National Competitiveness and Productivity Council
Bulletin 25-2 Re-estimating Ireland's International Competitiveness Performance

- **This Bulletin explores how Ireland's performance in the IMD World Competitiveness Ranking 2024 is affected when selected indicators are rescaled using GNI* in place of GDP. Our findings show that Ireland's competitiveness performance is only modestly impacted by this adjustment, rising by one position in the ranking, with improvements in three of the four pillars.**
- **Overall, Ireland's competitiveness performance is robust to re-assessment using GNI*, with the most significant improvement under *Economic Performance*, moving up seven positions to 2nd, followed by *Infrastructure*, moving up two positions to 14th, while Ireland's ranking on *Government Efficiency* drops two-positions to 8th.**
- **This work highlights the need to interpret international indices critically and in context, understanding their underlying assumptions, and where necessary, supplementing them with alternative analyses that better align with national circumstances. While some changes reflect genuine improvements in comparability and accuracy, others reveal the sensitivity of the index to definitional choices, particularly when indicators are expressed as ratios of headline macroeconomic aggregates.**

OVERVIEW

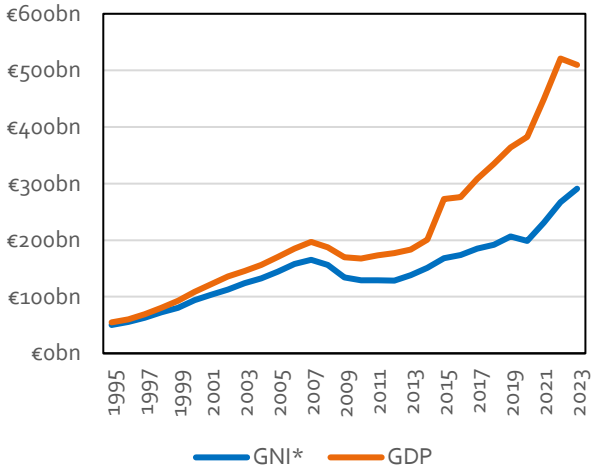
Sound policy-making depends not only on learnings from domestic data, but also on an understanding of Ireland's relative position in the world. The latter can be achieved through the benchmarking of national performance against international standards, using global indices of comparative performance. For the National Competitiveness and Productivity Council ("the Council"), tracking Ireland's position in these indices provides an essential context for understanding how the country is performing in a rapidly changing global economic environment. This benchmarking also plays a key role in shaping our understanding of Ireland's economic strengths and vulnerabilities.

Among the tools used by the Council to inform this perspective, is the World Competitiveness Ranking, published by the Institute for Management Development (IMD).[1] Each year, the IMD publishes its assessment of the international competitiveness of over 60 economies, ranked across four "factors" (or pillars) and 20 "sub-pillars". This index provides a structured and data-rich assessment of how countries perform across the key dimensions of competitiveness.

The Council published its assessment of the latest set of IMD results in June 2024.[2] Ireland was ranked in 4th place overall (a decline from 2nd in 2023). The Council noted that, despite a relative slowdown in the rate of economic expansion, the Irish economy remains strongly competitive, and as in previous years, small, advanced economies dominated the top rankings.

Although international indices such as the IMD World Competitiveness Ranking provide valuable benchmarks, they are not without limitations. They rely on standardised methodologies to ensure comparability across countries, but that can, at times, obscure important economic specificities. Unique features in economic structures can lead to misleading interpretations of competitiveness, when these indicators are compared across countries.

Figure 1. GNI* and GDP, Ireland, 1995-2023



Source: CSO

[1] The Council also monitors other indicators of competitiveness, including *Business Ready* by the World Bank. Ireland will feature in the next iteration of this report, due later in 2025.

[2] See: NCPC Bulletin 24-4 IMD World Competitiveness Rankings, June 2024.

In Ireland's case, indicators incorporating GDP (as numerator or denominator) can distort perceptions of performance due to the outsized impact of foreign-owned multinational activity. GNI* (Modified Gross National Income) is an adjusted metric developed by the Central Statistics Office (CSO) to account for these effects, specifically excluding items such as the retained earnings of redomiciled firms and depreciation on foreign-owned intellectual property and aircraft leasing (see Figure 1). As a result, GNI* can provide a more meaningful estimate of national income. By recalibrating GDP-denominated indicators using GNI*, this work helps to provide a more accurate account of Ireland's relative international competitiveness.

Last year, the Council reviewed Ireland's ranking in the Global Innovation Index (GII), taking a similar focus on the difference between GDP and GNI*. This followed a recommendation in *Ireland's Competitiveness Challenge 2023* that research be undertaken to provide a more robust view of Ireland's performance across the various dimensions of innovation. That analysis found that, once relevant variables were rescaled in terms of GNI*, Ireland's performance in the GII improved by 10 places, rising from 22nd to 12th overall.[3]

In this present analysis, we find that Ireland's competitiveness performance is altered but only marginally, when we use GNI* (in place of GDP). In our model, Ireland climbs one position overall, with improved scores under the *Economic Performance*, *Business Efficiency*, and *Infrastructure* pillars. The broader value of this analysis is that it highlights the need to interpret international indices critically and in context. For this reason, it is important to engage actively with the construction of these indices, understanding their underlying assumptions, and, where necessary, supplementing them with alternative analyses that better align with national circumstances.

While this assessment focuses on the 2024 IMD rankings, the Council intends to expand its analysis, to refine its methodology and to incorporate a time-series perspective, covering both past and future editions. This will be important, as the impact of recalibrating these rankings using GNI* is likely to vary across years.

METHODOLOGY

The IMD evaluates over 60 economies across four high-level competitiveness pillars, specifically: *Economic Performance*, *Government Efficiency*, *Business Efficiency*, and *Infrastructure*. Each of these four high-level pillars are based on five separate sub-pillars, for a total of 20 individual sub-pillars. These 20 sub-pillars are based on more than 250 individual "ranked" indicators (or criteria), which feed into the 20 sub-pillars, and in turn into the four pillars, to generate overall competitiveness scores and rankings. Using its own proprietary methodology, the IMD World Competitiveness Ranking is a bottom-up exercise, that aggregates across 250 individual indicators. Of these 250 indicators, 30 incorporate a measure of GDP.

These criteria capture a broad range of factors that impact on the relative competitiveness of the economy. It should be noted, however, that some of these factors may reflect structural characteristics rather than true competitive performance. Indicators such as arable land area, population or market capitalisation, tend to favour larger countries, despite having relatively limited relevance for smaller and/or service-based economies, such as Ireland. For instance, in terms of stock market capitalisation as a percentage of GDP, Ireland ranks 50th. This, however, does not provide an accurate reflection of the capacity of Irish-resident firms to access capital markets, as many of these firms are listed abroad. As a consequence, this will understate Ireland's ranking under the *Business Efficiency* pillar.

In this analysis, we focus specifically on the impact of rescaling the indicators based on GDP, replacing them with GNI*, which offers a more accurate reflection of domestic economic capacity. To do this, we need to develop our baseline model of the IMD World Competitiveness Ranking.[4] This involves collating data on each of the underlying criteria that comprise the index, before replicating the IMD methodology based on the available information. First, the raw data values for each individual criterion are standardised across all countries, using z-scores. These z-scores are then averaged at the sub-pillar level for each country and are then normalised across all sub-pillars and countries (on a 0 to 100 scale). This facilitates a sub-pillar ranking. These sub-pillar scores are then averaged and normalised to determine pillar scores.

[3] See: NCPC Bulletin 24-1 Re-estimating Ireland's International Innovation Performance, March 2024.

[4] More information on the IMD's methodology can be found here.

At this stage of the analysis, we find that replication based solely on unweighted averages does not always closely align with the published results. The use of individual weights at the indicator level is a common strategy used in the construction of composite indices.[5] The specific weights used in respect of each individual data point (or criterion) when aggregating are not disclosed, and are part of the IMD's proprietary methodology. To derive suitable indicator weights and improve our replication model, we employ a regression-based approach to determine empirical weights, using the published IMD scores and our standardised criteria values for each country. We then apply these weights when aggregating criteria into sub-pillar averages and follow the same steps regarding aggregation and normalisation to estimate sub-pillar, pillar, and overall competitiveness scores.

This regression-based weighting approach also incorporates the directional impact of each indicator, with the sign of each regression coefficient reflecting whether a higher value of that indicator is associated with improved or diminished performance. As a result, the estimated weights account for whether higher or lower values are more desirable, ensuring that the aggregated sub-pillar and pillar scores accurately reflect the intended direction of competitiveness for each criterion.[6]

We then identify those criteria that depend on, or are informed by, estimates of GDP. These criteria are res-estimated using GNI*. Our baseline model is then adjusted to account for these changes, with substitutions made in respect of the 30 criteria which contain GDP. We then recalibrate sub-pillar, pillar and overall competitiveness scores, to determine the impact of these changes on Ireland's competitiveness performance, relative to our baseline model. We refer to three sets of figures:

(1) The published IMD Rankings, based on its proprietary methodology;
(2) The NCPC's baseline estimation of these rankings, using the same source data and the replication of the IMD methodology where practicable, and supplemented by the use of regression-based weighting;
(3) The NCPC's GNI* adjusted figures, based on (2).

Figure A1 in the Appendix provides an overview of our approach.

RESULTS

Overall, we find that Ireland's competitiveness performance is robust to the re-assessment of affected criteria in terms of GNI*. Specifically, we find that Ireland's competitiveness ranking is one position higher when GNI* is used in our baseline model. As shown in Table 1, the most significant improvement is in *Economic Performance* (up seven positions), followed by *Infrastructure* (up two positions). Ireland's score improves in all but *Government Efficiency* which translates into a two-position decline).

Table 1: Rankings – IMD, NCPC Baseline, and GNI* Model

Pillar	IMD	NCPC		Change in Score: Baseline vs. GNI*
		Baseline	GNI* Model	
Overall	4th	5th	4th	+3.7%
Economic Performance	10th	9th	2nd	+23.6%
Government Efficiency	6th	6th	8th	-7.8%
Business Efficiency	3rd	3rd	3rd	+0.4%
Infrastructure	17th	16th	14th	+4.3%

Source: NCPC based on IMD. Note: "IMD" refers to the IMD's published rankings; "Baseline" refers to the Council's estimated replication of IMD rankings; "GNI* Model" refers to the re-calibration of the NCPC baseline, substituting GNI* for Irish GDP. There was a substitution in respect of 30 GDP-affected indicators, including 16 under Economic Performance, six under Government Efficiency, two under Business Efficiency, and six under Infrastructure. IMD rankings and based on its proprietary methodology, while the NCPC Baseline rankings represent the NCPC's replication of these IMD rankings, using the same source data, and a regression-based approach to determining indicator weights in aggregation.

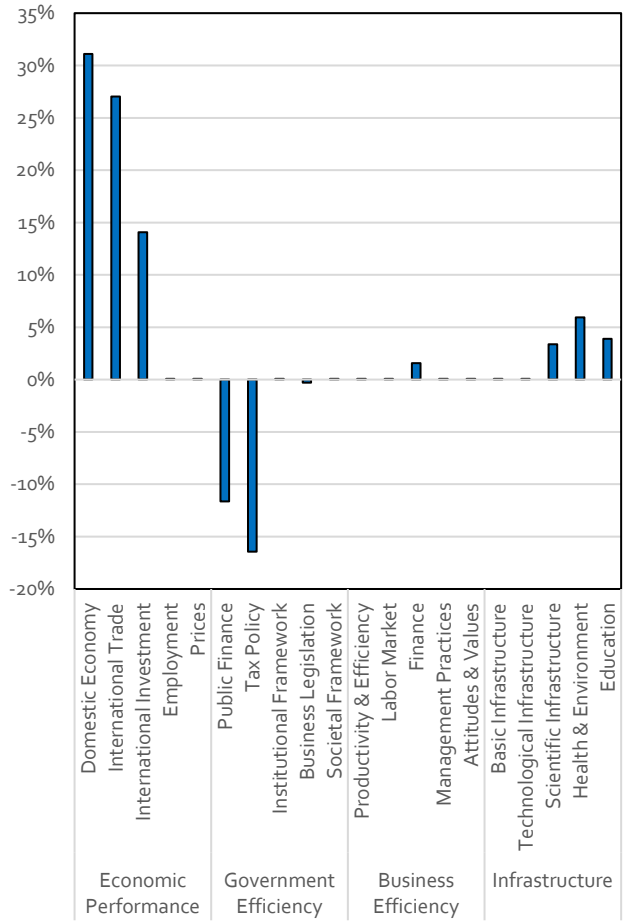
The improvements under *Economic Performance* reflect a more accurate alignment of GDP-based indicators with the true scale and dynamics of Ireland's domestic economy, achieved through the use of GNI* in place of GDP. The gains under Infrastructure were driven by improved ratios in R&D and environmental metrics, while the decline in *Government Efficiency* reflects that fiscal indicators, such as the tax burden and public debt sustainability, are weaker when recalculated using GNI*.

[5] See the Council's previous work in replicating the GII: NCPC Bulletin 24-1 Re-estimating Ireland's International Innovation Performance, March 2024.

[6] This regression-based approach is consistent with practices in composite index validation, as seen elsewhere (e.g., see: Ju & Sohn, 2014; Alemu, 2022; OECD, 2008).

These dynamics can be seen in more detail in Figure 2, which shows the net change in sub-pillar score for each of the 20 individual sub-pillars.[7] The most significant improvements are under Domestic Economy, International Trade, and the International Environment. This reflects improvements at the criterion level, in terms of the relative strength of growth in GNI* in 2023 compared to GDP (which contracted), as well as improvements in trade ratios and the relative strength of the current account balance. The deterioration under Public Finance and Tax Policy reflects a deterioration in Ireland's fiscal profile once fiscal metrics are expressed over a smaller income base (GNI* rather than GDP).

Figure 2: Impact of GNI* substitution on 20 sub-pillar scores



Source: NCPC based on IMD

It is important to note that while GNI* provides a more accurate measure of domestic income, it is not a universally appropriate substitute for GDP in this index. Next, we assess an alternative specification of the index, where only a sub-set of the GDP dependent criteria are expressed in terms of GNI*. We retain GDP as the denominator where it is conceptually appropriate to do so, particularly for indicators related to trade and investment flows. In the case of trade, using GNI* as the denominator would involve comparing gross trade flows to a reduced income base that excludes much of the activity driving those flows, thereby inflating trade ratios. In this case, we find that Ireland's overall ranking is unchanged relative to our baseline model (i.e. at 5th place). This will be addressed in more detail in future work.

CONCLUSION

This Bulletin demonstrates how rankings of global competitiveness can be materially influenced by the choice of macroeconomic aggregate. In Ireland's case, GDP substantially inflates the denominator of key ratios, understating performance in some areas, such as investment intensity, while overstating performance in others, like debt sustainability. As a standalone indicator, GDP provides a potentially misleading view of the size of the domestic economy. This can significantly distort cross-country comparisons for an economy like Ireland, which has an atypical statistical profile due to the scale of its multinational activity. Our analysis addresses the unique feature of the Irish economy by re-calibrating this index using GNI*, thereby producing a more informative profile of Ireland's competitiveness strengths and vulnerabilities.

Overall, we find that Ireland's competitiveness performance is altered but only marginally, when we use GNI* (in place of GDP). In our model, Ireland climbs one position overall with improved scores under the *Economic Performance*, *Business Efficiency*, and *Infrastructure* sub-pillars. These changes reflect improvements in comparability and accuracy, and reveal the sensitivity of the index to definitional choices, particularly when indicators are expressed as ratios of headline macroeconomic aggregates.

For policy-makers, these findings reinforce the importance of choosing contextually appropriate metrics in international benchmarking exercises. They also highlight the need to ensure that cross-country comparisons account for structural differences in economic measurement (especially for small, open economies like Ireland). This Bulletin sets out a method for generating more meaningful benchmarking, that facilitates a better informed, context-sensitive approach to policy-making.

[7] It is worth noting that some sub-pillar scores change despite no direct substitution of indicators within them. This is due to the normalization process used in constructing the index, where changes in one country's scores (even in unrelated sub-pillars) can affect the relative positioning and scaled values of others.

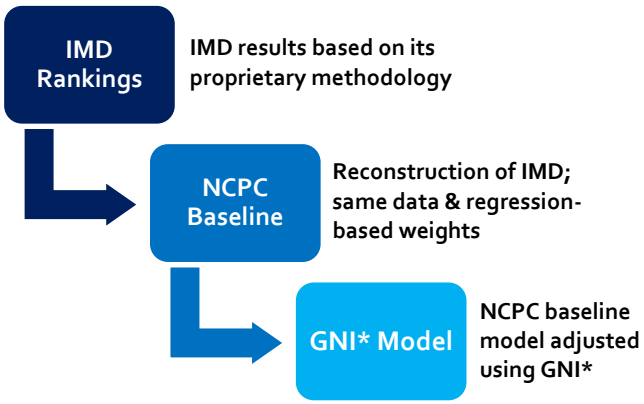
While this assessment focuses on the 2024 IMD rankings, the Council intends to expand its analysis, to refine its methodology and to incorporate a time-series perspective, covering both past and future editions. This will be important, as the impact of recalibrating these rankings using GNI* is likely to vary across years.

The NCPC reports to An Taoiseach and the Government, through the Minister for Enterprise, Trade and Employment, on the key competitiveness and productivity issues facing the Irish economy and makes recommendations to Government on how best to address these issues. The latest NCPC publications can be found at: www.competitiveness.ie.

This Bulletin has been issued by the Chair, Dr Frances Ruane, and was prepared by Dr. Keith Fitzgerald and Dr. Dermot P. Coates in the NCPC Secretariat.

APPENDIX

Figure A1: Overview of Council's Approach to Replicating IMD Rankings



Source: NCPC.