BENCHMARKING NORTHERN IRELAND'S COMPETITIVENESS AGAINST SMALL ADVANCED ECONOMIES

Thomas Byrne – Analytical Services, Department for the Economy

MAY 2017

Department for the Economy
www.economy-ni.gov.uk

Contents

1. Introduction

With the draft Industrial Strategy for Northern Ireland outlining a vision of being one of the most competitive small advanced economies, this research seeks to identify which small advanced economies are most relevant and how competitive Northern Ireland is compared with them.

1.1 Background and Context

Policy Context

Small economies do not have the scale and market pull of larger economies, and therefore need to ensure they are internationally competitive in other areas. This is recognised in the Northern Ireland Economic Strategy (NIES), published in March 2012, which identified an overall goal to "improve economic competitiveness."[1] The NIES was an outward looking document, underpinned by a comprehensive review of global best practice in economies development and two accompanying papers looking at key lessons from international best practice[2] and specific best practice policies and programmes in place.[3] A total for four research projects underpinned this work:

- Building Economic Competitiveness: Lessons from Small Peripheral European Economies by the Cambridge Centre for Business Research and Oxford Economics.[4] This research focused on best practice in the Republic of Ireland, Finland, Estonia and Sweden;
- Productivity, Innovation and Competitiveness in Small Open Economies by Bradford University School of Management, Manchester Business School and University College Cork.[5] This provided an assessment of the Republic of Ireland, Singapore and New Zealand;
- The Changing Face of Innovation Policy: Implications for the Northern Ireland Economy by University of Cambridge.[6] This work identified regions within Germany, Italy, Netherlands, Finland and Sweden; and
- Promoting Investment and Increasing Employment among the Economically Inactive by Edinburgh Napier University.[7] This assessed approaches in Australia, Belgium, Denmark, Finland, Germany, Netherlands, New Zealand, Slovenia, Spain, United States and Great Britain.

In addition to these projects, further research was taken forward as part of the Independent Review of Economic Policy (IREP) in 2009 looking at Global Best Practice in Productivity Improvement: Lessons for Northern Ireland.[8] This focused on economic development approaches in Singapore, Finland,

[1] https://www.northernireland.gov.uk/publications/northern-ireland-economic-strategy
[2] https://www.northernireland.gov.uk/sites/default/files/publications/nigov/deti-research-agenda-best-practice-paper.pdf
[3] https://www.northernireland.gov.uk/sites/default/files/publications/nigov/deti-research-agenda-best-practice-annexe.pdf
[4] https://www.economy-ni.gov.uk/publications/building-economic-competitiveness
[5] https://www.economy-ni.gov.uk/publications/productivity-innovation-and-competitiveness-small-open-economies
[6] https://www.economy-ni.gov.uk/publications/changing-face-innovation-policy-implications-northern-ireland-economy
[7] https://www.economy-ni.gov.uk/publications/promoting-investment-and-increasing-employment-among-economically-inactive
[8] https://www.economy-ni.gov.uk/publications/independent-review-economic-policy

Republic of Ireland, Sweden, Costa Rica and Portland, Oregon. These five projects in total provided the evidence base on international best practice used to develop the NIES.

More recently, a consultation on an Industrial Strategy for Northern Ireland was published in January 2017. It continues an outward-looking approach, putting forward a vision to turn Northern Ireland into one of the world's most innovative and competitive small advanced economies.[9] Meeting this ambition requires understanding who these economies are and how competitive Northern Ireland is against them. This report, alongside additional research being carried out by Landfall Strategy Group, delivers an up-to-date evidence base on competitiveness in Northern Ireland and other small advanced economies.[10]

Northern Ireland Competitiveness Reports

Competitiveness reports such as those produced by the World Economic Forum (WEF)[11] and the International Institute for Management Development (IMD)[12] provide a wealth of information on how small economies compare internationally and allow economic policy makers to understand where their relative strengths and weaknesses are. As a region, Northern Ireland does not feature in these national assessments and thus two ad-hoc competitiveness reports have been produced by the Economic Advisory Group (EAG).

The first of these, published in 2013, developed a Competitiveness Index for Northern Ireland by replicating the WEF approach.[13] This provided comparable information against 144 countries, and found that Northern Ireland ranked 42nd, above economies such as Italy, Turkey and Portugal but still below most advanced economies. More recently, the EAG has developed a Competitiveness Scorecard for Northern Ireland published in 2016.[14] The work is based on the approach taken in the Republic of Ireland by the National Competitiveness Council (NCC) covering over 150 indicators. It finds that economic competitiveness was below average across many of the pillars and indicators.

This report does not seek to duplicate the approaches taken in either of these earlier reports, and instead offers an alternative perspective on benchmarking Northern Ireland's competitiveness. It has developed a competitiveness framework for small advanced economies which brings together key elements of both the 2016 Competitiveness Scorecard (based purely on factual data) and 2013 Competitiveness Index (providing rankings and scores for economies). There are inherently trade-offs involved in any approach to measuring a comprehensive and complex topic such as competitiveness, and the framework and approach utilised in this report is outlined in Chapter 3.

1.2 Aims and Objectives

The overall aim of this research is to understand how Northern Ireland's competitiveness compares against relevant small advanced economies which share similar characteristics or challenges and represent best practice in economic competitiveness. Specific objectives are to:

---

[9] https://www.economy-ni.gov.uk/sites/default/files/consultations/economy/industrial-strategy-ni-consultation-document.pdf
[10] Skilling, D. (2016) *Economic Context and Policy Approaches in Small Advanced Economies*
[11] http://reports.weforum.org/global-competitiveness-report-2015-2016/
[12] http://www.imd.org/wcc/news-wcy-ranking/
[13] http://eagni.com/wp-content/uploads/2015/06/Competitiveness-Index-for-Northern-Ireland-2013.pdf
[14] http://eagni.com/wp-content/uploads/2016/08/EAG-Competitiveness-Summary-Report.pdf

a) Review the competitiveness performance of small advanced economies and identify the most relevant benchmarks for Northern Ireland;

b) Develop an appropriate methodology for benchmarking Northern Ireland on key competitiveness metrics against the selected small advanced economies;

c) Assess how competitive Northern Ireland's economy is compared with small advanced economies and identify comparative strengths and weaknesses; and

d) Identify potential areas for future research to build more comprehensive and regular sources of international competitiveness benchmarking for Northern Ireland.

1.3 Research Methodology

The methodology employed for this research is desk-based, with a focus on data analysis and reviewing publicly available documents and reports. Information from existing competitiveness reports has been assessed and a custom dataset of competitiveness metrics for small advanced economies has been developed. Peer review and insight has been provided by David Skilling of Landfall Strategy Group as part of his parallel research on economic strategy lessons for Northern Ireland from small advanced economies. [15]

[15] http://landfallstrategy.com/about/david-skilling/

2. Identifying Small Advanced Economies

A review of successful small advanced economies which share some similarities with Northern Ireland in terms of characteristics or challenges has identified Singapore, Finland, Estonia, Republic of Ireland, Denmark, New Zealand, Israel and Scotland.

2.1 Selection Criteria

There is no single small economy which shares the exact circumstances of Northern Ireland and can provide a direct comparator to assess competitiveness with. However, focusing on those economies which represent best practice whilst sharing some similar characteristics or challenges – be it around size, scale, structure, peripherality or other challenges – can provide a tailored group of comparators with which Northern Ireland can most accurately benchmark itself against.

There are many potential comparators for Northern Ireland to consider; for example, the most recent WEF Global Competitiveness Report includes rankings for 140 countries. In order to identify those that represent the best options, a four-stage assessment has been carried out:

1. **Competitiveness:** the focus of this work therefore is on best practice comparators and only high-performing economies should be included. As Northern Ireland ranked 42nd in the 2013 Competitiveness Index, only economies which are in the top 40 most competitive economies based on their average ranking across both the WEF and IMD reports are included;

2. **Size:** economies which have a relatively small domestic population and economy are most likely to face similar challenges to Northern Ireland around lack of critical mass and domestic demand. Two key metrics have been considered here; countries with a population of more than 10 million persons *or else* an economy which is larger than $500,000m (which is around ten times the size of Northern Ireland) have been removed as potential comparators;

3. **Peripherality:** Northern Ireland's location at the edge of Europe is a key contextual factor which any benchmark location needs to share in common. This peripherality can be either due to physical location or lack of economic integration with nearby countries. Economies which are small and competitive but benefit from strategic locations within their regional markets are therefore not included; and

4. **Relevance:** final consideration has also be given to *how* economies have achieved their economic success to ensure those which are included represent appropriate comparators for Northern Ireland. This includes assessing information on global financial centre rankings and oil wealth, as well as broader evidence available from previous best practice research.

This section takes each of these criteria in turn to eventually narrow the group of comparators down to the most relevant for Northern Ireland.

2.2 Developing a Shortlist

Competitiveness

The two main reports on global competitiveness are provided by the WEF and IMD. Whilst these are both essentially measuring the same thing, the differences in approach and methodology mean that their rankings for countries can vary. In order to give a fuller assessment of best practice comparators, rankings for the 61 economies which are included in both the WEF and IMD measures have been averaged, and those which are outside the top 40 excluded.[16] The economies which have not been taken forward are shown in Table 1, leaving a total of 37 economies for further consideration.[17]

Table 1: Economies Excluded on Competitiveness Ranking

Economy	IMD Rank (2016)	WEF Rank (2015/16)	Average
Latvia	37	44	40.5
Indonesia	48	37	42.5
Kazakhstan	47	42	44.5
Philippines	42	47	44.5
Russia	44	45	44.5
Turkey	38	51	44.5
India	41	55	48
South Africa	52	49	50.5
Mexico	45	57	51
Romania	49	53	51
Slovenia	43	59	51
Bulgaria	50	54	52
Slovak Republic	40	67	53.5
Hungary	46	63	54.5
Colombia	51	61	56
Jordan	53	64	58.5
Peru	54	69	61.5
Brazil	57	75	66
Croatia	58	77	67.5
Greece	56	81	68.5
Ukraine	59	79	69
Argentina	55	106	80.5
Mongolia	60	104	82
Venezuela	61	132	96.5

Sources: WEF Competitiveness Index 2015/16; IMD World Competitiveness Yearbook 2016

[16] The WEF report includes 140 countries whereas the IMD only includes 61. However, the 79 economies not included in the IMD assessment are generally lower income or less developed economies which would not be seen as best practice comparators for Northern Ireland anyway.
[17] Three countries (Saudi Arabia, Kuwait and Bahrain) which are in the WEF top 40 rankings are not covered by the IMD report, leaving 37 countries for further consideration. These countries would all have been excluded later in the assessment due to their reliance on oil wealth as a driver of economic success.

Size

The two key metrics considered to assess the size of potential comparators is population (less than 10 million persons) and GDP (less than $500bn). Out of the 37 economies shortlisted at this stage, 14 of these economies are significantly larger than Northern Ireland on both of these measures. Table 2 presents this information in order of average competitiveness ranking. A further five economies meet the market size criteria but are too large in terms of their populations (Table 3).

Table 2: Economies Excluded on Size (Population and GDP)

Economy	Ave Competitiveness Ranking (2015/16)	Population (millions, 2014)	GDP (US$ billions, 2014)
United States	3	318.9	17,348,072
Germany	8	81.0	3,868,291
Netherlands	6.5	16.9	879,319
Canada	11.5	35.5	1,783,776
United Kingdom	14	64.6	2,990,201
Taiwan	14.5	23.5	530,038
Japan	16	127.1	4,596,157
Australia	19	23.5	1,454,675
China	26.5	1,364.3	10,351,112
France	27	66.5	2,829,192
Republic of Korea	27.5	50.4	1,411,334
Spain	33.5	46.5	1,381,342
Poland	37	38.0	544,982
Italy	39	60.8	2,138,541

Sources: WEF Competitiveness Index 2015/16; IMD World Competitiveness Yearbook 2016; World Bank

Table 3: Economies Excluded on Size (Population Only)

Economy	Ave Competitiveness Ranking (2015/16)	Population (millions, 2014)	GDP (US$ billions, 2014)
Malaysia	18.5	29.9	338,104
Czech Republic	29	10.5	205,270
Thailand	30	67.7	404,320
Chile	35.5	17.8	258,733
Portugal	38.5	10.4	230,117

Sources: WEF Competitiveness Index 2015/16; IMD World Competitiveness Yearbook 2016; World Bank

Applying these size criteria brings the 37 countries down to a potential list of 18 small competitive advanced economies for further consideration. Of these 18 economies, four of them (Switzerland, Belgium, Sweden and Norway) did not meet the market size criteria but have been retained due to their strong competitiveness performance (with their large markets partly being driven by their economic success). An overview of these four economies is provided in Table 4.

Table 4: Economies Retained Which Don't Meet Criteria

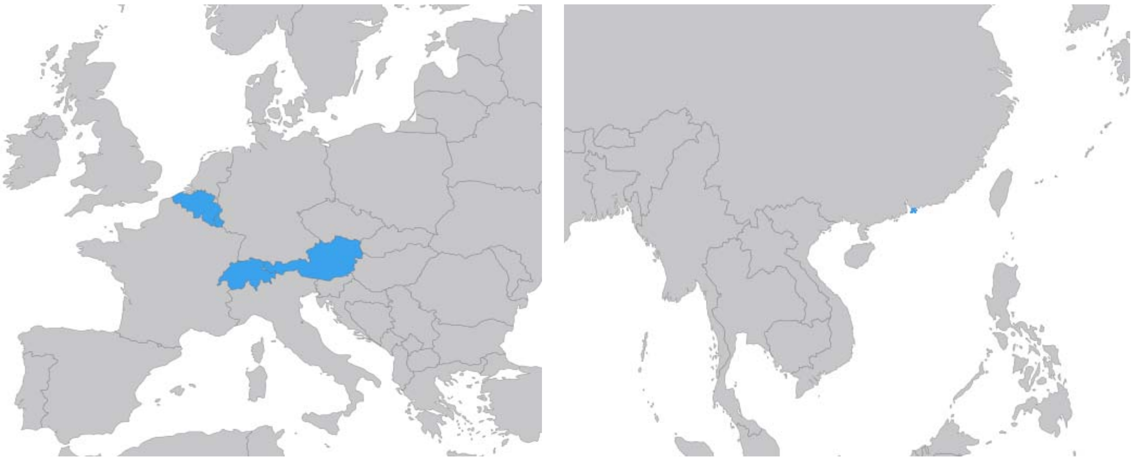
Economy	Ave Competitiveness Ranking (2015/16)	Population (millions, 2014)	GDP (US$ billions, 2014)
Switzerland	1.5	8.2	701,037
Sweden	7	9.7	571,101
Norway	10	5.1	500,519
Belgium	20.5	11.2	531,235

Sources: WEF Competitiveness Index 2015/16; IMD World Competitiveness Yearbook 2016; World Bank

Peripherality

The ability with which small economies can easily access nearby major strategic markets is a key factor in the policy approaches they must implement to be succeed. Figure 1 highlights that there are five small economies which hold strategically advantageous positions within their wider regions and thus do not face the same kind of challenges as Northern Ireland. Within Europe (left chart) Belgium and Luxembourg may be small, but they are bordered by Germany, France and Netherlands and their firms thus have direct access to combined markets which are cumulatively worth over US$7.5tn. An advantageous location is also held by Switzerland (bordered by France, Germany and Italy) and Austria (bordered by France, Italy and four more countries). Within Asia (right chart), Hong Kong is a small competitive economy but benefits from being part of mainland China (market size of over US$10tn) where firms can establish a base to serve the wider region. Removing these five economies leaves a total of 13 for further consideration.

Figure 1: Economies Excluded on Location



Source: amcharts.com

Relevance

Having used a largely quantitative and factual approach thus far, this final criterion seeks to assess just how relevant the remaining 13 small advanced economies really are for Northern Ireland using a variety of information. Six of these are not taken forward to the final list (see Table 5 for an overview) and the following paragraphs will consider each in turn to explain why.

Whilst Norway is a competitive small advanced economy, it has benefitted from significant natural resources[18] and is amongst the leading energy exporters in the world[19] meaning that a large part of its wealth is reliant on oil in particular.[20] Norway is therefore not as relevant a benchmark as some other countries given that its economic model and drivers of success is vastly different to what government policy in Northern Ireland can pursue.

Sweden is a highly competitive economy but operates at a much larger scale than Northern Ireland due to its larger population and market size. Sweden was thoroughly reviewed as part of the NIES best practice research and this showed that although there were useful lessons for Northern Ireland, particularly around its approach on research and innovation, there was less relevance in Sweden's broader approach to competitiveness as it is a larger and more well-established economy with much of its development having taken place some decades ago. Based on both its larger size and the available body of evidence that has already taken place, Sweden is not included as a relevant small economy benchmark for Northern Ireland.

Iceland has managed to develop itself into a small competitive economy. It transformed itself from having an economy based around fishing, energy and aluminium to becoming a leading international financial centre. However, this success was narrowly focused on financial services (it ranks relatively poorly on both innovation and business sophistication pillars in the WEF report) and much of Iceland's economic recovery has been linked to the government's macroeconomic policy[21] and a devalued currency.[22] Northern Ireland is not a major financial centre and does not have control over monetary policy tools, and therefore looking to Iceland as a model of economic competitiveness is not ideal. This was a conclusion in the previous NIES best practice research which considered Iceland but not pursue further due to the lack of overlap between Iceland's model and Northern Ireland. Whilst Iceland is therefore not taken forward for consideration now, there may still be merit in considering it further at a later date given the success it has achieved despite its size and peripheral location.

Lithuania has improved its economy in recent years and, whilst it does rank in the top 40 most competitive economies overall, there are concerns over how much of a best practice example it really is for Northern Ireland. GDP per capita for example is less than half the figure in Northern Ireland. Although there are signs that Lithuania is gradually shifting towards a knowledge-based economy, particularly in biotechnology and IT,[23] much of this has been catching-up with existing advanced economies with cheap, well-qualified labour and adapting existing technologies from elsewhere.[24] Lithuania is therefore not seen as a good best practice exemplar for Northern Ireland at this still relatively early period in its development, but indeed may become so as it continues to develop.

The final two economies not included as relevant small economy comparators are Qatar and the United Arab Emirates (UAE), where a key issue is their reliance on oil wealth. Both are members of the Organisation of the Petroleum Exporting Countries (OPEC)[25] and their economic competitiveness and wealth are closely interlinked with their natural resources. This oil wealth has allowed them to invest

[18] https://www.gecf.org/countries/norway
[19] https://www.iea.org/countries/membercountries/norway/
[20] http://www.economist.com/news/special-report/21570842-oil-makes-norway-different-rest-region-only-up-point-rich
[21] http://www.imf.org/external/pubs/ft/survey/so/2015/car031315a.htm
[22] http://www.worldfinance.com/infrastructure-investment/government-policy/failing-banks-winning-economy-the-truth-about-icelands-recovery
[23] http://www.euro-challenge.org/wordpress/wp-content/uploads/2014/11/Lithuania-2015.pdf
[24] http://ec.europa.eu/europe2020/pdf/csr2015/cr2015_lithuania_en.pdf
[25] http://www.opec.org/opec_web/en/about_us/24.htm

significantly in infrastructure (ranking second and third in the Global Infrastructure Investment Index)[26] and thus move up the competitiveness rankings. Northern Ireland therefore shares very little in common with Qatar and UAE with due to its lack of natural resources and oil wealth.

Table 5: Economies Excluded on Relevance

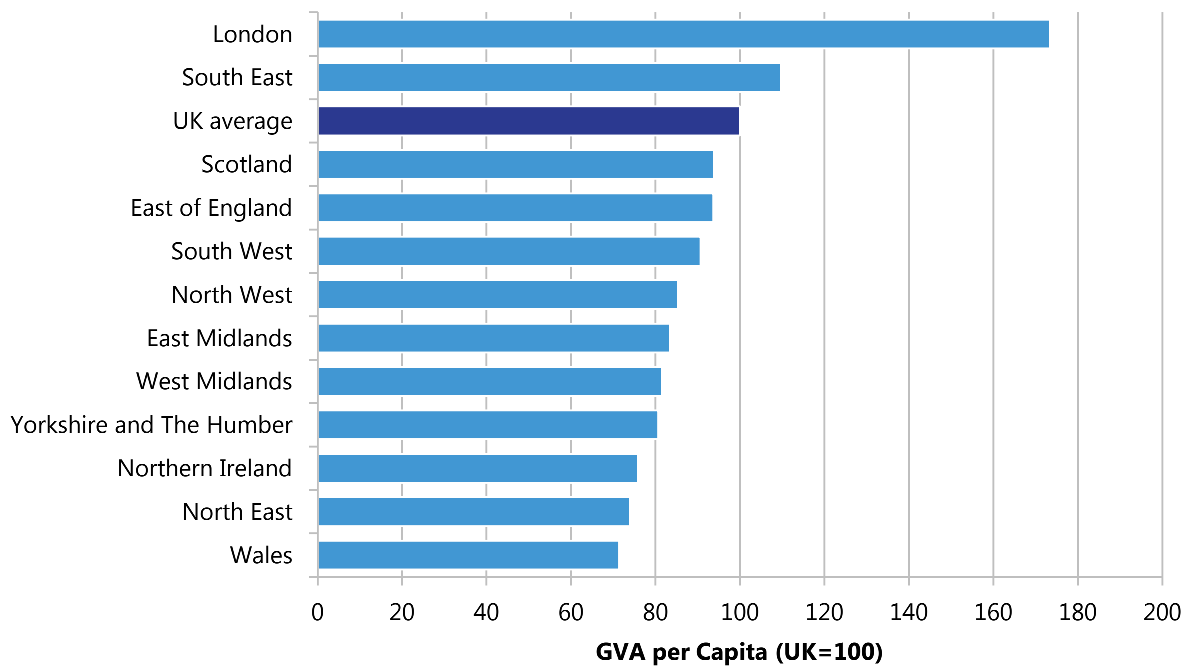
	Ave Competitiveness Ranking (2015/16)	Global Financial Centre Ranking	OPEC Member
Sweden	7	37	No
Norway	10	65	No
Iceland	26	85	No
Lithuania	33	-	No
Qatar	13.5	35	Yes
UAE	16	13	Yes

Sources: WEF Competitiveness Index 2015/16; IMD World Competitiveness Yearbook 2016; Global Financial Centres Index 2016

UK Regional Economies

Thus far only national economies have been considered as potential comparators for Northern Ireland, but other UK regions also present potential options for benchmarking competitiveness. Whilst competitiveness measures are not available at a regional level, an overall measure of economic prosperity (Gross Value Added per capita) is presented in Figure 2.

Figure 2: UK Regional GVA per Capita (UK=100, 2014)



Source: ONS Regional GVA

[26] https://www.arcadis.com/media/3/7/E/%7B37E96DF6-82D5-45A6-87D8-5427637E736D%7DAG1015_GIII%202016_ONLINE%20FINAL_SINGLE%20PAGES.pdf

2.3 Selected Economies

Based on the criteria and assessment outlined above, a total of eight small advanced economies are put forward as relevant benchmarks for Northern Ireland to track its overall economic competitiveness against. Figure 3 presents an overview of the location of these economies.

Figure 3: Overview of Selected Economies

Source: amcharts.com

In addition to Northern Ireland, five European economies (top left chart) have been identified as relevant benchmarks: the Republic of Ireland; Scotland; Denmark; Finland; and Estonia. A further three economies have been identified elsewhere in the world: Israel (top right chart); Singapore (bottom left chart) and New Zealand (bottom right chart). An overview of key competitiveness and economic metrics for each of these is presented in Table 6. This section will briefly consider each in turn.

Table 6: Competitiveness Overview of Peripheral European Economies

	Ave Competitiveness Ranking (2015/16)	Population (millions, 2015)	GDP (US$ billions, 2014)	Financial Centre Ranking
Denmark	9	5.6	346.1	49
Estonia	30.5	1.3	26.5	78
Finland	14	5.5	272.2	60
Israel	24	8.2	305.7	25
New Zealand	16	4.5	200.1	-
Northern Ireland	n/a	1.9	51.0	-
Rep of Ireland	15.5	4.6	250.8	39
Scotland	n/a	5.4	183.1	61
Singapore	3	5.5	306.3	3

Sources: World Bank; WEF Competitiveness Index 2015/16; IMD World Competitiveness Yearbook 2016; Global Financial Centres Index 2016; Eurostat GDP Estimates

Note: Northern Ireland and Scotland GDP converted from Euro to USD at exchange rate of 1.06

Denmark

All three Scandinavian countries rank highly on international competitiveness and have been able to combine high incomes with low inequality.[27] Having already considered Sweden and Norway earlier, Denmark is seen as a better overall benchmark of economic competitiveness for Northern Ireland. Denmark is a highly competitive economy and is much closer in size to Northern Ireland and many of the other small advanced economies being considered. It is geographically a much smaller state than either Sweden or Norway with one main capital city (Copenhagen) supported by a smaller but still significant city (Aarhus) which again parallels with Northern Ireland. Despite Denmark's economic success to date, there are undoubted challenges which it must address, including the need to encourage growth in the economy and implement new structural reforms to provide a balance between inclusiveness and work incentives.[28]

Estonia

Whilst Estonia still ranks relatively low on GDP per capita, it was often been cited as a best practice exemplar for government economic policies before the economic downturn[29] and is still held up as a technology leader[30] and described as a "country for the future" based on its economic approach.[31] The NIES best practice work found many lessons from Estonia as a small economy has started from a low economic base but achieved much success by adopting best practice policies from elsewhere, particularly Finland. Estonia is still on a journey and still has significant room for improvement, but its experience at closing the gap with (and in some cases overtaking) more well-established advanced economies means that there is real policy relevance here for Northern Ireland.

[27] http://www.economist.com/news/special-report/21570835-nordic-countries-are-probably-best-governed-world-secret-their
[28] http://www.oecd.org/eco/surveys/Denmark-2016-OECD-economic-survey-overview.pdf
[29] http://www.rferl.org/content/article/1078562.html
[30] http://www.economist.com/blogs/economist-explains/2013/07/economist-explains-21
[31] http://www.cato.org/publications/commentary/why-estonia-country-future

Finland

Finland was a key focus country for the NIES best practice research and offered many lessons around increasing Research and Development (R&D) and innovation, building indigenous industries and skills development. Finland is an economy which many others have often looked at enviously with its strong economic competitiveness fundamentals, but is now at a crossroads and its international rankings have been slipping more recently.[32] One of the key challenges facing Finland is how it positions itself following the decline of Nokia and the wider Information Technology (IT) sector.[33] In addition, the decline of the Russian economy – a key export partner – and subsequent EU sanctions have also had a major impact with Finnish sales falling by almost one-half from 2012 to 2015.[34]

Israel

There are aspects of the Israeli economy which are not directly relevant for Northern Ireland. For example, the defence industry drives a large part of Israel's strong research and skills base.[35] The success of entrepreneurship is driven by a unique mindset of stubbornness, resilience and intellectual curiosity.[36] The diamond industry is also a big part of Israel's economy, having become and international trade centre for diamonds to pass through which accounts for a significant volume of diamond jewellery sold around the world.[37] But there is much within Israel that is relevant. Israel has achieved significant success at growing its high-tech and life sciences sectors,[38] both though attracting major investors and developing its own "start-up nation" with a best practice model of attracting Venture Capital (VC).[39] Israel is also a leading R&D centre, with excellent research institutes and highly skilled people.[40]

New Zealand

New Zealand has to face significant location challenges due to being physically isolated from almost all large global markets. To put it in perspective, the distance from Wellington to Melbourne[41] is only slightly shorter than from Belfast to Moscow.[42] This makes all types of international trade and interaction much more difficult, which explains the lack of any global financial centre present. Despite this, New Zealand has still managed to rank amongst the top 20 most competitive global economies. It has also recently been ranked as the most prosperous economy in the world by the Legatum Institute.[43] The previous NIES best practice work assessed New Zealand and found good examples of how government was able to develop a research base in areas of traditional strength such as agri-food and environmental science where it has now become a global leader.

---

[32] http://www.helsinkitimes.fi/finland/finland-news/domestic/13553-finland-falls-four-places-in-major-competitiveness-ranking.html
[33] https://www.theguardian.com/world/2015/apr/15/finland-boom-election-recession-oulu-miracle-timber-nokia
[34] https://www.etla.fi/wp-content/uploads/ETLA-Muistio-Brief-45.pdf
[35] http://www.spiegel.de/international/world/defense-industry-the-business-of-war-in-israel-a-988245.html
[36] http://www.ishitech.co.il/origins.html
[37] http://en.israelidiamond.co.il/news.aspx?boneID=1436
[38] https://ec.europa.eu/jrc/sites/default/files/events/20140120-tto-circle/jrc-20140120-tto-circle-zetelny.pdf
[39] http://www.bbc.co.uk/news/technology-26071818
[40] http://www.insme.org/files/527
[41] http://www.distance.to/Wellington/Melbourne
[42] http://www.distance.to/Belfast/Moscow
[43] http://www.li.com/about/press-releases/new-zealand-is-the-most-prosperous-country-in-the-world

Republic of Ireland

The Republic of Ireland offers the most obvious benchmark for Northern Ireland given that the two share a land border. The "Celtic Tiger" led to rapid economic development with the Republic of Ireland going from being one of poorest EU states in the 1980s to one of the richest in the 2000s.[44] However, the subsequent housing market crash and banking crisis from 2008 onwards led to the government requiring a financial support programme from the European Commission (EC) and International Monetary Fund (IMF) worth around €85bn.[45] The Republic of Ireland exited this programme in 2013 and now has rebounded to become the fastest growing EU economy.[46] Previous best practice research for the NIES has shown that there are many relevant insights from the Republic of Ireland for Northern Ireland, particularly around attracting FDI and ensuring that a small economy at the periphery of Europe can become an export platform for companies.

Scotland

Scotland shares many similarities with Northern Ireland, operating with a devolved government under a broader UK national policy framework. Indeed, the outcomes-based approach to developing the draft Programme for Government in Northern Ireland is similar to that used in Scotland.[47] The Scottish Economic Strategy has set out competitiveness as one of its two overarching goals (alongside tackling inequality) supported by the four key drivers of investment, innovation, internationalisation and inclusive growth.[48] Scotland therefore represents a relevant comparator which has similar ambitions and policy levers as Northern Ireland but starts from a stronger economic position.

Singapore

Singapore has the highest competitiveness ranking of all the selected economies. This is a remarkable achievement given that Singapore was a third-world country with a lack of infrastructure and capital in the 1960s, which then adopted a pro-business approach from the 1970s onwards and subsequently sought to move up the value chain in the 1990s.[49] Whilst there are aspects of the Singaporean economy which are not directly relevant to Northern Ireland, such as its position as a leading global financial centre and its political system, the fact that it has developed so much in a relatively short space of time largely due to government policy decisions means it is a highly relevant comparator. The previous NIES research reported on Singapore and identified many areas of best practice, for example around attracting FDI, taking an international approach to skills development and investing in innovation and R&D.

2.4 Summary

The identification of small advanced economies for Northern Ireland to benchmark its economic performance against has been based on a review of relevant high-level competitiveness metrics. The 140 countries included in the WEF competitiveness report have been assessed against criteria relating

[44] http://www.economist.com/node/3261071
[45] http://www.finance.gov.ie/what-we-do/eu-international/irelands-programme-eu-imf-programme
[46] https://www.weforum.org/agenda/2016/02/europe-s-10-fastest-growing-economies
[47] https://www.northernireland.gov.uk/sites/default/files/consultations/newnigov/pfg-consulation-document.PDF
[48] http://www.gov.scot/Resource/0047/00472389.pdf
[49] https://www.edb.gov.sg/content/edb/en/why-singapore/about-singapore/our-history/1960s.html

to their size (less than 10 million population), competitiveness (ranking in the top 40) and location (peripheral to main markets). This shortlisted 13 potential comparators of which, after further consideration, has been narrowed down to leave the Republic of Ireland, Scotland, Denmark, Finland, Estonia, Singapore, Israel and New Zealand. It must be recognised that there is not a single definitive list of economies which Northern Ireland can learn from; there are many aspects of best practice in other small economies such as Switzerland or Sweden which are relevant even if they are not identified as direct peers. In addition, there will be regional economies which have a more similar set of devolved powers which will be relevant too. There is therefore still a need to monitor and learn from the economic policy approaches in a wider group of small advanced economies not included in this study, as well as identify other regions which might be of interest.

Whilst this shortlist will form the basis of the remainder of this report, ongoing consideration of the comparator list should be given going forward. Iceland, for example, warrants further consideration at a more in-depth level to identify whether it could be included amongst the list. It is also important to recognise that this list is unlikely to remain static over a 10 or 15 year period; some small economies may rapidly improve their competitiveness and thus warrant inclusions, whereas some of those included may decline. This suggests that a watching brief should be kept on those small advanced economies which Northern Ireland should benchmark itself against.

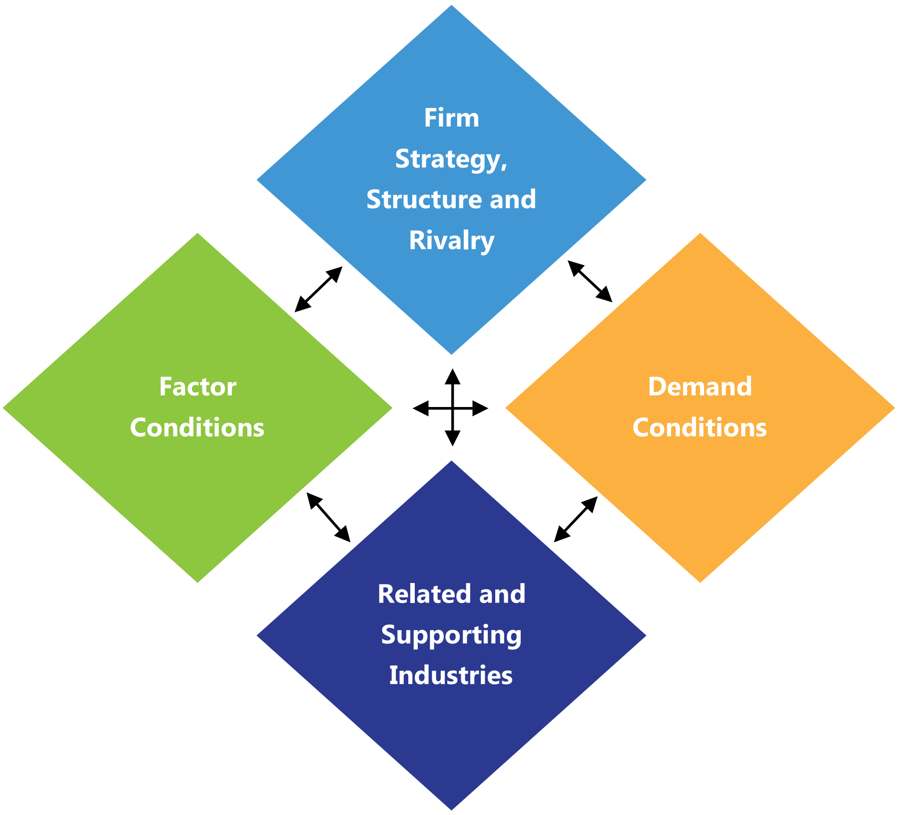
3. Measuring Competitiveness

A competitiveness framework has been developed to measure the performance of small advanced economies across 20 key metrics which reflect their economic outcomes, international engagement, innovation, human capital, labour supply and business environment.

3.1 Competitiveness Theory

The beginning of modern thinking on national economic competitiveness stems from Porter (1990). Porter found than national prosperity is created, not inherited. It does not grow out of a country's natural endowments, its labour pool, its interest rates, or its currency's value. A nation's competitiveness depends on the capacity of its industry to innovate and upgrade. Companies gain advantage against the world's best competitors because of pressure and challenge. They benefit from having strong domestic rivals, aggressive home-based suppliers, and demanding local customers. This work identified four interlinked attributes of an economy which, both individually and collectively as a system, determine national competitiveness (shown in Figure 4).

Figure 4: Porter's Diamond of National Advantage



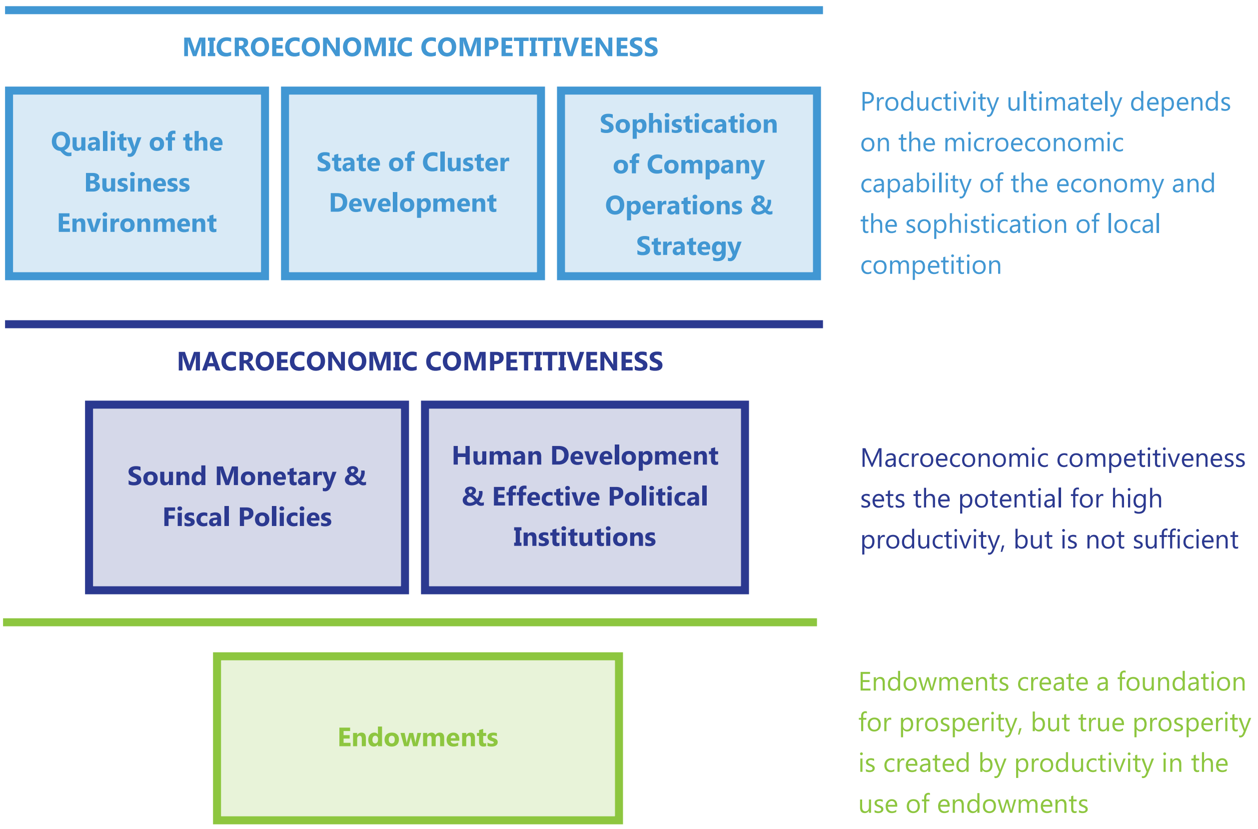
Source: Porter, M. E. (1990) The Competitive Advantage of Nations, Harvard Business Review

These attributes are:

- **Factor Conditions:** The nation's position in factors of production, such as skilled labour or infrastructure, necessary to compete in a given industry;
- **Demand Conditions:** The nature of home-market demand for the industry's product or service;
- **Related and Supporting Industries:** The presence or absence in the nation of supplier industries and other related industries that are internationally competitive; and
- **Firm Strategy, Structure and Rivalry:** The conditions in the nation governing how companies are created, organized, and managed, as well as the nature of domestic rivalry.

This competitiveness framework has gradually evolved over time by the Institute for Strategy and Competitiveness (ISC) at Harvard Business School, which was founded by Michael Porter. The ISC suggest that competitiveness is determined by the productivity by which a location uses its human, capital and natural endowments to create value. Figure 5 presents the framework of competitiveness determinants put forward by the ISC.[50]

Figure 5: Determinants of Competitiveness



Source: Institute for Strategy and Competitiveness, Harvard Business School

[50] http://www.isc.hbs.edu/competitiveness-economic-development/frameworks-and-key-concepts/Pages/drivers-of-competitiveness.aspx

Further descriptions of each of these determinants are outlined in Table 7.

Table 7: Specific Competitiveness Determinants

Determinant	Description
Quality of the Business Environment	The overall quality of the business environment impact company productivity, innovation and growth. The Diamond model is useful for thinking about multiple dimensions of the environment and the way they interact.
State of Cluster Development	Clusters are concentrations of firms in particular fields, including suppliers, supporting services and related institutions. They enable productivity and new business formation.
Sophistication of Company Operations & Strategy	Economic performance depends on the capacity of firms in terms of skills capabilities and management practices.
Sound Monetary & Fiscal Policies	Sound fiscal policy is effective public spending aligned with revenues over time, whilst sound monetary policy delivers low levels of inflation. Overall economic stabilisation means avoiding structural imbalances and cyclical overheating.
Human Development & Effective Political Institutions	Human development requires basic education, health care and equal opportunity. Rule of law delivers property rights, personal security and due process. Political institutions result in stable and effective political and governmental organisations and processes.
Endowments	Endowments, including natural resources, geographical location, population and country size create a foundation for prosperity.

Source: Institute for Strategy and Competitiveness, Harvard Business School

The review of competitiveness theory stresses the importance of productivity (i.e. it's not what you do but how you do it) and reinforces the famous saying "productivity isn't everything, but in the long run it is almost everything" by Krugman (1994). Productivity may be a narrow measure, but it is clearly central to the concept of productivity and therefore this review of theory needs to capture the key factors that influence productivity. ONS (2007) identifies the five factors which interact to underlie long-term productivity performance:

- **Investment** in physical capital – machinery, equipment and buildings. The more capital workers have at their disposal, generally the better they are able to do their jobs, producing more and better quality output;

- **Innovation** is the successful exploitation of new ideas. New ideas can take the form of new technologies, new products or new corporate structures and ways of working. Such innovations can boost productivity, for example as better equipment works faster and more efficiently, or better organisation increases motivation at work;

- **Skills** are defined as the quantity and quality of labour of different types available in an economy. Skills complement physical capital, and are needed to take advantage of investment in new technologies and organisational structures;

- **Enterprise** is defined as the seizing of new business opportunities by both start-ups and existing firms. New enterprises compete with existing firms by new ideas and technologies increasing competition. Entrepreneurs are able to combine factors of production and new technologies forcing existing firms to adapt or exit the market; and

- **Competition** improves productivity by creating incentives to innovate and ensures that resources are allocated to the most efficient firms. It also forces existing firms to organise work more effectively through imitations of organisational structures and technology.

The relevance of these productivity drivers for a region was considered by IREP (2009), which concluded that they were a necessary, but insufficient, framework for regional economic growth as the failed to sufficiently prioritise exports and inward investment as the key drivers at the regional level to grow the economy.

3.2 Existing Reports

This section reviews existing reports by the WEF, IMD, NCC and Global Federation of Competitiveness Councils (GFCC) to identify how they have developed competitiveness theory into quantitative studies which do capture the key factors impacting on competitiveness.

WEF Competitiveness Report

The WEF define competitiveness as the set of institutions, polices, and factors that determine the level of productivity of an economy, which in turn sets the level of prosperity that the country can earn. The WEF makes an annual assessment of the drivers of productivity and prosperity through their Global Competitiveness Index (GCI). This approach formed the basis of the 2013 Competitiveness Index for Northern Ireland carried out by the EAG.

The GCI includes statistical data from internationally recognised agencies, notably the International Monetary Fund (IMF), the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the World Health Organisation (WHO). A large proportion of the data comes from the WEF's annual Executive Opinion Survey to capture concepts that require a more qualitative assessment, or for which comprehensive and internationally comparable statistical data are not available.

The GCI combines 114 indicators that capture concepts that matter for productivity. These indicators are grouped into 12 pillars (Figure 6): institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication, and innovation. Although all of the pillars above will matter to a certain extent for all economies, it is clear that they affect different economies in different ways. These are, in turn, organised into three sub-indexes, in line with three main stages of development: basic requirements, efficiency enhancers, and innovation and sophistication factors.

Figure 6: WEF Competitiveness Pillars

Source: WEF Global Competitiveness Report

In line with well-known economic theory, the GCI assumes that, in the first stage, the economy is factor driven and countries compete based on their factor endowments – primarily unskilled labour and natural resources. Maintaining competitiveness at this stage of development hinges primarily on well-functioning public and private institutions (1st pillar), a well-developed infrastructure (2nd pillar), a stable macroeconomic environment (3rd pillar), and a healthy workforce that has received at least a basic education (4th pillar).

As a country becomes more competitive, productivity will increase and wages will rise with advancing development. Countries will then move into the efficiency-driven stage of development, when they must begin to develop more-efficient production processes and increase product quality because wages have risen and they cannot increase prices. At this point, competitiveness is increasingly driven by higher education and training (5th pillar), efficient goods markets (6th pillar), well functioning labour markets (7th pillar), developed financial markets (8th pillar), the ability to harness the benefits of existing technologies (9th pillar), and a large domestic or foreign market (10th pillar).

Finally, as countries move into the innovation-driven stage, wages will have risen by so much that they are able to sustain those higher wages and the associated standard of living only if their businesses are able to compete using the most sophisticated production processes (11th pillar) and by innovating new ones (12th pillar).

In calculating the GCI, the three subindexes (basic requirements, efficiency enhancers, and innovation and sophistication factors) are given different weights, depending on each economy's stage of development as proxied by its GDP per capita and the share of exports represented by raw materials. For example, in the case of Burundi – a country in the first stage of development – the score in the basic requirements subindex accounts for 60% of its overall GCI score, while it represents just 20% of the overall GCI score of Sweden, a country in the third stage of development. The computation of the GCI is based on successive aggregations of scores from the indicator level (i.e. the most disaggregated level) all the way up to the overall GCI score. To make the aggregation possible, the indicators are converted to a 1-to-7 scale in order to align them with the survey results.

IMD Competitiveness Yearbook

The IMD World Competitiveness Centre believes that competitiveness determines how countries, regions and companies manage their competencies to achieve long-term growth, generate jobs and increase welfare. The IMD has developed the World Competitiveness Yearbook. This annual publication ranks and analyses the ability of nations to create and maintain an environment in which enterprises can compete. This means that they assume that wealth creation takes place primarily at enterprise level. However, they do note that enterprises operate in a national environment which can enhance or hinder their ability to compete domestically or internationally.

Based on analysis made by leading scholars and their own research and experience, they begin by dividing the national environment into four main factors:

1. **Economic performance**: Macro-economic evaluation of the domestic economy (83 criteria);
2. **Government efficiency**: Extent to which government policies are conducive to competitiveness (73 criteria);
3. **Business efficiency**: Extent to which the national environment encourages enterprises to perform in an innovative, profitable and responsible manner (71 criteria); and
4. **Infrastructure**: Extent to which basic, technological, scientific and human resources meet the needs of business Government efficiency (115 criteria).

In turn, the IMD then divide each of these factors into five sub-factors which highlight every facet of the areas analysed. These 20 sub-factors comprise of more than 340 criteria, although the IMD point out that each sub-factor does not necessarily have the same number of criteria (for example, it takes more criteria to asses education than to evaluate prices). Each sub-factor, independently of the number of criteria it contains, has the same weight in the overall consolidation of results, which is 5% (20 x 5=100). Criteria can be hard data, which analyses competitiveness as it can be measured (e.g. GDP) or soft data which analyses competitiveness as it can be perceived (e.g. availability of competent managers). The IMD finally aggregates the results of the 20 sub-factors, which leads to the overall ranking of the World Competiveness Yearbook.

The IMD use a combination of statistical data (2/3) and survey data (1/3) obtained through their business executives opinion survey. The statistics are taken from a mix of international organisations, private institutions and national data sources.

GFCC Competitiveness Decoder

The GFCC define national competitiveness as the long-term growth of living standards through improvements in productivity. The GFCC has developed a web-based data tool, the Competitiveness Decoder, which endeavours to visualise the key drivers of national competitiveness.

A set of 131 metrics, organised within eight dimensions, represent the GFCC's broad competitiveness framework and thus composing the Competitiveness Decoder. These metrics were derived from the guidelines provided by the GFCC Board, the work of a research team and the discussions held with experts from all GFCC members' organisations. The eight key dimensions include: general performance, economic complexity, infrastructure, talent, capital, innovation, quality of life and future growth. These are blocks of factors that are related to competitiveness and, in contrast, to a ranking, which enables users to extract and perform analyses according to their particular priorities. The segmentation of metrics has the ability to help users understand the different factors that influence the capability of nations to create competiveness capabilities.

The Competitiveness Decoder includes static and dynamic metrics/variables; includes ex ante and ex post metrics; captures present competitiveness performance and future competitiveness potential; differentiates micro and macro level competitiveness drivers; and emphasises hard data. It uses internationally comparable data from organisations such as the World Bank, OECD and IMF.

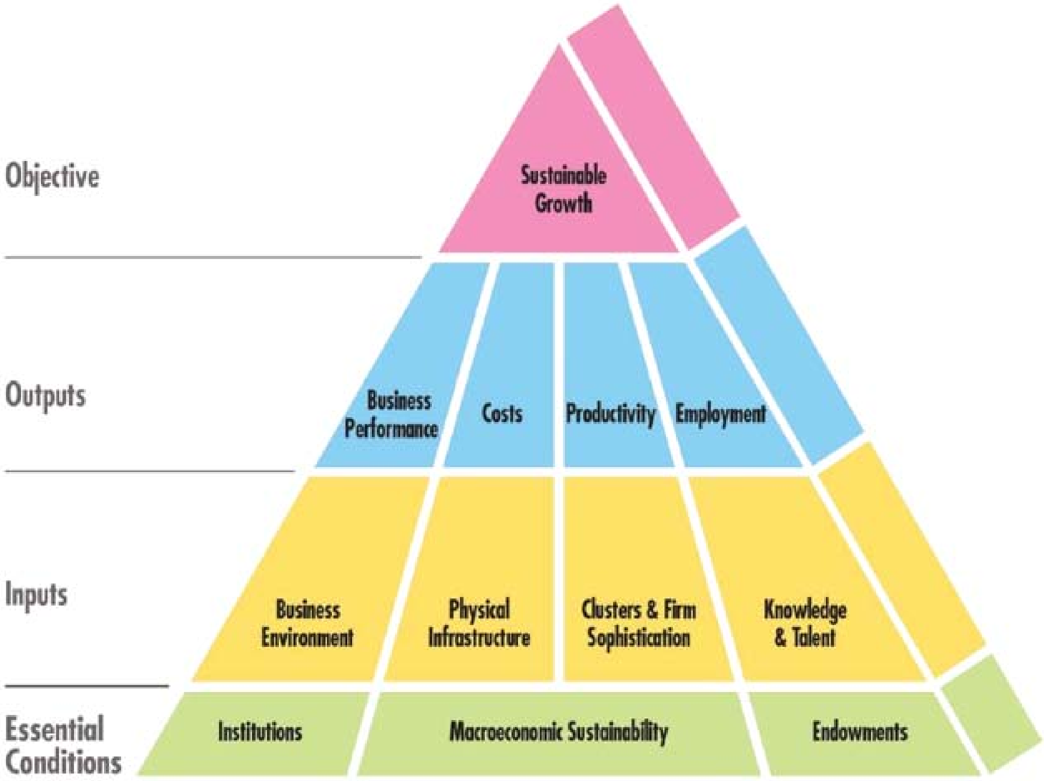
NCC Competitiveness Report

The Republic of Irelands NCC defines national competitiveness as the ability of enterprises to compete successfully in international markets. It produces an annual Competitiveness Scorecard that provides a comprehensive statistical assessment of Irish competitiveness against a range of competitor countries on international markets for trade and investment. The NCC uses a framework model to understand the concept of national competitiveness. It distinguishes between the 'inputs' to national competitiveness – over which policymakers can have the greatest control – and the essential conditions for national competitiveness. The competitiveness pyramid illustrates the framework used by the NCC (Figure 7). This approach was used for the 2016 Competitiveness Scorecard by the EAG.

The NCC has examined the essential conditions for competitiveness (such as business performance, productivity, prices and costs, and labour supply) alongside the key policy inputs (such as the business environment, physical infrastructure and knowledge infrastructure), to plot a path to improve Ireland's overall competitive environment.

At the top of the Pyramid is sustainable growth in living standards – this reflects the fruits of competitiveness success. The competitiveness outputs and enablers of competitiveness are represented in the second tier of the pyramid framework. These can be seen as the metrics of current competitiveness. A range of national performance indicators in business performance, costs, productivity and employment are examined and assessed relative to international competitors to provide an overall macroeconomic view of Irish competitiveness. These indicators are defined as "output" indicators and are not directly within the control of policymakers. The Republic of Ireland's performance in these areas is directly related to the quality of previous policies instituted at the input level and the ability to build a strong intermediate stage of competitiveness.

Figure 7: The NCC Competitiveness Framework



Source: NCC Competitiveness Scorecard

The third tier of the pyramid focuses on policy inputs and includes four broad pillars of future competitiveness, namely the business environment (taxation, regulation, finance and social capital), physical infrastructure, clusters and firm sophistication, and knowledge and talent. These represent the foundation stones of the economy and are the primary drivers of current and future competitiveness performance. The Council believes that it is within these particular areas that policymakers can have the greatest impact on competitiveness, and highlights that it is crucially important to measure the Irish competitiveness at the input level and then benchmark it against best international practise. This allows policy makers to identify weaknesses and thus design specific policies to address concerns.

The bottom tier of the pyramid is a new addition to the Council's framework. Described as essential conditions, this tier reflects the impact that a number of largely exogenous factors (exogenous, at least from the perspective of competitiveness policy) have on national competitiveness. These factors include the institutional make-up of a country, its macroeconomic stability, and a range of natural endowments (such as demographics, for example).

The NCC uses internationally comparable metrics from organisations such as the Organisation for Economic Cooperation and Development (OECD) or the International Monetary Fund (IMF) as the sources for the majority of indicators. Indicators from specialist international competitiveness bodies such as the WEF Global Competitiveness Report are also used. The Republic of Ireland's performance is measured using over 130 indicators, and no attempt is made to create a single quantifiable measure of competitiveness; each are examined individually against a mix of countries (both inside and outside the EU) and against either the EU or OECD average.

Review of Competitiveness Frameworks

A recent review of competitiveness frameworks has been carried out (Ketels, 2016) to inform the future development of the NCC approach.[51] Whilst this is specifically aimed at the NCC framework, the material and advice contained within it is highly relevant for any competitiveness assessment as it provides an up-do-date review of recent competitiveness literature and concepts now being adopted.

This review highlights two different approaches to competitiveness assessments; one which focused on a longer term productivity view of competitiveness and another which takes a short-term costs/market share view of competitiveness. An approach which focuses on longer-term productivity is viewed as favourable, with an important caveat that cost competitiveness is still important to be aware of particularly in terms the relationship between costs and productivity.

Two new developments in the academic debate of competitiveness are identified. The first of these relates to competitiveness at different levels of geography; this recognises that a focus on national competitiveness conditions is insufficient with prosperity and productivity differences evident within countries. Regions are therefore argued to not just be smaller versions of national economies but structurally different. The second is the need to incorporate new measures of standards of living beyond GDP such as inequality and non-income social measures.

The review puts forward a range of factors to incorporate grouped into one of three blocks depending on how well embedded they are in current approaches (see Table 8).

Table 8: Competitiveness Factors

Area	Competitiveness Factors
Traditional building blocks	• Rules and regulations • Financial markets • Physical infrastructure • Macroeconomic policies • The role of 'Deep Roots': Institutions and geography • Scale: Size of the economy
New(er) issues (or new perspectives on traditional building blocks)	• Firms: Company sophistication and firm heterogeneity • Economic geography: Urbanisation and clusters • Economic composition: Economic complexity and more • Creative skills and locational attractiveness • Competitiveness at different levels of geography
Complex factors	• Individuals: Culture and trust • Institutions: Quality and capacity • Social capital and linkages

Source: Ketels (2016)

The review also notes two different approaches to competitiveness reports. The first, such as the WEF and IMD, provides competitiveness rankings. Whilst these can be misleading, they are also very powerful tools for communication and driving policy action. The second provide country-specific

[51] http://www.hbs.edu/faculty/Publication%20Files/Review%20of%20Competitiveness%20Frameworks%20_3905ca5f-c5e6-419b-8915-5770a2494381.pdf

reviews which either apply general frameworks to countries or develop tailor-made studies for specific counties (as with the NCC report and the EAG Scorecard).

An evaluation of the NCC competitiveness framework highlights a number of areas for potential improvement. One very relevant point made relates to potentially refining the peer group to provide "a clear identification of the competitive set of countries that are structurally similar or are competing in similar ways." This is ultimately the point of this research for Northern Ireland – to move away from a assessing competitiveness against a broad group of countries towards a refined and tailored group which is more relevant.

3.3 Competitiveness Framework

This chapter has shown that there is no single definition of what competitiveness is, and no single framework with which to measure it. This is particularly true when looking at the competitiveness of a regional economy such as Northern Ireland, which does not have control over macroeconomic policy levers and where national competitiveness metrics may not be relevant or appropriate. This report utilises a competitiveness framework based around five key pillars (shown in Table 9) which broadly align with the ONS / HM Treasury productivity drivers and also the recent draft Industrial Strategy framework. Full details of the competitiveness indicators are presented in Table 10.

Table 9: Competitiveness Framework

Pillar	Description	Metrics
Economic Outcomes	A competitive economy will deliver successful economic outcomes. Whilst productivity is central to competitiveness, this also needs to look more widely at how economic prosperity is shared across the population and how it impacts on the wellbeing of citizens.	• Productivity • Economic wealth • Economic growth • Equality • Happiness
International Engagement	Small economies do not have large domestic markets and must look outwards to support their growth. Competitive economies will be attractive for both investors and tourists, and have a company base that is successful at selling in external markets.	• Exports • Inward investment • Outward investment • Tourism
Innovation and Human Capital	Innovation and human capital can give small economies a competitive edge. Businesses must invest in innovation and the education system must produce a highly-skilled workforce if an economy is to become an international leader.	• R&D expenditure • Literacy of 15 year olds • Adult skills • University rankings
Labour Supply	People are the building blocks of an economy, and competitiveness requires a strong supply of labour which can productively contribute to prosperity.	• Working age population • Participation rate • Unemployment rate
Business Environment	The private sector drives economic growth and prosperity, and competitive economies therefore need to have an environment which supports the growth of businesses.	• Ease of doing business • Corporate tax rate • Business start-ups

Table 10: Competitiveness Indicators

Theme	Measure	Definition	Source(s)	Note on UK Regions
Economic Outcomes	Productivity	GDP per hour worked	The Conference Board; ONS Regional Productivity	Incorporated into national standings through their relative performance against the UK
	Economic wealth	GDP per capita	World Bank; ONS Regional Gross Value Added	Incorporated into national standings through their relative performance against the UK
	Economic growth	Annual % GDP growth	World Bank; ONS Regional Gross Value Added; HM Treasury GDP Deflator	Refers to GVA not GDP; converted from nominal to real growth using national GDP deflator
	Equality	Gini coefficient (after taxes and transfers)	OECD Income Distribution Database; Statistics Singapore; Scottish Government; Department for Communities	-
	Happiness	Happiness score	World Happiness Report; ONS Personal Wellbeing in the UK	Incorporated into national standings through their relative performance against the UK
International Engagement	Exports	Exports of goods and services as a % of GDP	World Bank; Export Statistics Scotland; NISRA Broad Economy Sales & Exports Survey; Eurostat	Refers to all external sales including those to other UK regions; GDP data estimated by Eurostat
	Inward investment	Inward FDI jobs per capita	fDi Markets; World Bank; ONS Population Estimates	-
	Outward investment	Outward FDI jobs per capita	fDi Markets; World Bank; ONS Population Estimates	-
	Tourism	Overnight trips by external visitors per capita	World Bank; Statistics Estonia; Finland Statistics; NISRA Tourism Statistics; Statistics New Zealand; Singapore Tourism Board; Israel Central Bureau of Statistics; Visit Scotland	-

Theme	Measure	Definition	Source(s)	Note on UK Regions
Innovation and Human Capital	R&D expenditure	General expenditure on R&D as a % of GDP	World Bank; Scottish Government; NISRA R&D Survey; Eurostat	GDP estimated by Eurostat
	Literacy of 15 year olds	Mean scores averaged across maths, reading and science	OECD Programme for International Student Assessment (PISA)	-
	Adult skills	Mean scores averaged across literacy and numeracy	OECD Programme for the International Assessment of Adult Competencies (PIAAC)	Scotland does not take part in the survey and has been given a UK proxy
	University rankings	Score of top ranking university	QS University Rankings	-
		Average score across all universities	QS University Rankings	-
Labour Supply	Working age population	Population aged 15-64 as % of total population	World Bank; ONS Population Estimates	-
	Participation rate	ILO participation rate of 15-64 population	ILO Key Indicators of the Labour Market; ONS Labour Force Survey	Incorporated into national standings through their relative performance against the UK as 15 year olds not included in the ONS measure
	Unemployment rate	ILO unemployment rate as percentage of total labour force	World Bank; ONS Labour Force Survey	-
Business Environment	Ease of doing business	Doing business rank	World Bank	Use a UK proxy as not in the survey
	Corporate tax rate	Corporate tax rate	OECD Tax Database; Trading Economics	Use a UK proxy as rates not devolved
	Business start-ups	Business start-up rate as a % of business stock	Statistics Denmark; Statistics Estonia; Statistics Finland; CSO Ireland; New Zealand Statistics; Statistics Singapore; Israel Central Bureau of Statistics; NISRA; Scottish Government	-

This framework does not cover everything; for example infrastructure, prices or the environment is not included. There are also metrics that are relevant for each of the five pillars but are not included. This is ultimately due to the lack of available international data that is consistent and comparable across all the small economies. The review of other reports has shown that this is dealt with in different ways by others. The WEF carries out its own executive opinion survey to provide consistent measurement where data is not available, but this has the drawback that rankings are partly based on opinion and perceptions rather than facts. Conversely, the EAG Scorecard has exclusively used statistical data at the expense of maintaining a consistent group of comparators. For this report, which needs to have consistent information across the small economies and also seeks to rely on factual data, it therefore focuses on a smaller group of key metrics which represent what a successful small economy should look like.

3.4 Methodology

A total of 20 indicators have been identified with which to assess small economy competitiveness, with the best performer on each of scoring a five out of five (a 'distance to frontier' type approach). The other comparators are then scored relative to this leading economy on each indicator. This means that performance is being considered on the basis of how it performs against best practice, rather than looking at how it performs on its own or against a less relevant benchmark simply because of its geographic location.

The allocation of scores relative to the best performer has been calculated using one of two methods. The first is the most straightforward and simply looks at relative performance. As an example, take an economy with the highest R&D expenditure at 3.0% of GDP which will score a 5.0. Another economy may have R&D expenditure at 1.5% of GDP which is half the leading performer and thus scores 2.5. A third economy may have R&D expenditure at 2.0% of GDP, which is two-thirds of the leader and therefore scores 3.3. However, some indicators are closely distributed around the mean and therefore using the above method does not reflect differences in performance.

An adjusted methodology based on the same principle has therefore been used for some indicators. Take an example using participation rates, where the highest rate might be 78% and the lowest 70%. Using the above methodology would mean that the leading performer would score 5.0 and the poorest performer would score 4.5, which clearly does not reflect differences in performance. In these cases, we take the full range of participation rates that any global economy has and give the highest rate a score of 5.0 and the lowest rate a score 1.0, with a score of 3.0 given to a relevant average (e.g. OECD or high-income). Scores are then allocated on a pro-rata basis throughout this range and then the initial approach followed once again to allocate a score of 5 to the leading small economy and benchmark relative performance of the other small economies against this.

This approach ensures that every indicator has a leading performer scored out of 5.0 and each other comparator has a score relative to this. In order to provide an overall assessment of competitiveness, each indicator has been weighted and aggregated into an overall score out of five. The weights used for each indicator are shown below in Table 11 and the full competitiveness data and rankings included in Annexes C and D. It worth noting that these weights are largely based on their prevalence in the draft Industrial Strategy and previous Economic Strategy; they represent the factors which economic policy in Northern Ireland is concerned with.

Table 11: Indicator Weightings

Pillar	Pillar Weighting	Indicators	Intra-pillar Weighting	Reference Period
Economic Outcomes	**20%**	Productivity	30%	2015
		Economic wealth	10%	2015
		Economic growth	10%	2015
		Equality	25%	2013
		Happiness	25%	2014-16
International Engagement	**20%**	Exports	40%	2015
		Inward investment	40%	2014-16
		Outward investment	10%	2014-16
		Tourism	10%	2014
Innovation and Human Capital	**40%**	R&D expenditure	40%	2014
		Leading university rank	10%	2016
		Average university rank	10%	2016
		Literacy of 15 year olds	20%	2015
		Adult skills	20%	2012
Labour Supply	**10%**	Working age population	40%	2015
		Participation rate	30%	2015
		Unemployment rate	30%	2016
Business Environment	**10%**	Ease of doing business	25%	2016
		Corporate tax rate	50%	2017
		Business start-ups	25%	2014

Note: reference period refers to the most common period used across the majority of economies; due to differences in national reporting periods some data may refer to other years than listed above

3.5 Summary

A review of existing literature on national competitiveness has highlighted that there is no common definition of what competitiveness means and, and as result, there are a range of different approaches to measuring it. A key challenge for measuring competitiveness in Northern Ireland is that none of those reviewed look at the competitiveness of regional economies; indeed, regional governments tend to have very different powers devolved and thus it would be difficult to apply a general regional economic competitiveness model even if one was readily available.

The competitiveness framework developed for this report covers five broad pillars: economic outcomes; international engagement; innovation and human capital; labour supply; and business environment. These are areas where both small economies and regional economies have policy levers and can influence. They are also broadly aligned to Northern Ireland's draft Industrial Strategy and can therefore provide a basis to link through to the levers, policies and programmes available at a regional level. Going forward, a more detailed consideration could be given to Ketels (2016) as well as a broader programme of engagement and review to inform potential new indicators and adjustments to the framework.

The availability of data has been a key factor influencing the development of this competitiveness framework, with much less data readily available for a region than a national economy. This assessment therefore focuses on 20 key metrics which represent what a competitive and successful small economy should look like, with each economy being scored out of five based on its relative performance against the leading comparator. There is potential to develop this further and add new measures going forward, for example around inward-migration, fiscal balance and FDI stocks.

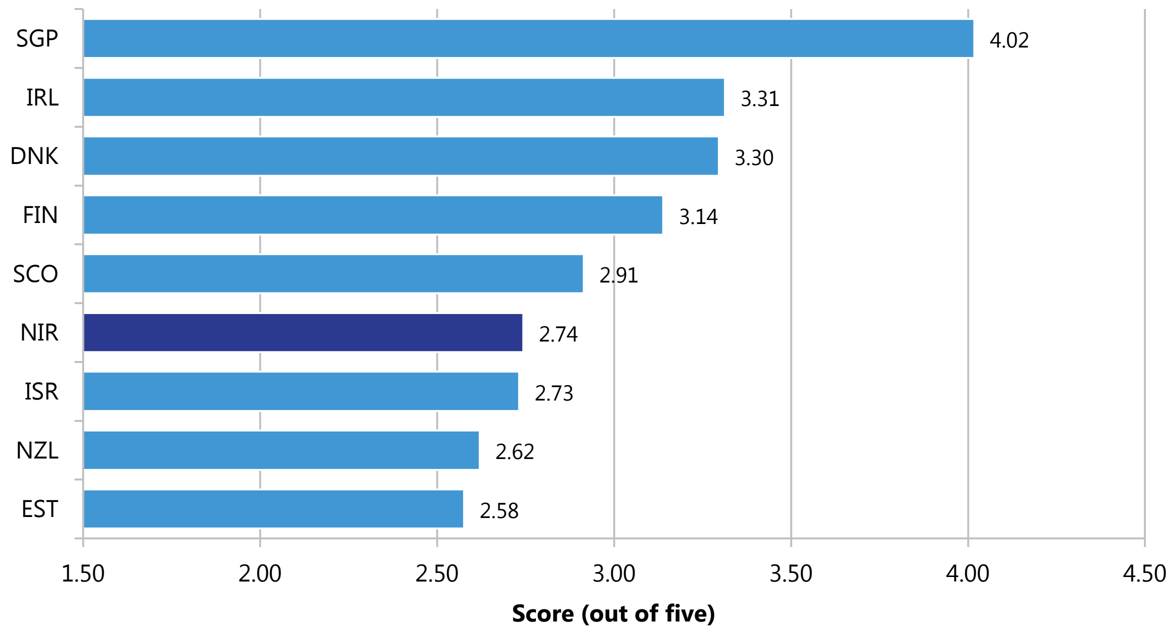
4. Competitiveness Results

Northern Ireland is currently less competitive than the leading small advanced economies of Singapore, Denmark, Republic of Ireland and Finland. Whilst there are competitive strengths to build on, there are a number of areas where competitors are significantly ahead.

4.1 Small Economy Competitiveness

Singapore is found to be the most competitive small advanced economy of those considered in this report, considerably above all other comparators (see Figure 8). Behind Singapore, there is a group of highly-competitive small economies including Denmark, Republic of Ireland and Finland, with Scotland just behind. Northern Ireland ranks in the lower group of competitive small economies alongside New Zealand and Estonia, with Israel slightly ahead.

Figure 8: Small Advanced Economy Competitiveness Scores



These results tell two key things about Northern Ireland's competitive position. It is clear that Northern Ireland is significantly less competitive than the leading small economies of Singapore, Denmark, Republic of Ireland and Finland. This is perhaps unsurprising given the results of previous work into competitiveness. However, the findings also demonstrate that there is a strong base to build on. This is a high-performing group of comparators which are intended to represent best practice, and having an economy which is similar in economic competitiveness to Israel, New Zealand and Estonia is a positive.

Rather than focusing on individual rankings, in setting targets and tracking Northern Ireland's competitiveness going forward it perhaps more helpful to think about two broad groups:

1. **Followers:** Small advanced economies which have competitive strengths to build on but lag behind the most competitive economies which they aspire to catch up with. This group in the current rankings includes New Zealand, Estonia, Israel, Northern Ireland and Scotland; and

2. **Leaders:** The most competitive small advanced economies which represent exemplars in many economic policy areas. These countries must work maintain their existing competitive advantages and differentiate themselves from other countries in this group. Singapore, Denmark, Republic of Ireland and Finland make up this group in the current rankings.

Looking ahead, Northern Ireland's ambition will be to move up this ranking of small economies from being a follower to a leader. Firstly, Northern Ireland must become "the best outside the best" by catching up with Scotland and then begin to close the gap with economies such as Finland, Republic of Ireland and Denmark. This will take a long-term improvement in competitiveness across a wider range of areas to achieve. Singapore perhaps represents a less realistic ambition in the medium term given its performance gap against even the other competitiveness leaders.

4.2 Competitiveness Pillars

A breakdown of competitiveness rankings into each of the five pillars (Table 12) begins to provide an insight into key strengths and weaknesses of each economy. If we look at the four most competitive small economies, this suggests there are two broad models that they have followed. The first – an "indigenous" model – involves strong economic outcomes through building a leading innovation and human capital base, as seen in Finland and Denmark. The second is more of an "international" model which looks much more to overseas markets and investors, supported by a pro-business environment, as seen in the Republic of Ireland and Singapore. There is obvious overlap between these two models (attracting FDI needs a strong talent base and, vice versa, indigenous companies need to look to export markets for growth) but the most competitive small economies have developed globally competitive advantages in at least one of these two areas.

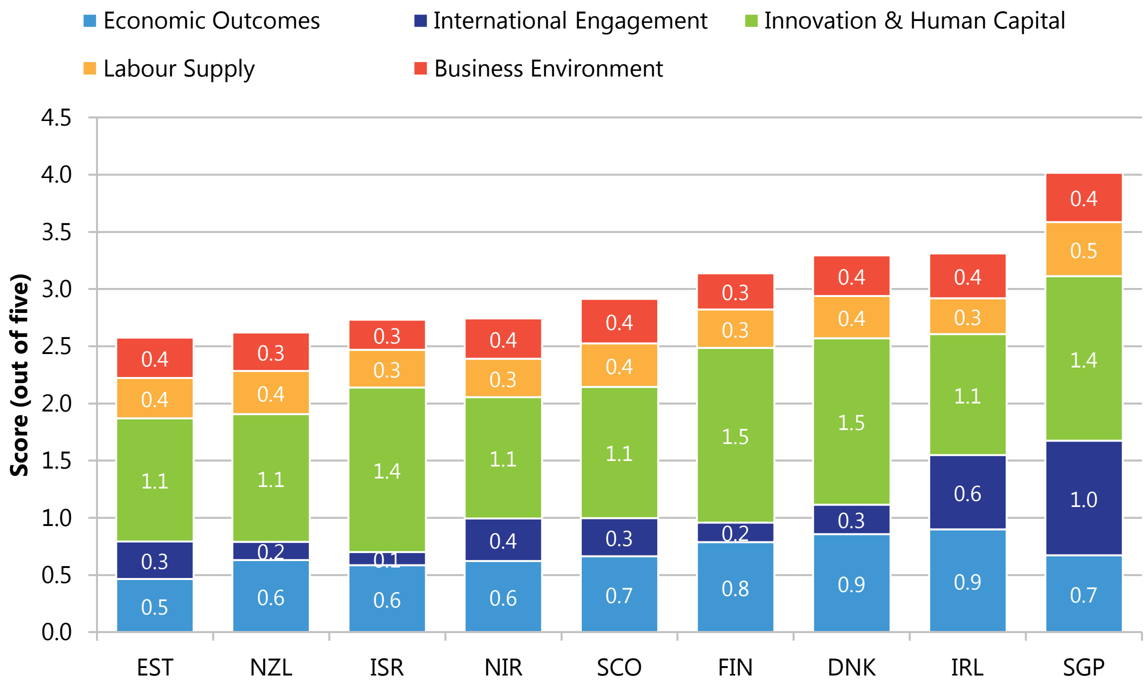
Table 12: Competitiveness Pillar Rankings

Rank	Economic Outcomes	International Engagement	Innovation & Human Capital	Labour Supply	Business Environment
1	Rep Ireland	Singapore	Finland	Singapore	Singapore
2	Denmark	Rep Ireland	Denmark	Scotland	Rep Ireland
3	Finland	**N Ireland**	Israel	New Zealand	Scotland
4	Singapore	Scotland	Singapore	Denmark	Denmark
5	Scotland	Estonia	Scotland	Estonia	Estonia
6	New Zealand	Denmark	New Zealand	Finland	**N Ireland**
7	**N Ireland**	Finland	Estonia	**N Ireland**	New Zealand
8	Israel	New Zealand	**N Ireland**	Israel	Finland
9	Estonia	Israel	Rep Ireland	Rep Ireland	Israel

At present, Northern Ireland appears better positioned to compete on the "international" model (where it ranks third on international engagement) than the "indigenous" model (where it ranks eight on innovation and human capital and seventh on labour supply). Northern Ireland therefore needs to both maintain its strong standing on international engagement whilst also improving its performance on these other pillars where it lags behind.

As highlighted in the previous chapter, each of these five pillars has a different weighting in calculating the overall competitiveness score, reflecting its importance for small economy competitiveness. Innovation and human capital, for example, has the largest weighting of any pillar, contributing 40% of the overall competitiveness score. Figure 9 splits out the overall competitiveness scores into each of the five weighted pillars to demonstrate which components are most important and where the greatest differences lie.

Figure 9: Small Advanced Economy Competitiveness Scores by Theme



4.3 Competitiveness Assessment

Economic Outcomes

There are a total of five indicators captured within the economic outcomes pillar (see Table 13). The Republic of Ireland ranks as the best performing small economy on this pillar due to its high levels of productivity, GDP per capita and economic growth.[52] Denmark also performs very strongly due to its high levels of GDP per capita, an equal distribution of income and citizens who are happy with their lives. Northern Ireland ranks amongst the least competitive small advanced economies in seventh.

The best performing aspect of this pillar for Northern Ireland is income equality, whilst people are also relatively happy. Indeed, Northern Ireland ranks significantly above Singapore on both these measures. However, a key concern here would be poor performance in GDP per capita (a proxy for

[52] This includes GDP growth of 26.3% in 2015 due to the movement of assets onto the balance sheets of foreign companies in the Republic of Ireland from elsewhere.

economic wealth or living standards). With a less wealthy economy, lower income inequality suggests that there is a lack of wealth for those at the top of the income distribution rather than higher living standards for those at the bottom. As Northern Ireland improves its GDP per capita performance, it will want to do so in a manner which maintains (and indeed improves) income equality and happiness in the manner than Denmark has.

Table 13: Northern Ireland Competitiveness on Economic Outcomes

Measure	Weight	Rank / 9	Score / 5	First	Last
Economic Outcomes	**20%**	**7**	**3.1**	**Rep of Ireland**	**Estonia**
Productivity	6%	6	2.9	Rep of Ireland	Estonia
GDP per capita	2%	8	2.3	Rep of Ireland	Estonia
GDP growth	2%	6	0.3	Rep of Ireland	Finland
Income equality	5%	3	3.5	Denmark	Singapore
Happiness	5%	6	4.5	Denmark	Estonia

Focusing on a more traditional measure such as productivity can often be a somewhat misleading indicator due to the accounting practices of multi-nationals for profits which can enhance productivity figures; indeed, when we look at the best performers here the Republic of Ireland and Singapore (two economies which have followed the "international" economic model) rank first and third respectively. Perhaps most relevant here is the performance of Denmark in second place, which has managed to achieve very high levels of productivity without the same success in attracting foreign investors.

Northern Ireland ranks sixth on productivity, above New Zealand, Israel and Estonia. This highlights that some other small economies face similar (and indeed even more pronounced) productivity challenges to Northern Ireland. Productivity measures the efficiency with which inputs produce outputs, and thus the economy (the outputs) needs to grow faster than its workforce (the inputs) to improve on this measure. However, GDP growth in Northern Ireland is only moderate and many of the other economies are growing faster. If Northern Ireland is to improve its productivity, it needs to grow its economy faster than it is at present.

International Engagement

The indicators in the international engagement pillar capture exports, investment and tourism (Table 14). Singapore is quite clearly the most internationally engaged small advanced economy, ranking first on each of the four measures. Israel, by contrast, faces a number of issues in terms of its relationship with its surrounding region and thus ranks lowest on this pillar, particularly with lagging performance on inward FDI and tourism.

Northern Ireland is a relatively strong performer at engaging with the international economy (despite the relatively low scores which reflects just how far ahead Singapore is as the best practice comparator) due to ranking fourth on exports[53] and third on inward FDI. Scotland is slightly weaker on both export performance (ranking fifth) and attracting FDI (ranking fourth). The Republic of Ireland

[53] This includes all external sales from NI and Scotland, including to other UK regions. This reflects the fact that these sales create value for the economy and involve local businesses competing in external markets.

is second on both these measures. These two indicators are linked, as foreign investors locating in a small economy are likely to want to exploit external markets rather than the domestic economy, and thus improvements in attracting FDI will also influence export performance.

Table 14: Northern Ireland Competitiveness on International Engagement

Measure	Weight	Rank / 9	Score / 5	First	Last
International Engagement	**20%**	**3**	**1.9**	**Singapore**	**Israel**
Exports	8%	4	1.7	Singapore	New Zealand
Inward FDI	8%	3	2.2	Singapore	Israel
Outward FDI	2%	8	0.2	Singapore	Estonia
Tourism	2%	6	2.7	Singapore	Israel

FDI is a two-way flow, and part of a small economy engaging with the international economy is the extent to which local firms invest elsewhere. Outward FDI creates global value chains for local firms, allowing them to become more competitive by accessing markets, expertise and/or cost advantages that are not available domestically.[54] Northern Ireland has the weakest performance on outward FDI of any of the nine small economies, suggesting that local companies are not seeking to exploit potential opportunities to maximise their international competitiveness by looking to invest overseas. This may also be linked to a larger representation SMEs which would be less likely to have multiple offices around the world.

Attracting external tourists is an area which, in the same manner as exports, can bring additional wealth to a small economy. Northern Ireland ranks sixth on tourism performance, above Finland, New Zealand and Israel; however, Scotland ranks fourth with the Republic of Ireland second. The significantly stronger tourism performance of another UK region and a neighbour geographically located on the same island demonstrates that the tourism sector has much greater potential for growth than is currently being realised. Singapore's is shown as the leading tourist destination of all the small economies, which may partly reflect large number of external business visitors, as well as its popularity as a stop-off destination for long flights.

Innovation and Human Capital

This pillar represents the underlying core fundamentals of competitiveness that a small advanced economy has to work from, and the metrics within it (Table 15) capture R&D, universities rankings and the literacy of both 15 year olds and adults. Finland is the strongest performer overall here.

Northern Ireland has demonstrated significant success at increasing R&D expenditure in recent years, rising from 1.1% of GDP in 2008 to 1.9% in 2015. This performance now puts Northern Ireland well above four other economies and catching up with Singapore in fourth. However, levels of R&D

[54] OECD (2013) identifies that global value chains can be a powerful driver of growth and productivity, and support job creation. Hufbauer, Moran and Oldenski (2013) estimate that an increase in overseas employment of 10% by US multinationals leads to a further 4% increase in domestic job creation due to the competitiveness advantages it brings.

spending in Israel, Finland and Denmark still remain significantly higher than Northern Ireland as a percentage of GDP.

Table 15: Northern Ireland Competitiveness on Innovation and Human Capital

Measure	Weight	Rank / 9	Score / 5	First	Last
Innovation and Human Capital	**40%**	**8**	**2.7**	**Finland**	**Rep of Ireland**
R&D expenditure	16%	5	2.3	Israel	New Zealand
Leading university rank	4%	8	2.6	Singapore	Estonia
Average university rank	4%	8	1.9	Singapore	Estonia
Literacy of 15 year olds	8%	7	3.2	Singapore	Israel
Adult skills	8%	6	3.3	Finland	Israel

Universities will have a key role to play in growing this research base as well as producing graduates for small economies. The two indicators captured in this assessment measure both the standing of the leading university in the economy, as well as the broader average across all universities in the QS University Rankings.[55] Northern Ireland is in eighth place on both these measures, with Queens University in 195th and Ulster University in the range of 601-650. Singapore is the leading small economy, with two of its three universities in 12th and 13th place in the overall global list. Scotland's strong university base is evident, ranking second on both measures, where the University of Edinburgh is 19th globally and a further two are in the global top 100. The Republic of Ireland is in sixth place of the small economy comparators.

The actual skills that the broader population have are captured by assessing literacy. Northern Ireland sits near the lowest performers on literacy of 15 year olds, but ranks higher on adult literacy above the Republic of Ireland, Singapore and Israel. The extreme contrast of Singapore on these two measures is noted, ranking first on literacy of 15 year olds but eighth for adults. This suggests that the workforce of the future in Singapore will be considerably more literate than the existing adult population, which will strengthen their competitive position. Finland's literacy strengths are evident, ranking first for adults and second for 15 year-olds.

Labour Supply

A competitive economy needs a growing supply of labour that is both able and available to work, the three metrics here (Table 16) measure not only the approximate size of the working age population but also the proportion of this group that are contributing to the economy.

Table 16: Northern Ireland Competitiveness on Labour Supply

Measure	Weight	Rank / 9	Score / 5	First	Last
Labour Supply	**10%**	**7**	**3.4**	**Singapore**	**Rep of Ireland**

[55] http://www.topuniversities.com/university-rankings/world-university-rankings/2016

15-64 population	4%	6	4.4	Singapore	Israel
Participation rate	3%	7	3.8	New Zealand	Rep of Ireland
Unemployment rate	3%	5	3.5	Singapore	Finland

Labour is particularly important in less developed economies and the position of Singapore in first demonstrates how a strong labour supply has helped them evolve to now becoming a high-income country. Northern Ireland's performance on this pillar is steady rather than spectacular, ranking no lower than seventh and no higher than fifth on any individual measure.

The proportion of the population aged between 16 and 64 is relatively similar across many economies in the range of 64-66%. For example, the Northern Ireland rate of 64.7% is not that different to the Scottish rate of 65.8%, whereas Northern Ireland ranks sixth and Scotland second. The outliers here are Israel (with a working age population of just over 60%) and Singapore (over 70%). A key issue for small economies going forward will be how to deal with an aging population; every small economy has seen a decline in the proportion of working age population over the period 2005 to 2015 with the exception of Singapore.

The contribution that small economies get from their working age population is determined by the proportion of these people that are active (i.e. employed or unemployed seeking work) in the labour market. Northern Ireland is above both the Republic of Ireland and Israel on this measure, but lags well behind the leading performers of New Zealand and Denmark which both have participation rates that are more than 5 percentage points higher. The unemployment rate is lowest in Singapore at just 1.8%, with Northern Ireland ranking fifth at 6.1%; this is considerably lower than the Republic of Ireland and Finland where unemployment rates are much higher 8.1% and 9% respectively.

Business Environment

Government has an important role in facilitating the growth of businesses, and three metrics are covered which demonstrate how competitive small economies are at providing this environment (Table 17). These reflect how easy an economy is to do business in, how competitive the tax rate is for profitable businesses and the levels of new business creation that area evident. Singapore again ranks first on this pillar.

Table 17: Northern Ireland Competitiveness on Business Environment

Measure	Weight	Rank / 9	Score / 5	First	Last
Business Environment	**10%**	**6**	**3.5**	**Singapore**	**Israel**
Ease of doing business	3%	4	4.3	New Zealand	Israel
Corporate tax rate	5%	3	3.3	Rep of Ireland	New Zealand
Business start-ups	3%	7	3.1	Singapore	Rep of Ireland

The business environment for Northern Ireland at present is largely determined by being part of the UK regulatory environment, which is relatively pro-business. Two of the metrics here (ease of doing business and corporate tax rate) use UK proxies, which results in strong rankings of fourth and fifth respectively (as is the case in Scotland). This will, however, change once the NI Executive implements its planned reduction in corporate tax rate to 12.5%, which will put Northern Ireland on a par with the Republic of Ireland in first place.

The only specific Northern Ireland measure in this pillar – business start-ups – is the lowest ranking area at seventh. This is, however, still above the Republic of Ireland which is the lowest ranking economy here; whilst this is a narrow measure of indigenous business performance it does suggest that the performance of the Irish indigenous sector is not as strong as its FDI record where it is one of the leading economies. Singapore, by contrast, is also heavily reliant on FDI but demonstrates much stronger performance on business start-ups.

4.4 Summary

Northern Ireland's economic competitiveness compares well to the small economies of Estonia, New Zealand and Israel. Whilst this represents a solid base to build on, there is a significant gap to much more competitive small economies such as Singapore, Denmark, Finland and the Republic of Ireland. Scotland is a highly relevant comparator for Northern Ireland being a UK devolved administration with similar powers; whilst it is less competitive than these top performing small advanced economies, it starts from a strong position as it attempts to move up the international rankings.

There are two important points to consider looking to improve competitiveness performance. First, these economies are not standing still and are all looking to do exactly the same thing as Northern Ireland. Improvements by themselves are therefore not sufficient; Northern Ireland needs to improve faster than not only the economies it aspires to catch up with but also those behind it. Second, improvements in many of these areas can take many years or even decades to achieve; Northern Ireland's recent success in improving R&D expenditure demonstrates that this can be done.

The assessment highlights that there are a number of areas where Northern Ireland is internationally competitive; it has a relatively equal society in terms of income, and people are happy with their lives. There are good levels of international engagement, with a strong track record at attracting FDI and companies that look to external markets. Businesses also benefit from being part of the UK regulatory regime with a competitive corporate tax rate.

Despite these positives, there are a number of areas which Northern Ireland will need to address it if it to become a leading globally-competitive economy. These include improvements in productivity, living standards, economic growth, R&D, university rankings, skill levels, tourism, business start-ups and labour supply. Given how strong the leading small advanced economies are in these areas, Northern Ireland's focus needs to be not on what it can do to match the UK or OECD averages, but rather what it can do to be world-class.

There are two broad models evident which the leading small advanced economies have adopted. The first is an "international" model which relies on becoming an export base for the wider region through attracting FDI and having a pro-business tax environment (e.g. Singapore and the Republic of Ireland). The second is an "indigenous" model which relies on a highly competitive innovation and skills base to support the growth of globally-successful industries and companies (e.g. Denmark and Finland). Of these two, Northern Ireland would appear to be best positioned to compete on the "international" model at present, and the future reduction in Corporation Tax to 12.5% will support this further.

Further improvements in the skills and enterprise base will be needed to become globally competitive on a more “indigenous” model.

5. Summary and Conclusions

This research has developed a tailored competitiveness framework to assess Northern Ireland's competitiveness against relevant small advanced economies. Northern Ireland has much to do to catch up with the leading performers internationally, but has key strengths to build on.

5.1 Introduction

Small economies are different from large economies. Large economies have substantial domestic markets which attract investors and can supply a wide range of goods and services that other firms need. They can access a wide range of skills in many different disciplines. They have a diverse range of business sectors which have a critical mass to be key global players. In short, they have many natural advantages. Small economies, however, do not have these advantages. Small economies must make the most of what they have – a limited domestic market and finite pool of resources – and make informed policy decisions in targeted areas if they are to be globally competitive.

Small countries such as the Netherlands, Sweden, and Switzerland have done just this; they have developed globally competitive economies which, in many cases, outperform their larger counterparts. But even these economies operate on a different scale from Northern Ireland. In the same way that the Japanese economy is almost ten times bigger than the Swedish economy, so too is the Swedish economy almost ten times bigger than Northern Ireland's. In benchmarking Northern Ireland's global competitiveness, it is therefore most relevant to look at small advanced economies which share some similar characteristics or challenges, albeit recognising that there is no single direct comparator which is exactly the same as Northern Ireland.

This study aims to understand how competitive Northern Ireland is against the most relevant best practice examples of small advanced economies around the world. This is intended to inform a broader debate around the ambition which Northern Ireland shows on the global stage and the priorities for policy decisions going forward. It builds on competitiveness reports produced by the Economic Advisory Group which, when read together, give a comprehensive assessment of what Northern Ireland needs to do to become a globally competitive economy.

5.2 Identifying Small Advanced Economies

The economies that Northern Ireland benchmark's itself against should reflect two things – relevance and ambition. Relevance means focusing on comparators that share similar characteristics or face similar challenges, and ambition means targeting those economies which are more competitive than Northern Ireland is at present. To identify these comparators, and starting from a long list of 140 economies included in the World Economic Forum Global Competitiveness Report, a number of criteria have been applied:

1. **Size:** economies with a population of more than 10 million people have been excluded; this removes potential comparators such as the United States, Netherlands, Germany, Canada and the United Kingdom;

2. **Competitiveness:** only economies which rank in the top 40 across existing measures of competitiveness have been included; this excludes small economies such as Slovenia, Bulgaria, Slovakia, Hungary and Hungary; and
3. **Peripherality:** economies which have strategic locations at the centre of major regional markets have been excluded; this removes potential benchmarks such as Switzerland, Luxembourg, Austria and Hong Kong; and
4. **Relevance:** a final assessment has been made based on how successful the economies have been, key drivers of growth behind this and applicability to Northern Ireland; this has excluded Norway, Sweden, Iceland, Qatar and the United Arab Emirates.

The overall outcome delivers a group of relevant small advanced economies for Northern Ireland made up of the Republic of Ireland, Denmark, Finland, Estonia, Singapore, Israel and New Zealand. Scotland has also been included as a high-performing UK region with similar devolved powers.

5.3 Measuring Competitiveness

A review of existing literature on national competitiveness has highlighted that there is no common definition of what competitiveness means and, and as result, there are a range of different approaches to measuring it. The competitiveness framework developed for this report covers five broad pillars: economic outcomes; international engagement; innovation and human capital; labour supply; and business environment. Each of these represents areas where both small economies and regional economies have policy levers and can influence.

The availability of data has been a key factor influencing the development of this competitiveness framework. Put simply, it is not possible to gather a wide and comprehensive series of metrics on every aspect of economic competitiveness that is based on factual statistical data and is available for Northern Ireland and each of the eight small economy comparators. This assessment therefore focuses on 20 key metrics which represent what a competitive and successful small economy should look like, with each economy being scored out of five based on its relative performance against the leading comparator.

5.4 Competitiveness Results

Northern Ireland's Competitiveness

Northern Ireland's economic competitiveness is similar to the small economies of Estonia, New Zealand and Israel. Whilst this represents a solid base to build on, there is a significant gap to much more competitive small economies such as Singapore, Denmark, Finland and the Republic of Ireland. Scotland is less competitive than these top performing small advanced economies, but starts from a much stronger position than Northern Ireland as it attempts to become a global leader.

The findings for Northern Ireland are somewhat more positive in this study than in other recent competitiveness reports, albeit the gap with the most competitive economies is consistently evident in all. The reasons for any differences with existing studies largely come down to the methodology used; rather than adopting a wide-ranging approach developed for national economies (such as WEF, IMD or NCC), this approach has been developed to much more closely align with the draft Industrial

Strategy framework and incorporate those metrics which reflect what success would look like for Northern Ireland given its position as an ambitious small advanced economy.

Competitive Strengths and Weaknesses

There are a number of areas where Northern Ireland is internationally competitive. Northern Ireland has a relatively equal society in terms of income, and people are happy with their lives. There are good levels of international engagement, with a strong track record at attracting FDI and companies that look to external markets. Businesses also benefit from being part of the UK regulatory regime with a competitive corporate tax rate.

Despite these positives, there are a number of areas which Northern Ireland will need to address it if it to become a leading globally-competitive economy. These include improvements in productivity, living standards, economic growth, R&D, university rankings, skill levels, tourism, business start-ups and labour supply. Given how strong the leading small advanced economies are in these areas, Northern Ireland's focus needs to be not on what it can do to match the UK or OECD averages, but rather what it can do to be world-class.

Best Practice Economic Models

The competitiveness assessment highlights that there are two broad models evident which the leading small advanced economies have adopted. The first is an "international" model which relies on becoming an export base for the wider region through attracting FDI and having a pro-business tax environment (e.g. Singapore and the Republic of Ireland). The second is an "indigenous" model which relies on a highly competitive innovation and skills base to support the growth of globally-successful industries and companies (e.g. Denmark and Finland). A key difference between these two is that economies which have followed the "indigenous" model tend to be associated with higher levels of wellbeing and equality across society.

There is obvious overlap between these two models (attracting FDI needs a strong talent base and, vice versa, indigenous companies need to look to export markets for growth) but the most competitive small economies have developed world-class competitive advantages in one of these two areas. Northern Ireland would appear to be best positioned to compete on the "international" model at present, and the future reduction in Corporation Tax to 12.5% will support this further.

5.5 Future Implications

Implication 1: Greater consideration is needed of how ambitious local policy interventions are compared with leading international performers and what can be learnt from best practice

The findings from this report demonstrate just how ambitious Northern Ireland must be to become a globally-competitive small economy and the scale of improvements needed in certain areas. In developing and delivering policy interventions going forward, a key question that needs to be consistently asked is: *how does this compare against what is happening in the leading small advanced economies?* Improving Northern Ireland's economic performance from what has gone before is welcome, but if other small advanced economies are doing moving at a faster rate, then Northern Ireland's relative competitiveness will not be improving. Local policy interventions therefore need to be informed by what is happening elsewhere, not just to understand whether they are ambitious enough to contribute towards the draft Industrial Strategy ambition, but also to enable learning from best practice on what has and hasn't worked elsewhere.

Implication 2: Regular future research on small advanced economies would be beneficial in taking forward the refocused Northern Ireland Economic Strategy

With global competitiveness featuring as a key objective of the draft Industrial Strategy, it will be important that Northern Ireland maintains an up-to-date evidence base on what is happening in the small advanced economies considered in this benchmarking report. This is not just about quantitative competitiveness benchmarking (which will of course be important to understand progress against goals), but also gathering a greater understanding of new policy approaches being introduced and how these economies deal with new challenges they are facing and grasp global opportunities as they emerge. This would mean in practice having a more regular ongoing tracker of small advanced economies rather than occasional one-off studies as has been the case previously.

Implication 3: Consideration should be given to how the future benchmarking of small economy competitiveness might sit alongside the EAG Competitiveness Scorecard

This research is intended to be the *starting point* for benchmarking Northern Ireland's competitiveness against relevant small advanced economies rather than the definitive *last word* on the subject. For example, the methodology should be developed further to refine current metrics and add potential new metrics, whilst time series data can be added to add an additional aspect to the assessment. Further assessment is also needed to refine the list of comparator economies, which may include other regions, and a watching brief ultimately would be needed to monitor other economies which might become more relevant over time. The ultimate goal should be to not only have quantitative benchmarking report, but shape this into more of an interactive policy tool which can be used to inform policy and target setting.

This all must be considered alongside the EAG Competitiveness Scorecard so that there are not two separate parallel measures looking at the same thing in different ways. The draft Industrial Strategy invites "the Economic Advisory Group to examine in more depth specific dimensions of the Competitiveness Scorecard, particularly in relation to understanding how to improve Northern Ireland's productivity position. Learning from global best practice, we will ask the Economic Advisory Group to make recommendations for the development and delivery of policy interventions in Northern Ireland that will improve our competitiveness ranking." Giving the EAG Competitiveness Scorecard a much stronger slant towards small advanced economies should therefore be part of the work programme going forward.

Annex A: Bibliography

Abreu, M., Grinevich, V., Kitson, M. and Savona, M. (2011) The Changing Face of Innovation Policy: Implications for the Northern Ireland Economy

Arcadia (2016) Third Global Investment Infrastructure Index 2016: Bridging the Investment Gap

Barnett, R. (2009) Independent Review of Economic Policy

Berg-Andersson, B. and Kotilainen, M. (2016) The Effect of Sanctions on Finnish Exports to Russia

Department of Enterprise, Trade and Investment (2012) DETI Research Agenda: Lessons from Best Practice

Economic Advisory Group (2013) Competitiveness Index for Northern Ireland

Economic Advisory Group (2016) Competitiveness Summary

Euro Challenge (2014) An Overview of Lithuania's Economy

European Commission (2015) Country Report Lithuania 2015

Global Federation of Competitiveness Councils (2016) The Competitiveness Decoder

Gudgin, G., McKenzie, N., Magill, M. and Gibson, G. (2011) Building Economic Competitiveness: Lessons from Small Peripheral European States

IMD World Competitiveness Centre (2016) World Competitiveness Yearbook 2016

Johnson, R. and Heery, L. (2016) Competitiveness Scorecard for NI

Krugman, P. (1994) *The Age of Diminished Expectations*. 4th revised and updated edition, MIT

Kuah, A., Shapira, P., Doyle, E. and Ward, D. (2011) Productivity, Innovation and Competitiveness in Small Open Economies

Legatum Institute (2016) The Legatum Prosperity Index 2016

National Competitiveness Council (2016) Ireland's Competitiveness Scorecard 2016

Northern Ireland Executive (2012) Economic Strategy: Priorities for Sustainable Growth and Prosperity

Northern Ireland Executive (2016) Programme for Government Consultation Document

Office for National Statistics (2007) The ONS Productivity Handbook: A Statistical Guide and Overview

Organisation for Economic Cooperation and Development (2016) OECD Economic Surveys: Denmark

Porter, M. E. (1990) *The Competitive Advantage of Nations*. Harvard Business Review

Scottish Government (2015) Scotland's Economic Strategy

Skilling, D. (forthcoming) *Economic Context and Policy Approaches in Small Advanced Economies*

World Economic Forum (2016) The Global Competitiveness Report 2015-16

Yeandle, M. and Mainelli, M. (2016) The Global Financial Centres Index 19

Annex B: Acronyms

CSO	Central Statistics Office
EAG	Economic Advisory Group
EC	European Commission
EU	European Union
FDI	Foreign Direct Investment
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GFCC	Global Federation of Competitiveness Councils
GVA	Gross Value Added
IMD	International Institute for Management Development
IMF	International Monetary Fund
IREP	Independent Review of Economic Policy
ISC	Institute for Strategy and Competitiveness
IT	Information Technology
NCC	National Competitiveness Council
NI	Northern Ireland
NIES	Northern Ireland Economic Strategy
NISRA	Northern Ireland Statistics and Research Agency
OECD	Organisation for Economic Cooperation and Development
ONS	Office for National Statistics
OPEC	Organisation of the Petroleum Exporting Countries
PISA	Programme for International Student Assessment
PIIAC	Programme for the International Assessment of Adult Competencies
QS	Quacquarelli Symonds
R&D	Research and Development

ROI	Republic of Ireland
UAE	United Arab Emirates
US	United States
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VC	Venture Capital
WEF	World Economic Forum
WHO	World Health Organisation

Annex C: Competitiveness Data

Measure	DNK	EST	FIN	IRL	ISR	NZL	SGP	SCO	NIR
Labour productivity per hour worked (2015, US$)	64	33	55	72	38	41	59	50	41
GDP per capita (2015, US $000s, current prices)	58	18	45	65	33	37	52	38	30
Annual GDP growth (2015, %)	1.0	1.4	0.2	26.3	2.5	3.4	2.0	1.7	1.4
Gini coefficient OECD methodology (after taxes and transfers, 2013)	25	36	26	31	36	33	36	30	30
Happiness score (2014-16, 1-10)	7.5	5.6	7.5	7.0	7.2	7.3	6.6	6.7	6.9
Exports (2015, as % of GDP)	53	79	37	124	31	28	177	55	59
Inward FDI jobs (2014-16, per million persons)	301	809	532	2,724	190	645	4,323	1,368	1,929
Outward FDI jobs (2014-16, per million persons)	3,147	374	2,172	2,505	1,175	589	12,367	755	500
Overnight external visitor trips (2014, per capita)	1.8	1.5	0.5	2.1	0.4	0.6	2.2	1.7	1.2
Total R&D expenditure (2015, as % of GDP)	3.0	1.5	2.9	1.5	4.3	1.2	2.2	1.5	1.9
Highest ranked university score (2016, score out of 100)	70	34	65	63	54	67	92	89	48

Measure	DNK	EST	FIN	IRL	ISR	NZL	SGP	SCO	NIR
Average university score (2016, score out of 100)	43	20	36	33	33	39	62	46	24
Literacy of 15 year-olds (2015, average mean score)	504	524	523	509	472	506	552	494	497
Adult literacy (2012, average mean score)	275	275	285	261	253	276	258	267	264
Population aged 15-64 (2015, as % of total population)	64	65	63	65	61	65	73	66	65
Participation rate (2015, 15-64 as % of 15-64 total population)	78	76	76	70	72	78	74	77	72
ILO unemployment rate (2016, as % of total labour force)	6.1	6.9	9.0	8.1	5.6	5.2	1.8	4.8	6.1
Doing business rank (2016)	5	12	13	18	52	1	2	7	7
Corporate tax rate (2017, %)	22	20	20	12.5	24	28	17	19	19
Business startup rate (2014, as % of total business stock)	10	11	7	7	9	11	14	13	9

Annex D: Competitiveness Scores

Measure	DNK	EST	FIN	IRL	ISR	NZL	SGP	SCO	NIR
Labour productivity per hour worked (2015, US$)	4.4	2.3	3.8	5.0	2.6	2.9	4.1	3.5	2.9
GDP per capita (2015, US $000s, current prices)	4.4	1.4	3.5	5.0	2.5	2.8	4.0	2.9	2.3
Annual GDP growth (2015, %)	0.2	0.3	0.0	5.0	0.5	0.6	0.4	0.3	0.3
Gini coefficient OECD methodology (after taxes and transfers, 2013)	5.0	2.6	4.8	3.4	2.6	3.0	2.6	3.5	3.5
Happiness score (2014-16, 1-10)	5.0	3.3	5.0	4.6	4.7	4.8	4.2	4.3	4.5
Exports (2015, as % of GDP)	1.5	2.2	1.0	3.5	0.9	0.8	5.0	1.6	1.7
Inward FDI jobs (2014-16, per million persons)	0.3	0.9	0.6	3.2	0.2	0.7	5.0	1.6	2.2
Outward FDI jobs (2014-16, per million persons)	1.3	0.2	0.9	1.0	0.5	0.2	5.0	0.3	0.2
Overnight external visitor trips (2014, per capita)	4.2	3.5	1.2	4.8	0.8	1.5	5.0	3.9	2.7
Total R&D expenditure (2015, as % of GDP)	3.5	1.8	3.4	1.8	5.0	1.4	2.6	1.7	2.3
Highest ranked university score (2016, score out of 100)	3.8	1.8	3.5	3.4	3.0	3.7	5.0	4.9	2.6

Measure	DNK	EST	FIN	IRL	ISR	NZL	SGP	SCO	NIR
Average university score (2016, score out of 100)	3.5	1.6	2.9	2.7	2.7	3.1	5.0	3.7	1.9
Literacy of 15 year-olds (2015, average mean score)	3.4	4.1	4.0	3.6	2.7	3.5	5.0	3.1	3.2
Adult literacy (2012, average mean score)	4.2	4.2	5.0	3.0	2.5	4.3	2.8	3.5	3.3
Population aged 15-64 (2015, as % of total population)	4.4	4.5	4.3	4.5	4.2	4.5	5.0	4.5	4.4
Participation rate (2015, 15-64 as % of 15-64 total population)	5.0	4.5	4.4	3.3	3.8	5.0	4.1	4.8	3.8
ILO unemployment rate (2016, as % of total labour force)	1.5	1.3	1.0	1.1	1.6	1.7	5.0	1.9	1.5
Doing business rank (2016)	4.8	3.9	3.8	3.3	2.0	5.0	4.9	4.4	4.4
Corporate tax rate (2017, %)	2.8	3.1	3.1	5.0	2.6	2.2	3.7	3.3	3.3
Business startup rate (2014, as % of total business stock)	3.7	4.0	2.6	2.4	3.3	3.9	5.0	4.5	3.1