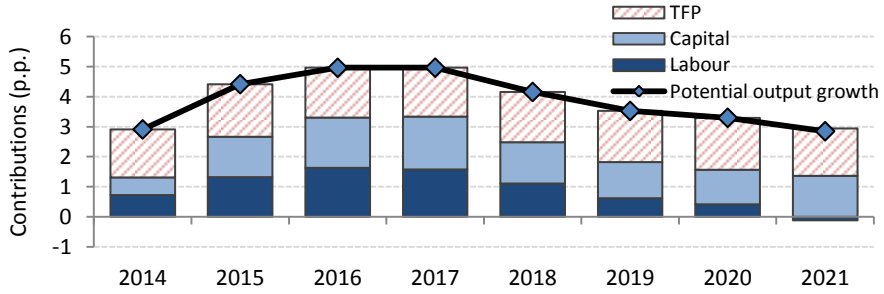
APPENDIX D: CHANGES TO POTENTIAL OUTPUT FOLLOWING 26% GDP GROWTH IN 2015

The sharp 26.3 per cent GDP growth rate in 2015 has a number of implications, one of which is the assessment of cyclical developments in the Irish economy. As the standard barometer of an economy's health, real GDP forms a fundamental part of the common approach to estimating potential output among EU member states. This Box examines the impact of the 2015 real GDP growth rate on Irish potential output estimates in the context of the EU Commonly Agreed Methodology (CAM) and explains why changes to the CAM as applied to Ireland were considered necessary.

IMPACT OF AN UNCHANGED APPLICATION OF THE CAM

To understand the impact of last year's National Accounts outturn on CAM-based estimates of Irish potential output, it is helpful to first consider the *SPU 2016* estimates that were based on the unrevised National Accounts data. Figure B.1 shows the potential output estimates using the unrevised GDP data and the contributions to the growth rate as computed under the CAM. Prior to the revised real GDP outturn, estimates of potential output growth gradually fell from near 5 per cent per annum in 2016 and 2017 to 3 per cent by 2021.

FIGURE B.1: CONTRIBUTIONS TO POTENTIAL OUTPUT GROWTH , UNREVISED *SPU 2016* ESTIMATES (P.P.)



Sources: *SPU 2016.*

The revisions to the Irish National Accounts for 2015 are now reasonably well understood (see Box A of IFAC 2016c for an explanation). Real GDP growth of 26.3 per cent is currently estimated for 2015. This followed a preliminary estimate of 7.8 per cent. Much of the revision was attributable to an approximate €300 billion increase in the capital stock following the restructuring/relocation of company assets, which led to associated increases in net exports, measures of contract manufacturing, real GDP, and levels of measured depreciation.

Reflecting the rise in actual growth, an unchanged application of the CAM to Ireland would have had a number of undesirable features. Prospective estimates of potential output growth over the medium-term would have been artificially boosted by the level shift in GDP in 2015 and forecasts of

the output gap would have been drastically altered. These features could also have had a distortionary impact on the operation of fiscal policy given their importance for the fiscal rules.

Given the underlying economics of the revisions, there was no evident reason why both historical and projected estimates of the output gap and potential output growth rates should be significantly affected or that implications for fiscal policy under the rules should be radically revised as a result of data distortions impacting 2015. In advance of *Budget 2017*, the Council held discussions with the Department of Finance and discussed a technical approach in an effort to limit the impact of these distortions on estimates of potential output growth and the output gap for Ireland to the year 2015 only.[1]

A number of elements were outlined in the Council's proposal. These were intended to produce potential output measures consistent with an unchanged output gap when compared with pre-revision estimates and to limit the effect on long-run potential output estimates.[2] The proposal was shared with the Department on 2 September in advance of a presentation by the Department to the European Commission's Output Gap Working Group. Substantive work was undertaken by the Department of Finance to explore numerous possible alterations and options over the course of discussions with the Commission. These discussions and related work led to a decision on how to treat the distortions for the purposes of the CAM, which was finalised on 22 September.

Changes to the CAM as Applied to Ireland

The changes agreed on comprised three main factors: (i) the inclusion of revised capital stock data for 2015; (ii) a structural break in trend Total Factor Productivity (TFP) from 2015 onwards; and (iii) a structural break in the Phillips curve relationship underpinning estimates of the natural rate of unemployment in 2015.

(i) Revised Capital Stock Data

The introduction of the revised capital stock data for 2015 – as yet unpublished – meant a greater consistency with the revised GDP data used as an input to the CAM. It also helped to explain a substantial portion of the sharp upward revision of GDP in 2015 so that less of this was allocated as a residual boost to total factor productivity (TFP).

[1] The Department had already identified concerns with a standard application of the CAM and had proposed a number of changes, including amendments to address the inconsistency with capital stock estimates. The Council was of the view, however, that these did not go far enough to address potential long-run impacts on fiscal policy, with trend TFP estimates in particular likely to be inflated over a number of years in the absence of further methodological changes.

[2] These included a proposal to include a proportionate adjustment to trend TFP *ex post* or, alternatively, that the 2015 growth rate be treated as an outlier or, more crudely, that a dummy variable be applied in 2015.

(ii) Trend TFP Break

On its own, the increase in capital would have been insufficient to explain the sharp rise in GDP growth in 2015.[3] As a result, a proportion of the 2015 growth rate is attributed to an upward shift in total factor productivity, which is defined as a residual.

To prevent the sharp rise in growth in 2015 from signalling an upward shift in the pace of trend productivity growth that could be expected in surrounding years (i.e., through the filtering process), the new trend TFP is estimated under the assumption of a level shift in trend TFP taking effect from 2015 on, with growth rates thereafter relatively unchanged.[4] One economic interpretation of the level shift in TFP is that the newly restructured/relocated company assets attract a higher rate of productivity on capital.

(iii) Phillips Curve Break

The final adjustment reflected the impact on unit labour costs stemming from changes in output (real GDP) in 2015. Unit labour costs enter the estimation of the natural rate of unemployment (the NAWRU) based on the usual Phillips curve relationship that assumes a negative relationship between cyclical unemployment and the expected growth rate of real unit labour costs. The sharp GDP growth rate led to much lower real unit labour costs in 2015, albeit the rise in labour output underpinning this was predominantly the result of a sharp rise in income from capital of multinational enterprises, with little relevance for wage setting dynamics in the Irish labour market. As such, the decision was taken to estimate the NAWRU under the assumption that the change in real unit labour costs experienced a one-off disturbance in 2015 (essentially amounting to a break in the usual Phillips curve relationship).

RESULT OF CHANGES

Figure B.2 shows that contributions to potential output growth in 2015 are radically different as a result of the inclusion of revised National Accounts data. Most of this is accounted for by the sharp rise in the capital stock, while a sizeable proportion is also accounted for by trend TFP. As a result of the changes to the CAM as applied to Ireland, however, the sharp jump in contributions to potential output growth is limited in the main to the year 2015 only, with surrounding years relatively unaffected. By extension, Figure B.3 shows that the path for the output gap over the forecast horizon is also relatively unchanged following these methodological adjustments.

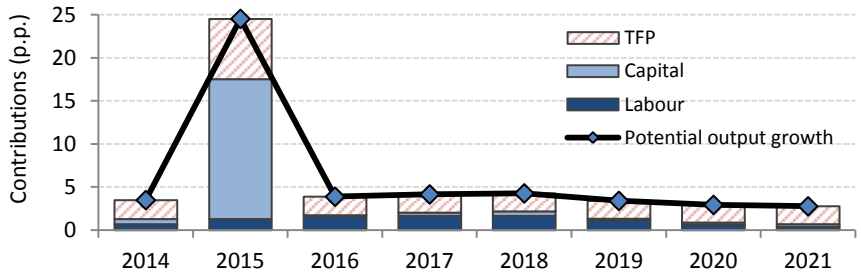
[3] The assumed output elasticity of capital (0.35) would imply a capital contribution to GDP growth of approximately 19 per cent given the growth rate in the capital stock of roughly 54 per cent in 2015.

[4] A zero dummy variable is added taking the value of 1 from 2015 onwards. The dummy variable is assumed to be a part of trend TFP, such that the revisions to the TFP cycle (and the output gap) are minimised.

An example of why these changes are important can be discerned from the impact on estimates of trend TFP growth. Without the methodological changes, trend TFP growth would have been artificially boosted for all surrounding years such that the step-change in 2015 could have been mis-represented as a sustained rise in trend productivity growth rates with consequent impacts for the path of potential output growth and the output gap.

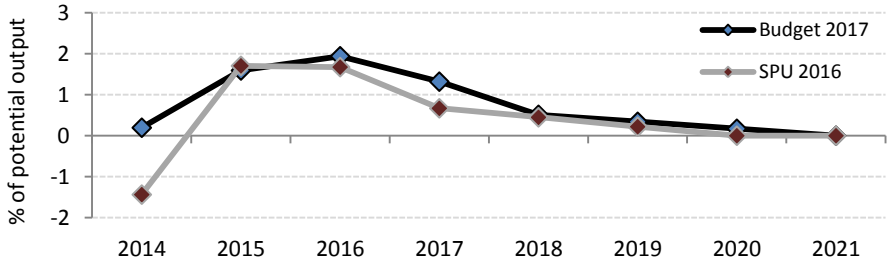
Although the adjustments were considered pivotal to ensure a consistent application of the fiscal rules, there are risks that the adjustments may lead to unintended consequences in future. There is also a risk that further step changes in actual GDP produce similar distortions in the future. As such, the Council will continue to monitor the application of the CAM closely. It is important to note that the technical modifications discussed here only address the problems created by the 2015 National Accounts data. Other long-standing problems with the CAM previously discussed by the Council remain, such as the procyclicality of its estimates of potential output. As a result, it is important for the Department of Finance to develop alternative potential output estimates outside the CAM.

FIGURE B.2: CONTRIBUTIONS TO POTENTIAL OUTPUT GROWTH (P.P.)



Sources: *SPU 2016.*

FIGURE B.3: OUTPUT GAP ESTIMATES, *BUDGET 2017* AND *SPU 2016* (% POTENTIAL)



Sources: *SPU 2016; Budget 2017* (*ex ante* estimates without allocation of fiscal space).