Box C: Department of Finance now making greater use of GNI* when assessing budgetary sustainability and real economic activity

The Department of Finance has moved to using modified Gross National Income (GNI*) in its budgetary documents as a key measure for assessing both fiscal sustainability and real economic activity. This aligns with the Fiscal Council's view that GNI* is a more appropriate measure for assessing the sustainability of the public finances and for gauging economic activity relative to other countries' estimates of GDP.

This box explains why the Council assesses GNI* to be an appropriate measure. In particular, it shows that the ability of GNI* to explain and predict taxes and real economic activity is far superior to GDP.

How does GNI* differ from GNI?

When moving from GNI to GNI*, the CSO makes the following adjustments:

1) Depreciation on intellectual property and on leased aircraft: Some assets held in Ireland by foreign-owned companies add significantly to GNI due to the addition of high amounts for depreciation. However, these amounts have little relation to production here, and if they are used in production, the profits all flow overseas to foreign owners. This is true of patents needed for manufacturing pharmaceuticals and of planes leased by foreign-owned companies. Yet the impact of these planes and patents on domestic output and employment is limited. The cost of depreciation on these assets is also borne by the owner overseas. For these reasons, the CSO excludes this depreciation.

2) Redomiciled PLCs: Redomiciled PLCs are companies with permanent offices in Ireland, but usually a small staff and little or no real activity. Management, leadership and other productive activity are mainly carried out overseas. While a lot of their profits from subsidiaries elsewhere are sent on to shareholders as dividends, some profits remain as net income inflating GNI. Recognising that they have little interaction with the Irish economy, the CSO subtracts out this net income from GNI*.

Why GNI* is a useful measure

1) Informed by expert assessments

After Ireland's GDP growth spiked in 2015, an expert group was set up to provide recommendations to the Central Statistics Office on how to address distortions in the national accounts. The idea was to convene experts and wide-ranging stakeholders to provide insights as to how best meet user needs for greater insight into Irish economic activity. Specifically, the group sought to account for measurement challenges associated with the highly-globalised nature of the Irish economy and the role of large foreign-owned multinational enterprises.

It its recommendations, the Economic Statistics Review Group (ESRG) proposed GNI* as a reliable level indicator of the size of the Irish economy. This was designed to be suitable for fiscal planning and for assessing the sustainability of public and private debt.

A substantial amount of evidence went into the ESRG assessment drawing on inputs from FitzGerald (2016); Honohan (2016); the Central Bank of Ireland (2016); Revenue (2016); and the Head of National Accounts at the OECD, Van de Van (2016). The report was finalized in 2016. Subsequent analysis by Lane (2017) and FitzGerald (2020) corroborates the move to GNI* as an appropriate measure of Ireland's economy. Lane looks at the need for countries such as Ireland where globally active firms play an important role to have an appropriate accounting framework. Two principles are sought: (1) a stable measure of overall economic performance robust to alternative accounting approaches; (2) a sensible measure robust to alternative mechanisms by which returns to foreign investment are paid out. As with the ESRG, he concludes that GNI* represents a suitable measure of domestic resources. FitzGerald (2020) similarly assesses that GDP, the traditional measure of national output and income, is no longer a good measure of the

economic welfare of those living in Ireland and shows how detailed measures consistent with GNI* provide a more informative breakdown of economic growth over recent years.

2)   More useful for assessing public finances and sustainability

As well as being statistically better able to explain historical year-to-year movements in taxes, GNI* is far superior for predicting future taxes.

Using error correction models, we assess a variety of government revenue measures and their relationship with both GDP and GNI*. The short-run equations for the models are of the form:

$$\Delta log(tax_t) = \alpha + \beta \, \Delta log(activity_t) + EC_{t-1}$$

with tax activity being represented by a variety of revenue measures; activity represented by either nominal GDP or nominal GNI*; and the Error Correction (EC) term representing the lagged residual from a long-run equation of the form:

$$log(tax_t) = \alpha + \beta \, log(activity_t)$$

On average, models that use GNI* are able to explain about 86 per cent of annual variation in government revenues as compared to just 59 per cent with GDP (Figure C1). This points to the better ability of GNI* to explain how the public finances evolve with economic activity.

Using GNI* also leads to a better forecasting performance. On average, using GNI* almost halves the forecast errors compared to GDP. The errors using GDP would average 7.9 percentage points for annual growth rates as compared to 4.3 percentage points if using GNI* (Figure C2).

Figure C1: GNI* is better at explaining taxes

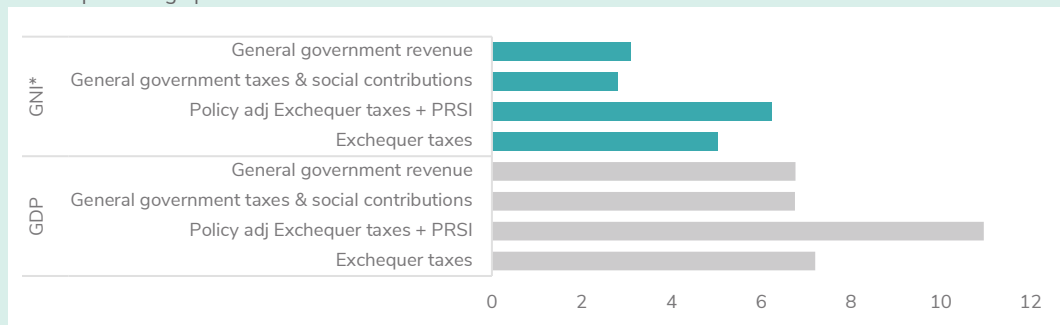Explanatory power for error correction models estimating revenues
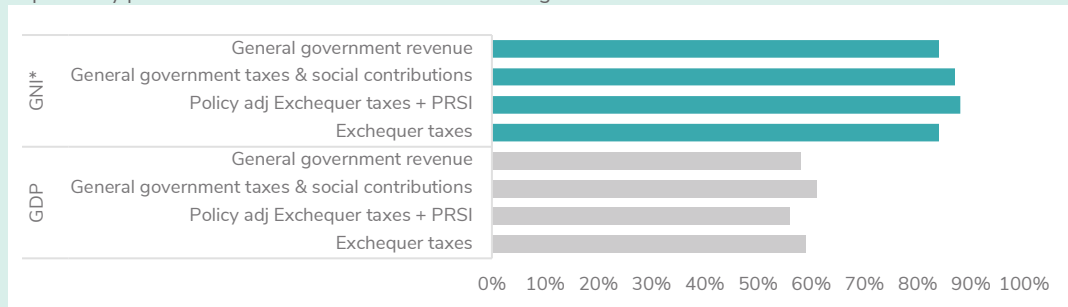
Sources: CSO; Department of Finance; and Fiscal Council workings. Get the data.
Notes: The chart compares the explanatory power (adjusted R-squared) of error correction models that rely on nominal GNI* as compared to nominal GDP. The estimation window is 1995–2019 using annual data.

Figure C2: GNI* is better at forecasting revenues

Annual percentage point forecast errors

Sources: CSO; Department of Finance; and Fiscal Council workings. Get the data.
Notes: The chart compares the forecast errors (the root mean squared error of annual percentage changes) of forecasts produced by error correction models that rely on nominal GNI* as compared to nominal GDP. The estimation window is 1995–2005 and the out-of-sample forecast window is 2006–2019 using annual data.

3) More aligned with the real economy

Another sense check on whether GNI* provides useful insights into the domestic economy is how it relates to growth in employment — a common measure of the performance of the "real economy".

Table C1: GNI* is also better at explaining and predicting employment

Independent variable	Dependent variable	Explanatory power	Out-of-sample forecast errors (p.p.)
Real GDP	Employment	43%	3.34
Real GNI*	Employment	86%	1.59

Sources: CSO; Department of Finance; and Fiscal Council workings.
Notes: The explanatory power (adjusted R-squared) is shown for error correction models that rely on real GNI* as compared to real GDP when modelling employment. The forecast errors refer to the root mean squared error of annual percentage changes with a smaller estimation window of 1995–2005 and an out-of-sample forecast window of 2006–2019.

4) GNI tends to align well with GDP elsewhere

For most countries, GNI aligns very closely with GDP. Over the 10 years 2010 to 2019, for instance, nominal GNI averaged within 2 per cent of GDP for 15 EU countries. It was within 4 per cent for all but 4 countries, while Czechia was 6.6 per cent below on average, and Malta 8.2 per cent below. However, Ireland was a clear exception with GNI, on average, 19.2 per cent below GDP. Only Luxembourg, at 33.6 per cent below, showed a greater gap to GDP (Figure C3).

Figure C3: GNI tends to align well with GDP internationally
GNI as a % of GDP
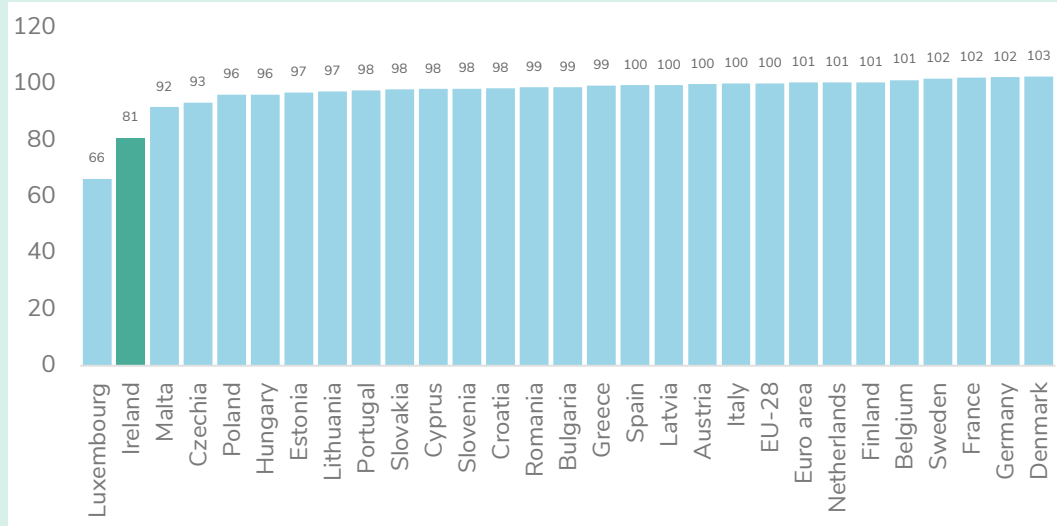
Sources: AMECO. Get the data.
Notes: Figure shows the average for nominal gross national income (not modified gross national income) as a share of nominal gross domestic product over 2010 to 2019.

For these four reasons, the Council tends to use GNI* as a more meaningful measure of the Irish economy — one that reduces the statistical distortions linked to globalized activities that have less of a bearing on fiscal and real-economy developments.