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UNDERSTANDING RECENT TRENDS IN THE IRISH ECONOMY

John FitzGerald¹

ABSTRACT

The latest release by the CSO of the Institutional Sector Accounts provides important new data that provide a much clearer picture of recent developments in the economy. This paper argues that the best measure of the economic welfare of those living in Ireland is Net National Product (NNP). Using the new data this paper shows the contribution to NNP by each industrial sector, broken down by foreign and domestically owned businesses. The growth rate of NNP and the contribution to it from the different industrial sectors and from foreign and domestically owned firms is analysed. The results suggest that the economic welfare of those living in Ireland has grown by around 5 per cent a year since 2013. The analysis in the paper shows that the foreign owned sector has contributed around 20 per cent of the growth in the economy since the recovery began. It also shows that the contribution from domestically owned businesses is spread across a range of industrial sectors. Finally, the paper makes some suggestions for further data improvements.

1. INTRODUCTION

Over the last 20 years the problems for policymakers in interpreting the Irish national accounting data have increased, making it very difficult to discern what is happening to the Irish economy. These problems have arisen because of the way globalisation is affecting the economy and they have posed special challenges, not only for those responsible for fiscal policy, but for those seeking to understand the key contributors to Irish growth.

The traditional national accounting framework was developed in the first half of the twentieth century at a time of largely closed economies. Nearly all the output and income of an economy such as Ireland's, then reflected in the GDP aggregate, was available to those living in that economy. Thus, GDP was also the best measure of the economic welfare of those living in an economy.

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However, globalisation has meant that an increasing share of the output and income arising in an economy, such as Ireland, belongs to the foreign owners of multinational enterprises (MNEs) operating in Ireland. However, the income available to those living in Ireland is also enhanced by the inflow of profits and wages from Irish companies and individuals operating abroad.

Beginning in the late 1970s it was apparent that Gross National Income (GNI) was a better measure of the economic welfare of those living in Ireland than GDP because it excluded the profits of the foreign MNEs. These profits are repatriated to foreign owners and they are, as a result, not available to be spent by those living in Ireland, including the Irish government. GNI also takes account of profit inflows.

This measure proved reasonably satisfactory for policymakers and the wider public until about 15 years ago. However, since the early 2000s a range of developments, arising from new dimensions of the globalisation of the Irish economy, began to muddy the statistical waters. These developments are discussed in detail in FitzGerald (2018) and FitzGerald (2020).

For example, redomiciled PLCs, which are essentially foreign-owned funds operating in Ireland, receive their investment income here. However, because their foreign owners take much of the return on their investments in the form of capital gains, there is no income outflow corresponding to the investment income received. This raises Irish GNI, while the income so recorded is of no benefit to those living in Ireland.

Further globalisation developments, including aircraft leasing operations in Ireland and, even more important, the location by foreign MNEs of much of their very large intellectual property in Ireland, have affected the traditional national accounting aggregate GNI. This has rendered it a very unsatisfactory measure of the economic welfare of those living in Ireland.

These problems were brought to the fore with the publication by the CSO of National Income and Expenditure (NIE), 2015, which showed a 25 per cent growth rate for GDP in that year. It was apparent to all looking at these data that this increase in real GDP massively overstated the improvement in economic welfare of those living in Ireland.

While some of these problems are affecting the interpretation of the National Accounts for other countries, their manifestation in the Irish National Accounts has been extreme by international standards. To deal with these problems the CSO has taken the lead in developing additional measures and publishing a range of new information to help policymakers and the public at large understand what is really going on in the economy.

Following on the experience with the National Accounts for 2015, the CSO set up the Economic Statistics Review Group (ESRG) to review the problems with the existing framework of accounts and to recommend how they could be best supplemented with additional information to provide a better understanding of what is happening in the Irish economy.

The ESRG report, published in 2017, recommended a series of developments, most of which have now been implemented by the CSO.

The first significant change was the publication by the CSO of an adjusted GNI measure – commonly referred to as GNI*. This removes many of the distortions in GNI, including the effects of depreciation of aircraft leasing operations and of the intellectual property of foreign-owned MNEs. It also excludes the income of redomiciled PLCs.

While the GNI* measure was initially only available at current prices, in 2019 the CSO published an experimental constant price GNI* figure.² While useful as a measure of what was happening in the aggregate economy, it did not give a good idea of what industrial sectors were fuelling the growth in the economy, and of the relative importance in that growth of foreign MNEs and domestic business. It also showed surprising volatility, suggesting a small fall in the volume of GNI* in 2015 compared to the 25 per cent volume increase for GDP.

However, at the end of 2019, as part of the Institutional Sector Accounts, the CSO published a full break-down by industrial sector of output for foreign-owned MNEs and domestic business.³ At last, this makes possible a detailed analysis of the sectors that are growing rapidly and the relative importance of foreign MNEs. It also makes it possible to provide a good measure of the development of the aggregate economic welfare of those living in Ireland and how it has grown since 2013.

² <https://www.cso.ie/en/releasesandpublications/in/nie/in-mgnicp/>

³ <https://www.cso.ie/en/releasesandpublications/ep/p-isaff/isaff2018/>

This article uses these new CSO data to better understand key developments in the economy since 2013. It shows how Net National Product (NNP) can be decomposed by industrial sector and by ownership, foreign or domestic, to give a much better understanding of what is driving growth in the economy. The article suggests that NNP is a better measure of economic activity for this purpose than GNI*. In particular, NNP allows the separation out of all the activity of foreign MNEs which does not add to the economic welfare of Irish residents and, by excluding all depreciation, it gives a better indication of the long-term sustainable level of output.

When the adjusted data are analysed, they show that foreign MNEs contributed about 20 per cent of NNP over the period 2013 to 2018. The stability over time in their contribution to the welfare of Irish residents contrasts with the big increase in their contribution to GVA over that period. The sectors where foreign MNEs made a substantial contribution to NNP were manufacturing, distribution, IT services and financial services. Interestingly the contribution to NNP of domestic firms in the IT sector was quite close to that for foreign MNEs, in spite of their much smaller GVA. Foreign MNEs accounted for 25 per cent of the wage bill over the period 2013-2018, significantly larger than their contribution to NNP.

Finally, it is estimated that real NNP grew by an average of around 5.2 per cent a year over the period 2013-2018, very close to the growth rate in the experimental CSO GNI* aggregate. However, unlike GNI*, the contributions to this growth from different sectors can now be separately identified.

Section 2 considers the best aggregate measure of economic welfare for those living in Ireland. Section 3 describes the new information available from the CSO. That information is used to develop an alternative presentation of the output and income tables of the traditional National Accounts in Section 4, showing separately the contributions of foreign-owned MNEs and domestic business. These new data are then used to consider the recent trends in the economy, showing the contributions to growth from the different industrial sectors. Section 5 describes some further developments of the National Accounts that could prove useful, and Section 6 concludes.

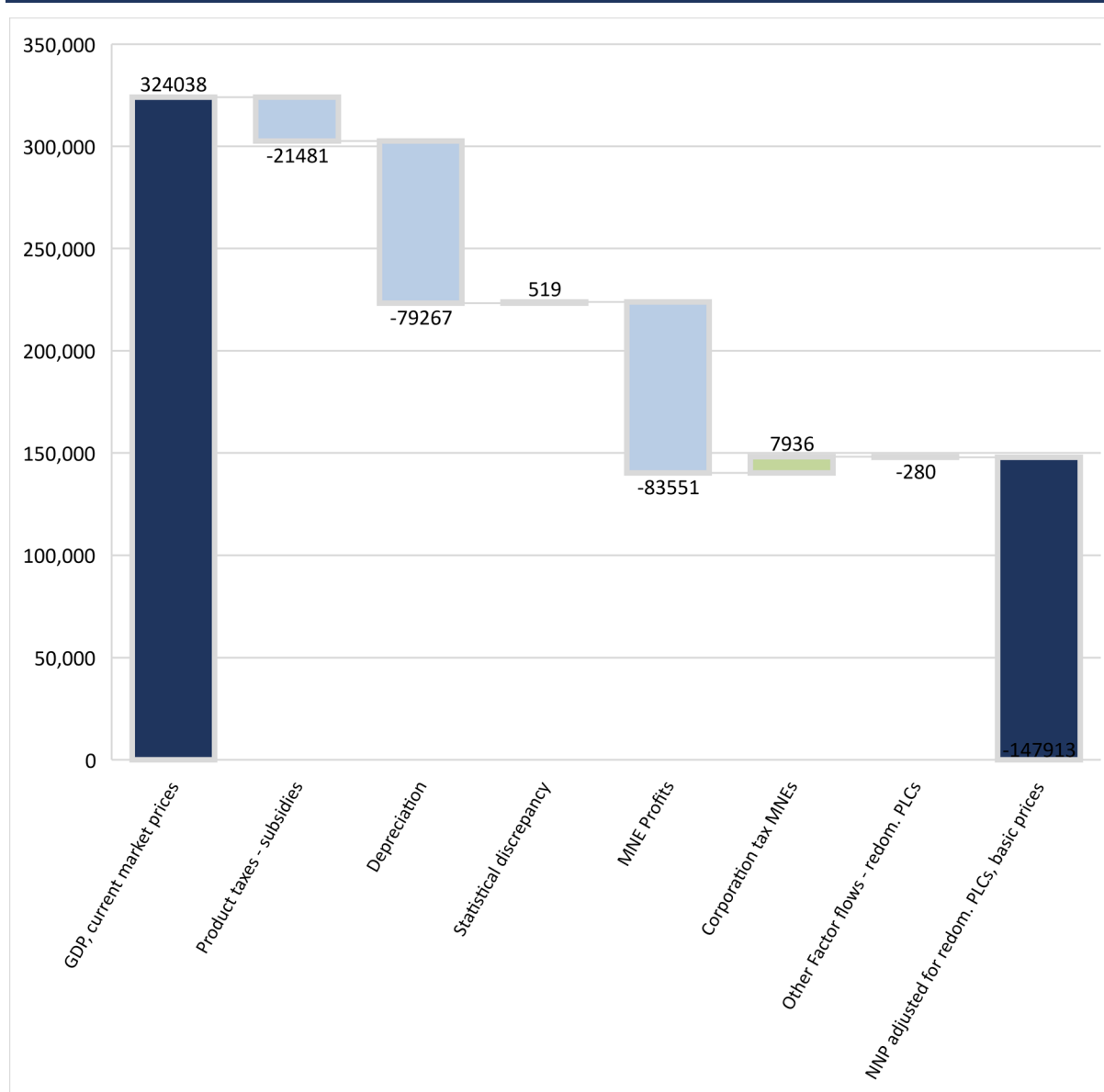
2. MEASURING ECONOMIC WELFARE

As discussed above, GDP, the traditional measure of national output and income, is no longer a good measure of the economic welfare of those living in Ireland.

Figure 1 illustrates the adjustments that are made to GDP in this paper to arrive at a more appropriate measure of economic welfare – Net National Product.⁴

To facilitate the analysis, an adjustment is first made to how goods are priced – product taxes and subsidies are deducted to move from market prices to what are referred to as basic prices. This adjustment is done to simplify the calculations and it does not significantly affect the underlying measure of welfare.

FIGURE 1 ADJUSTMENTS TO GDP TO MOVE TO NNP, 2018, € MILLION



Source: CSO Institutional Sector Accounts, Non-Financial and author's calculations.

⁴ This aggregate measure does not give information on the distribution of that income. It also fails to capture many other factors which affect the welfare of individuals, such as life expectancy and it also does not take account of the environmental impact of economic development.

The second adjustment made is the deduction of depreciation. In producing goods and services some of the stock of capital is used up and must be replaced if production is to be maintained in future years. This adjustment for depreciation is quite large because of the movement to Ireland in recent years of substantial intellectual property (IP), owned by foreign MNEs. This capital is used by the foreign-owned MNEs, not only to produce goods and services in Ireland, but also to produce them elsewhere. While only the depreciation of certain foreign owned capital, such as IP, is deducted in deriving GNI*, in moving to NNP all depreciation is deducted. This reflects the fact that, as capital is used up (depreciated) in producing goods and services in the domestic economy, it must be replaced if that level of production is to be maintained, keeping the economic welfare of those living in Ireland unchanged.

The statistical discrepancy in the National Accounts is added back in to maintain consistency with the detailed data derived from the CSO Institutional Sector accounts for the individual industrial sectors.

The profits of foreign-owned MNEs, which accrue to their foreign owners, are deducted. However, the corporation tax paid on those profits is added back in as it accrues to the Irish government, to be used to enhance the welfare of those living in Ireland.

An adjustment is then made for other factor flows, excluding the receipts of redomiciled PLCs. These other flows include dividend payments made abroad by Irish companies and dividends received from abroad by Irish residents. It also includes profits from abroad received by Irish owned MNEs, as well as wages received from abroad by Irish residents less wages paid to people living outside Ireland. In 2018 these net factor payments in and out of the country were quite small, as shown in the Figure. However, in other years they can be significantly larger.

After these adjustments, the residual is NNP at basic prices, before the inclusion of the inflows of redomiciled PLCs. This is the measure of the economic welfare of those living in Ireland which is used in the rest of the paper.

A key difference between the NNP measure suggested in this article and GNI* is that NNP adjusts for all depreciation, whereas GNI* only adjusts for depreciation on foreign-owned intellectual property, R&D service imports and leased aircraft.

In addition, by focusing on NNP it is possible to decompose output by industrial sector and by ownership, allowing one to clearly identify where the growth in the economy, that adds to the welfare of Irish residents, is coming from. This is not possible with GNI*.The next two sections exploit the advantages of this NNP measure to identify the contribution to NNP of each institutional and industrial sector, broken down by foreign MNEs and domestic business.

3. DATA FROM THE INSTITUTIONAL SECTOR ACCOUNTS

The latest version of the Institutional Sector Accounts for Ireland contains important new information. For both the financial sector and the non-financial corporations sector, the accounts separate out foreign-owned MNEs, giving a full range of data for those sectors. In addition, the CSO has made available data on GVA, compensation of employees (COE) and Gross Operating Surplus (GOS) for each industrial sector, cross-classified by institutional sector. These data are available for the period 2013 to 2018.

This is the first time that we have complete coverage of foreign-owned MNEs. Previous very useful CSO publications only covered the larger foreign MNEs, or certain industrial sectors. The latest release of data makes possible a much more detailed analysis of the role of MNEs in the economy and it helps us to build a much better picture of what is really going on in the Irish economy.

This section uses the extensive new data released by the CSO to estimate the income and output available to those living in Ireland to spend or invest. In each case NNP, excluding factor inflows of redomiciled PLCs, is used as a summary measure of economic welfare. The resulting analysis, using the data from the Institutional Sector accounts, is consistent with the published National Accounts aggregates in National Income and Expenditure.

Some limited imputation was needed to allocate depreciation and corporation tax across the industrial sectors. The methodology used is described in a separate Data Appendix.⁵

⁵ The Data Appendix is available from the author.

TABLE 1 NNP AT BASIC PRICES, BEFORE ADJUSTING FOR THE STATISTICAL DISCREPANCY, € MILLION

Foreign MNEs	2013	2014	2015	2016	2017	2018
1. Compensation of employees	18,056	18,848	20,201	21,089	22,373	23,308
2. Gross operating surplus/mixed income	52,654	59,552	117,723	118,073	131,425	145,830
3. Consumption of fixed capital	14,710	16,135	42,730	49,244	57,244	62,279
4. (2-3) Net operating surplus	37,944	43,417	74,993	68,829	74,181	83,551
5. (1+2) Gross value added	70,710	78,400	137,924	139,162	153,798	169,138
6. (5-3) Net value added	56,000	62,265	95,194	89,918	96,554	106,859
7. Corporate taxes	3,329	3,427	5,202	5,615	6,258	7,936
8. Factor flows - profit repatriations (allocation of primary income flows)	34,615	39,990	69,791	63,214	67,923	75,615
9. (6-8) Contribution to NNP	21,385	22,275	25,403	26,704	28,631	31,244
Domestic	2013	2014	2015	2016	2017	2018
1. Compensation of employees	52,591	54,250	57,588	61,579	65,778	69,986
2. Gross operating surplus/mixed income	41,267	45,924	48,977	53,266	57,671	63,958
3. Consumption of fixed capital	11,829	12,548	13,603	14,512	15,832	16,989
4. (2-3) Net operating surplus	29,438	33,376	35,374	38,754	41,839	46,969
5. (1+2) Gross value added	93,858	100,174	106,565	114,845	123,449	133,944
6. (5-3) Net value added	82,029	87,626	92,962	100,333	107,617	116,955
7. Corporate taxes	955	1,206	1,689	1,758	1,959	2,485
8. Factor flows - profit repatriations (allocation of primary income flows)	0	0	0	0	0	0
9. (6-8) Contribution to NNP	82,029	87,626	92,962	100,333	107,617	116,955
Total	2013	2014	2015	2016	2017	2018
1. Compensation of employees	70,647	73,098	77,789	82,668	88,151	93,294
2. Gross operating surplus/mixed income	93,921	105,476	166,700	171,339	189,096	209,788
3. Consumption of fixed capital	26,539	28,683	56,333	63,756	73,076	79,268
4. (2-3) Net operating surplus	67,382	76,793	110,367	107,583	116,020	130,520
5. (1+2) Gross value added	164,568	178,574	244,489	254,007	277,247	303,082
6. (5-3) Net value added	138,029	149,891	188,156	190,251	204,171	223,814
7. Corporate taxes	4,284	4,633	6,891	7,373	8,217	10,421
8. Factor flows - profit outflows	34,615	39,990	69,791	63,214	67,923	75,615
9. (6-8) Contribution to NNP	103,414	109,901	118,365	127,037	136,248	148,199
10. Residual factor outflows excluding profit repatriations and redomiciled PLCs	1,022	-1,888	-3,176	-6,456	-1,327	280
11. (9-10) NNP adjusted for redomiciled PLCs	102,392	111,789	121,541	133,493	137,575	147,919
12. Redomiciled PLCs	6,492	6,852	4,662	5,781	4,458	5,002
13. (11+12) NNP	108,884	118,641	126,203	139,274	142,033	152,921
NNP adjusted for redomiciled PLCs	102,392	111,789	121,541	133,493	137,575	147,919
Foreign MNEs % of GVA	43	44	56	55	55	56
Foreign MNEs % of NNP adjusted	21	20	21	20	21	21

Source: CSO Institutional Sector Accounts, Non-Financial and author's calculations.

Table 1 summarises the data for foreign owned MNEs and for the rest of the economy. The approach taken here is to replicate Table 2 in National Income and Expenditure 2018,⁶ first classifying by institutional sector rather than by industrial sector. The data are shown at basic prices. Profit repatriations are allocated to the foreign MNE sector, so that the contributions to NNP from the foreign and domestic sectors are separately identified. The residual factor flows are included in the third panel to arrive at NNP for the economy, excluding and including the income of redomiciled PLCs.

In the first panel, the data for foreign MNEs are shown. Data are given on the wage bill and the gross operating surplus (GOS) and consumption of fixed capital (depreciation). Rows 4 to 6 then derive the net operating surplus (NOS) after deducting depreciation, gross value added and net value added. Row 7 shows the corporation tax paid by these firms. Item 8 is the factor flows paid abroad by these firms – profit repatriations. These are the residual when corporation tax is deducted from the NOS for these firms. Some additional factor payments are received and paid by this sector.⁷ However, here these residual flows are shown as part of residual factor flows in panel 3 of the Table.

The direct contribution of the foreign MNE sector to NNP is then the sum of the wage bill and the corporation tax paid by the firms, shown as item 9 in the first panel.

The second panel shows a similar set of data for the domestic economy. Here, profit repatriations are zero because the businesses are Irish-owned. There are net factor flows to and from the sector, such as dividend payments and profits received from abroad. These factor flows are included in the residual factor flows item in panel 3 of the Table. The contribution to NNP by the sector is equivalent to the GVA arising in the sector.

The third panel shows the aggregates for the whole economy. Row 10 shows the residual factor flows, excluding the receipts of redomiciled PLCs, and row 11 shows NNP before the inclusion of the receipts of the redomiciled PLCs. This measure of NNP is used in the rest of the paper as the best summary measure of the economic welfare of those living in Ireland. Finally, row 13 adds in the

⁶ <https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=N1802&PLanguage=0>
However, to facilitate the analysis by industrial sector in this article, these residual flows are treated as a single item when deriving NNP for the economy, rather than being separately allocated by industrial sector.

receipts of the redomiciled PLCs to arrive at NNP at basic prices, consistent with the data in National Income and Expenditure.⁸

The final panel of Table 1 shows the share of GVA and NNP accounted for by the foreign-owned MNE sector. On the basis of GVA, the MNE sector dominates the economy, accounting for over 50 per cent of GVA since 2015. However, when allowance is made for the factor outflows from this sector, its contribution to NNP is around 20 per cent. Also, as shown in the Table, the contribution of the foreign-owned MNE sector to NNP has been steady throughout the period 2013 to 2018, in spite of the widely reported major expansion of the activity of these firms in Ireland over the period.

4. CONTRIBUTION TO GROWTH BY INDUSTRIAL SECTOR

Current prices

Appendix Table A.1 shows the NNP arising in each industrial sector at current basic prices, broken down by foreign-owned MNEs and the domestic sector. While the CSO has supplied data on this basis for the wage bill and the Gross Operating Surplus (GOS), it does not provide full details of the allocation of depreciation and corporate taxes across industrial sectors cross-classified by ownership. Where this detail was lacking, depreciation and taxes were imputed using a set of simple rules, described in the separate Data Appendix.

Table 2 shows the growth rate at current prices for three different measures of NNP and for GNI*. The first row shows NNP after accounting for profit repatriations, but before including residual factor flows. The second row in the Table is the preferred measure of economic welfare, NNP before the factor inflows to redomiciled PLCs are included. The third item is NNP including the income of redomiciled PLCs. As can be seen from the Table the average growth rate between 2013 and 2018 in the preferred measure is identical to that for GNI*. Also, the annual pattern of growth is rather similar, with a significant dip in the growth rate in 2017. In the case of NNP after accounting for profit repatriations and before taking account of residual factor flows, the average growth rate over the period is also very close to that of GNI*. However, there is little variation in the growth rate over the five years and there is no significant dip in 2017. This highlights the contribution to the volatility of GNI* arising from the residual factor flows.

⁸ There is a small further residual item of around €100 million, which reflects the fact that there is a small difference between the net factor flows shown in the Institutional Sector Accounts and the flows shown in National Income and Expenditure.

TABLE 2 CURRENT PRICES, GROWTH RATE, %

	2014	2015	2016	2017	2018	Average Annual 2013-2018
1. NNP after profit repatriations	6.3	7.7	7.3	7.2	8.8	7.5
2. NNP adjusted for redomiciled PLCs	9.2	8.7	9.8	3.1	7.5	7.6
3. NNP	9.0	6.4	10.4	2.0	7.7	7.0
4. GNI* - from NIE	8.6	9.4	8.0	4.7	7.3	7.6

Source: CSO Institutional Sector Accounts, Non-Financial and author's calculations and CSO National Income and Expenditure.

TABLE 3 AVERAGE SHARE OF NNP, CURRENT PRICES, 2013-2018, %

	Total	Foreign	Domestic
Agriculture, forestry and fishing	1.4	0.0	1.4
Manufacturing	13.2	6.3	6.9
Electricity, gas, and water	1.8	0.1	1.8
Construction	4.4	0.2	4.2
Distribution, transport, hotels and restaurants	19.0	3.7	15.3
Information and communication	6.4	3.4	3.0
Financial and insurance activities	9.6	4.1	5.5
Real estate activities	8.8	0.1	8.7
Professional, admin and support services	10.5	2.5	7.9
Public admin, education and health	20.7	0.1	20.5
Arts, entertainment and other services	2.6	0.1	2.5
Factor income - profit repatriations	46.5	46.5	0.0
NNP after profit repatriations	98.5	20.6	77.8
Factor income - other, excluding redomiciled PLCs	-1.5	-2.3	0.8
NNP adjusted for redomiciled PLCs	100.0	22.9	77.1

Source: CSO Institutional Sector Accounts, Non-Financial and author's calculations.

Table 3 shows the average share of the different industrial sectors in NNP over the period 2013 to 2018, broken down by ownership. It shows that public administration, health and education accounted for 20 per cent of NNP and that the Distribution sector also accounted for nearly 20 per cent. Manufacturing was the next largest sector, accounting for 13 per cent of NNP.⁹

Looking at the contribution of the foreign owned MNE sector, it was particularly significant in manufacturing (6 per cent of NNP), and the Distribution,

⁹ Because these data are shown at basic prices, they do not include non-product taxes and subsidies. The foreign sector paid around €1 billion in non-product taxes in 2018. Thus, the figures here may slightly underestimate the contribution to NNP of the foreign sector. If the CSO published the data on the taxes and subsidies cross-classified by industrial sector, allowance could be made for this factor by moving from showing the data at basic prices to showing them at factor cost.

Information and Financial sectors (each between 3 per cent and 4 per cent of NNP). Also, the Table shows that in three of these sectors – Industry, Information Communications and Finance, foreign-owned firms account for roughly half of the NNP arising in the sector.

In the case of the Information and communication sector, it is surprising that, while domestically owned firms account for only 15 to 20 per cent of the GVA in the sector, they account for just under half of the sector’s contribution to NNP. Domestic firms also account for around 45 per cent of the wage bill in the sector. These data suggest that more attention should be focused on the progress of the domestic firms in this sector, as they represent a significant share of NNP.

The overall share of the financial sector in NNP, at almost 10 per cent, is rather high by international standards.¹⁰ However, this may be accounted for by the presence of quite a large share of foreign-owned companies, many of whom are providing international services. However, the foreign share of NNP has been around 40 per cent since 2016, lower than it was in 2013-2015. This is in spite of the influx of foreign financial firms to Ireland as a result of Brexit. This suggests that the contribution of recent arrivals to NNP has been small.

TABLE 4 AVERAGE SHARE OF WAGES, 2013-2018, %

	Total	Foreign	Domestic
Agriculture, forestry and fishing	0.8	0.0	0.8
Manufacturing	12.8	6.5	6.3
Electricity, gas, and water	1.4	0.1	1.3
Construction	3.8	0.3	3.5
Distribution, transport, hotels etc.	20.2	5.4	14.8
Information and communication	7.2	4.1	3.1
Financial and insurance	9.2	5.0	4.1
Real estate activities	0.7	0.2	0.6
Professional, admin & support	11.6	3.5	8.1
Public admin, educ. & health	29.8	0.2	29.6
Arts, entertainment etc.	2.4	0.1	2.3
Total	100.0	25.5	74.5

Source: CSO Institutional Sector Accounts, Non-Financial and author’s calculations.

¹⁰ For the EU15, GVA arising in the financial sector accounts for 5 per cent of GVA.

Table 4 shows the average share of wages by industrial sector and ownership over the period 2013-2018. The share of wages arising in foreign-owned firms is around 26 per cent. This is significantly greater than their share of NNP shown in Table 3. This partly reflects the fact that, as other CSO data suggest, the average earnings in foreign MNE firms are well above the economy average.¹¹

Table 5 in the Data Appendix shows corporation tax revenue as a share of the Net Operating Surplus (NOS) by institutional sector and ownership. The average rate of tax paid by foreign and domestic firms shown in this Table is then used to impute corporation tax payments across the different industrial sectors.¹² Table 5 (below) shows that the tax rate has consistently been higher in the financial sector than elsewhere. This reflects the fact that the NOS is not a good measure of the tax base in the sector and also problems arising from FISIM (Financial Services Indirectly Measured). For the rest of the economy the average tax rate has ranged between 7 per cent and 10 per cent. This is somewhat lower than the marginal tax rate of 12.5 per cent, and it may reflect differences in the treatment of depreciation between the National Accounts and the tax system.

TABLE 5 AVERAGE CORPORATION TAX RATE BY INSTITUTIONAL SECTOR, %

	2013	2014	2015	2016	2017	2018
Financial Domestic	7.6	8.6	12.3	15.5	18.8	21.2
Financial Foreign	23.5	17.3	23.4	18.5	18.7	25.2
Non-Financial Corporation Domestic	7.2	7.7	9.7	8.2	7.9	8.7
Non-Financial Corporation Foreign	7.5	6.9	5.8	7.3	7.5	8.4
Total	6.4	6.1	6.3	6.9	7.1	8.0
Foreign	8.9	8.0	7.0	8.2	8.5	9.6
Domestic	7.3	7.8	10.2	9.8	9.8	10.8

Source: CSO Institutional Sector Accounts, Non-Financial and author's calculations.

¹¹ <https://www.cso.ie/en/releasesandpublications/ep/p-fdi/foreigndirectinvestmentinireland2017/awe/>

¹² Details are given in the Appendix.

TABLE 6 FOREIGN MNE SHARE OF NNP, %

	2013	2014	2015	2016	2017	2018
Agriculture, forestry and fishing (A)	2.0	1.5	1.9	1.6	1.2	1.4
Manufacturing	46.5	45.1	51.3	45.6	47.7	48.7
Electricity, gas, and water	3.5	4.1	4.3	5.5	5.4	3.9
Construction (F)	6.3	5.1	4.3	4.4	3.9	3.7
Distribution, transport, hotels and restaurants	21.0	19.8	19.5	19.7	18.9	18.6
Information and communication	52.0	52.6	53.0	52.1	52.4	52.9
Financial and insurance activities (K)	45.4	44.3	43.0	40.6	41.8	40.9
Real estate activities (L)	1.2	1.3	1.3	1.3	1.4	1.2
Professional, admin and support services	25.0	23.8	23.6	25.0	24.5	23.6
Public admin, education and health	0.6	0.6	0.6	0.7	0.7	0.8
Arts, entertainment and other services	2.8	2.7	2.6	2.4	2.3	2.3
NNP excluding additional factor flows	20.7	20.3	21.5	21.0	21.0	21.1
Factor income	29.7	43.0	62.0	57.2	20.2	-24.1
NNP excluding redomiciled PLCs	22.5	23.3	24.9	25.2	21.7	20.3

Source: CSO Institutional Sector Accounts, Non-Financial and author's calculations.

Table 6 shows how the share of the NNP in each sector that is accounted for by foreign MNEs has evolved over the period 2013-2018. In the case of manufacturing, the share has only shown a small increase, in spite of the huge increase in GVA arising in the sector due to relocation of activity to Ireland in the period from 2015. Except for the IT sector, where the foreign share has slightly increased over time, the other sectors where foreign MNEs account for significant activity have seen a limited reduction in their share. Thus, while the share of NNP in the economy accounted for by all foreign MNEs has fluctuated over time, there has been relatively little change between 2013 and 2018.

Constant price data

The CSO has not published separate deflators for individual industrial sectors broken down by ownership. Here the aggregate deflator for each industrial sector is used to deflate the NNP data for both the foreign-owned MNE sector and the domestic sector. In many cases this simplification may not matter. However, because they are engaged in different sub-sectors of the manufacturing and IT sectors, the appropriate deflator for the output of foreign-owned MNEs may be different from that for domestically owned firms.

The approach taken here means that the profit repatriations from foreign-owned MNEs are effectively deflated by the deflator for the relevant industrial sector, which seems appropriate. The implied deflator for net factor income from NIE 2018 is used to deflate the residual factor flows.

While the approach taken here involves some simplifications, as shown below, the results of using these sectoral deflators look broadly consistent with the CSO constant price data, where available.

Appendix Table A.2 shows the resulting data for each year and industrial sector, broken down by ownership, and these results are summarised in the Tables below.

TABLE 7 GROWTH RATE, CONSTANT PRICES, %

	2014	2015	2016	2017	2018	Average Annual 2013-2018
NNP after profit repatriations	4.6	3.2	6.1	4.0	7.0	5.0
NNP adjusted for redomiciled PLCs	7.2	3.2	7.8	1.6	6.3	5.2
NNP	6.2	0.1	8.4	0.9	6.2	4.3
GNI* from NIE	8.8	-0.4	8.7	3.7	6.3	5.4
GNI from NIE	8.7	13.7	9.7	5.1	6.5	8.7
GDP from NIE	8.6	25.2	3.7	8.1	8.2	10.5
Modified Total Domestic Demand	6.3	5.3	6.1	3.5	1.7	4.6
Employment	2.6	3.4	3.6	2.9	2.9	3.1

Source: CSO Institutional Sector Accounts, Non-Financial and author's calculations CSO National Income and Expenditure.

As can be seen in Table 7, the average growth in the preferred measure of NNP, adjusted for redomiciled PLCs, is 5.2 per cent a year between 2013 and 2018. This is very similar to the growth rate of GNI* in the experimental CSO data over the same period. However, unlike the CSO figure for GNI*, the adjusted NNP figure shows less volatility over time.

Also, it is interesting that the NNP measure which shows least volatility is that which just adjusts for profit repatriations, omitting the residual factor flows. This shows that the volatility in the adjusted NNP series, and also probably in the GNI* series, arises from the volatility in these residual factor flows.

The growth in the CSO measure Modified Total Domestic Demand is also shown in the Table. It displayed somewhat slower growth than the modified NNP measure or the GNI* measure. This reflected the fact that the modified balance on the current account of the Balance of Payments moved into increasing surplus over the period, adding to the resources available to those living in Ireland. Thus, while the modified total domestic demand measure is a very useful summary

statistic, it does not take account of developments in the Balance of Payments, which can have important implications for domestic economic welfare.

Table 7 also shows the growth rate for GNI and GDP at constant prices. As can be seen from these data, they showed a dramatically higher growth rate over the period. However, much of this measured increase in output did not directly benefit those living in Ireland, and hence GNI* and NNP are much more appropriate for measuring the development of domestic economic welfare.

Table 7 also shows the growth in employment each year between 2013 and 2018. This series shows very little volatility. Over the full period 2013 to 2018, it indicates a growth in output per person employed of around 2 per cent a year.

TABLE 8 AVERAGE GROWTH RATE BY INDUSTRIAL SECTOR, 2013-2018, CONSTANT PRICES, %

	All Sectors	Foreign MNEs	Domestic
Agriculture, forestry and fishing	8.9	1.8	9.0
Manufacturing	7.3	8.3	6.5
Electricity, gas, and water	0.3	2.7	0.2
Construction	10.8	-0.3	11.4
Distribution, transport etc.	5.9	3.3	6.6
Information and communication	9.9	10.2	9.4
Financial and insurance activities	-0.1	-2.1	1.5
Real estate activities	2.7	3.5	2.7
Professional, admin and support services	8.2	6.9	8.6
Public Admin, Education and Health	2.0	7.3	2.0
Arts, entertainment and other services	5.9	1.5	6.0
NNP after profit repatriations	5.0	5.1	5.0
NNP adjusted for redomiciled PLCs	5.2	3.3	5.7

Source: CSO Institutional Sector Accounts, Non-Financial and author's calculations.

Table 8 shows the average growth rate by industrial sector over the period 2013 to 2018. It shows that above average growth rates were experienced in agriculture, manufacturing, construction, information and communications and professional services. The growth in public administration and financial services was particularly low over the relevant period.

While the growth in the output of the foreign-owned sector in manufacturing and information and communications was higher than for domestic firms, the domestically owned businesses in these industrial sectors also grew quite rapidly.

Table 9 summarises the contribution to growth over the period 2013-2018 from each industrial sector, broken down by ownership. The foreign-owned sector in manufacturing contributed 10 per cent of the growth in the economy over the five years. Foreign firms in the information and communications sector contributed 7 per cent of the growth and foreign firms in the professionals and administrative service sector contributed 3.5 per cent of the growth.

For domestically owned businesses the major contribution to growth was in the distribution sector (19 per cent) and professional and administrative services (13 per cent). Domestically owned manufacturing firms, construction firms and public administration all contributed between 8 per cent and 10 per cent of the growth in the economy.

TABLE 9 CONTRIBUTION TO GROWTH OF NNP, PERCENTAGE POINTS

	Total	Foreign	Domestic
Agriculture, forestry and fishing	2.2	0.0	2.2
Manufacturing	18.6	10.0	8.6
Electricity, gas, and water	0.1	0.0	0.1
Construction	9.8	0.0	9.8
Distribution, transport, hotels and restaurants	21.7	2.4	19.2
Information and communication	12.7	6.9	5.8
Financial and insurance activities	-0.1	-2.0	1.8
Real estate activities	4.7	0.1	4.7
Professional, admin and support services	16.7	3.5	13.3
Public Admin, Education and Health	8.1	0.2	7.9
Arts, entertainment and other services	2.7	0.0	2.7
NNP after profit repatriations	97.1	21.2	76.0
NNP adjusted for redomiciled PLCs	100.0	14.0	86.0

Source: CSO Institutional Sector Accounts, Non-Financial and author's calculations.

While the foreign-owned sector of the economy contributes directly up to a fifth of the growth in the economy, it may have a wider indirect impact. This is because the sector buys services from other sectors in the domestic economy, such as legal and accounting services.

The approach taken here has been to deduct the profit repatriations from foreign MNEs in arriving at their contribution to NNP in each industrial sector. However, the dividends paid by domestic firms and the profits received from abroad by Irish-owned MNEs are included in the aggregate residual factor income item in the Tables shown here and in Tables A.1 and A.2.

The institutional sector accounts provide information on total net factor payments by institutional sector, but not by industrial sector. If the data were available by industrial sector it might be appropriate to include these residual factor payments in arriving at the NNP for each industrial sector.

Then, in arriving at the constant price data for NNP, these residual factor payments would then be deflated by the deflator for the industrial sector in which they arise. This would certainly seem sensible in the case of the dividend payments paid by Irish firms – consistent with the approach on profit repatriations. It could be argued that it would also be the best approach in deflating the profits from abroad of Irish MNEs.

The factor payments received by the household sector, principally the dividends received on institutional investment could then be deflated by the deflator for consumption. The factor payments paid by the government sector, principally national debt interest could be deflated by either the consumption deflator or the deflator for NNP.

5. NEXT STEPS

These new data, published by the CSO, represent a major step forward in understanding developments in the Irish economy. The analysis shown here could still be improved in a number of dimensions with some further data.

- If the CSO could fill in some of the missing data for depreciation and corporation tax, this would allow some refinement of the analysis in this paper. However, it would be unlikely to change any of the conclusions.
- It would be helpful if the CSO published their data on a constant price basis using appropriate deflators. This would provide a more robust estimate of the growth in NNP at constant prices.
- It is important that employment data be published mirroring the industrial classification used here, with details of sectoral employment by ownership. This would allow a more robust analysis of trends in productivity in the economy.
- It would be very helpful if some current indicators were developed which could help in forecasting key aggregates.
- It would be desirable to carry these data back to the mid-2000s to allow appropriate economic modelling of the Irish economy.

As discussed in this article, the new analysis that is made possible by the additional data provides a much more coherent picture of developments in the Irish economy over the last five years than is possible from the standard National Accounts. Instead of exceptional and erratic growth rates, as seen in the headline National Income and Expenditure data, the pattern shown here for NNP is smoother and more plausible. Of course, that does not necessarily mean that the numbers are right, but it does suggest a greater degree of coherence with other data on developments in the economy, such as employment.

The analysis in this paper suggests that an important factor in the volatility of key aggregates, such as GNI*, is the volatility in the residual factor flows. Separating these out, as in this paper, would give a better indication of the long-term trends in the domestic economy.

Because of the huge gross flows into and out of the country in the form of goods, services and factor incomes, it would be exceptionally difficult to carry out the kind of analysis undertaken here for the expenditure side of the National Accounts. The modified total domestic demand measure is reasonably straightforward to derive, but that still leaves out the very important effects of developments in the external account on the economic welfare of domestic residents.

Heretofore forecasts for the economy have concentrated on the expenditure side of the National Accounts. However, the problems with understanding the developments in the Balance of Payments mean that, for an economy such as Ireland's, much more attention should be focused on forecasting output and incomes.

Of necessity, the NNP data shown here are only available with a significant lag, being published in the second half of the year subsequent to the year to which they refer. While there is a wide range of short-term indicators available on items on the expenditure side of the National Accounts, it would be very helpful if better current indicators were developed which could help in forecasting key aggregates on the income and output side. For example, the long-running monthly output index could be extended and reweighted to better reflect trends in NNP.

6. CONCLUSIONS

This paper uses the new data published by the CSO in the Institutional Sector accounts to derive an adjusted NNP measure, showing the economic welfare of

those living in Ireland. The contribution to this NNP measure can now be disaggregated by industrial sector, and also by nationality of ownership.

The resulting analysis shows that foreign MNEs operating in Ireland contribute approximately 20 per cent of NNP and that this share has not varied much since the economic recovery began in 2013. The analysis also shows that domestic firms in the manufacturing and the IT and communications sector, while much less important than the foreign firms when measured in terms of their contribution to GVA, make nearly as large a contribution to NNP. Also, the growth in the economy, contributing to the economic welfare of Irish residents has been spread over quite a number of sectors of the economy.

The analysis in this paper developing a constant price NNP aggregate is consistent with the CSO's new data for GNI* at constant prices, suggesting an average growth rate over the period 2013-2018 of a little more than 5 per cent. However, the analysis also suggests that the volatility seen in this measure is due to extreme volatility in factor flows other than profit repatriations.

Given the importance of the new data published by the CSO in developing our understanding of the Irish economy, when the CSO publish their Institutional Sector Accounts for 2019 in the traditional format towards the end of this year they should, in addition, consider presenting these data in a similar framework to that used in this paper.

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APPENDIX 1: NNP BY INDUSTRIAL SECTOR OF ORIGIN AT BASIC PRICES

The derivation of these data from the Institutional Sector Accounts and the National Accounts is shown in a separate Data Appendix in Excel format.

TABLE A.1 NNP BY INDUSTRY, CURRENT BASIC PRICES, BEFORE STATISTICAL DISCREPANCY, € MILLION

	All sectors						Foreign MNEs						Domestic					
	2013	2014	2015	2016	2017	2018	2013	2014	2015	2016	2017	2018	2013	2014	2015	2016	2017	2018
Agriculture, forestry & fishing	1185	1599	1493	1693	2587	2019	23	24	28	27	31	28	1161	1575	1464	1664	2556	1991
Manufacturing	12872	14054	15757	18336	18187	20665	5986	6343	8083	8368	8679	10057	6876	7703	7669	9965	9502	10602
Electricity, gas, and water	2484	2226	2147	2091	2010	2899	87	91	93	116	109	114	2399	2136	2052	1973	1901	2785
Construction	3199	4151	4762	5553	7105	8125	201	212	205	246	275	300	3001	3938	4558	5307	6830	7824
Distribution, transport, hotels etc.	20976	21938	23166	24484	26005	27177	4413	4354	4506	4819	4915	5055	16562	17586	18659	19662	21090	22122
Information and communication	6073	6548	7374	8272	9435	10530	3158	3445	3905	4308	4942	5573	2916	3102	3468	3963	4495	4957
Financial and insurance	10406	10917	12157	12328	12946	14018	4722	4838	5223	5007	5412	5730	5683	6078	6935	7321	7534	8287
Real estate activities	8601	9536	10450	11630	11989	14246	101	121	140	146	171	175	8500	9416	10310	11484	11817	14071
Professional, admin & support	9838	10963	12622	13612	15584	16544	2462	2612	2979	3408	3818	3908	7378	8351	9645	10204	11766	12638
Public admin, education & health	24790	24878	25454	25924	26883	28211	146	152	163	184	198	214	24641	24726	25291	25740	26685	27997
Arts, entertainment & other	2995	3094	2990	3124	3522	3765	85	83	78	76	81	86	2910	3014	2910	3048	3441	3678
Factor income - profit repatriations	34615	39990	69791	63214	67923	75615	34615	39990	69791	63214	67923	75615	0	0	0	0	0	0
NNP after profit repatriations	103421	109905	118373	127046	136253	148200	21384	22275	25404	26705	28631	31239	82026	87625	92962	100331	107616	116952
Factor income - other, excluding redomiciled PLCs	1022	-1888	-3176	-6456	-1327	280	-1623	-3760	-4859	-7001	-1168	1139	2645	1872	1683	545	-159	-859
NNP adjusted for redomiciled PLCs	102399	111793	121549	133502	137580	147920	23007	26035	30263	33706	29799	30100	79381	85753	91279	99786	107775	117811
Redomiciled PLCs	6492	6852	4662	5781	4458	5002	0	0	0	0	0	0	6492	6852	4662	5781	4458	5002
NNP	108891	118645	126211	139283	142038	152922	23007	26035	30263	33706	29799	30100	85873	92605	95941	105567	112233	122813
Memo: Total Factor Flows	29145	31250	61953	50977	62138	70893	32992	36230	64932	56213	66755	76754	-3847	-4980	-2979	-5236	-4617	-5861

Source: CSO Institutional Sector Accounts, Non-Financial and author's calculations.

TABLE A.2 NNP BY INDUSTRY, CONSTANT BASIC PRICES, BEFORE STATISTICAL DISCREPANCY, € MILLION

	All sectors						Foreign MNEs						Domestic					
	2013	2014	2015	2016	2017	2018	2013	2014	2015	2016	2017	2018	2013	2014	2015	2016	2017	2018
Agriculture, forestry & fishing	1321	1815	1847	2130	2587	2021	26	27	35	34	31	28	1294	1788	1812	2094	2556	1994
Manufacturing	14181	15745	14694	17861	18187	20210	6595	7106	7538	8151	8679	9836	7575	8630	7151	9707	9502	10368
Electricity, gas, and water	2804	2525	1997	2038	2010	2848	98	103	87	113	109	112	2707	2423	1909	1924	1901	2736
Construction	4734	5171	5611	6191	7105	7896	297	264	241	274	275	292	4440	4906	5370	5917	6830	7604
Distribution, transport, hotels etc.	21070	22915	24503	25809	26005	28099	4433	4548	4766	5080	4915	5226	16636	18369	19735	20727	21090	22872
Information and communication	6847	7238	7769	9188	9435	10958	3561	3808	4114	4785	4942	5799	3288	3429	3654	4402	4495	5159
Financial and insurance	13716	12658	13865	12807	12946	13674	6224	5609	5957	5201	5412	5589	7491	7047	7909	7605	7534	8083
Real estate activities	10864	11491	11646	11953	11989	12400	128	146	156	150	171	152	10736	11346	11490	11803	11817	12248
Professional, admin & support	11242	12258	12924	13709	15584	16664	2813	2921	3050	3432	3818	3936	8430	9337	9876	10276	11766	12729
Public admin, education & health	24900	25051	25732	25995	26883	27526	147	153	165	185	198	209	24751	24898	25567	25811	26685	27317
Arts, entertainment & other	2655	2774	2920	3354	3522	3530	75	74	77	82	81	81	2579	2701	2842	3272	3441	3448
NNP after profit repatriations	114334	119640	123508	131034	136253	145826	24396	24759	26185	27487	28631	31259	89927	94874	97317	103536	107616	114558
Factor income - other, excluding redomiciled PLCs	1079	-1715	-1676	-3893	-784	146	-1714	-3416	-2565	-4221	-690	596	2793	1701	888	329	-94	-449
NNP adjusted for redomiciled PLCs	113255	121355	125184	134926	137037	145680	26110	28175	28750	31709	29321	30664	87134	93174	96428	103207	107710	115008
Redomiciled PLCs	6856	6224	2461	3486	2634	2616	0	0	0	0	0	0	6856	6224	2461	3486	2634	2616
NNP	120110	127580	127645	138412	139671	148296	26110	28175	28750	31709	29321	30664	93990	99398	98889	106693	110344	117624

Source: CSO Institutional Sector Accounts, Non-Financial and author's calculations.