Global Production and Economic Globalization - an Irish perspective

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May 2017

Abstract:
This paper will explore some of the impacts on the National Accounts results for small open economies following the introduction of the statistical standards of SNA 2008 (ESA 2010) and BPM6 . The primary focus will be on research and development now inside the production boundary for these accounts. In particular the impact of economic globalisation on the transactions and stocks of intangible assets together with the depreciation of these assets will be reviewed . Some unintended consequences of the application of these statistical standards will be illustrated and alternate approaches to the recording in particular of cross border transactions in Intellectual Property products will be outlined.

1.1 Introduction

On 12 July 2016 CSO reported 2015 annual national accounts estimates for economic growth in Ireland of 26.3 percent to a startled press conference in Government Buildings, Dublin. At the press conference, CSO outlined that the principal factor was economic globalization in the form of international corporate relocations with very large additions to Ireland's stock of intangible assets and greatly increased contract manufacturing activities abroad associated with these relocated entities. To arrive at a more informed understanding of the events that led to this increase in economic growth for Ireland, it is necessary to step back to July 2013.

In July 2013 CSO implemented the new economic standards of the European System of Accounts (ESA 2010) and the IMF Balance of Payments Manual 6th edition (BPM6). The new standards were the outcome of extensive international discussion and debate concerning a total of forty four issues and also resulted in twenty nine clarifications covering a wide variety of topics[2]. The discussions took place during the update of the United Nations System of National Accounts (SNA) that resulted in SNA2008 which preceded ESA 2010. ESA 2010 is SNA 2008 translated into a legal instrument that determines how EU member states should compile their national accounts, while the SNA is a series of international recommendations that apply to all member states of the United Nations.

What is particularly pertinent to this paper is that these new standards introduced both conceptual and practical recommendations to address the measurement challenges to the SNA accounting framework posed by economic globalisation. Indeed, following the introduction of the new standards, a need to develop an even greater level of understanding around economic globalisation activities was identified, despite the additional guidance and recommendations already included in the related SNA (ESA) and BPM manuals,

The UNECE /OECD/Eurostat Guide to The Impact of Globalization on National Accounts (2011) and the subsequent UNECE Guide to Measuring Global Production (2015) were developed to provide additional guidance on both a conceptual and practical level. The latter Guide is particularly relevant as it sets out to

1 The views expressed in this article are those of the author only, and do not necessarily reflect the views of the CSO

2 See appendix 1 Eurostat (2014) for the details of this list of issues and clarifications

address the impact of the new standards on the global production and distribution chains of multinational corporations (MNEs). The key issues addressed in these Globalisation Guides are, in turn, central to explaining the 2015 National Accounts results reported for Ireland and are outlined in Table 1 below.

The key globalisation issues discussed in the development of SNA 2008 and BPM6 standards are identified below. They apply to both conceptual items and practical approaches to compilation of the National Accounts. Due to Ireland's dependency on MNEs it is no coincidence that the most significant items for Ireland in applying the new standards were also these main recommendations covering the topic of economic globalisation.

Table 1 Economic Globalisation - Key Issues and Recommendations from SNA 2008

No.	Issue / clarification	Brief summary of issue	References
9	**Research and development**	Q. Should research and development be recognised as capital formation, leading to the creation of Intellectual Property Products? A. Yes; and so ESA 2010 recognises R&D as capital formation, which is a change from ESA 95.	ESA 2010 3.82 – 3.83; 3.127 (7) Manual 1.1 – 1.14
10	**Patented entities**	Q. Redundant due to recognition of R&D as capital formation leading to Intellectual Property Products. A. So patented entities omitted from ESA 2010 asset categories, replaced by intellectual property products.	-
38a	**Change of economic ownership (as a term)**	Q. Is more description needed to clarify what is meant by economic (as opposed to legal) ownership?	ESA 2010 1.90
39b	**Predominant centre of economic interest (as a term)**	Q. Should this term be adopted to help in the determination of the residence of households, where there are several country candidates to be the country of "residence". A. Yes, but additional material needed to ensure no unnecessary change to business units.	ESA 2010 2.07
40	**Goods sent abroad for processing**	Q. Should there be a change to "no imputation of a change in ownership", and a processing service observed in the national accounts? A. Yes, change to "no imputation".	ESA 2010 3.166d Manual 20.1 – 20.12
41	**Merchanting (in international trade)**	In ESA 95, recorded as a service, with no trade in goods. A change in recording is observed in BPM 6 and in the national accounts. The merchanting margin that was shown as services is now shown as the margin on goods, classed as export of goods, and recording the imports as negative exports of goods.	ESA 2010 3.164d Manual 21.1 – 21.7

In Table 1 we see the main globalisation issues together with some accompanying observations. Nevertheless it may not be entirely clear to readers why Research and Development is included in this table. Given the cross border nature of R&D activities in Ireland, these first two items although relating to Research and Development are all about globalisation.

1.2 Research & Development

Both items are now included under the single R&D heading in SNA 2008 (ESA2010) although in previous versions of the standards they were addressed separately. In SNA'93 (ESA'95) R&D related only to actual research and development activities and was recorded as intermediate consumption in the SNA i.e. treated as an input to production activities. So called "patented entities" were the intangible assets created from successful research and development activities, but were not previously recognised as assets in the accounting framework. However, in the previous edition of Balance of Payments BPM5 and SNA'93 (ESA'95) outright purchases of R&D intellectual products i.e. patents or licences were recorded in the Capital Account under *acquisition/disposal of non-financial non produced assets*[3]. In this case although the cross border transaction was recorded in the Balance of Payments framework and SNA capital account the transaction was outside the SNA investment frontier and not included in capital formation.

R&D had been the subject of intensive debate and discussion in the lead in to the introduction of the previous standards SNA'93 (ESA'95) and BPM5 in 1993 and indeed in the earlier edition SNA'68 in 1968, but in each of these editions a comprehensive treatment of R&D in the accounts was not resolved or agreed.

In addition, R&D related royalties and licenses were initially recorded as property income in SNA 1968 and subsequently as a service i.e. included in GDP, in SNA '93. The patented entities mentioned above were always excluded from the National Accounts and were not recognised as capital assets. This treatment in the standards only changed in 2008 with the inclusion in capital formation of intellectual property products created by R&D activities in SNA2008.

1.3 Change in Economic Ownership and Economic Residence

Other issues from both a globalisation perspective detailed in Table 1 relate to two key conceptual matters that were central to explaning the increase in Ireland's GDP in 2015. Firstly Issue 38a *Change in economic ownership (as a term)* and secondly Issue 39b covering *predominant centre of economic interest*.

The clarifications associated with these concepts in the accounts gave additional guidance on how to determine whether an entity is in fact resident or not in a given economy and the basis for recording transactions entered into by a resident entity i.e. where a change in economic ownership occurs.

Although the principle of recording transactions in the corporate or market sector[4] where a change in economic ownership occurs had been established in previous editions of SNA[5] and BPM, the aim was to introduce greater clarity both in SNA 2008 and BPM6. This principle is one of the key concepts underlying the compilation of the economic accounts both National (SNA) and International (BPM).

1.4 Processing and Merchanting

The final two items in Table 1 relate to *Goods sent abroad for processing* and to transactions related to *Merchanting*. In these two cases the revised treatment accorded more closely with recognising the change of ownership when recording transactions.

3 See IMF Balance of Payments 5th Manual (1993) par 311

4 Leaving aside taxes and subsidies and other "something for nothing (or vice versa) type transactions"

5 SNA '93 par 14.55 re when change in economic ownership occurs or not.. par4.24 re : centre of economic ownership

In the case of merchanting[6] a good is bought in one country and then resold to another country without crossing the border of the merchant. The standards changed the way of reporting these transactions. In SNA'93 they were recorded on a net basis under the services heading; the margin on the buy/sell was recorded as a business service. In this case a "no change of economic ownership" was imputed. In SNA 2008 these buy and sell transactions were recorded on a gross basis under the goods heading; thus recognising the change in economic ownership that occurs when the merchant buys the good and again when it is sold. However, the two transactions are recorded as positive and negative exports of goods. No overall change to GDP results from this change in recording.

Goods sent abroad for processing[7] covers many of the transactions associated with contract manufacturing. The entire model for recording these types of transactions where elements of the production process are oursourced has changed since SNA'93 and BPM5 were introduced. The standard case was where goods went abroad for further processing and then returned to the country of the sender. The treatment was to impute a "change in economic ownership" and recognise the export and import associated with the movement of the good before and after processing abroad. The net of these two transactions accords with the value of the processing service provided abroad.

In reality no change in ownership takes place because the good remains in the ownership of the principal that sent it abroad. In SNA 2008 and BPM6 it is recognised that no change in economic ownership takes place and the transaction with the processer abroad is recorded as the import of a manufacturing service by the principal.

Many of the transactions that take place in global value chains[8](GVCs) involve outsourcing and procurement between affiliates and third parties abroad. These GVCs span continents as specialization of stages in the production and distribution cycle are clustered in particular countries or zones. Although no change is GDP results from this change in recording it is possible that the increased clarity around the nature of these transactions results in additions or reductions in activity being recorded in a country's national accounts and balance of payments.

1.5 Updating the Standards

A feature of the process of updating the statistical standards for the National and International Accounts is that it entails extensive rounds of discussion and debate and ultimate agreement comes slowly. The last three updates took place in 1968, 1993, and 2008 (2010). These standards apply to practically all the countries in the world irrespective of their level of economic development and the application can be uneven across countries in some respects although in March 2016, 62 countries had implemented SNA 2008 (partially or fully) and a further 98 had implemented SNA'93[9].

6 For a more detailed discussion see Eurostat/OECD/UNECE (2011) Chapter x

7 For a more detailed discussion see Eurostat/OECD/UNECE (2011) Chapter y

8 A Global Value Chain takes in the entire life cycle of a product from conception, to production, distribution Sale to customers after sale services

9 See par 22 https://unstats.un.org/unsd/nationalaccount/aeg/2016/RM2_UNSC_Report.pdf

As already stated, ESA 2010 is the application of the SNA 2008 for the members of the European Union and is a legal instrument requiring compliance by all member states of the Union ensuring that these standards are followed in the compilation of their national accounts. Oversight and validation by Eurostat, ECB and IMF guarantees this level of compliance, for example through the Own Ressources[10] (GNI) audit process carried out by Eurostat. It requires documentation of all the processes followed in compiling a member state's National Accounts and Gross National Income (GNI) in particular. The GNI audit process is carried out in conjunction with other EU directorates i.e. DG Audit and DG Tax.

In summary, this section has highlighted the key changes in the statistical standards, SNA 2008 (ESA2010) and BPM6, related to the recording of items significantly impacted by globalisation. This focus on globalisation was emphasised through the related conceptual framework of economic ownership and economic residence. This represents an essential starting point to an understanding of the drivers behind the 2015 national accounts and balance of payments annual results reported by CSO in July 2016.

Section II of this paper considers the expected consequences of applying these changes to the statistical standards and their impact on the Irish National Accounts and International Accounts (BOP &IIP).

These findings are followed in Section III by what I am terming the unexpected consequences of introducing these changes to the accounts. The changed global environment for international tax compliance, a key feature of the Base Erosion and Profit Shifting (BEPS) initiative of the OECD is also discussed in detail in Section III.

Section IV discusses the recommendations of the (Irish) Economic Statistics Review Group[11](ESRG). These ESRG recommendations were designed to address both expected and unexpected consequences of implementing the new standards.

In Section V summary conclusions are presented along with some forward looking issues for consideration in the next revision of the statistical standards probably in the mid to late 2020s. In particular, a proposal regarding the classification of certain cross border activities covering IP is outlined.

Section II – Implementation of ESA 2010

2.1 New Standards for R&D

After prolonged debate Research and Development (R&D) was finally included in the investment frontier (capital formation) of the National Accounts in SNA 2008 (ESA2010). Previously SNA '93 (ESA'95) did not recognize the output of R&D as capital formation, although it was recognised and understood as a major contributor to future economic growth. Some of the questions posed in the 1993 revisions of the standards were the following:

- *Should all expenditure on R&D, or only some, be recorded as capital formation?*

10 The GNI Own Resources framework uses the National Accounts of EU member states to calculate their contribution to the EU budget

11 For these reports see http://www.cso.ie/en/csolatestnews/eventsconferencesseminars/resrg/

- *Can all the practical difficulties of deriving satisfactory estimates be overcome, for example by using expenditure data collected in accordance with the Frascati Manual[12], and obtaining appropriate deflators and service lives?*

The SNA '93 distinguished between the three elements of R&D as mentioned above ;

1. Expenditure incurred in the development of R&D assets
2. R&D related services such as *royalties and licenses* which related to the use of assets created by R&D activities
3. The R&D assets themselves i.e. *intellectual property products (IPPs)*.

In the SNA '93 patented entities as these assets were classified, were treated as *non-financial, non produced assets* [13]. However, payments arising from the use of R&D related intellectual property products were required by convention to be recorded as payments for *services* (similar to rentals from an operating lease of fixed assets such as aircraft or ships). This created an anomaly in the SNA accounting rules, which then required payments for the use of non-produced assets to be recorded as property income. If R&D is not treated as capital formation, in this context, the question was whether the payment for the use of patented entities should continue as a payment for services i.e. royalties.

The measurement of productivity in the SNA'93 (ESA95) framework also highlighted shortcomings in approach to R&D and the related patented entities. There were clearly some unanswered questions, specifically how could accurate estimates for capital services and multi factor productivity be made when the IP assets are excluded from the calculations. At the same time, the exports of royalties added to Gross Value Added. Thus the result was an overstatement of all measures of productivity.

The intention of this paper is not to revisit the decisions and recommendations of SNA 2008 (ESA 2010) or BPM6. The focus is instead on the consequences, both intended and unintended, of these decisions for National Accounts and Balance of Payments compilers with a particular focus on Ireland. However there is a particular emphasis on the impact on R&D given the cross border nature of these activities in Ireland. Of all the globalisation related issues highlighted in Table 1 and indeed of all the the issues detailed in Annex 1, R&D had the largest single impact on the Irish national accounts and balance of payments.

As already outlined, the treatment of R&D activities and the related patented entities created by these activities are recorded indistinguishably and capitalised in the National Accounts. Nevertheless the consequences for Ireland of the inclusion of each of these two aspects of R&D together in the latest version of SNA were very different.

Cross border R&D together with Irish R&D is capitalised in the National Accounts, however, the activities abroad are treated as an import of services with the result that no overall addition to GDP results from this element of R&D activities. In the case of patented entities we are considering assets that are already the outcome of R&D activities. Other cross border service imports of R&D relate to the activity that might lead to the development abroad of IP assets.

12 The Frascati Manual sets out the OECD recommendations for Capital Formation
http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm

13 See SNA'93 par 10.130

Regardless of whether the IP assets were developed abroad by affiliates or purchased outright, they add to Gross Value Added and GDP once they begin to be used in production activities:

- in the domestic economy,
  or
- through the use of contract manufacturing arrangements abroad
  or
- through the export of royalties to other non-resident affiliates.

R&D activities in Ireland mainly take the form of research programmes carried out in Universities or other public sector institutions. R&D is also carried out in the corporate sector in Ireland and through partnerships between public and private sector companies and institutions. This overall activity amounts in value to approx. €3bn[14] per annum. In addition to this R&D, many multinational enterprises (MNEs) fund research and development activities abroad on their behalf.

In SNA 2008 (ESA2010) manual R&D transactions are described as follows regardless of whether they relate to outright purchases of R&D intellectual property products or expenditure on R&D activities :

A market producer purchases R&D : The purchases are reclassified from intermediate consumption (ESA95) to gross fixed capital formation (ESA2010).

The former distinction between R&D assets and expenditure on R&D was replaced by a common treatment, with both being capitalised and recorded under capital formation and in the stocks of capital assets of a country. It is likely that the distinction between these two elements of R&D was no longer considered relevant because the development of IP assets was being capitalised as the expenditure was incurred. However, when the impact of cross border purchases of R&D related patents is considered these changes were very significant particularly for small, open economies engaged in activities where these intellectual property products are critical inputs to production.

Moreover, these changes in the standards relating to R&D were compounded by other developments in favour of greater compliance with international recommendations for corporate tax planning, specifically the OECD Base Erosion and Profit Shifting (BEPS). These initiatives were complimented by other developments in Irish tax law.

It is unlikely than those involved in framing the statistical standards could have foreseen that the introduction of the new statistical standards as they apply to Research and Development activities would coincide with these global and domestic initiatives addressing aspects of corporate tax planning by MNEs.

2.2 BEPS Recommendations

14 See Table 2 below

The Base Erosion and Profit Shifting (BEPS) recommendations of OECD were aimed at ensuring greater compliance with the principal that income is taxed where it is earned and received significant support, particularly from OECD member countries. Ireland [15] has strongly supported these initiatives and has introduced the necessary associated legislation. In fact, the BEPS proposals were introduced at the same time as domestic legislative changes aimed at addressing some of the same issues namely ending the so called "Double Irish"[16] or Dutch Sandwich" and also eliminating stateless[17] companies.

Following on from the introduction of the BEPS recommendations and the associated legal changes there has been a fairly steady stream of imports related to cross border purchases of Intellectual Property from foreign affiliates by MNEs resident in Ireland. The presence of IP assets on the balance sheet of the Irish entity gives more substance to the economic residence and centre of economic interest of the Irish based MNEs. This activity began in the first quarter of 2012 and is ongoing (see Chart 1 below). The deadline for the expiry of the so called "Double Irish" tax arrangement is 2019 so the recent acceleration in IP imports will continue until then and are likely to continue beyond that date.

2.3 Results for 2015

In addition to these transactions in investment and imports, in 2015 there were also relocations of companies i.e. the entire balance sheets for a small number of very large entities. These relocations entailed the arrival into the Irish economy of very substantial capital and financial assets and liabilities. The assets were dominated by intellectual property and explain most of the increase in capital assets of €300bn in 2015 (see Figure 1 below). The additions to the stock of capital assets were offset by increased financial liabilities, these financial liabilities were recorded in the Irish International Investment Position (IIP). The presentation in the Non-Financial and Financial Institutional Sector Accounts for 2015 also gives a comprehensive overview of the overall impact of these relocations both capital and financial on the Irish economy[18].

15 http://budget.gov.ie/Budgets/2015/Documents/Competing_Changing_World_Tax_Road_Map_final.pdf

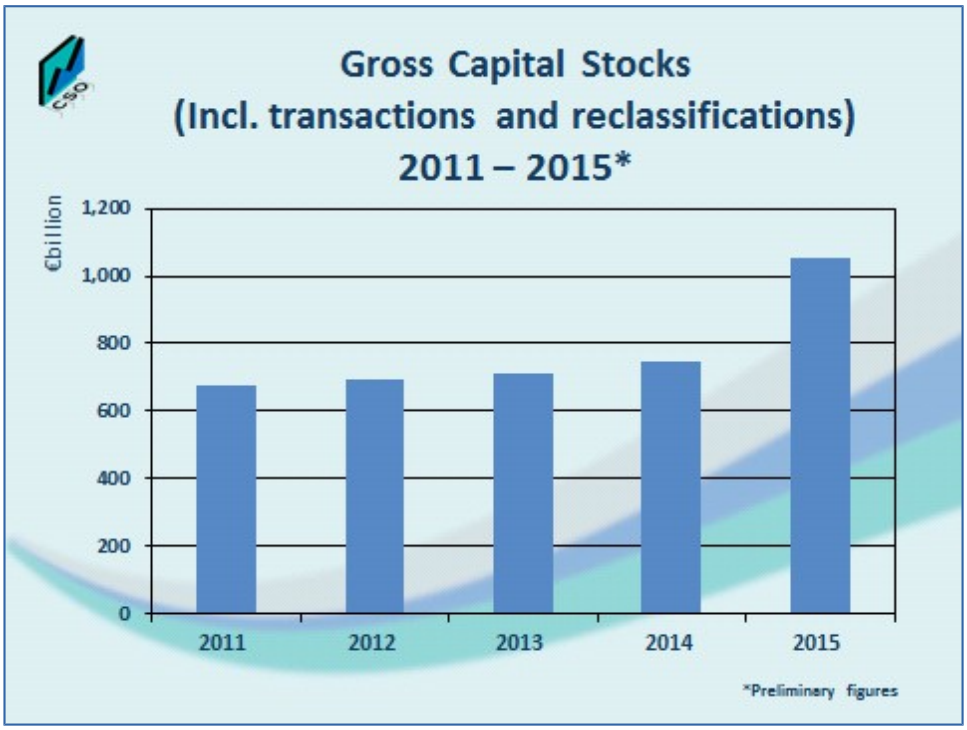
16 The double Irish In broad terms, an Irish incorporated company will automatically be tax resident in Ireland. The 'place of incorporation' test is subject to two exceptions: (a) the treaty exception; and, (b) the trading exception. This trading exception is central to what is now commonly referred to as the 'double Irish' structure. By utilising the trading exception, it is possible to create a company which, although Irish incorporated, is not tax resident in Ireland and therefore generally not subject to Irish corporation tax. The company may also not be regarded as tax resident in any other jurisdiction, and this has led some commentators to describe such companies as stateless.

17 The effect of the draft legislation published today is that if such a company is managed and controlled in a treaty partner country, and that country applies a 'place of incorporation' test of residence, then the company will be Irish tax resident if it is not regarded as a tax resident of any territory.

18 See CSO Institutional Sector Accounts 2015 (annual) http://www.cso.ie/en/releasesandpublications/ep/p-isanff/isanff2015/commentary/

Associated with the corporate relocations were increases in contract manufacturing activity[19]. In these cases Ireland was now the economic principal for substantial additional production abroad where it had engaged contract manufacturers. These arrangements are accounted for in line with the clarifications and changes in the standards as outlined in Table 1, particularly in relation to the measurement of exports and imports on a "change of economic ownership" basis and also how value added should be attributed in these scenarios[20].

Figure 1 - Stock of Capital Assets 2011 - 2015

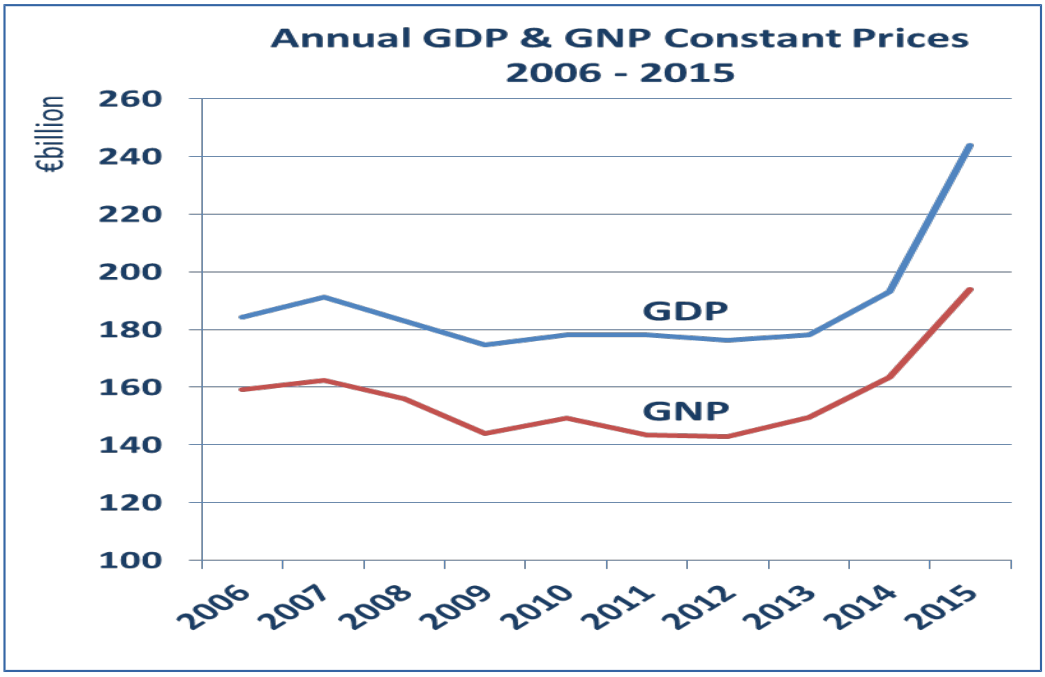


When the net effect of sales of goods produced abroad under contract was added to Ireland's trade exports, the balance of trade in goods and services in the national accounts doubled from €35bn to €70bn between 2014 and 2015, driving a level shift in GDP (see Figure 2 below). Prior to the 2015 corporate relocations, the impact of contract manufacturing activities on exports of goods was largely offset by imports of royalty services being used in the production process, as Irish companies made payments to non-resident parts of the group for the use of intellectual property. However, once the intellectual property was located in Ireland, these offsetting royalty charges did not occur, and contract manufacturing results in a greater addition to Ireland's GDP of the value added generated by these activities. This is clearly seen in the Irish results for 2015.

19 See Stapel-Weber & Verrinder (2016) for details of a framework for these events

20 That exports and imports should be measured on a change of economic ownership basis rather than based on cross border movements was included in the guidance in previous editions of the standards however there was a greater emphasis in SNA 2008 and BPM6 on this issue.

Figure 2 - Trends in GDP and GNP



In summary, the changes in the statistical standards together with the changed legislative and international oversight on how MNEs are structured and where they earn their profits, has had major implications for Ireland. We have observed a change in the statistical recording of R&D activities and assets, coupled with an international initiative aimed at bringing IP assets closer to where the R&D is carried out or alternatively closer to where the production is taking place. This is aimed at reducing the potential for income to be earned at a different location from where production is taking place. In Ireland these collective changes have resulted in both a changed recording of R&D in the National and International Accounts which has been compounded by a series a very significant transactions in R&D either through relocations or inter affiliate purchases of R&D related IP products. The balance sheet for R&D related products in Ireland has consequently increased hugely.

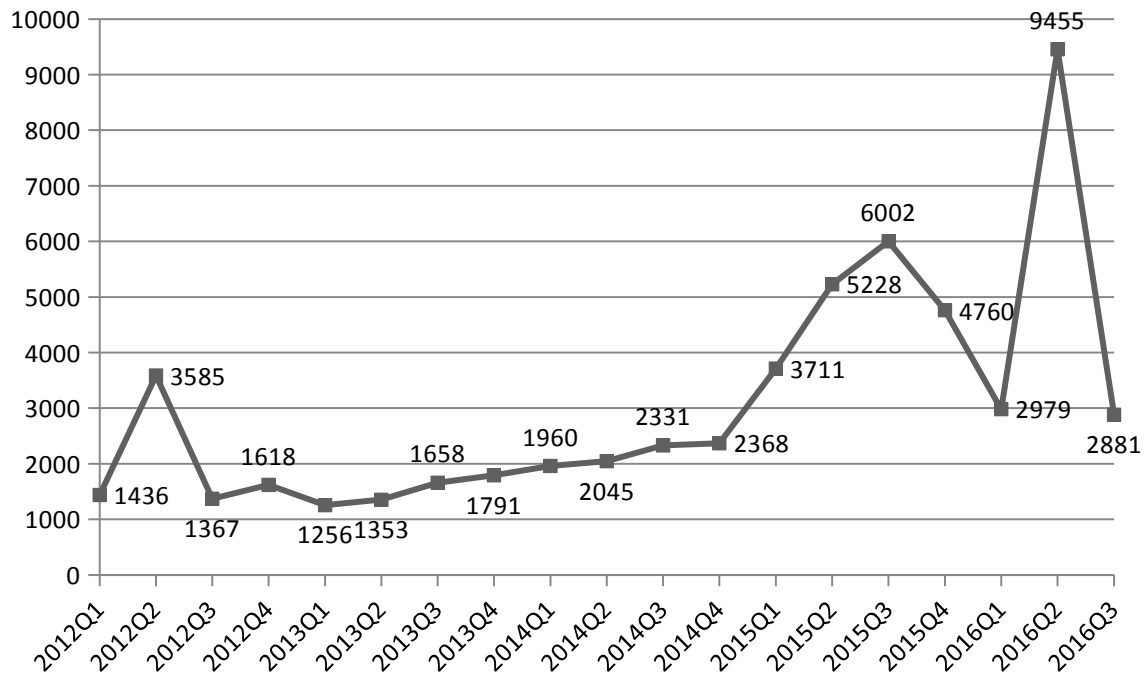
Table 2 Transactions in R&D Cross Border v's Capital Investment

	2012	2013	2014	2015
Capital Formation - R&D	9,853	7,942	9,579	21,342

Of which : Current Account Net Imports R&D	7,240	4,944	6,427	17,943
Domestic R&D	2,613	2,998	3,152	3,399

Table 2 illustrates the extent of domestic investment in R&D and how this compares with cross border R&D activity largely involving MNEs. The balance of activity clearly lies with the MNEs. However, although the changes due to the introduction of SNA 2008 (ESA2010) are significant and form the major explanatory factor in the rise in GDP for 2012 - 2014, it is only when we get to 2015 that really material changes in investment occur. This is before taking account of the balance sheet impact of the corporate relocations.

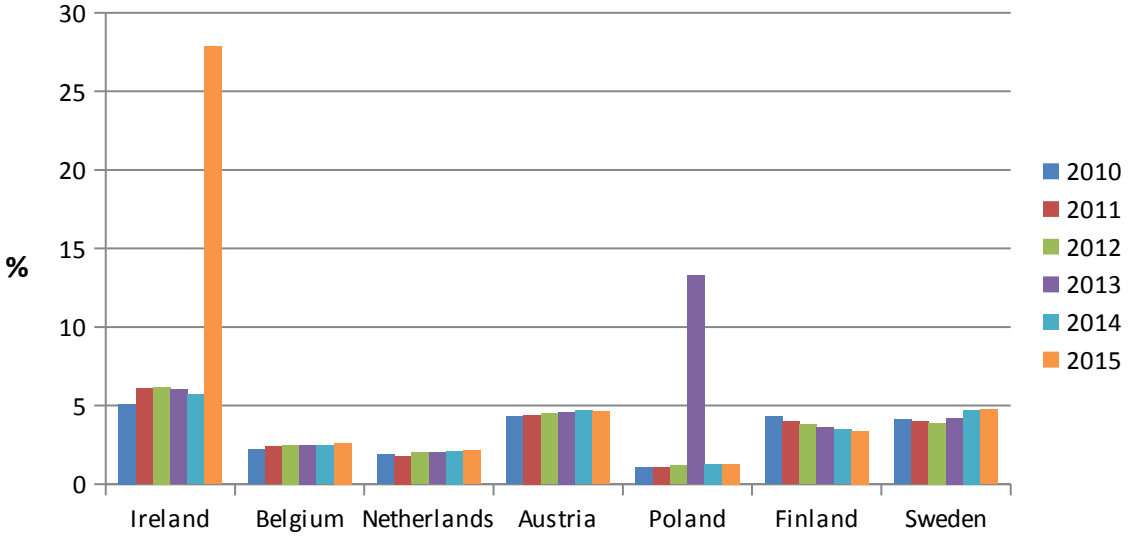
Figure 3 Imports of Business services: Research and development, €m



These impacts could be described as the intended or expected consequences of the changes in the standards, albeit amplified or compounded by the changes in tax legislation and BEPS international recommendations.

Section III - Unintended consequences of Changes

3.1 Impact of Depreciation



As a result of the corporate relocations discussed in the previous section, the size of the capital stock of Ireland increased dramatically (see Fig 1 above). These additional assets resulted in a significantly larger depreciation charge in 2015 compared to 2014 which can be seen in Table 3 below. In fact depreciation doubled, increasing from €31 bn in 2014 to €62 bn in 2015. This increase is largely explained by the effect of corporate relocations on the capital assets of Ireland and the resulting increase in the depreciation charge on these capital assets.

Table 3 Analysis of Impact of Relocations on GDP and GNI –current prices

Year	GDP	Depreciation	Net Factor Flows	GNI	NNI
2014	193,160	30,891	-29,715	161,759	130,868
2015	255,815	61,558	-53,173	200,762	139,204
Change	32.4%			24.1%	6.4%

The impact of increased depreciation on the economic aggregates published in 2015 can be clearly seen by looking at the increases in GDP of +32.4%[21] and GNI of 24.1% whereas NNI (an aggregate that excludes depreciation) reported an increase of only 6.4% in 2015.

Given that the impact of the cross border movements of IP arising either from the 2015 corporate relocations or from transactions in IP as already discussed effectively results in a zero sum because increases in capital formation are offset by the increased imports, similarly increased capital assets due to relocations are offset by increased financial liabilities. The scale of the contribution of depreciation to GNP and GNI and its impact on the Net Factor Flows is particularly large.

It might have reasonably been considered that this would be the extent of any new activity generated by the new IP assets whether relocated or purchased from affiliates abroad. Of course once the assets became active they substitute for existing royalty imports or add to royalty exports and ultimately add to GDP.

21 In current prices

Expenditure GDP[22] is the ideal prism through which these corporate events can be viewed where changes in investment and exports and imports of goods and services can be observed. However, Income GDP[23] is also very informative. The previous discussions focussed on the Expenditure variables that were impacted by the outright purchases of IP i.e. imports and capital formation that contribute to GDP. Looking at the impact of additional IP on the income side particularly where cross border IP is being considered means that two separate but definitely linked sets of calculations around Gross Operating Surplus and what is termed Primary income in the Balance of Payments, need to be examined. Primary income is the main contributor to Net Factor Incomes (NFI) from abroad, the key explanatory variable in the transition from GDP to GNP (GNI).

3.2 Income GDP - Operating Surplus v's Net Factor Income

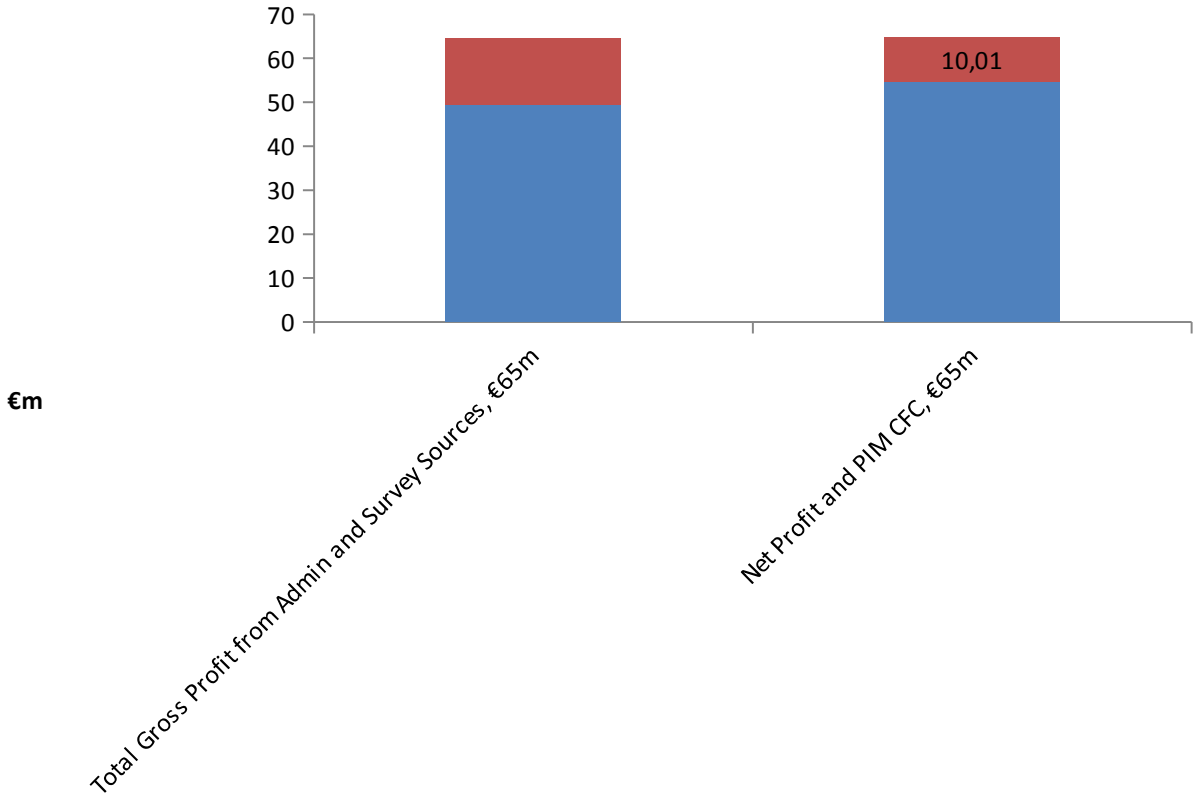
To calculate Gross Operating Surplus, company depreciation charges are added back. Depreciation is then calculated based on the permanent inventory method (PIM) and subtracted from the Gross Operating Surplus calculation to give Net Operating Surplus (see Fig 2 below). Depreciation is calculated in the PIM model based on the economic lives of the assets. This differs from the accounting measure used in a company's statutory accounts. In the case of the IP assets related to R&D, the economic life tends to be longer than the accounting life although assets lives can vary from company to company. The asset valuation at the outset is the same[24] in both approaches but the consequence of the difference in asset lives is that the depreciation from the PIM model can be smaller than the statutory accounting depreciation annual charge.

Figure 4 - Company accounting and National Accounts Operating Surplus

22 Personal and Government Consumption of goods and services, Capital formation and net exports C+I+G+(X-M) = GDP

23 Operating surplus, mixed income, compensation of employees, depreciation plus taxes less subsidies on products and production. GOS+GMI+COE+T-S =GDP

24 Simplification - the asset valuation may be different at the outset. In addition the annual revaluation, geometric assumptions etc. of the asset will result in different asset valuations to apply the depreciation calculations to.



When the calculation of Primary income for Balance of Payments is made the actual company depreciation is normally charged rather than the PIM based economic charge. The PIM model usually produces depreciation estimates at the level of economic activity sector (Nace) rather than company by company. Therefore the depreciation charge for all the entities engaged in the same economic activity are grouped together rather than producing company specific estimates within the PIM model.

Consequently there are different depreciation estimates used in the Operating Surplus PIM model based calculations used in GDP and, for BOP primary income calculations which generally use the depreciation as reported by the company (see Figure 3 for an illustration of the differences). GOS is an addition to GDP of income earned in the domestic economy and the NFI attributes these same profits or income to the foreign direct investor in the transition from GDP to GNI because these earnings are not ultimately the income of Ireland but instead accrue to the country of the owner of the corporation. This is particularly relevant for MNEs that are generally wholly owned by a foreign direct investor. In these cases primary income earned are incorporated into the Net Factor Income from Abroad when the transition from GDP to GNI is presented in the national accounts. Due to the use of different estimates of depreciation at different stages in the accounting framework there will be an over/under estimate in GNI. If these differences are significant some balancing adjustments will be necessary. In general a coordinated approach to ensure this does not occur requires a focus on asset lives, asset valuation and the method of calculating depreciation i.e. geometric or straight line.

In the case for the relocated entities in 2015, particularly given the scale of the underlying capital assets and the related depreciation charge for 2015, adjustments were necessary to avoid a distortion to the economic aggregates.

3.3 Unanticipated Changes – Implementation of ESA 2010 (SNA2008)

This scenario is what I have termed an unanticipated consequence of the implementation of the SNA(ESA) standards as they apply to IPP from R&D activities. On account of the large scale of cross border movements, in Ireland's case at least, there are large depreciation charges and a need to actively manage the consistency and coherence of depreciation charges between National Accounts and Balance of Payments.

If we are to consider the anticipated changes and the unanticipated changes of implementing SNA 2008 (ESA 2010) and BPM6 the recording of R&D in the macro economic accounts is the clear front runner. There is in reality a two stage impact. Firstly

the impact of the R&D related changes in SNA 2008 observed at the time of the introduction of ESA 2010 (in June 2013) and then the subsequent IP imports and corporate relocations that have occurred following the BEPS recommendations and the related Irish legislation. In the context of the 2015 results for Ireland we could consider the following stages:

- The anticipated change was an increase in GDP of 6 per cent at the time of the implementation of ESA 2010 compared to earlier estimates of GDP in 2013. Imports of R&D were already recorded in line with SNA'93 therefore the additions of these R&D imports to capital formation led to an increase in GDP over the entire time series.(See fig 4)
- In 2015 Expenditure GDP increased by 26.3% was recorded due to the additions to net exports by the relocated companies, these exports being produced on a contract manufacturing basis with production outsourced abroad while GVC management, IP and all other aspects of the GVC management remaining in Ireland. In other words the economic owner of this additional production abroad was resident in Ireland in line with the clarifications introduced in the new standards.
- The main unanticipated change is that following on from the corporate relocations that resulted in the addition of most of the €300bn to the stock of Irish capital assets in highly mobile R&D or patent products or IPP. Consequently very large increases in depreciation occurred which when taken together with the increases in goods and services produced abroad under contract manufacturing arrangemens resulted in the increase in GDP of 26.3% in 2015 and an increase of 18.7% in GNP.

As said previously these relocations were probably driven by changes in the regulatory environment and also resulted in the GDP result for 2015. Of course had the IP assets been excluded from capital formation, in line with SNA'93 (ESA'95), the increase in GDP would still have been very large on account of the inclusion of contract manufacturing activity in line with the previous standards. However as the depreciation charge would have been excluded, the knock on impact on GNP and GNI would have been significantly reduced and higher profit outflows to the foreign direct investors in these relocated entities would have been recorded.

It is possible that, when considering the revisions to the standards, all aspects might not have been given the same attention. In particular the accounting consequences of cross border movement of these highly mobile intangible assets, particularly into small and open economies such as Ireland might not been perceived as a very high risk item.

For economic statisticians, a further unanticipated consequence of these changes to the standards and recommendations was the level of suppression of data required to protect the confidentiality of MNEs that had supplied the data. This suppression resulted in less detailed data being available to explain the developments in key economic indicators in the National Accounts SNA framework such as

GDP/GNP/GNI together with other important indicators in the International Accounts viz the Balance of Payments on current account and the Net International Investment Position.

In order to address the deficit in information that could be gleaned from the existing presentations of the macro-economic accounts in 2015 following the large corporate relocations, the Director General of CSO convened the Economic Statistics Review Group[25] (ESRG) in July 2016.

Section IV - Recommendations of ESRG - The Lane Report

4.1 Establishment of ESRG

To address the challenges of interpreting economic developments posed by the arrival of highly mobile IP products in Ireland and also the related substantial increases in contract manufacturing abroad, the ESRG began its work in August 2016. The focus (terms of reference) of the ESRG was to identify a suite of analyses or indicators that would provide a better understanding of the domestic components of the highly globalised Irish economy.

The members were selected in their roles as key stake holders in the macro economic data and information produced by CSO. The whole range of users extending from Central Bankers, economic policy makers, business representatives, economic journalists, Government Debt managers and other experts and commentators on the economy accepted the invitation to participate. In addition to these National representatives, the ESRG included observers from Eurostat and International Monetary Fund. Presentations were also given to the group by OECD, UNSD, KPMG and the Revenue Commissioners. When the group (see Appendix 2 for composition) came together to discuss how best to meet user needs, greater emphasis was already being placed on indicators already published by the CSO such as information on personal consumption in the National Accounts framework and data on employment and earnings. Nevertheless the discussions of the group identified areas where there was a need for additional indicators or extended analysis of existing presentations of the macro accounts.

The group met between the months of September and November 2016 and produced a report which was submitted to the Director General of CSO. The ESRG report and CSO's response[26] were both published on 3 February 2017. The ESRG report identified a suite of analyses or indicators to provide better understanding of the domestic activity and components of Ireland's highly globalised economy.

Although GDP and GNP continue to be important indicators for the Irish economy, the development of a new level indicator, called modified GNI (GNI*), was proposed to address the unique nature of the Irish economy. GNI* is designed to exclude the depreciation attributable to relocated capital assets and the impact of the so called re-domiciled quoted firms or corporate inversions[27]. This new level indicator will provide useful information for analytical and economic modelling purposes, but can also be used to better measure the sustainability of Debt in the economy; Government, Corporate or Household, as a ratio of GNI* in addition to existing GDP based ratios. The Lane Report proposed other measures to enable a greater understanding of cyclical trends in the economy where investment in highly mobile

25 The ESRG has also been titled the Lane Report ; the Chair of the ESRG was the Governor of the Central Bank of Ireland Mr Philip Lane.

26 Link to both ESRG report and CSO response http://www.cso.ie/en/csolatestnews/eventsconferencesseminars/resrg/

27 For explanatory on Redomiciled Corporations see
http://www.cso.ie/en/media/csoie/methods/balanceofinternationalpayments/RedomiciledPLCs.pdf

internationally leased aircraft and intellectual property is excluded. Structural perspectives were also recommended in order that MNE activity can be seen separately and distinctly from domestic activity.

Delivery of these new indicators and measures by CSO will be incremental with some being included in the annual National Income and Expenditure (NIE) results in mid-2017. Over the following years[28], they will be extended in stages to the various quarterly series where feasible. Progress will be kept under review and feedback will be sought from users on developments.

Ultimately the proposed new measures will be robust, repeatable, consistent and comparable. The CSO will have to balance the level of detail made available against its commitment to the confidentiality of data provided by respondents. A legally binding guarantee of confidentiality is given to all CSO respondents and this is essential to enable CSO to collect the data required to produce detailed presentations of economic and social data.

Overall, the recommendations of the ESRG represent a substantial response towards making the macroeconomic statistical aggregates more meaningful. They facilitate alternative analysis with a more realistically scaled measure of the economy. The recommendations of the ESRG cover the short to medium term with a series of deliverables already scheduled for 2017 (see appendix 3). The recommendations that require a more micro based approach are scheduled for 2018 and subsequent years reflecting the scale of the challenge in building new aggregates from the basic data i.e. from the bottom up,

Section V Alternative Approaches

5.1 Classification of Cross Border Intellectual Products

The ESRG represented a prompt response to an enormous challenge to the relevance and clarity of the Irish National Accounts and Balance of Payments posed by increased economic globalisation that resulted in the 26.3% increase in GDP in 2015. The additional analytical presentations of the ESRG will be included in the Irish National Accounts beginning with the inclusion of GNI* in mid- 2017. This work will continue over successive years to complete the programme of work on all the analytical and statistical presentations.

If the globalisation impact on the Irish accounts for 2015 hadn't been so dramatic and necessitated immediate action to better communicate and assist users in understanding what had occurred, a different and considerably slower route might have been pursued. The fifteen year period between updates of the SNA framework allows for detailed consideration to be given to complex issues that can have wide ranging impacts across the statistical framework. Given the importance of indicators of economic growth to policy makers, debt managers, ratings agencies and investors in determining the progress being achieved in an economy, decisions taken in developing the SNA framework are critical in developing this information . Accordingly, the intervening periods between revisions to the framework do offer opportunities to address the statistical measurement challenges that might arise for example as a result of economic globalisation, where a change in methodology or recording might be considered.

The lead in to the next set of standards will undoubtedly offer opportunities to explore other approaches to dealing with economic globalisation in the statistical framework of SNA. The benefit of this approach

28 See CSO response to Lane report for precise timetable of implementation of recommendations of ESRG

is that an international solution can be agreed by all compilers and this preserves comparability of data across countries rather than having individual countries producing separate analytical presentations . It also facilitates the sharing of experiences to make all NSIs aware of developments that could even be occurring in their economy without their being necessarily fully aware.

This approach requires active participation in the initial discussions that lead ultimately to the next set of standards for SNA and BPM. It can, nevertheless, be achieved through a variety of routes i.e. via the Advisory Expert Group (AEG) of the Inter Secretarial Working Group on National Accounts (ISWGNA)[29] or indeed through any of the various working groups and task forces at Eurostat, ECB, OECD or IMF where it is possible to table issues for discussion as part of the coordinated approach to the production of the next edition of standards. Of course the issues being raised by a given member state must be of general concern and relevance to some or all compilers as support is needed from other countries for any proposal to have the possibility of being implemented at the International level in SNA. Ultimately without sufficient support such an approach in dealing with an issue might fail if other countries are not convinced of the need to change.

In this overall context, one question surfaced informally at the time that the impact of the corporate relocations was reported in the 2015 Irish National Accounts. It related to the classification of cross border inter affiliate IP asset transactions or similar relocations of Balance Sheets dominated by IP. The question was whether IP assets in these specific circumstances should be treated as financial assets rather than capital assets (which is how they are currently recorded)?

The economic rationale for transferring IP between affiliates from one country to another can be difficult to understand. The use of IP within an MNE group can be facilitated through the payment of royalties without the necessity to change the geographic location of the patent or licence being used in production. Given the intangible nature of IP products there isn't any particular need for these products to be located in the proximity of production or even of the location where the Global Value Chain (GVC) is being managed from. However, in certain instances R&D activities are co-funded by a number of foreign affiliates in an MNE group. In such cases cross border movement of IP could result after successful research and development has been completed.

To further complicate matters, it is also possible that some IP that has been purchased is not coming from the country where the IP was developed in the first place and instead is coming from another location in line with tax optimisation strategies being followed by MNEs. Movement of IP assets can also occur following corporate restructuring as MNEs may want to demonstrate greater transparency and compliance for example in line with BEPS and other legislation changes discussed earlier. In these cases the IP may be associated with global production arrangements on behalf of Irish MNEs abroad. In this scenario is it appropriate to record these particular cross border inter affiliate IP assets as additions to the capital stock of Ireland.

Could these cross border IP assets be viewed as a type of securitised asset instead and be recorded in the Financial Account of the Balance of Payments? As the R&D activities that resulted in the creation of these assets has already occurred in another country, viewing these highly mobile intangible assets that remain within an MNE group as being different in nature to R&D expenditure or the resulting patented asset seems plausible as this particular type of R&D asset could be thought of as having characteristics

29 For further information on ISWGNA see https://unstats.un.org/unsd/nationalaccount/docs/mandate.pdf

more akin to a financial asset. In both these cases the related flows would necessarily be recorded as property income rather than services.

This approach could be justified because these transactions are closer in substance to financial rather than capital ones. As financial assets the impact on the macroeconomic accounts would be more aligned with the domestic impact of the relocation or purchase. The financial accounts would be balanced between the securitised asset and the related intercompany transaction of a loan to fund the IP purchase. Therefore the impact on the net IIP would be balanced. The income inflow from the IP securitised asset would be offset with a Direct Investment income flow back to the non-resident investor. This would not impact the transition from GDP to GNP/GNI.

The original R&D asset could still exist in the country where it was developed and the cross border inter affiliate transaction would relate to the purchase of an asset leveraged off an IP asset. In this instance the capital asset continues to exist and the cross border asset could be viewed as a securitised version of the underlying IP asset.

As it stands this proposal represents a deviation from the existing standards, SNA 2008 and BPM6, and the question is firstly can it be conceptually justified and secondly can it be made operational? To fully explore these questions is beyond the scope of this paper but further research is encouraged.

Section V – Conclusions

I have argued here that the introduction of the SNA 2008 (ESA 2010) and BPM6 statistical standards resulted in an increase of GDP in Ireland, these increases compared with similar results across the countries of the European Union. However once the additional legal developments in Ireland concerning the phasing out of the so called Double Irish or Dutch Sandwich and Stateless companies together with the BEPS recommendations were introduced, these changes in the statistical standards had very substantial impacts on Irish economic statistics.

The key recommendation of SNA 2008 (ESA 2010) related to the capitalising of R&D assets and it is these same IP assets that were driven onshore into the Irish economy as a consequence of the changes in legislation and BEPS. The highly mobile nature of these intangible assets means that huge inflows can occur in a small open economy.

Additionally there were unexpected consequences of these changes to the standards in the depreciation charges for the Irish economy in 2015 in particular following the very large corporate relocations. These calculations also brought to light the need to ensure a balanced impact on the calculations of Gross Operating Surplus in GDP and Net Factor Incomes in the Balance of Payments.

The ESRG have recommended that a number of new indicators be compiled in the Irish National Accounts and Balance of Payments for analytical purposes including GNI*. The expectation is that these new indicators will enable a more meaningful analysis of the Irish economy.

The paper concludes with an open question regarding the treatment of cross border inter affiliate transactions in Intellectual Property; in this particular scenario is there a case for recording these assets as Financial rather than Capital assets`? The consequence of such a treatment would result in eliminating the depreciation charges and any associated accounting difficulties.

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