2. Endorsement and Assessment of the Macroeconomic Forecasts

Key Messages

- The Council endorsed the *Budget 2018* macroeconomic forecasts for 2017 and 2018. Taking into account the uncertainties and judgements involved, it was satisfied that these forecasts were within an endorsable range. The forecasts imply continued strong growth this year, with growth moderating in later years.
- While there is much uncertainty over the exact cyclical position of the Irish economy, it would appear that any remaining output gap is relatively small. Given that the economy is likely to be close to its potential level of output, there is a possibility that overheating would occur in the years ahead if growth was to continue at elevated levels. While a rapid response from the construction sector to persistent supply shortfalls would be welcome, this could also contribute to overheating if other sectors of the economy also continue to grow strongly.
- By contrast, the profile of the output gap produced using the Commonly Agreed Methodology (CAM) in *Budget 2018* is implausible, showing a strong positive output gap for 2017, which becomes negative in 2019-2021. This would imply that the economy is to turn from a position of overheating in 2017 and 2018 to one where there is slack in the economy. This runs counter to *Budget 2018* forecasts that the labour market will continue to tighten over the coming years. To avoid a repeat of past failures of macroeconomic and budgetary management, it is essential that the Government's forecasts for the medium term are well-founded. This requires an expansion of the Department of Finance's current toolkit to include measures of the output gap that reflect their own views of the supply side.
- While near-term macroeconomic prospects look favourable, there are a number of downside risks visible over the medium-term horizon. Although a hard Brexit is the central scenario envisaged in *Budget 2018*, the impact of Brexit is highly uncertain as is the timing of the economic effects. These effects could be more negative than assumed, particularly if the impact is front-loaded, which cannot be assessed from the existing estimates. Additional risks include potential future changes to tax arrangements among Ireland's trading partners. There are also important domestic risks. The housing market and the highly concentrated production base are the most pertinent. *Budget 2018* notes that risks to the short-term outlook are "broadly balanced", an assessment the Council shares.

2.1 Introduction

The Council's ninth endorsement exercise covered the macroeconomic projections in *Budget 2018*. The endorsement exercise covers the forecasts for 2017 and 2018. The timeline for the endorsement process is detailed in Appendix A.

To support the endorsement and assessment functions, the Council has continued to develop and update its own suite of models used for both short-term and medium-term forecasting. These are important tools for assessing the cyclical position of the economy, as well as for understanding the economy's medium-term supply-side potential. Box D documents a new approach to forecasting goods exports, utilising monthly trade data rather than National Accounts aggregates. Additional work on producing alternative estimates of the supply side is also ongoing (Chapter 1).

Section 2.2 outlines the endorsement process as it applied to the *Budget 2018* forecasts. Section 2.3 discusses the *Budget 2018* forecasts and puts these in context relative to the forecasts of other agencies. Section 2.4 provides an assessment of the risks surrounding the economic outlook and potential economic imbalances. Three boxes are included: the first (Box C) examines different estimates of the savings rate in Ireland, the second (Box D) describes a new approach to modelling goods exports; and the third (Box E) considers problems with the Commonly Agreed Methodology (CAM) as applied to Ireland.

2.2 Endorsement of the *Budget 2018* Projections

This section details the ninth endorsement exercise undertaken by the Council, covering the macroeconomic forecasts in *Budget 2018*, outlining the Council's considerations around the time of the endorsement, and the process itself. Data available at that time may differ from that available for the purposes of this assessment.

The Council endorsed the *Budget 2018* macroeconomic projections for 2017 and 2018, taking into account the methodology and the plausibility of the judgements made. The endorsement process focuses on three key dimensions: the plausibility of the methodology used; the pattern of recent forecast errors; and comparisons with the Council's Benchmark projections and other projections.

First, focusing on the methodology used by the Department of Finance, the Council is satisfied that short-term projections broadly conform to standards set by other forecasting agencies. The Department provides information on models and judgement used in the development of its forecasts for the assessment by the Council. In relation to medium-term projections, both the Council and the Department have noted that the Commonly Agreed Methodology (CAM) is unsuitable for Ireland. While judging the methodology itself to be unsuitable (see Box E), the correct application of the CAM was verified by the Council.

Second, in terms of the pattern of errors in Department of Finance forecasts, the Council has found no systematic pattern in recent forecast errors. The Council will continue to monitor the composition and accuracy of the forecasts. While there have been some large forecast errors in recent years, these have not been systematic and reflect the highly volatile nature of the Irish economy (Conroy, 2015).

Third, comparisons with the full set of Benchmark projections (Appendix B) showed some deviation from the Department's forecasts in 2017 and 2018. The Department's estimates for growth were assessed to be within an endorsable range, despite being lower than the IFAC Benchmark projections for both 2017 and 2018. In terms of composition, the Council's Benchmark projections suggest a larger contribution to growth from net exports in 2017 and 2018 than do the forecasts of the Department of Finance, leading to a higher forecast of overall growth.

The forecasts endorsed by the Council and those published in *Budget 2018* differ slightly because the forecast for the personal consumption deflator is slightly stronger next year, driven by increases in excise duties announced in the Budget. On the face of it, this means that the *Budget 2018* forecasts imply no substantive macroeconomic impact from the policy measures undertaken on budget day. A feature of *Budget 2018* was that increased spending was largely funded by revenue-raising measures. There may be reasons to believe that some of the specific revenue-raising measures in the Budget may not significantly reduce domestic demand, and hence the overall budgetary package may have a more expansionary macroeconomic impact than would otherwise be the case. For example, changes to deductions for capital allowances for intangible assets is expected to yield €150m in 2018, but this revenue-raising measure seems unlikely to significantly alter domestic demand.

2.3 An Assessment of the Macroeconomic Forecasts in *Budget 2018*

2.3.1 Macroeconomic Context

Outturn data indicate that the impressive growth performance of the Irish economy continued in 2016, with growth estimated at 5.1 per cent for GDP and 9.6 per cent for GNP.[1] While there is still significant uncertainty over what measures of activity should be used, it is clear that there has been a rapid recovery in the Irish economy over the past few years. Looking at domestic Gross Value Added (GVA), for example, which should provide a better measure of what is happening in the domestic economy, it can be seen that there has been real growth averaging over 5 per cent from 2013 to 2016.[2] Looking beyond National Accounts metrics, employment is a reliable indicator of the progress of the economy, and there has been annual growth averaging 2.6 per cent for the past

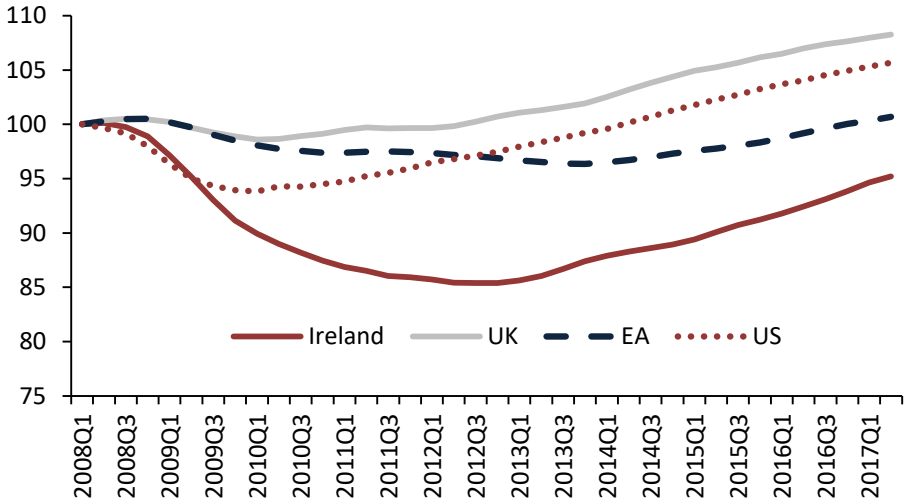
[1] Preliminary estimates suggest growth of 5.4 per cent (GDP) and 2.6 per cent (GNP) in the first half of 2017 compared to the same period in 2016.

[2] This excludes the sectors of the economy dominated by multinational enterprises.

four years. Figure 2.1 shows employment in Ireland, the US, the UK and the Euro Area since 2008. Despite impressive employment growth in the past four years, employment in Ireland is still less than its pre-crisis peak unlike the UK, the US and the Euro Area.[3]

Figure 2.1: Employment Developments, International Comparison

Index (2008Q1 = 100)



Source: Eurostat; CSO; US Bureau of Labor Statistics; and Internal IFAC calculations.
Note: A four-quarter moving average is taken for each of the series.

While the UK economy has performed better than expected in the immediate aftermath of the referendum on leaving the EU, forecasts of future growth have been revised down. Figure 2.2 shows how estimates of external demand have been revised down over the past year.[4] Changing forecasts for the UK have been mainly responsible for the revisions shown. The strongest projections came prior to the UK referendum on EU membership (March 2016). The more recent sets of projections show weaker external demand growth in the medium term. Projections for imports into the UK have been revised down more significantly, which implies weaker external demand for Irish exports.

Looking at the high-frequency indicators available so far this year, a positive picture of the Irish economy emerges. Retail sales (excluding motor trades) have been positive (+7.7 per cent year-on-year in September). Tax returns also give an indication of activity and demand. Tax revenue for the first ten months is 6.2 per cent higher than for the same period last year, with all the major tax heads showing growth.[5]

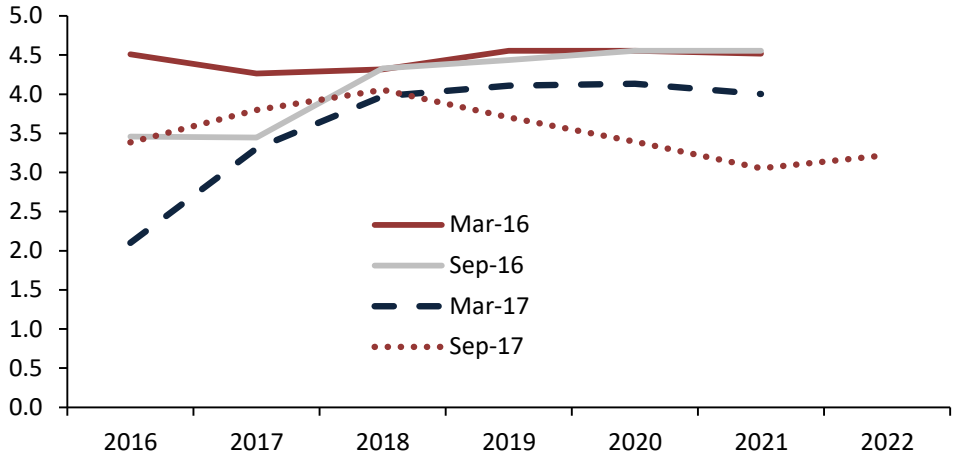
[3] Employment excluding construction has risen just above its pre-crisis peak (2008Q2).

[4] These are the estimates compiled by IFAC which are used for the Benchmark projections.

[5] If these estimates were to be adjusted for recent tax policy changes, the growth in tax revenues would be expected to be higher.

Figure 2.2: Vintages of External Demand Growth Projections

% change (year-on-year)



Sources: Internal IFAC calculations; IMF and European Commission forecasts for trading partners.
Note: External demand is calculated as a trade-weighted average of forecast import growth in Irelands export markets. This variable is used as an input to the Council's Benchmark models of exports.

2.3.2 *Budget 2018* Short-Term Forecasts, 2017-2018

This section describes the main aspects of the expenditure-side forecasts in *Budget 2018* for 2017 and 2018. Some of the key expenditure components are discussed below, including consumption, investment, government consumption and exports.

The *Budget 2018* forecasts project that the strong **personal consumption** growth seen in recent years is expected to moderate in 2017 and 2018 (see Table 2.1 for a summary of *Budget 2018* forecasts). The *Budget 2018* forecasts are based on an anticipated upward revision to services consumption for the first half of this year. This appears to be a plausible assumption, as it would bring services consumption into closer alignment with recent employment and income data. In addition, a pattern of upward revisions to services consumption has been evident in recent years. The high-frequency data on retail sales are broadly supportive of a positive outlook for consumption, particularly when the weaker motor trade data are excluded.[6] Given new data, it is no longer clear that there is still a large upside risk to consumer spending growth from reduced household savings ratios as had been previously thought (Box C). The approach taken in *Budget 2018* forecasts is for nominal consumption and nominal income to grow at the same rate, hence keeping the savings rate constant over time.

[6] The weak new car sales is thought to be driven by substitution to second-hand imported cars, particularly after the appreciation of the euro against sterling.

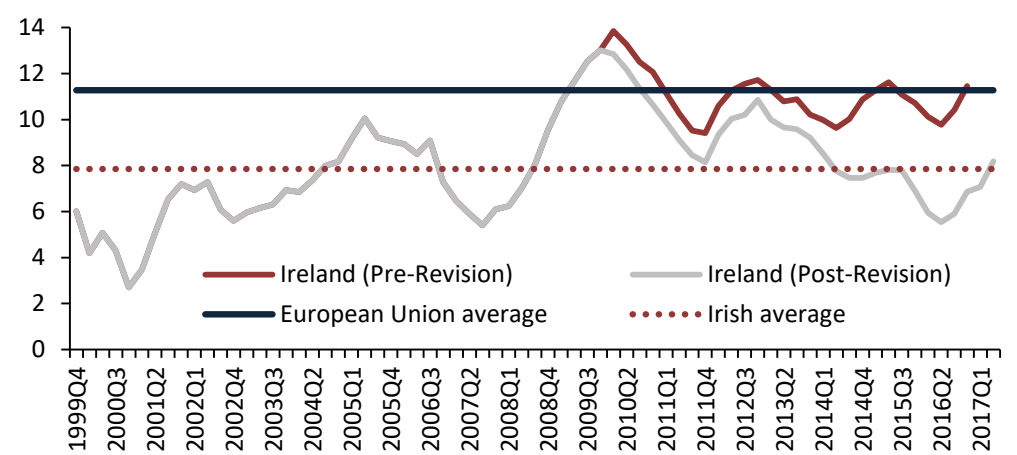
Box C: Challenges in assessing the equilibrium household savings rate in Ireland

This box shows how different data sources give a strikingly different picture of the household savings rate in Ireland and, hence, have very different implications for future consumer-spending developments.

Savings rates of the household sector are a key indicator for examination when forecasting consumption, particularly in the medium term. If the savings rate is low (relative to an estimated/assumed equilibrium), then one might expect consumption to grow more slowly than income, hence leading to an increased savings rate. By contrast, if the savings rate is very high, this would suggest that there is scope for consumption growth to outstrip income growth for a period.[7] In addition, significant departures in the savings rate from expected norms may point towards temporary imbalances that could be expected to correct over time.

Figure C1: Savings Rate

% of personal disposable income, four-quarter moving average



Sources: CSO, Eurostat.

Notes: The pre-revision data are from the 2016Q4 release of the Institutional Sector Accounts (12/4/17). The post-revision data uses the latest release (2017Q2, released on 13/10/17). Irish and European Union averages are calculated using data from 1999Q1 to 2007Q4 and 2013Q1 to 2016Q4.

Different data sources can be used to look at the savings behaviour of Irish households. The CSO's Non-Financial Institutional Sector Accounts (ISA) provide both quarterly and annual data on the income, consumption and savings of the household sector.[8] Estimates are prone to change as new data becomes available. For example the series for, gross disposable income of households was revised down significantly for the period 2014 – 2016.[9] This in turn reduced savings (as consumption was not significantly revised) and hence reduces the savings rate. From Figure C1 above, it is evident that without the recent revision to the CSO data, Ireland would be quite close to the EU average savings rate and above the Irish historical average (both averages

[7] This would be consistent with the permanent income hypothesis. If consumers believe income will grow strongly in future they will increase consumption now (in anticipation of these increases), hence the savings rate is low now, but increases in future as income grows at a faster pace than consumption.

[8] This refers to sectors S.14 + S.15 in the ISA accounts. This includes Households and Non-Profit Institutions Serving Households (NPISH). The NPISH sector is quite small and hence should not have a material impact. A fully integrated set of annual financial accounts are produced by CSO. These financial accounts are balanced with the non-financial ones to produce a more comprehensive picture of the macroeconomy.

[9] The 2017Q1 release (2/8/17) first reflected the revised disposable income figures. Most of the decrease in gross disposable income is attributable to a downward revision of value added by the household sector of almost €4bn.

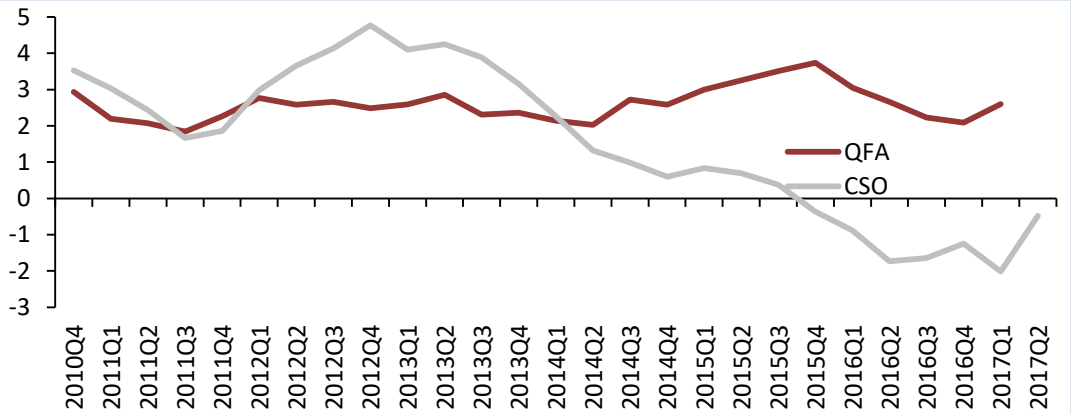
are calculated over the sample 1999Q1 to 2016Q4, excluding the period most affected by the financial crisis: 2008 to 2012). The revised CSO data paints a much different picture, with the savings rate trending downwards for much of the last four years and now lying around 8 per cent, slightly above Irish historical norms but below the EU historical average.

Irish and EU historical averages here are shown to give some sense of an equilibrium savings rate.[10] However, there may be good reason to believe that the Irish equilibrium savings rate has changed recently. In particular, the introduction of macroprudential regulations by the Central Bank of Ireland may have led to an upward structural shift in savings rates of households to reflect changes in deposit requirements for home purchases.

Given the differing implications of the revised and unrevised savings rate estimates, it is worth examining which pattern fits with other data sources available. The Quarterly Financial Accounts (QFA) are produced by the Central Bank of Ireland and provide information on the assets and liabilities of the household sector. Using this dataset one can calculate an estimate of net lending/borrowing of the household sector. A somewhat comparable net lending/borrowing series is also available from the non-financial sector accounts produced by CSO. Figure C2 shows the two series. From the QFA series, it would appear that the household sector is a net lender (adding to net assets) and has been a net saver of €2–€3 billion in annualised terms since 2011. By contrast, looking at the revised ISA series, this would suggest that the household sector has become a net borrower in recent times. Indeed the trend in household investment, mainly in property has increased in the period 2014–2016. Such an increase would normally be associated with an increase in borrowing by the household sector.[11]

Figure C2: Net Lending (+)/Borrowing (-) of the Household Sector

€ billions, four-quarter sum



Sources: CSO, Central Bank of Ireland and Internal IFAC calculations.

Two contrasting pictures are presented. The QFA data would appear to be more in line with the unrevised ISA data and the higher savings rate shown in Figure C1. Using the QFA data from the Central Bank of Ireland, the household sector would appear to be a net lender. Furthermore, these data would suggest that savings rates are closer to European averages and well above Irish historical norms. By contrast, the integrated financial and non-financial data produced by the CSO would suggest that the household sector has been a net borrower since 2015Q4, with a savings rate that has been broadly trending downwards and is below European averages.

If the savings rate is indeed low and the household sector is a net borrower, then any further fall in the savings rate could be interpreted as a warning indicator of potential imbalances. A lower savings rate may also imply that weaker consumption growth could be expected in future

[10] These averages are merely shown as a rough guide. Demographics, pension contributions/enrolment, rates of home ownership and interest rates all affect savings rates and vary substantially both over time and across countries.

[11] More generally, the annual financial and non-financial sector accounts produced by the CSO draw on all of the current available data to produce a coherent and consistent set of accounts for Ireland.

years, if the savings rate moves back towards historical norms. If the QFA data are correct, however, stronger consumption growth might be expected in future years, should the savings rate revert to historical norms.

Recent data on headline **investment** growth have been subject to large movements related to intangible assets. These investments are mostly imported and hence have little impact on overall GDP. With this in mind, underlying investment, which excludes investment in aircraft and intangible assets, is a more informative indicator. Underlying investment grew strongly last year, with underlying machinery and equipment, and building and construction both contributing significantly. *Budget 2018* forecasts that underlying investment will grow by just under 10 per cent in both 2017 and 2018. This strong growth is forecast to be driven mainly by the building and construction sector. Investment in underlying machinery and equipment has been quite volatile in recent times, with a number of large projects thought to be responsible.

Table 2.1: *Budget 2018* Macroeconomic Forecasts (to 2018)

Percentage Change in Volumes Unless Otherwise Stated

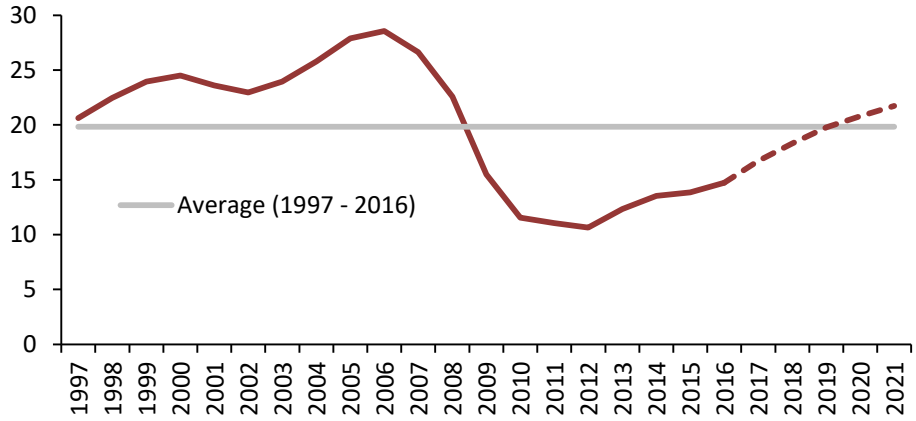
	2016*	2017**	2018**
GDP	5.1	4.3	3.5
GDP Deflator	0.0	0.5	0.9
Nominal GDP	5.2	4.9	4.4
GNP	9.6	0.0	3.3
Nominal GNI*	9.4	0.6	4.5
Personal Consumption	3.3	2.3	2.3
Investment	61.2	-3.7	6.1
Underlying Investment	13.6	9.6	10.0
Government Expenditure on Goods and Services	5.3	2.0	2.0
Exports	4.6	3.5	4.8
Imports	16.4	-1.0	5.5
Stock Changes (p.p. Contribution)	0.1	-0.6	0.1
Current Account (% of GDP)	3.3	3.0	2.0
Trade Balance (% of GDP)	22.0	25.3	24.2
Employment	2.9	2.8	2.3
Unemployment Rate (%)	7.9	6.3	5.7
Inflation (HICP, %)	-0.2	0.2	0.8
Nominal GDP (€ billions)	275.6	289.1	301.8

Sources: CSO and *Budget 2018.*
Notes: * Denotes latest outturns from the CSO. ** Denotes *Budget 2018* forecasts.

In previous *Fiscal Assessment Reports* (IFAC 2016a), the underlying investment to GDP or GNP ratio was examined as a yardstick for current investment levels, relative to historical standards. Using GDP or GNP has become less informative, due to the developments that led to the step change in the National Accounts for 2015. With this in mind, Figure 2.3 shows underlying investment as a

percentage of GNI*. When using this denominator, the Department of Finance forecasts indicate that underlying investment will be just above its historical average at the end of the forecast horizon, but below the ratio in all of the years 1998–2008.

Figure 2.3: Underlying Investment
Percentage of GNI*



Sources: CSO, *Budget 2018;* and Internal IFAC calculations.
Note: Underlying investment excludes investment in aircraft and intangibles. GNI* is assumed to grow at the same rate as GNP, the dashed line represents *Budget 2018* forecasts.

Government consumption grew faster than *Budget 2017* forecasts for 2016, with growth of 5.3 per cent. *Budget 2018* forecasts slower growth in 2017 and 2018 (2.0 per cent) and was not revised in light of increased expenditure announced on budget day.

Forecasting **exports** has proven difficult in recent times. Goods exports recorded in the National Accounts have diverged substantially from those recorded in the external trade data in recent years, largely due to developments in contract manufacturing (see Box D). For the first half of 2017, goods exports in the National Accounts have declined, while those recorded in the monthly trade data have increased by 7.4 per cent relative to the same period in 2016.

On the services side, growth has been very strong for the past number of years (averaging over 10 per cent per annum since 2010) and has continued in the first half of this year. *Budget 2018* forecasts strong services growth for this year, slowing significantly next year (12 per cent in 2017 followed by 5.5 per cent in 2018). Given the scale of service exports, this has a significant impact on GDP growth forecasts. By way of illustration, if the 2018 service export growth was 10 per cent rather than 5.5 per cent, then GDP growth would be 1.5 percentage points higher.[12] While a moderation in service exports growth (as forecast in *Budget 2018*) would bring it into closer alignment with measures of external demand, it has been much stronger than external demand for some time now, and this may well continue. The diverging recent performance of goods and

[12] This scenario assumes that service imports grow by an additional 2.25 percentage points in response to the additional 4.5 percentage points of growth in service exports.

services exports shows the value in forecasting these series separately rather than simply forecasting aggregate exports.

Box D: Modelling Goods Exports

This box sets out a new approach to forecasting goods exports using customs data to avoid recent problems related to contract manufacturing. There are two estimates of goods exports produced by the CSO. The monthly trade (or "customs") data records the value and volume of goods imported into and exported out of Ireland.[13] The Quarterly National Accounts (QNA) and Balance of Payments (BoP) also record the exports and imports of goods in to and out of Ireland. The levels recorded in the QNA/BoP differ from those recorded in the monthly trade data as adjustments are applied to the trade data to bring the data to national accounting standards.[14] The CSO (2015) has previously noted that the reasons for adjustments to the monthly trade series usually relate to the recognition of changes in economic ownership. As well as occurring due to contract manufacturing, such adjustments may take place due to the recording of merchanting activities and due to conceptual adjustments relating to the valuation of goods, such as in cases where certain exports may be undervalued.

Due to these adjustments, goods exports in the QNA have diverged substantially from those seen in the customs data, the latter giving a better sense of the goods being produced in Ireland for export. Prior to 2015, contract manufacturing activities were of a much smaller scale and had been largely GNP-neutral. In some instances, contract manufacturing would be GDP neutral due to imports of royalties (payment for the use of intellectual property). Even when these imports did not occur, outward profit flows (from foreign-owned multinational enterprises) would mean that GNP would not be impacted by contract manufacturing. In 2015, contract manufacturing made a large positive contribution to GDP (and GNP) growth, as the huge increase in these activities was not fully offset by increased services imports (or profit outflows). By contrast, contract manufacturing has acted as a drag on goods exports recorded in the National Accounts in 2016 and in the first half of 2017.

The diverging performance of goods exports recorded in the trade data and the National Accounts poses a dilemma for forecasters. If one is trying to forecast underlying activity in the Irish economy, then one might want to focus on drivers of customs exports, rather than the National Accounts measure which may be distorted by activities of multinational enterprises that have relatively less impact on incomes, employment and taxes. In Conroy and Casey (2017) the National Accounts measure of goods exports are modelled, with a dummy variable used to account for the level shift in goods exports that occurred in 2015. However, given that the divergence between the national accounts and the customs data has continued since that level shift, the focus may need to shift to the customs data.

With this in mind, an error correction model is estimated for customs goods exports (volumes) using standard predictors such as external demand and competitiveness. The dependent variable in the short-run equation is the log-difference in goods exports (i.e. $\Delta Ln(XG_t) = Ln(XG_t) - Ln(XG_{t-4})$). Column (1) in Table D1 shows the long-run relationship between goods exports and external demand and competitiveness. Column (2)

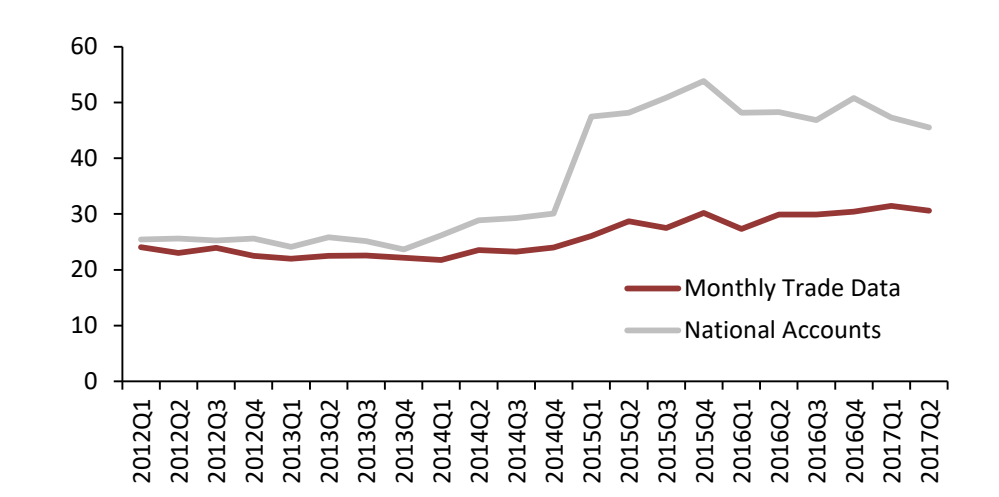
[13] Details on the methodology employed by the CSO can be found here:
http://www.cso.ie/en/media/csoie/methods/externaltrade/explanatorynotes2015.pdf

[14] See CSO information note on contract manufacturing
http://www.cso.ie/en/media/csoie/methods/balanceofinternationalpayments/ContractManufacturingInformationNotice.pdf

shows estimates of the short-run relationship, with the short-run impacts of the two explanatory variables, as well as the error correction coefficient.

Figure D1: Goods Exports

€ billion, current prices



Sources: CSO.

As one would expect, external demand for Irish goods exports is positively associated with customs goods exports both in the long-run and short-run. Competitiveness is captured here by the Real Effective Exchange Rate (REER_t). The error correction coefficient is negative as one would expect, and implies a fast pace of correction when customs goods exports deviate from the long-run equilibrium relationship estimated in column (1).

Table D1: Long-run (1) and short-run (2) equations.

Percentage change (year-on-year)

	(1)	(2)
	$Ln(XG_t)$	$\Delta Ln(XG_t)$
Constant	1.27*	0.03**
$\text{Ln}(\text{Demand}_t)$	0.57**	
$\text{Ln}(\text{REER}_t)$	-0.15*	
$\Delta\text{Ln}(\text{Demand}_t)$		0.16
$\Delta\text{Ln}(\text{REER}_t)$		-0.14
ECM		-0.49**
R^2	0.54	0.39
Sample	1998Q1 – 2017Q2 (78)	1999Q1 – 2017Q2 (74)

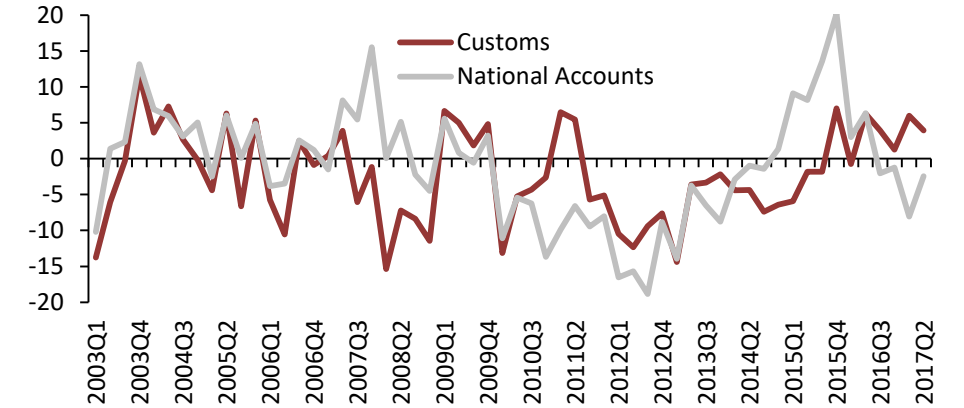
Statistical significance: ** 5 per cent; * 10 per cent

While the quarterly movements of customs goods exports may be quite large and difficult to model, the new model provides a better fit than does the corresponding model for goods exports as measured in the National Accounts. The mean absolute error using the new model is 5.7 percentage points, while the mean absolute error using the National Accounts-based model is 6.4 percentage points.[15]

[15] Both models are assessed from 2003Q1 on, as the "missing trader" fraud artificially increased goods exports in the early 2000s. Exports of electrical machinery, appliances etc. (SITC 77) fell by more than half in 2003 after the fraudulent activities were detected.

Figure D2: Customs goods exports and National Accounts models

Residuals, percentage point error in forecasting year-on-year growth

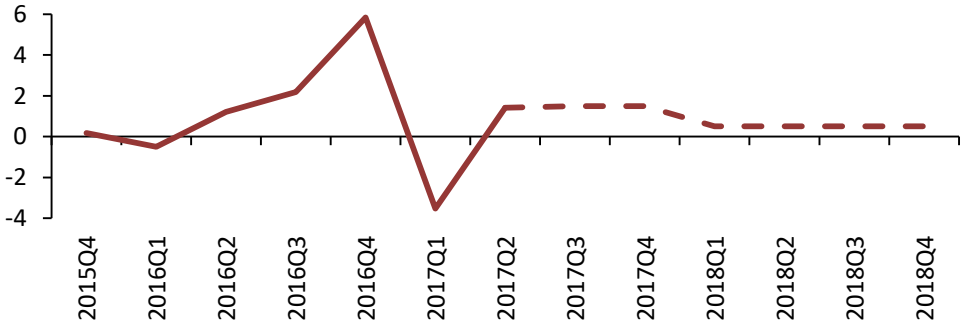


Sources: CSO and internal IFAC calculations.

Budget 2018 forecasts real **GDP** growth of 4.3 per cent this year, followed by a 3.5 per cent expansion in 2018. These forecasts are almost unchanged from *SPU 2017*, although the composition of growth has changed (see below). The carryover for 2017 now stands at 3.1 per cent, reflecting the momentum present in the economy.[16] Taken at face value, the *Budget 2018* forecasts imply that a quarter-on-quarter growth rate of 1.5 per cent would be needed in the remaining two-quarters to be consistent with the Department's 4.3 per cent forecast for annual GDP growth in 2017.[17] A significant slowdown in quarterly growth is implied for 2018, with only 0.5 per cent quarter-on-quarter growth required to achieve 3.5 per cent annual growth.[18]

Figure 2.4: Real GDP Growth Rates

Percentage change (quarter-on-quarter, seasonally adjusted)



Source: CSO; *Budget 2018*; and Internal IFAC calculations.
Notes: Solid line represents historical outturns; dashed line represents *Budget 2018* forecasts.

[16] The carryover for 2017 refers to the growth rate that would be observed in 2017 if seasonally adjusted real GDP remained unchanged at its Q2 2017 level for the second half of this year.

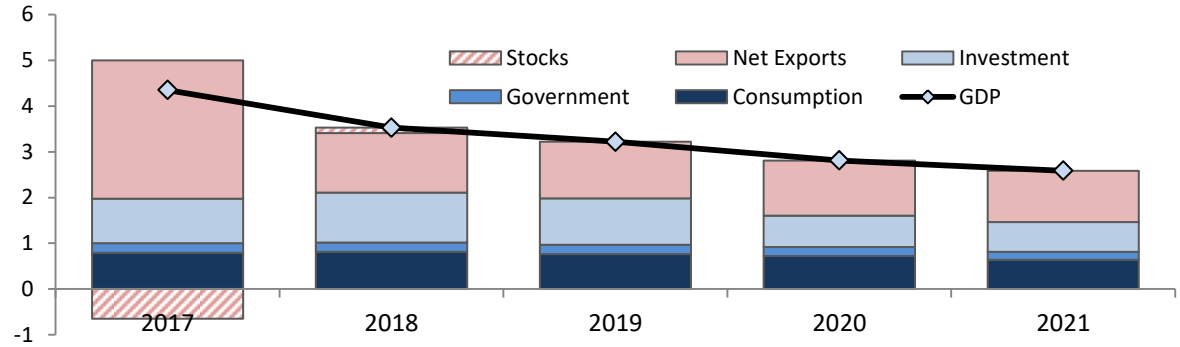
[17] If the revisions to services consumption anticipated in *Budget 2018* were to materialise and boost GDP in the first half of 2017 then slightly lower quarter-on-quarter growth (approximately 0.1 percentage points) would be required to achieve 4.3 per cent annual growth.

[18] *Budget 2018* documentation included a box on revisions to quarterly data and the role they can play when producing forecasts of the Irish economy. While noting that the Irish quarterly data are heavily revised and volatile, the box also noted that "carryover analysis and implied quarterly profiles can, in principle, be useful tools to inform short-term forecasts."

Figure 2.5 shows the underlying contributions to GDP growth in *Budget 2018* forecasts. For 2017, growth is forecast to be driven by underlying net exports along with personal consumption and underlying investment, with government consumption making a smaller contribution. The declining growth rates from 2019 to 2021 are due to steadily declining contributions from both underlying net exports and underlying domestic demand. The declining net export contributions in the later years reflect weaker external demand for Irish exports, largely due to the assumed impact of Brexit. The smaller domestic demand contributions are driven by underlying investment and to a lesser extent, consumption.

Figure 2.5: *Budget 2018* Underlying Contributions

Percentage Point Contributions to Real GDP growth

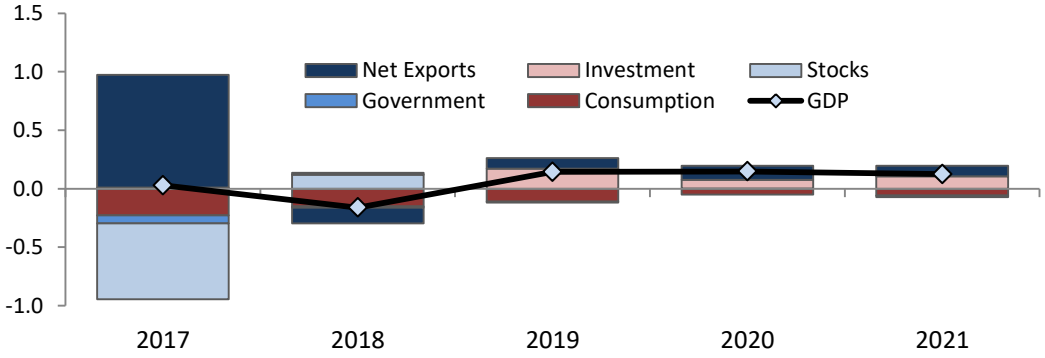


Sources: Budget 2018; CSO; and internal IFAC calculations.
Note: Underlying investment and net exports strip out intangibles and aircraft purchases in full as these are, in the main, imported, with little impact on real GDP.

The forecasts for GDP growth are largely unchanged since *SPU 2017*. However, there have been changes in the composition of growth (Figure 2.6). Compared to *SPU 2017*, the contribution from underlying net exports has been revised up for this year, with downward revisions to the contributions from consumption, government and stocks offsetting this. From 2018 on, the contribution underlying investment has been revised up, reflecting an upward revision to forecast housing completions.

Figure 2.6: Changes in the Underlying Contributions to GDP Growth: *Budget 2018* vs *SPU 2017*

Percentage Point Contributions, *Budget 2018* Forecasts Less *SPU 2017* Forecasts



Sources: Department of Finance; CSO; and internal IFAC calculations.
Note: Underlying investment and net exports strip out intangibles and aircraft purchases in full as these are, in the main, imported, with little impact on real GDP.

While the medium-term outlook for overall GDP growth is within a plausible range, it is worth examining the balance of growth between domestic demand and net exports. Table 2.2 shows that the slowdown in growth from 2017 to 2018 is driven by a smaller contribution from underlying net exports, with an increased contribution from underlying domestic demand not large enough to offset this. Thereafter, domestic and external contributions decline steadily out to 2021. Domestic demand makes the bulk of the contributions to growth from next year on, with consumption and investment mainly responsible.

Table 2.2: Real GDP Growth Forecasts and Underlying Contributions
Percentage Change, Unless Otherwise Stated

	2017	2018	2019	2020	2021
Real GDP Growth	4.3	3.5	3.2	2.8	2.6
Domestic Demand (p.p.) [1]	1.3	2.2	2.0	1.6	1.5
Net Exports (p.p.) [1]	3.0	1.3	1.2	1.2	1.1

Sources: Budget 2018.
[1] Underlying contributions to real GDP growth rates in percentage points (excludes the effect of investment in aircraft or intangible assets). Domestic demand includes changes in inventories. Rounding can affect totals.

Real **GNP** is forecast not to grow at all this year, diverging significantly from GDP growth. This reflects the assumption that net factor flows are to grow very strongly this year. While net factor flows have shown significant growth in the first half of this year, the forecasts of the Department imply exceptionally fast growth in the second half of this year (for the second half of 2017, quarter-on-quarter growth of 4 per cent on average would be required to meet the Department's forecasts in real terms). While GNP may not be a particularly important or informative indicator at the moment, forecasts of GNP are currently being used to generate forecast values of GNI*.[19] After this year, GNP is forecast to grow at similar rates to GDP.

2.3.3 *Budget 2018* Medium-Term Forecasts, 2019-2021

The forecasts published in *Budget 2018* cover the period 2017–2021. While not a legal requirement, it has been established practice that the forecasts of the Department extend to five-years ahead (t+5), which in this case would be 2022. This is the first occasion since *Budget 2015* on which forecasts have not extended out to five-years ahead. As medium-term forecasts are a key input into fiscal policy and identifying potential imbalances, the Council would welcome a return to forecasting out to t+5.

In terms of the supply-side forecasts, there have been substantial revisions to estimates of potential output growth and the output gap in *Budget 2018* relative to *SPU 2017* (Table 2.3 and Figure 2.7). CAM-based forecasts of potential output growth for 2019-2021 have been revised up significantly. As the estimates of real GDP growth are relatively unchanged, this leads to a very

[19] This assumes that the following four items are unchanged: EU taxes/subsidies, factor income of re-domiciled PLCs, depreciation on research & development-related intellectual property (IP) imports, and depreciation on aircraft for leasing.

different picture of the output gap for these years. Box E below notes some of the many shortcomings of the CAM as applied to Ireland and Box B highlights the procyclical nature of CAM estimates. Due to these shortcomings, CAM-based estimates of potential output can give poor insights as to where the Irish economy is in terms of the business cycle.

Looking at a range of imbalance indicators and alternative models of potential output, it seems unlikely that there is significant overheating in the Irish economy as suggested by output gap estimates published with *Budget 2018* (see Chapter 1 for IFAC's range of estimates for the output gap). Even ignoring the starting point of 2017, the direction of change in the output gap over the forecast horizon seems implausible. The *Budget 2018* estimates imply that the economy will be growing at well below its potential rate in 2018 and 2019, before growing faster than the potential rate again in 2020 and 2021, leading to a small negative output gap. A more plausible path for the output gap would be one that continues to approach zero from below, possibly becoming more positive in coming years as the labour market tightens, wage and price pressures grow and savings decline. This would be more likely if the recent strong growth were to continue (see Section 2.4.2 on imbalances).

Table 2.3: Medium-Term Supply-Side Forecasts

Percentage change unless otherwise stated

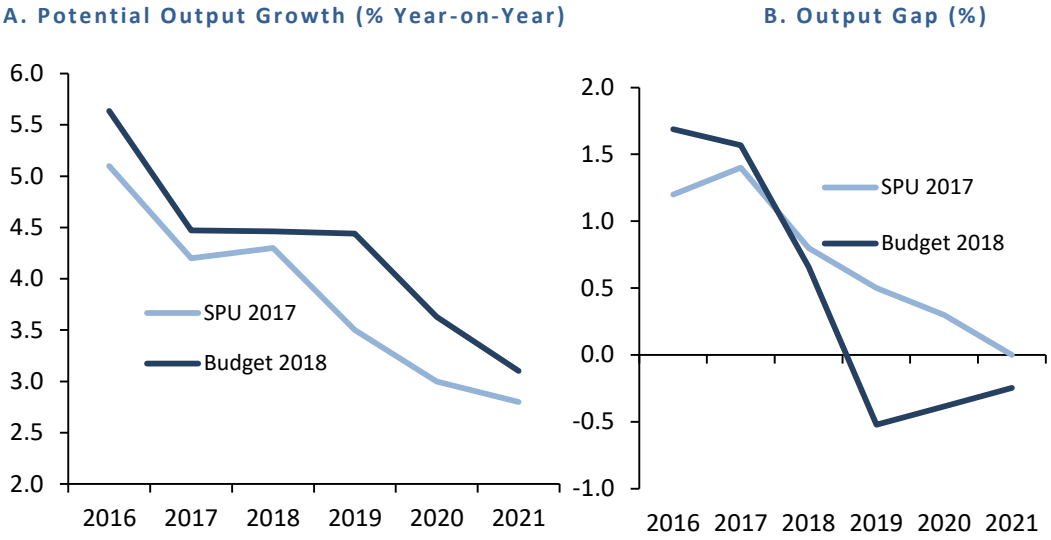
		2016	2017	2018	2019	2020	2021
Budget 2018	Real GDP Growth	5.1	4.3	3.5	3.2	3.8	3.3
	Potential GDP Growth	5.6	4.5	4.5	4.4	3.6	3.1
	Output Gap (% Potential GDP)	1.7	1.6	0.7	-0.5	-0.4	-0.2
SPU 2017	Real GDP Growth	5.2	4.3	3.7	3.2	2.8	2.5
	Potential GDP Growth	5.1	4.2	4.3	3.5	3.0	2.8
	Output Gap (% Potential GDP)	1.2	1.4	0.8	0.5	0.3	0.0

Source: CSO and Department of Finance.
Note: Supply-side real GDP growth rates are not the same as those shown for the demand-side.

The supply-side real GDP growth rates shown in Table 2.3 for 2020 and 2021 are not the same as those shown for the demand-side (Figures 2.5 and 2.6 and Table 2.2 use the demand-side forecasts). This is due to the way mechanical closure under the CAM operates. Forecasts for actual output are adjusted so that the output gap closes in year t+5 (2022). In this case this means that the supply-side forecasts of actual real GDP are higher than the demand-side forecasts so that the output gap closes from below zero. The demand-side forecasts reflect the views of the Department on growth prospects in the later years.

As a result of procyclicality in the CAM (Box B and Box E), estimates of potential output tend to track actual GDP quite closely, rather than providing robust estimates of potential which may deviate significantly from actual output.[20]

Figure 2.7: Vintages of Medium-Term Projections



Sources: Budget 2018 and *SPU 2017*.

The procyclical nature of CAM estimates can result in misleading signals being given regarding the cyclical position of the economy, particularly in real-time (Box B, Chapter 1). This is particularly problematic as CAM-based estimates are used for official measures of the structural balance and, hence, can give misleading signals for policymakers. Recognising these shortcomings, previous Fiscal Assessment Reports have highlighted the need for alternative supply-side methodologies to be developed by the Department, rather than reliance being placed on the CAM almost exclusively for projections and for officially published estimates of the cyclical position of the economy.

External conditions are projected to deteriorate in the later forecast years, mainly due to the assumed impact of Brexit. The Department is currently assuming a hard Brexit, where a World Trade Organisation-based tariff regime comes into effect from 2019. While there is uncertainty surrounding what form Brexit may take, the timing is also uncertain, with the possibility of transitional arrangements delaying the main economic impacts until 2021. As highlighted in IFAC (2017a), the impact is highly uncertain and could be more severe than assumed. This reflects the complexity in quantifying the impact of such an event. In addition, model-based estimates (such as those using COSMO) tend to show the economy gradually adjusting to the shock and reaching a new steady-state level (Bergin *et al*, 2016). It may be more likely in this case that the impact of such

[20] This means that as the economy experiences a cyclical upturn, estimates of potential growth rise, while in a downturn the reverse process is evident. In addition, the regional nature of the Irish economy makes self-reinforcing growth dynamics more likely. Previous experience has shown how inward migration can occur in periods of strong growth, further boosting potential growth in these periods.

a shock would be more sudden, with a sharp front-loading of the negative impact when the shock occurs. As noted in IFAC (2017a), COSMO estimates assume that the impact on the Irish labour market from a shock to UK output is equivalent to that of an average trading partner. Given that Irish exports to the UK may be more labour-intensive than average, this may underestimate the medium-term impact of a hard Brexit on the Irish economy.

Ascertaining the current cyclical position of the economy is difficult, and the Council uses a modular approach to help assess cyclical developments in the economy (see Appendix C). This involves assessing key sources of imbalances that can help to explain any deviation of the economy from its level of potential output, with a view to examining these "modules" in a more systematic manner. Means of incorporating this information directly into baseline estimates of potential output can then be explored, with additional indicators incorporated into output gap equations as proposed by Borio *et al* (2014).[21] For further discussion of imbalances see Section 2.4.2.

Box E: Problems with the Commonly Agreed Methodology as applied to Ireland

This box sets out some of the problems that arise from using the Commonly Agreed Methodology (CAM) for estimating potential output in Ireland. The unsuitability of the CAM has been highlighted in previous *Fiscal Assessment Reports* and has been highlighted by the Department going back as far as 2003 (Department of Finance, 2003) and by Bergin and FitzGerald (2014).

The CAM uses a production function approach, whereby potential output is driven by capital, labour and technological progress. While production function approaches are standard in the literature, there are alternative methods to estimate potential output, with univariate and multivariate filters also popular. The basic structure of the CAM production function is shown in equation (1) below.

$$Y = L^{\alpha}K^{1-\alpha}TFP \qquad (1)$$

where Y = potential output; L = trend labour inputs; K = net capital stock; and TFP is Trend Factor Productivity; with the elasticities of output to labour and capital determined by α. The exponents on labour and capital (α and 1-α) represent the respective factor shares. The fact that they sum to one reflects the constant returns to scale assumption.

The specific application of the production function methodology leads to questionable estimates for Ireland. Some of these aspects are discussed below:

(1) The natural rate of unemployment (NAWRU): Labour inputs are key to the production function approach and one of the most important aspects of this is the estimate of the NAWRU, which represents the long-run equilibrium unemployment rate consistent with keeping inflation constant.[22,23] While structural changes in the labour market can lead to changes in the NAWRU, the NAWRU itself would be expected to be reasonably stable over time. Figure E1 below shows how CAM-based estimates of the NAWRU vary greatly from year to year and appear to track actual unemployment quite closely.

[21] See Box A, Fiscal Assessment Report, November 2015.

[22] NAWRU stands for the Non-Accelerating Wage Rate of Unemployment.

[23] Labour inputs have an output elasticity of 2/3 (corresponding to α = 2/3 in (1) above).

As labour inputs make a substantial component of potential output, NAWRU estimates being quite close to actual unemployment rates contributes to potential output growth mirroring growth of actual output, as outlined below.

(2) Net Capital Stock: The assumption under the CAM is that when at its potential, output is consistent with full use of the existing capital stock. Recent distortions to the capital stock data cause difficulties for Ireland. In recent years there have been substantial levels of investment recorded in the National Accounts in the form of investment in intangible assets. In addition, there have been large reclassifications of balance sheets (in 2015) which further boost the level of the capital stock. Such developments contribute positively to potential output estimates as measured under the CAM (this approach was adopted to help prevent distortions to estimates of the output gap in 2015), though their contribution to the labour market, to domestic incomes, and to government revenues are less relevant than are other activities. A more appropriate approach might be to use a modified capital stock that excludes some of the capital assets which do not generate income or employment for Irish residents. Prior to the crisis, large additions to the capital stock were made via the housing sector. Because of the assumption highlighted above, these increases contributed to stronger potential output growth even though these investment levels proved unproductive.

(3) Total Factor Productivity: The third element of the production function is Total Factor Productivity (TFP). Historical estimates are obtained as a residual (often referred to as the Solow residual), after assuming output elasticities of labour and capital inputs of 2/3 and 1/3 respectively.[24] Naturally, if the other production function inputs (capital stock and labour) are poorly measured, then the quality of TFP estimates will also suffer as it is a residual. The TFP series is de-trended using a Kalman filter, which draws on information from a capacity utilisation series for the manufacturing sector.[25] This is particularly problematic for Ireland, as the capacity utilisation series was discontinued in 2008.

(4) Mechanical closure: Some applications of the CAM (not all, as this is optional) involve enforced closure of the output gap over the medium term. In effect, this approach sees the output gap closed in three equal parts from its starting position in year t+2 to year t+5 (e.g., by 2022 in the *Budget 2018* forecasts). This is an approach used by the Department of Finance in its own application of the CAM. Forecasters often assume that growth reverts to trend levels in the medium term given uncertainties about longer-horizon developments and the transient nature of demand shocks. Yet there may be good reasons to suggest that output may fall short of or even overshoot potential levels for a sustained period of time. One scenario that the Council has considered plausible over the medium-term is that persistent supply shortfalls in the residential sector could lead to a period of above-normal output that lasts beyond the very near term (IFAC, 2017b).

(5) Use of GDP: While GDP is used as the standard measure of national output across the EU, this is problematic for Ireland. GDP has been considered to be a poor measure for Ireland given the unusual gap between GDP and GNP arising from a relatively high level of multinational activity and subsequent repatriation of profits. For most countries, there is little difference, but in Ireland GNP has tended to be some 85 per cent of GDP due to the outward flows of profits. In 2015, a level shift was observed, with both GDP and GNP boosted by a dramatic rise in net exports that resulted from

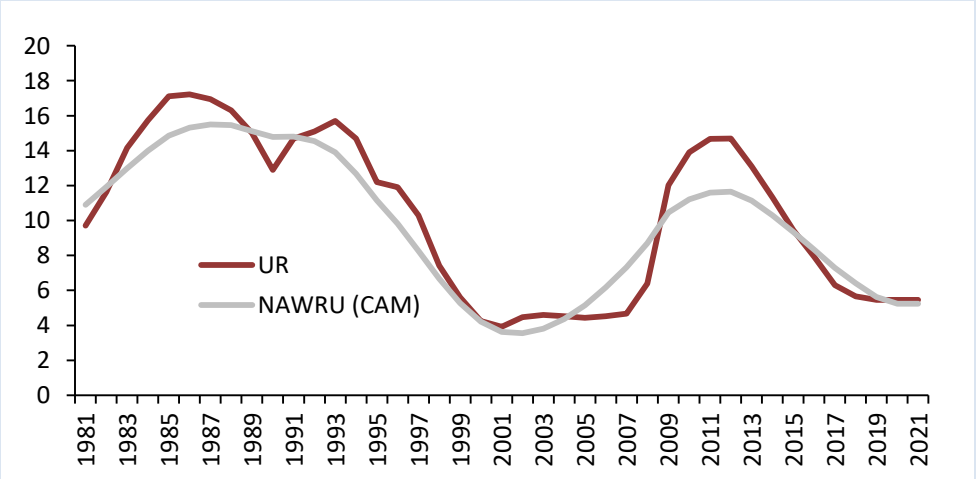
[24] Given that the labour share (as a percentage of GNI*) is currently less than 50 per cent, a 2/3 output elasticity on labour seems high.

[25] Using a Kalman filter rather than a HP filter is thought to be advantageous as it is less susceptible to end-point bias.

corporate restructuring. In 2014, the adoption of new international standards for national accounting saw both measures boosted by the recognition of investment in R&D. While the former level shift was more clearly an artificial boost to measured GDP/GNP levels, the inclusion of R&D asset flows was arguably a sensible recognition of previously unrecognised activities that had some value added. However, given that R&D activities do not contribute very strongly to employment or domestic incomes, and that, in the Irish context, these activities are exceptionally large by international standards, and predominantly conducted by foreign-owned multinationals, there is a good case for disregarding them when assessing the potential output of the Irish economy. An alternative metric (which has been used for IFAC estimates of potential output) that could be more appropriate is domestic GVA. This excludes output from the multinational-dominated sectors of the economy and gives a better indication of the cyclical position of the domestic economy.

Figure E1: NAWRU and the Unemployment Rate (UR)

Percentage of labour force.



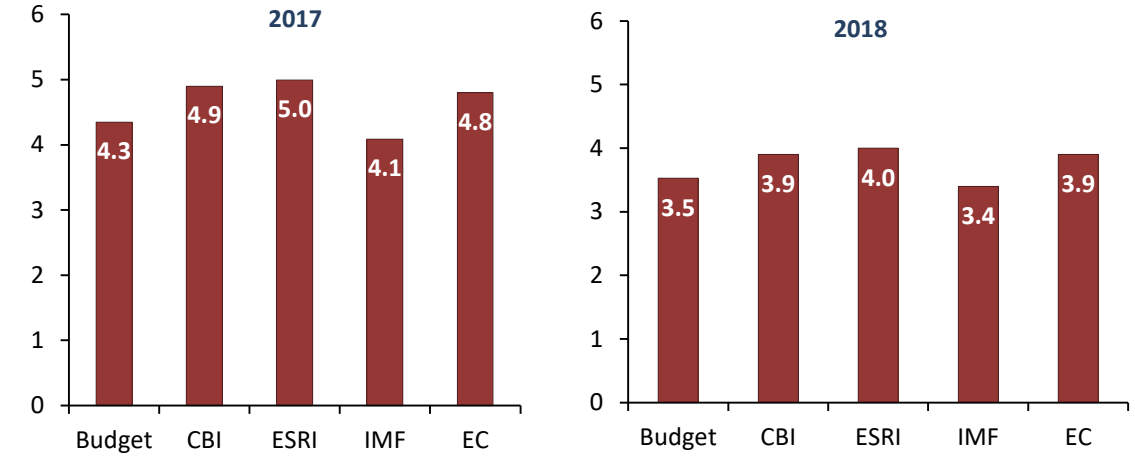
Sources: CSO and *Budget 2018*.

2.3.5 Forecasts of Other Agencies

Most forecasting agencies envisage strong real GDP growth in 2017, with more moderate rates of growth next year (Figure 2.8). For both this year and next year, the forecasts of the Department are lower than those of all agencies shown apart from the IMF. Interestingly, all agencies apart from the Department of Finance have significantly upgraded their forecasts for 2017 and 2018 in recent rounds (Figure 2.9).

Figure 2.8: Real GDP Growth Forecasts

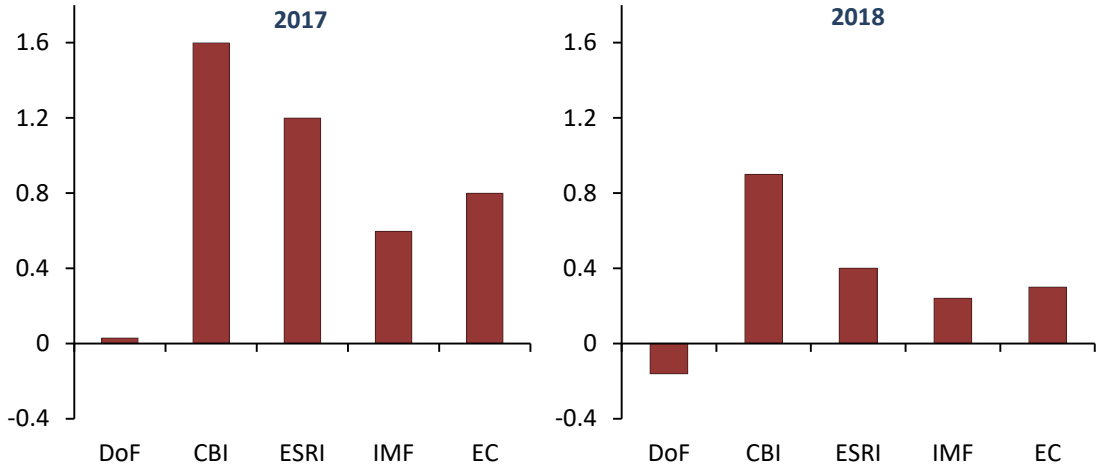
Percentage, year-on-year



Sources: Budget 2018; ESRI *(Quarterly Economic Commentary, Autumn 2017);* IMF *(World Economic Outlook, October 2017);* Central Bank *Quarterly Bulletin, October 2017;* and European Commission (*European Economic Forecast, November 2017).*

Figure 2.9: Changes in Real GDP Growth Forecasts

Latest Forecasts – Spring Vintages



Sources: Budget 2018; SPU 2017; ESRI *(Quarterly Economic Commentary, Spring 2017 and Autumn 2017);* IMF *(World Economic Outlook, April 2017 and October 2017);* Central Bank *Quarterly Bulletin, April 2017 and October 2017;* and European Commission (*European Economic Forecast, May 2017 and November 2017).*

Taking the four agencies other than the Department, their forecasts have been revised up by an average of 1 percentage point for 2017 and 0.5 of a percentage point for 2018, partially reflecting lower initial forecasts. By contrast, the forecasts of the Department are unchanged for 2017 and revised down by 0.2 per cent for 2018.

2.4 Risks and Imbalances

2.4.1 Risks

While forecasts of the Irish economy remain relatively positive, substantial risks surround this central scenario. The recovery in the economy since 2012 has been aided by largely favourable external conditions for Ireland. Exchange rates boosted competitiveness; a looser global monetary

policy stance helped alleviate a strained credit environment domestically; and there was some demand growth in Ireland's major trading partners. The last twelve months have seen some reversals of these trends, with weaker external demand and a significant appreciation of the euro against sterling and the dollar. Given the open nature of the Irish economy, changes to the external environment could have a sizeable impact on the economy.

Table 2.4 below shows the macroeconomic risks identified in *Budget 2018,* along with the Department's assessments of relative likelihoods and impacts. This table also includes comments from IFAC on each of the risks identified. Two additional risks, which were not included in *Budget 2018*, are also added here, with the Council's assessment of the respective likelihoods and impacts. Overall, the *Budget 2018* risk matrix presents a comprehensive list of the main macroeconomic risks. "Overheating" was added to the Department's risk matrix in *Budget 2018*, having not been included in previous risk assessments. Based on the Council's assessment of the current cyclical position of the economy discussed above, the inclusion of this risk by the Department is warranted and timely. *Budget 2018* notes that "having been tilted to the downside in the spring set of forecasts, short-term risks now appear broadly balanced, with both upside and downside risks". The Council also assesses risks to be more balanced, with substantial upside and downside risks to growth forecasts in the short-term.

Table 2.4: Assessing *Budget 2018* Risk Matrix

Risk	Likelihood	Impact	IFAC Comment
Exchange Rate Re-Alignment	H	H	Since the middle of last year, the euro has appreciated significantly against sterling and the dollar. While exchange rates could become more or less favourable in the coming years, increased volatility could be damaging to Irish firms.
"Hard Brexit"	M	H	A WTO-style arrangement would appear to have the most significant economic implications for both the UK and its trading partners. This scenario could have significant implications for medium-term growth prospects in Ireland. While listed as a risk, many of the negative consequences of a hard Brexit have been built into baseline projections of the Irish economy. As such, the main downside risk to the forecast from a hard-Brexit is that the impact of this shock has been underestimated, rather that the event itself will occur. In addition the shock may be more sudden, severe and persistent than current model-based estimates would suggest.
External Demand Shock	M	H	Ireland has benefited from its main trading partners performing relatively well in recent years. The slow pace of growth in world trade is of concern, as are the potential second-round impacts from Brexit.
Geopolitical Risks	M	H	While the direct impact of geopolitical tensions may be limited, second-round impacts could be more significant, particularly if global trade is disrupted.
De-globalisation	L	H	Given that trade plays such an important role in the Irish economy, any protectionist measures that limit trade would be damaging to Irish growth prospects. World trade growth normally surpasses GDP growth, but grew at the same rate in 2015 and 2016. OECD forecasts suggest trade growth will pick up somewhat in 2017 and 2018.

Risk	Likelihood	Impact	IFAC Comment
Loss of Competitiveness	M	H	Given the extremely open nature of the Irish economy, any losses in competitiveness could have significant growth implications. There are several possible sources that could lead to an erosion of competitiveness, with both domestic (wage pressures, commercial property inflation) and external (exchange rates) sources possible.
Housing Supply Pressures	H	M	The lack of a supply response to the excess demand in the property market has seen a continued escalation in the prices of both residential and commercial property. This has negative implications for competitiveness, with the likelihood of compensating upward pressure on wages. While a stronger supply response would be welcome and is needed to keep prices and rents down, overheating in the economy would be more likely to occur if there were substantial increases in construction activity, presuming other sectors continue to grow strongly. Labour mobility may also be adversely affected by the shortage of housing supply.
Concentrated Production Base	L	H	Ireland's production base is quite concentrated in a small number of sectors. As a result of this, some sector- or firm-specific shocks could have a considerable impact on the Irish economy.
Global financial market conditions	M	M	With continued low interest rates, a "search for yield" could raise financial stability concerns. Normalisation of monetary policy will also have to be managed carefully.
Policy Uncertainty around tax policy in the US and EU	M	M	Changes in policy in the US, particularly in relation to Corporation Tax, could negatively impact on FDI into Ireland. In addition, plans for a common, consolidated corporate tax base (CCCTB) in the EU could also impact on the Irish economy. More generally, an uncertain policy environment in the US could damage growth prospects and hence weaken demand for Irish exports.
Overheating Economy	M	M	As discussed extensively above, overheating could occur in the Irish economy in the coming years, even without significant credit growth. As the economy now appears to be close to its potential level, strong growth in future years could see the economy overheat.
Inappropriate Monetary Policy (IFAC Risk)	M	H	A risk which is not identified in *Budget 2018* is that monetary policy could become more inappropriate for Ireland. While there have been some upward revisions to projections for output and inflation in the Euro area, accommodative monetary policy looks set to continue at least in the short-term, albeit that quantitative easing is to be scaled back from next year.[26] As growth in Ireland is forecast to continue to outperform the Euro Area, there is a risk that monetary policy could be looser than ideal is for Ireland in the coming years. The last crisis showed the impact that inappropriate monetary policy can have in amplifying the business cycle.
Inappropriate Domestic Policy (IFAC Risk)	M	M	With monetary policy set by the European Central Bank (ECB), Ireland has fewer levers for managing the domestic economy. There are two main domestic policy tools. Given the current cyclical position of the economy and forecasts of strong growth rates, fiscal and macroprudential policy may need to play an active role in preventing overheating in the economy.

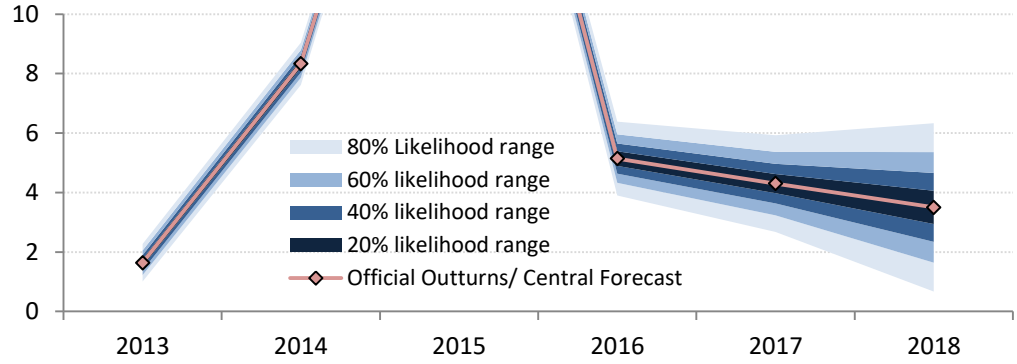
Note: Likelihood and impacts from *Budget 2018*: H= High; M = Medium; L = Low.

[26] Forecasts for inflation have been revised up but remain below the 2 per cent target level in 2017 and 2018. Output growth is forecast to be 2.1 per cent this year, falling to 1.9 per cent next year (IMF *World Economic Outlook, October 2017*).

As has been highlighted in previous *Fiscal Assessment Reports*, the Irish economy has historically been one of the most volatile in the OECD, along with having a tendency towards large revisions to historic data. Figure 2.10 shows historic data and *Budget 2018* forecasts with fans based on historical revisions and forecast errors.

Figure 2.10: Real GDP Fan Chart Based on *Budget 2018* Projections

Percentage Change (Year-on-Year)



Note: Distributions or "fans" around historical growth estimates are based on previous revisions to real GDP data. Forecast errors based on 1999-07; 2010-15 sample. The vertical axis is truncated to make the 2017 and 2018 forecasts legible.

2.4.2 Imbalances

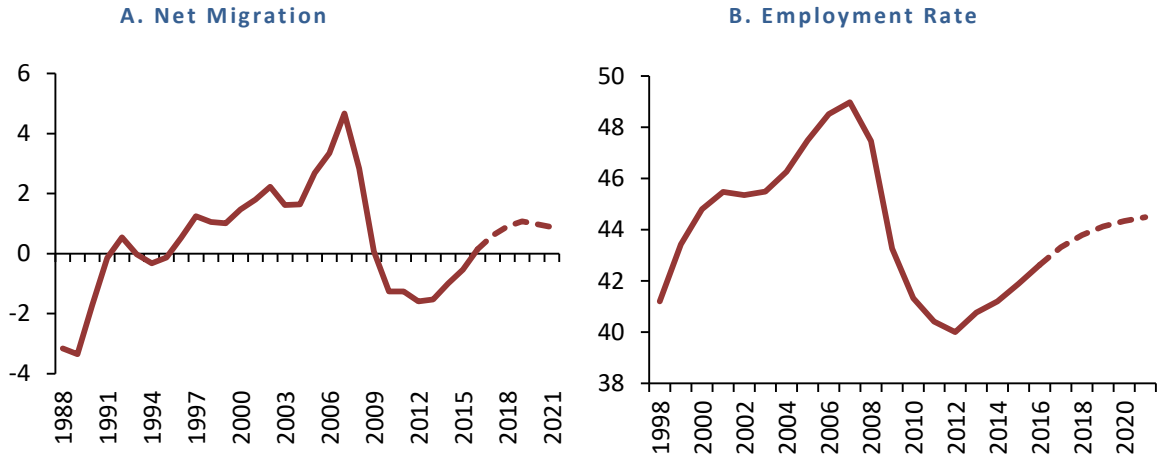
With a realistic prospect of overheating occurring in the years ahead, it is worth considering how overheating or imbalances could look in an Irish context. Overheating in this case refers to a situation where the economy is producing a level of output above what can be sustainably produced. Ideally, cyclical fluctuations around this sustainable level would be captured by estimates of potential output and the output gap. In line with the modular approach adopted by the Council (Box A *November 2015 FAR*, IFAC 2015), this section looks at a number of different indicators which could act as warning signals of economic imbalance, which can be a manifestation of the cycle. In each case, the usefulness/rationale for examining the indicator is given, as well as what the latest values would suggest for the cyclical position of the economy. Four broad modules are examined in Appendix C, namely the labour market, external balances, investment/housing, and credit conditions.

Labour Market

As a small open economy, competitiveness is a key component to Ireland's economic growth. Upward wage or general price pressures could erode competitiveness gains achieved in recent years and provide a signal of an economy that is exceeding sustainable levels of output. Consumer price inflation measured by CPI, HICP or core HICP remains low and has not accelerated recently. Wage growth, having been just above 1 per cent in 2014 and 2015, accelerated moderately through 2016. While there are some signs of wage growth picking up, there do not yet appear to be significant price pressures apparent across the Irish economy. If construction activity remains

subdued and house prices and rents continue to increase, this could have negative competitiveness implications also.

Figure 2.11: Net Migration and Employment Rates
Percentage of labour force (A); Percentage of population (B)



Sources: CSO; *Budget 2018* and internal Irish Fiscal Advisory Council (IFAC) calculations.
Note: Dashed line indicates forecasts from *Budget 2018* for 2018-2021. Revised migration data are used here (including the 2017 outturn), although this was not available in time to be used in this forecast round.

The labour market is another area to be examined when looking for potential signs of overheating. Previous experience has shown that Ireland has a very elastic labour supply, particularly through the migration channel. In the 2000s there was large-scale inward migration, which further supported strong employment growth. This alleviated inflationary pressures even as unemployment rates had already fallen to low levels. Large migration flows into Ireland could indicate that overheating is occurring in the labour market, as strong demand for labour results in a supply response. Figure 2.11 shows net migration flows including the Department's latest forecasts. Stable net inward migration flows of less than one per cent of the labour force are expected in later years, well below that seen in the run up to the last crisis. However, if the upward trend seen over the past few years were to continue, this could point towards sustainability concerns in the labour market.

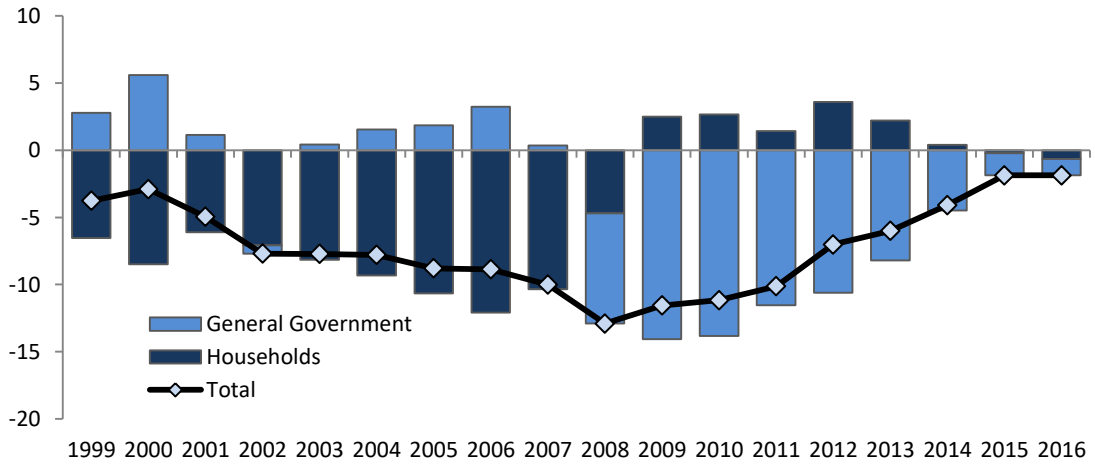
When thinking about unemployment rates in the context of economic imbalances or cyclical developments, the NAWRU is a key consideration. This describes the unemployment rate that is estimated to be consistent with stable wage inflation. If the unemployment rate were to fall below the NAWRU, one would expect inflationary pressures to build. As the NAWRU is not actually observed, it must be estimated, and estimates of the NAWRU for Ireland vary greatly (see Figure D1). Forecasts from *Budget 2018* project the unemployment rate falling to around 5½ per cent in 2019 and remaining stable at that level to the end of the forecast horizon. If the unemployment rate were to fall to much lower levels and below the NAWRU, this could indicate that overheating is occurring, with associated upward pressure on wages and prices. Looking at employment rates, Figure 2.11 (B) shows that they remain (and are forecast to remain) well below pre-crisis highs.

However, this fall has been driven by younger cohorts (see Figure AC.1.F for employment rates by age) who may have been attracted to the labour market by the booming construction sector in the mid-2000s.[27] If one were to see the overall employment rate continue to increase towards pre-crisis peaks then there may be cause to question the sustainability of this.

External Balances

Ordinarily, the current account of the balance of payments would be an important indicator when looking for signs of imbalance in an economy. However, recent distortions to Irish data have made it very difficult to assess the underlying position of the current account. The headline current account balance for 2016 indicates a surplus of almost 5 per cent of GNI*. By contrast, using a modified measure of the current account (using the same adjustments as used for GNI*) would indicate a substantial deficit (Figure AC.2.A). An alternative approach is to make the adjustments as per GNI*, but to also adjust for the R&D service imports of foreign-owned multinational enterprises and the acquisitions of intellectual property and aircraft for leasing. This gives the adjusted current account shown in Figure AC.2.A. Using this metric, the adjusted current account moved into a small surplus last year. Given the difficulty in arriving at an appropriate measure for the current account, it is unlikely to give reliable signals of potential imbalances in the Irish economy.

Figure 2.12: Net Lending/Net Borrowing of Households and General Government
Percentage of GNI*



Sources: CSO; Central Bank of Ireland and internal IFAC calculations.
Note: General government balance excluding one-offs is used here. Household net lending/borrowing refers to financial assets transactions less financial liabilities transactions from the Quarterly Financial Accounts.

An alternative approach that can be taken is to examine the current account balance from the bottom-up, rather than from the top down. This can be broken into three broad sectors: the household sector, the corporate sector, and the government sector. Figure 2.12 shows the savings behaviour of the government and household sectors as a percentage of GNI*. For the government

[27] By contrast, the employment rate for 35 -44 year olds, 55-59 year olds and 60-64 year olds are all above pre-crisis levels.

sector, the metric used is the general government balance excluding one-offs. For the household sector, net borrowing/lending from the CSO's Institutional Sector Accounts is used. As shown in Box C, a different picture of net lending/saving of the household sector emerges if looking at the QFA data. It can be seen from this chart that the household sector ran significant deficits in the lead up to the financial crisis. After the onset of the crisis, as households attempted to deleverage, they became net savers again (with small net borrowings emerging in 2015 and 2016). The picture for the government sector shows the opposite pattern, with surpluses prior to the crisis, followed by large deficits after the crisis, which have been steadily declining over the past six years. Taking the two sectors together, a large net borrowing position has unwound in recent years.

The corporate sector is much more difficult to examine, given the influence of multinational activities here. One way to do so is to examine credit advanced to Irish resident private sector enterprises. Looking at the total or the total excluding financial intermediation activities, one can see that significant deleveraging has occurred recently (Figure AC.4.D in the imbalances Appendix C).[28] Credit advanced as a percentage of GNI* has fallen rapidly recently, with both series at their lowest levels relative to GNI* since the credit series started in 2003. Looking at new credit advanced to Irish resident SMEs, there has been steady growth over the past three years.[29] Overall, the three main sectors examined here – household, government and corporate – do not appear to be showing obvious signs of imbalance.[30] In addition, the adjusted net international investment position currently shows a surplus (Figure AC.2.B). However, this could change rapidly and needs to be monitored closely.

Investment/Housing Indicators

Looking at domestic factors for imbalances, investment ratios are shown in Figure AC.3. Although headline investment appears to be above its historical average as a percentage of GNI*, this is mainly driven by investment in aircraft and intangible assets. A useful indicator of potential imbalances from investment is to look at building and construction activity. Despite some modest increases in the last few years, output in this sector remains well below historical averages and the unsustainable pre-crisis highs.

Estimates of the number of housing completions needed to meet demand due to demographics, obsolescence and new-household formation vary widely, but all estimates point towards a recent

[28] This covers credit institutions resident in the Republic of Ireland, the full listing of which is available at: https://www.centralbank.ie/docs/default-source/statistics/data-and-analysis/credit-and-banking-statistics/bank-balance-sheets/credit-institutions-resident-in-the-republic-of-ireland.pdf

[29] This time series only starts in 2010 so it is difficult to ascertain how this level of lending compares to historical levels.

[30] Taking into account the difficulties in examining the corporate sector and the uncertainties surrounding the savings rate, which appears to be at or above the Irish average.

shortfall in completions. This is likely to have created significant pent-up demand.[31] Given that there has been a limited supply response so far, there may be some structural factors hindering supply.[32] If these factors were to ease, there could be a rapid increase in completions. *Budget 2018* forecasts a steady, modest increase in completions of around 4,000 each year out to 2021, when completions are forecast to reach 35,000 per annum.[33]

If the economy continues to grow rapidly, any remaining slack in the economy would be eliminated. From this position, if there were to be an increase in construction activity – which would be welcome – this would positively impact on growth and potentially lead to output exceeding sustainable levels. In order to avoid this scenario, other sectors of the economy may need to grow at more moderate rates than is currently the case.

Credit Conditions

The last time overheating was evident in the Irish economy private sector credit played a major role. The strengthening of microprudential regulation and recently introduced macroprudential rules mean that overheating is less likely to be driven by excess household credit growth. That is not to say that overheating can only occur if there is an excessive expansion in credit. There is also the possibility that excessive credit in the corporate sector could play a role, particularly as the current macroprudential rules have little impact on this sector. In addition, credit coming from outside the State and regulatory control of the Central Bank could play a role. Looking at credit indicators, both private sector measures suggest credit is weak relative to trend as a share of GDP, while there are significant differences between the adjusted and unadjusted credit-to-GDP levels (Figure AC.4.A).[34] The adjusted credit-to-GDP level has continued to fall, reflecting continued deleveraging by Irish households and firms.

Concluding Assessment of Risks/Imbalances

On balance the indicators of imbalances explored above would reinforce the view that, while the economy may not yet be overheating, it is likely to be operating close to its potential. The indicators would suggest that the short-term outlook for the Irish economy looks positive, however, significant risks remain. As a small open economy, Ireland remains exposed to changes in external conditions. Exchange rates, the monetary policy stance of the ECB and trading partner growth are all key inputs into Irish growth prospects. Risks to the forecasts may be balanced in the

[31] Lyons' (2017) estimates of 50,000 are much higher than the 30,000 in Duffy *et al* (2016). These higher estimates reflect different assumptions for obsolescence and demographics.

[32] While prices remain well below pre-crisis peaks, costs have not fallen substantially, which may be preventing a large-scale response also (see Figure AC.3.C).

[33] For example, in the period 2003-2006, completions increased by almost 9,000 per annum on average. While this ultimately proved to be unsustainable, it does show how quickly activity can accelerate.

[34] The adjusted series excludes firms engaged in financial intermediation activities, and only includes Irish resident private sector enterprises as well as households.

short-term, with upside risks stemming from the response of the housing market in particular. As noted above it is possible that the impact of a hard Brexit may be underestimated. The impact of Brexit is a key consideration for Ireland's trend growth rate, which informs the setting of appropriate fiscal policy.