			
	Corporation Tax			
	GNI in sector			
	Depreciation			
	NNI in Sector			
	Deflator			
Constant prices	GVA Factor cost			
	Wages			
	Depreciation			
	National domestic product at factor cost			
	GVA Basic prices			
	Corporation Tax			
	GNI in sector			
	Depreciation			
	NNI in sector			

Set out in Table 6 is a proposed framework for expanding the accounts for the output side of the National Accounts to meet users' needs. Ideally these data should be provided for each sector of the economy (e.g. manufacturing, distribution etc.) cross-classified by foreign MNEs and the rest of the economy. This detail is needed to understand where growth is occurring in the economy and to understand developments in key aggregates, such as productivity.

For each sector, value added needs to be broken down into the wage bill, the net operating surplus, corporation tax and depreciation, and cross-classified by MNE and other (domestic) firms. The aggregate data for each sector are already available on this basis from Eurostat and the CSO. Some of the additional breakdown into MNE and 'other' is also available from Eurostat and the CSO. What would be needed would be to ensure that this breakdown by ownership was available for each sector where there was a mix of MNEs and other firms. If a

sector was predominantly accounted for by MNEs or else by 'other' (Irish owned) firms, then the breakdown would be unnecessary.[15]

GNI arising in a sector would then be the sum of the GVA in the 'Other' domestically owned sub-sector and the wage bill, depreciation, and corporation tax paid by the MNE sector. NNI excludes depreciation so that for foreign MNEs NNI would be the wage bill plus the corporation tax paid.

This breakdown, if applied on an annual basis would show the contribution to GNI and NNI from each sector of the economy. This would allow the growth in NNI to be decomposed both by the sector in which it occurs and also by whether it occurs in Irish owned firms or foreign MNEs.

One issue, which has not been discussed earlier, is the treatment of factor inflows. Where there are large Irish MNEs with operations abroad, the profits of these MNEs are included in factor income. This treats the activity abroad by MNEs as an investment that is not related to its domestic output. While this may be appropriate for some MNEs, for MNEs who have developed substantial IP and use it to produce goods or services abroad, an additional presentation might prove useful.

As discussed earlier, the result of the current national accounting treatment of such activity is that if a firm produces abroad through a subsidiary the profits will flow back to the owner of the IP as factor income. However, if the production abroad is done on contract, then the profits earned abroad are treated as part of the MNE's domestic output and included in the relevant sector's GVA. As discussed in Section 4, this difference in treatment leaves open the possibility of substantial discontinuities if an MNE changes the legal status of its operation in a third country.

To avoid this problem of possible discontinuities, one approach would be to include the factor income of MNEs as part of their output in satellite accounts. Then sectoral output would be unchanged if a domestic MNE moved from contract manufacturing abroad to operating through a subsidiary. This would be especially relevant where the profits were earned as a result of using IP. Such a change could have a significant impact on the accounts not only of the US, but

[15] It could also prove problematic to publish such data for confidentiality reasons if there were only one or two MNEs or 'other' firms in a sector.

also of countries such as Germany, where many of their MNEs have very large production undertaken abroad by subsidiaries. However, this alternative presentation would not be appropriate for many uses to which National Accounts are put. Because it would include in sectoral output production in other countries using foreign labour and physical capital, it would not be appropriate for fiscal or monetary policy purposes. Nonetheless, it would be a useful addition in a set of satellite accounts.

The attribution of profits from operations abroad would probably best be included in domestic output where these profits arise largely from the exploitation of the home country MNE's IP. Guvenen et al. (2017) attempt such an exercise for the US. However, it is difficult for most businesses to separate out the return on IP from profit reflecting the return on use of physical capital, making such an approach difficult for many sectors.

Alternative approaches to the expenditure side of the National Accounts

The CSO currently produces a measure of 'modified' domestic demand which excludes investment in IP and aircraft for leasing. These forms of capital are excluded because they are almost all used to produce output outside Ireland. This modified variable provides a better picture of what is happening on domestic demand.

However, to date, a suitable approach to trade and factor flows has not been established which can separate out the role of foreign MNEs and domestic firms. Without such separation between the activities of these two types of firms it is very difficult, using the expenditure side of the National Accounts, to establish the effects of trade on the economic welfare of those living in Ireland.

As a result of globalisation, foreign MNEs affect the external sector of the economy through a multiplicity of different channels. They may simultaneously export goods and import materials for use in domestic production; license IP for use abroad; purchase IP abroad; provide services abroad; receive profits from subsidiaries abroad and remit profits to their head offices. While for the larger foreign MNEs the CSO captures good data on all of these transactions, it is a much more complex task to derive appropriate deflators and maintain consistency with the available data on output.

In the past, much of the attention of those forecasting the economy has gone on the components of the expenditure side of the National Accounts. Thus the

problems in interpreting what is happening on the expenditure side of the accounts are particularly difficult for policymakers. For example, both the Central Bank of Ireland and the Irish Department of Finance only provide detailed estimates of current and expected future economic activity on an expenditure basis.

A further problem with the trade data is that there are massive gross flows. In recent decades globalisation has seen production processes being broken up into multiple stages occurring in many countries. Thus the exports associated with the production of a car or a computer (including exports of parts) could end up being a multiple of the value of the final product. We have seen in the Irish input-output tables how the true domestic value added associated with exports, especially of services, has fallen over time.

This is not just an Irish problem. One approach suggested in Koopman et al., 2014, Rojas-Romagosa and van der Horst, 2015 and Los et al., 2016, would use input-output information to try and derive the domestic value added content in gross exports. If the data were readily available on a timely basis this might be a useful approach.

However, the detailed data needed to implement this approach are not available in a timely manner. If implemented it would involve using the latest available data to undertake the analysis but these data would, inevitably, be out of date. As we have seen in Ireland, there have been very rapid changes in the structure of the economy over time which could render such an approach unreliable.

7. CONCLUSIONS

Globalisation has changed the model that traditionally underpinned the National Accounts. Economic activity in one country is now linked to activity in other countries through many different channels. This interdependency of economic activity in different countries makes it difficult to identify the output of a particular country and to measure it appropriately.

The revisions to the System of National Accounts (SNA 2008) have tried to capture the effects of this globalisation process in a comprehensive fashion. The inclusion of IP in the capital stock has a strong basis in economic theory. However, possibly because of the concentration on capturing the effects of globalisation in a comprehensive manner, the headline national accounting indicators now do not provide a useful guide for policymakers in countries such as Ireland.

In recent decades the growth of MNEs spanning the globe has driven a growing wedge between the output attributed to a country such as Ireland, measured by GDP, and the economic welfare of those living in a country, previously measured by GNI. While in the past GNI provided a good guide to the output and income available to those living in a country, this is no longer the case for Ireland because of the way globalisation has affected the behaviour of MNEs. The traditional indicators need significant adjustment to make them useful.

Probably the biggest distortion to the Irish National Accounts has arisen as a result of the inclusion of IP in the capital stock. This meant that the relocation to Ireland in 2015 of companies with large IP had a dramatic effect on the National Accounts. The fact that IP capital is scalable, in the sense that it can be used to produce unlimited output, and the fact that it is separable from all the other factors of production and can be combined with capital and labour in many countries to produce output, means that it does not fit well into the framework of National Accounts for a single country.

Also, the fact that the National Accounts treat activity undertaken by MNEs in third countries very differently depending on their legal structure in the third countries, can give rise to serious discontinuities if firms change that legal structure.

To deal with these problems it will be necessary to develop satellite accounts that separate out the activities of MNEs in each sector of the economy. This will allow policymakers to identify where growth is occurring in the economy and the contribution to growth that is coming from different sectors.

While the CSO has developed a headline indicator for the economic welfare of domestic residents, referred to as adjusted GNI or GNI*, this indicator could need further adjustment if there is a significant change in the population of foreign MNEs in Ireland.

While developing national solutions to these problems can meet the needs of domestic policymakers, this is not ideal: it lacks transparency at an international level. Because the national accounting problems discussed in this paper are not unique to Ireland it would be better if there were some international co-ordination of the development of the necessary satellite accounts to understand how individual economies are really behaving.

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