

# Addressing the Challenges of Globalization in National Accounts<sup>1</sup>

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## Section I: Introduction – Overview of the challenges of globalization

Increased globalization — through increased international trade, capital flows, and the growth of multinational enterprises — is one of the most important developments affecting the world economy during the last 25 years. Globalization grew rapidly over this period, especially during the 15 years leading up to the 2007–2009 economic and financial crisis. Total world trade in goods and services, for example, increased from 41 percent of world GDP in 1993 to 61 percent in 2008, before dropping during the recession and then afterwards rebounding.<sup>4</sup> The growth of foreign direct investment was perhaps even more dramatic. The direct investment asset position for the United States, for example, increased from 14 percent of GDP at year-end 1992 to 40 percent at year-end 2007. Global competition and the deepening of global supply chains have transformed many industries and led to profound economic changes. Globalization has been associated with innovation in business practices as corporations increasingly manage their production and sales activities at a global level.

While we won't attempt to give a full accounting of the reasons for the acceleration in globalization, several factors appear to have played major roles. First, advances in digital information and communication technologies, notably including the introduction of widespread access to the Internet, have enabled enterprises to do things like manage deeper supply chains on a “just in time” basis, manage production and marketing activities in more locations, and utilize intellectual property products on a global scale. Second, economic reforms and investment have allowed developing economies — notably including China and India — to greatly expand their productive capacity and open new markets to trade and investment. Third, the end of the cold war, along with strengthened international institutions and reductions in trade barriers have undoubtedly contributed to a more stable economic environment in which enterprises are willing to invest globally.

Our focus, of course, is on economic measurement, and specifically on the impact of globalization on the national accounts. In this paper we will focus on the interplay between economic activities that are often not constrained by national boundaries and national accounting statistics, which are defined in terms of national totals. In particular, we find that the effects of globalization can make national data hard to interpret, and for certain types of analysis may even be considered a distorting influence on the data.

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<sup>1</sup> The views expressed in the paper are those of the authors, and should not be considered as representing the official views of the OECD or of its member countries.

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<sup>4</sup> Source: World Bank data, <https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS>.

The impact of globalization was one of the driving forces behind the most recent update of the *System of National Accounts* (SNA), the internationally agreed standards for compiling national accounts, in 2008.<sup>5</sup> The updated 2008 SNA addresses many of the challenges in globalization by clarifying fundamental principles such as “residence” (when is an institutional unit considered to be part of a national economy?) and “economic ownership” (when is an institutional unit recognized as the owner of an asset, and when should a change in ownership be recognized?).

The 2008 SNA also acknowledges the growing importance intellectual property products by recognizing expenditures on research and development as fixed capital formation and the resulting intellectual property product as a fixed asset, joining other intangible intellectual property assets, such as computer software and databases, that were recognized by the SNA in its previous 1993 update. In the globalized context, the fact that intellectual property products are non-rival means that a multinational enterprise can freely use its intellectual property anywhere it operates at zero marginal cost.

While each of these changes in the SNA clarified the concepts and improved the overall coherence of the system, globalization also led to some practical difficulties when these concepts are applied to multinational enterprises that do not operate along national lines. One of the challenges is that multinational enterprises often structure their operations and legal ownership of their assets in ways that reduce their global tax liabilities. Section II of this paper looks at some of the challenges that national accountants face when they attempt to apply the concepts of residency and economic ownership more generally, and the ownership of intellectual property products in particular, to multinational enterprises.

The rapid growth of globalization also exposed some new difficulties in the long-standing problems associated with measuring prices and volume changes, which we will discuss in Section III. Many international transactions are among affiliated enterprises within a multinational enterprise group, and the valuations assigned to these transactions are considered “transfer prices” because there is often no market equivalent price to which they can be compared. Again, multinational enterprises have incentives to try to set transfer prices to reduce their global tax burden. There has also been a recent recognition that as businesses increasingly source their parts and materials from internationally competitive markets, traditional price index methods that track price changes of individual sellers are missing important aspects of substitution in the sourcing of materials, contributing to bias in measured GDP price and volume measures.

In addition to measuring production and generation of income, the SNA also covers financial accounts and balance sheets. In Section IV of this paper, we discuss how globalization may impact these data, and the vulnerabilities that were exposed during the 2007–2009 economic and financial crisis. For example, to understand a nation’s financial vulnerabilities, better information is needed on the nature of the relationships with counterparties, whether affiliated or unaffiliated.

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<sup>5</sup> European Commission et al. (2009).

Section V looks at the path forward, examining possible ways to address the measurement challenges described in the earlier sections. Some of the options call for providing supplementary information while staying within the current rules of the SNA. Other options involve possible changes to the standards, which could be considered in a future update of the SNA and related international standards and guidelines. Finally, some options would involve a more fundamental re-thinking of the data collection process. Under a new paradigm for data collection, countries would cooperate in the collection and sharing of data on operations of multinationals to more accurately measure the activities of multinational enterprises.

One aspect of the data needs associated with globalization that we will not discuss in detail, but which is well covered at this conference, is producing information on global supply chains for understanding the value added associated with trade. Because gross trade flows by country often have very little to do with where production activities associated with traded goods take place, bilateral trade data is often misinterpreted. Recognizing this problem, the OECD and World Trade Organization developed data on trade in value added, which weights trade flows by the value added associated with a country's contribution to the production of an exported good or service. These estimates rely on global input-output tables developed by the OECD. More recent research, including several papers at this conference, suggests that the estimates can be improved by making various extensions or supplements to the information of the traditional supply and use data used to estimate input-output relationships.

## **Section II: Multinational enterprises, residency, economic ownership and intellectual property products**

### **a. Concept of residency in principle and practice**

One of the core definitions or constructs of the 2008 SNA is the residency criterion.<sup>6</sup> It delineates the units that are part of the national economy, and, at least indirectly, defines all macro-economic aggregates that can be derived from the system. In § 4.10 of the 2008 SNA, the concept of residence is elaborated as follows: *“The residence of each institutional unit is the economic territory with which it has the strongest connection, in other words, its centre of predominant economic interest.”*<sup>7</sup> § 4.14 subsequently defines an institutional unit as having a center of predominant economic interest *“when there exists, within the economic territory, some location, dwelling, place of production, or other premises on which or from which the unit engages and intends to continue engaging, either indefinitely or over a finite but long period of time, in economic activities and transactions on a significant scale.”* For the period of time, one year is taken as a, somewhat arbitrary, operational definition.

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<sup>6</sup> European Commission et al. (2009).

<sup>7</sup> An exception to the rule of each institutional unit only having one country of residence is the existence of so-called multi-territory enterprises, typically involved in cross-border activities such as shipping lines, airlines, pipelines, bridges, tunnels and undersea cables. The operations of such enterprises are typically prorated into the relevant economic territories.

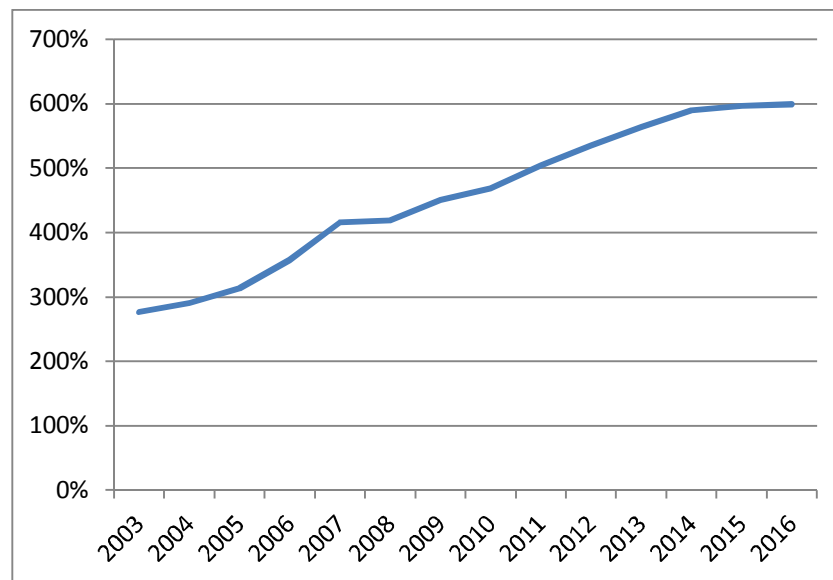
For corporations and non-profit institutions, the above residency principle means that enterprises have a center of economic interest in the country in which they are legally constituted and registered. Multinational enterprise groups may have centers of economic interest in quite a few countries. In this respect, § 4.15 (c) also explicitly states that when a corporation “...maintains a branch, office or production site in another country in order to engage in production over a long period of time (usually taken to be one year or more) but without creating a subsidiary corporation for the purpose, the branch, office or site is considered to be a quasi-corporation (that is, a separate institutional unit) resident in the country in which it is located.” So, even in the case in which a legal entity is not created, a unit without separate legal status that engages in substantial economic activities is considered a resident institutional unit.

In § 4.55 – 4.67, the 2008 SNA also addresses the residency of special purpose entities (SPEs), which are defined as having no employees and no non-financial assets; having little physical presence beyond a “brass plate”; always related to another corporation; and often resident in a country other than the country of residence of the related corporation (see § 4.56). Although such legal units would normally not qualify as separate institutional units because they may not perform any activities of economic substance and would be consolidated with the related corporation, if they are resident on the economic territory of another country they are treated by convention as separate units. In some countries, this convention can have a massive impact on the system of national accounts. For example, in the Netherlands, a country with a very high presence of SPEs, the total balance sheet value of such units, the main share of which concerns financial assets and liabilities with the rest of the world, amounts to 600% of GDP at the end of 2016; see Figure 1. Also, the related in- and outflows of property income are very substantial, amounting to 20-25% of GDP in the years 2010-2016. Flows of imports and exports of services would add another 3-5%.

For multinational enterprises, the above residency principles mean that the activities of each group of units belonging to a multinational enterprise that are located on the economic territory of a certain country are to be recorded as part of national economy of that country. This even holds in the case that the relevant unit, or group of units, has physical presence but no separate legal status (e.g. branches), only performs ancillary activities for the corporation at large, as well as in the case of an SPE with legal status but hardly any physical presence. All these units, if located on the same economic territory as the related corporation, typically would not qualify as an institutional unit.

**Figure 1. Balance sheet totals of “special financial institutions” in the Netherlands, 2003 – 2016**

% of GDP



Source: De Nederlandsche Bank (2018)

One may wonder why the above convention has been chosen. Two related reasons are relevant here. First of all, only this treatment would be consistent with the actual cross-border cash flows resulting from economic transactions. The other reason is that a “look-through” recording of e.g. SPEs would require a massive international exchange of individual data between statistical offices, which is not possible given existing legal constraints. However, we note that abandoning this convention and making the international exchange of individual data possible might actually resolve a lot of problems, though by no means all of them, related to the impact of globalized behavior of multinational enterprises on the measurement of national accounts.

The increased international integration of production poses serious challenges to adequately accounting for domestic activities. To arrive at a consistent recording of all transactions of internationally operating enterprises becomes more and more complex, especially in an economic environment that is characterized by quickly changing organizational structures of ever increasing complexity that also operate across borders. Conceptual differences in recording international trade flows add to the problems, since foreign trade statistics are generally based on goods crossing national borders, whereas national accounts (and business statistics) should be recorded on the basis of change in ownership. In practice, when combining the various source data for individual companies at the national level, one is often faced with major inconsistencies, which may also show up when balancing supply and demand for goods and services at the macro-level in the supply and use tables. One may also be confronted with significant differences between, for example, the transactions recorded in the balance of payments and the source statistics on income and finance of corporations. These consistency problems have triggered various initiatives, such as creating specific units within national statistical offices that are responsible for micro-balancing the transactions and positions of the largest and most complex corporations.

Another initiative is the growing international coordination of the allocation of the various parts of multinational enterprises to countries, such as the Euro Groups Register, in which the register-information for multinational enterprises in Europe is coordinated across countries.

In addition to the above, more practical and source statistics related problems, the activities of multinational enterprises also raise various conceptual or analytical concerns for the compilation of national accounts for national economies. The first and perhaps most prominent issue concerns the allocation of value added to national economies. As discussed in Section III, multinationals have substantial intra-group transactions in goods and services that cross the borders of national economies. The valuation of these transactions, often referred to as “transfer pricing”, has a direct impact on the allocation of value added and GDP to countries. If, for example, a multinational from the USA arranges the production of its goods in China, and subsequently distributes them to another subsidiary in Europe, a low price for the export from China to Europe will result in lower output, value added, and profits in China, and higher values outside China. Although such prices, according to most national tax legislations, have to be set at market-equivalent prices, there is obviously quite some room to maneuver, especially in the case of goods containing high margins for reasons of knowledge content or brand reputation, or related to corporate and ancillary services, or in the case of goods that are intermediate products which are not marketable, so that it is not possible to apply a true market-equivalent price.

#### **b. Economic ownership**

Another complication in the recording of cross-border transactions of multinational enterprises, and consequently also in the allocation of economies activities to national economies, concerns the application of the principle of economic ownership. In national accounts, transactions between units are based on the principle of change in economic ownership. In § 3.26 of the 2008 SNA, economic ownership is defined as follows: *“The economic owner of entities such as goods and services, natural resources, financial assets and liabilities is the institutional unit entitled to claim the benefits associated with the use of the entity in question in the course of an economic activity by virtue of accepting the associated risks.”* The change in economic ownership depends, of course, on the delineation of institutional units in the SNA. An institutional unit, the unit for recording and classifying units in national accounts,<sup>8</sup> is defined as a unit that is capable of owning assets, incurring liabilities, and engaging in economic activities and in transactions with other entities. It is also able to make economic decisions for which it is itself held to be directly responsible and legally accountable. The institutional unit generally consists of a legal unit or a limited group of legal units. Enterprise groups, in which a parent corporation controls several subsidiaries, are not to be considered as a single institutional unit (see § 4.51 – 4.52 of the 2008 SNA). A change in economic ownership would therefore typically coincide with a financial

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<sup>8</sup> Please note that the unit for recording the production process, for example in the supply and use table, is the establishment. An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only one productive activity is carried out or in which the principal productive activity accounts for most of the value added” (§ 5.2 of the 2008 SNA). To be able to compile meaningful statistics on the production process, it must be possible to derive data for establishments on the items included in the production and generation of income account: output, intermediate consumption, compensation of employees, taxes less subsidies on production, etc.

transaction between two institutional units and would therefore coincide with a change in legal ownership. But there are clear exceptions to this rule.<sup>9</sup>

The principle of economic ownership is not necessarily straightforward within multinational enterprises. All affiliates of an enterprise group are to some degree controlled by their parent, whereby the case of multinational enterprise groups has the added complication of having non-autonomous affiliates which are considered as institutional units by convention, simply because they are resident in an economic territory that is different from the parent's. Transactions between units of a multinational enterprise, or the absence of such transactions as recorded in business accounts, may therefore be at odds with the principle of economic ownership. On the other hand, in practice there may be no alternative to following business accounting, unless one performs a detailed and resource-demanding analysis of individual transactions of the relevant enterprise groups. And even in the latter case, one would need to liaise with the statistical offices of other countries to arrive at a consistent recording across countries, which is not an easy task given current confidentiality rules for exchanging micro data.

### **c. Intellectual property products (IPPs)**

To add yet another layer of complexity, modern economies are more and more knowledge based, in that the competitive edge of an enterprise and a country is often driven by the ownership on intellectual property products (IPPs), the use of which is neither physically nor locally constrained. In the 2008 SNA, four types of produced IPPs are distinguished: (i) research and development; (ii) mineral exploration and evaluation; (iii) computer software and databases; and (iv) entertainment, literary or artistic originals. In addition, some non-produced IPPs are recognized, e.g. contracts, leases and licenses (e.g. permissions to use natural resources). Also, goodwill and marketing assets are recognized and recorded, if evidenced by purchases.

Determining the economic ownership of IPPs, and therefore the allocation of the output and the use of these assets, is already challenging in a more traditional environment of multinational enterprises owning a group of affiliated entities producing goods and services, including corporate or ancillary services. But it gets even more complicated in a world where multinational enterprises set up complex structures to allocate the receipts from IPPs and the payments for using them in the preferred way. For example, SPEs are being established in certain countries to reallocate the collection and distribution of royalties, license fees, or profits more generally, with the purpose of avoiding or minimizing worldwide tax payments. Countries with low tax rates, or providing the opportunity of using certain fiscal loopholes, are very attractive for the establishment of such conduits. The use of these conduits often gets front-page news coverage once they become publicly known and relate to well-known multinational enterprises. However, it also has become less obvious to exactly pin down the economic ownership of these intangible assets.

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<sup>9</sup> An exception relates to, for example, financial leasing. The lessor is the legal owner of the relevant asset (e.g. an airplane), but the lessee is considered to be the economic owner.

The United Nations Economic Commission for Europe (UNECE) *Guide to Measuring Global Production* took up the challenge of trying to come up with a decision tree for determining the economic ownership of IPPs; see Chapter 4 of UNECE (2015). Looking more closely at the decision tree in this *Guide* on how economic ownership is established for units operating within a multinational enterprise, first a distinction is made as to whether a unit is producing the IPP. If the unit is producing the IPP and also uses it in its production process, or receives income from royalties and licenses, the unit is considered to be the economic owner. However, if the unit receives compensation from the parent for the development or the sale of the IPP, the parent is considered the owner. If there is no evidence of compensation at all, it is assumed that the unit is indirectly funded by the parent, and economic ownership is allocated to the producing unit.

On the other hand, if the unit is not the producer of the IPP, and it is using the IPP for the production of other (non-IPP) goods and services, one may distinguish three alternatives: (i) the unit pays royalties and licenses; (ii) the unit made a payment to purchase the IPP; and (iii) no IPP-related payments are being observed. Economic ownership in the first two cases is rather straightforward: in the second case the unit in question is the economic owner, in the first case it is not. In the third case, the default option is not to consider the unit as the economic owner. With respect to the latter case, § 4.36 of the UNECE *Guide* notes the following: *“However, one could also argue that since these units are obtaining the benefits from IPPs, they could alternatively be identified as the actual economic owners inside MNEs. This would argue in favour of imputing the transfer of the IPP original from the parent to the unit and capitalization of this IPP on the balance sheet of the unit under observation. This is not an easy task, and not without risks. The nature, size and timing of these flows are principally unknown. This is why such an approach is not advocated ...”*. Finally, if the unit is not the producer of the IPP, and its main output is IPP related, we have the case of units created by multinational enterprises with the purpose of taking advantage of low tax jurisdictions. Here, § 4.38 of the UNECE *Guide* recommends the following: *“The default solution is assigning economic ownership of the IPP to these units, in correspondence with legal ownership. Rerouting of ownership, and corresponding income flows, from the legal to the economic owner is not recommended.”*

For more details on determining economic ownership for a unit that participates in a global production arrangement but not as member of a multinational enterprise, reference is made to the UNECE *Guide*, page 51 ff. More generally, as noted by the *Guide*, it is less problematic to establish the economic ownership in these circumstances, as these are autonomous units and payments for the transfer or use of IPPs can be observed from market transactions.

#### **d. Effects on GDP, GNI, and productivity**

The above rules clearly can have a significant impact on the allocation of output, value added (GDP) and profits across countries. Reasons related to worldwide tax minimization, instead of “economic substance”, often govern decisions at the enterprise level on how to price intra-concern deliveries of goods and services, where to allocate the ownership and returns from IPPs, etc. This may hamper the



provision of “meaningful” data on the economic performance of national economies. On the other hand, some would argue that global tax optimization also reflects a macro-economic reality, albeit not the economic reality one would want to arrive at for more traditional types of economic analysis and policy research. Whatever the case, we do have a problem here, as sufficiently proven by what is commonly referred to as “the Irish case”. Ireland noticed a remarkable economic growth of 26.3 % in 2015, which was mainly driven by international relocations of IPPs and related production activities to Ireland. In response, the Irish government set up an Economic Statistics Review Group (ESRG), under the leadership of Philip Lane, the governor of the Irish central bank, with amongst others the goal to arrive at “... *supplementary statistics that are more appropriate to the measurement of domestic economic activity ... that will be comprehensible and stable over time*” (ESRG, 2016). More information can also be found in OECD (2016).

Looking closer to the impact on GDP, then transfer pricing will have a direct, one-to-one impact on the levels of GDP across countries. In most cases, the impact on levels of gross national income (GNI)<sup>10</sup> will be far less substantial, as the profit shifting to low tax jurisdictions will be countered by a near equivalent increase of property income received from those countries. Also, in the case that the profits are retained, they will add to the relevant property income receipts in the form of reinvested earnings from foreign direct investment. In the SNA, all profits, including the retained part, of multinational enterprises are recorded as if they were repatriated to the country of the headquarters. To balance the recording of retained earnings as part of property income, the relevant receipts are considered to be directly reinvested into the non-resident affiliate as part of financial investments in shares and other equity. However, it should be noted that in some cases GNI can also be affected significantly — for example, if substantial depreciation costs, which negatively affect profits and retained earnings of affiliates, feed into the equation. But this is another issue, not directly related to the issue of transfer pricing, which will be dealt with below. We also note that net national income (NNI) would not be affected in this latter case. Finally, household disposable income, which is nowadays much more used as an indicator of household material well-being, is invariant for all these transfer pricing mechanisms.

When it comes to multifactor productivity measurement, one should generally be aware of the fact that at the national level one only sees part of the elephant. The full production process, including all intermediate inputs, can only be truly analyzed at the global level of the enterprise. Nevertheless, this would not be a major issue if the recording of the national part indeed includes all the implicit intra-concern transactions at fair value. However, as noted before, certain deliveries may be recorded at transfer prices which do not reflect the true value. Furthermore, corporate services including ancillary services and the use or purchase of IPPs, may not be adequately reflected. Although all of this will have an impact on the description of the inputs that are used in the production process, it is less clear how this will affect the measurement of output, intermediate consumption, and consumption of fixed capital

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<sup>10</sup> GNI is equal to GDP plus primary incomes (property income, compensation of employees, and taxes less subsidies on production and imports) receivable from non-resident units less primary incomes payable to non-resident units.

in volume terms, and therefore the measurement of productivity over time. This will be the topic of the next section.

Another problem in arriving at a consistent and exhaustive recording of the worldwide production process concerns the international consistency and exhaustiveness of the various national parts of multinational enterprises. It is not clear what would happen if one were capable of putting all these parts of the elephant representing the multinational enterprise together. The different pieces of the puzzle may not fit together, and one may also end up with missing a leg or the trunk. The contribution by De Haan and Haynes in this conference provides an excellent example of potential underreporting of worldwide output.

But from a point of view of analyzing economic developments of a national economy, changes in the arrangements of the productive activities within the multinational enterprise and international relocation of certain activities may have the most disruptive impact. The UNECE *Guide to Measuring Global Production* provides a nice example in country case study 3.3 on page 37, where a multinational centralized the worldwide purchases of manufactured goods from unaffiliated contract producers, because of which part of the trade margins previously allocated to local distributors ended up allocated in the country of the headquarters.

Other examples concern the relocation of economic activities from one country to another. It takes some time and significant disinvestments to relocate the physical production of goods in factories. But when it comes to IPPs and other movable assets such trucks and airplanes, it is far easier to relocate the relevant assets and the related output, only needing the advice of some creative lawyers and business accountants. Such relocations can lead to massive shocks in GDP, especially for smaller economies, such as the Irish example has proven. Certainly, when the relocation cannot be considered as a legal construct without any “economic substance”, one is – as was once provocatively expressed by Robin Lynch, the former Director of National Accounts at the UK Office for National Statistics – “doomed”. At some stage, it was argued that the impact of such relocations could be moderated, or even extinguished, by attributing all IPPs and related returns to the headquarters of the multinational enterprise. But one nowadays also frequently observes the international relocation of headquarters, thus leaving the national accountant again empty-handed. We will come back to this issue of how to possibly address these adverse impacts on the more traditional economic analysis of domestic productive activities. But at this stage we only would like to add that a refocusing on alternative national accounts indicators and looking at the complete framework of national accounts, including further breakdowns of multinational activities versus the activities of national corporations, may become all the more important to understand the performance of a national economy.

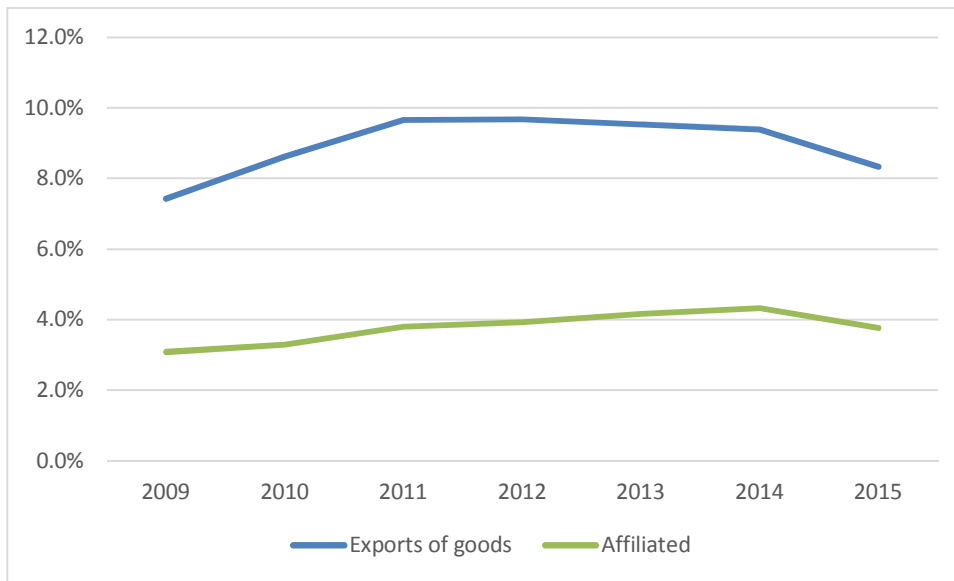
### Section III: Price and volume issues

#### a. Transfer pricing

A large share of international economic transactions, including trade in goods and services, occurs within multinational enterprise groups. The United States reports data on the trade by U.S. multinational enterprises with their affiliates (both U.S. parents and U.S. affiliates of foreign parents). As seen in Figure 2, goods exports to affiliated entities ranged from 38% to 46% of total exports of goods. Figure 3 shows that goods imports from affiliated entities ranged from 43% to 48% of total imports of goods. How does trade among affiliated parties differ from unaffiliated trade?

For transactions among members of a multinational enterprise group, the multinational has a great deal of discretion in structuring the transactions and setting the internal trading terms, or “transfer prices”, at which goods and services are exchanged between affiliates. Because the intra-group transactions often consist of specialized components that are unique to the multinational enterprise and thus not directly comparable to transactions by unrelated parties, it can be difficult to establish a market price, and the multinational has an incentive to set a transfer price that lowers its global tax burden.

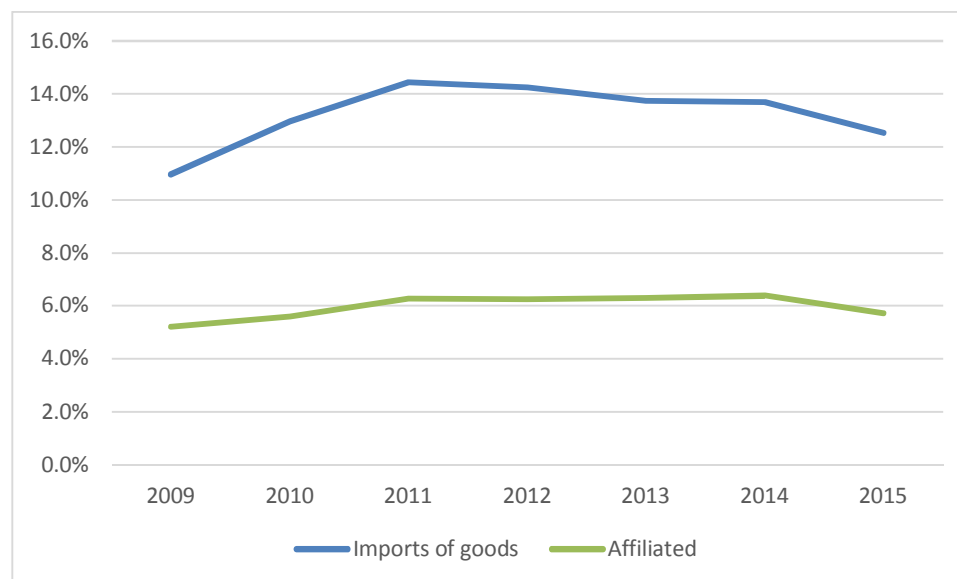
**Figure 2. Exports of Goods, Total and Affiliated, United States, 2009–2015**  
% of GDP



Source: Bureau of Economic Analysis. “Affiliated” is the sum of U.S. exports of goods shipped by U.S. parents to foreign affiliates and U.S. exports of goods shipped by U.S. affiliates.

**Figure 3. Imports of Goods, Total and Affiliated, United States, 2009–2015**

% of GDP



Source: Bureau of Economic Analysis. “Affiliated” is the sum of U.S. imports of goods by U.S. parents from foreign affiliates and U.S. imports of goods shipped to U.S. affiliates.

Transfer pricing rules used by tax administrations in most countries require multinational enterprises to set prices for tax purposes according to the “arm’s length principle” — that is, to value the transactions and calculate profits as if the transactions had been between independent businesses. The use of the arm’s length principle represents an attempt to provide a consistent basis for profit allocation and helps prevent multinationals from experiencing double taxation. But as globalization has increased, transfer pricing arrangements have become more complex and important, while management of multinational enterprises has become more integrated and sophisticated. These changes have given multinationals more latitude to set business arrangements and transfer prices to reduce tax burden and have been a challenge to national tax administrations, which often lack the specialist industry expertise that is possessed by the multinationals. Thus, it is reasonable to assume that the effects of transfer pricing have increased over time.

To the extent that multinational enterprises are successful in booking transfer prices that overstate or understate the appropriate economic value of a transaction, GDP will be misstated. If transfer prices are reported consistently in the enterprise’s books and those book values are the source of national statistical data, then all three approaches to measuring GDP (the production, expenditure, and income approach) will reflect the misstatement. However, because the 2008 SNA treats the reinvested earnings on foreign direct investment as if they were distributed to the owners, GNI should be less affected by the use of misleading transfer prices (UNECE, 2011, § 2.21).

While the 2008 SNA recommends that prices should be adjusted to a market-equivalent price when values do not represent market prices, especially when distortions are large, it also recognizes that this may not be practical. Because exchanges between affiliated enterprises often do not have any near

market equivalents, “... compilers may have no choice other than to accept valuations based on explicit costs incurred in production or any other values assigned by the enterprise” (2008 SNA, § 3.131-133). Statisticians thus have to rely on data reported by enterprises that follow tax and legal requirements, and the best prospect for addressing transfer pricing problems is likely to come from reforms to international tax rules.

The overall effect of transfer pricing and other profit shifting strategies is probably quite large. For example, the OECD estimated that for 2014, the broad strategies known as “Base Erosion and Profit Shifting” (see below), which include transfer pricing as well as other tax avoidance strategies, reduced global corporate income tax liabilities by \$100 to \$240 billion, or 4 to 10% of total corporate income taxes (OECD, 2015*b*). While most estimates are in terms of foregone tax revenues rather than the effects on GDP, Guvenen et al. (2017) conclude that reattributing earnings of U.S. multinationals would raise U.S. GDP by about \$280 billion, or 1.7%, for 2012.<sup>11</sup> This reattribution would be offset by lower GDP in other countries if the income has been attributed to those other countries. Although their data couldn’t be used to measure the full effect of earnings reattribution on the GDP of other countries, it is likely that for some countries—especially for tax havens—the effect as a percentage of GDP may be quite large.

While transfer pricing affects the value of GDP in current prices, if the transfer prices are reported on a consistent basis over time, the use of transfer prices may not necessarily bias the price indices used for deflation, and consequently for the volume measurement of economic growth. For example, if the price of an exported component is consistently undervalued by 25%, the bias in the price level would not necessarily bias the measure of price change. But if deflation is used and the level of the bias of GDP in current prices changes, the latter biases will also be reflected in GDP volume changes and the resulting productivity statistics. That is why Guvenen et al. (2017) report biases in U.S. productivity growth due to profit shifting.

Beginning in 2013, the OECD and the G20 governments embarked on a major project, the Base Erosion and Profit Shifting Projects (BEPS), to update the international tax rules to align with developments in the world economy and to ensure that profits are taxed where economic activity takes place and value is created. A set of major recommendations was published in 2015. There is new guidance on transfer pricing that reinforces the arm’s length principle and requires multinational enterprises to report information on their global business operations and pricing policies to help ensure compliance. Tax treaty provisions are strengthened, and measures are introduced that should eliminate or reduce tax regimes that attract paper income rather than substantial business activities. Model rules are introduced to improve consistency in domestic tax laws. The BEPS measures focus especially on the digital economy, associating income more closely with the value-added activities of the business (OECD, 2015*a*).

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<sup>11</sup> Clausing (2016), using a somewhat difference methodology, derives a similar estimate of the overall effect for the United States—\$258 billion for 2012.

Despite some initial uncertainty about how effective the BEPS initiative would be when it comes to country compliance, the project now appears to be moving forward quite successfully. In 2016, the European Commission adopted the Anti-Tax Avoidance Directive, which directly addresses several of the BEPS recommendations. Furthermore, the EU member states adopted the BEPS multilateral instrument, which improves dispute resolution methods. In the United States, the 2017 Tax Cut and Jobs Act also implemented many BEPS recommendations, including its underlying single tax principle. Reuven Aviyonah of the University of Michigan has described the U.S. tax act as “the triumph of BEPS.”

The BEPS project is not a panacea. We can expect countries to continue to try to enhance their tax competitiveness and multinational enterprises to take advantage of these opportunities. Nevertheless, based on what has already been accomplished, the BEPS initiative has already been a turning point in improved international tax cooperation and compliance that should ultimately improve the quality of national and international data.

**b. Sourcing substitution bias**

In 1996, the Boskin Commission drew attention to the way that biases in the measurement of the consumer price index can have large and persistent effects on our measurement of changes in productivity and in the standard of living (Boskin et al., 1996). We’ve since learned that biases in price measures for imported and exported goods and services can have similarly large effects in measures of GDP volume change and productivity. For example, Houseman et al. (2011), focusing on U.S. manufacturing, find that the price indices for manufacturing inputs failed to pick up the full price saving from switching from domestic to foreign suppliers. This upward bias to the intermediate input price index leads to an upward bias in manufacturing real value added, which they estimate was overstated by about 0.2 to 0.5 percentage point per year over the period 1997 to 2007.

How can this bias occur? The Bureau of Economic Analysis (BEA) measures of real (volume of) value added are estimated by “double deflation”, in which intermediate consumption measured in volume terms is subtracted from output measured in volume terms. The BEA calculations use a chain-type Fisher volume index. The measures of intermediate consumption, in turn, are weighted averages of domestic and foreign intermediate inputs, deflated using producer price indices for inputs that are supplied domestically, and import price indices for imported inputs. Each type of index is calculated by repricing a fixed basket — the producer price index (PPI) collects prices from domestic producers, and the import price index collects prices from establishments that are engaged in importing. Houseman et al. (2011) noted, however, that when a U.S. manufacturer switches from a domestic supplier to a lower cost foreign supplier, the cost saving from that switch is never recorded in either the PPI or the import price index. Reinsdorf and Yuskavage (2018) point out that, in addition to missing switches from a domestic supplier to a foreign supplier, the import price index is also likely to miss the price decline from switching import supply from a higher price country to a lower priced one. They describe this bias as “sourcing substitution bias”.

Inklaar (2015) examined import sourcing bias for a large group of countries, focusing on switches between imported sources, since his data did not allow him to capture switches from domestic to imported sources. For advanced economies, there were clear substitutions from higher priced domestically produced goods and services to lower priced imports, though for emerging economies the effect was unclear.

Sourcing substitution bias obviously affects more than just the manufacturing sector. For some components of GDP, the sourcing substitution bias may have offsetting biases. For example, in BEA's GDP estimates the price deflators for fixed investment in durable equipment are measured using weighted averages of domestic and import price indices because there is no purchasers' price index for durable equipment. This implies that in GDP final expenditures, upward biases to the import price indices for durable capital equipment due to sourcing substitution bias are offset by upward biases to the equipment investment deflators. Of course, even though these biases may be offsetting, the biases still affect other analyses — for example, accurate multifactor productivity measures need unbiased estimates of capital and investment.

For consumer goods, the story is a bit more nuanced. The deflators for household consumption come from consumer price indices (CPIs) that are collected from retail establishments, rather than from weighted averages of domestic production and imports. Because individual retail stores may substitute from one supplier to another, it's possible that substitutions to cheaper sources may be picked up in the CPI (though it is also possible that they may be missed). Consequently, any sourcing substitution bias may not necessarily be offset, and in comparing CPIs with supply prices, Reinsdorf and Yuskavage did observe significant sourcing substitution bias, especially for apparel and consumer durable goods.

Byrne, Fernald, and Reinsdorf (2016) concluded that the overall impact of bias in the import price index due to globalization boosted U.S. GDP growth by about 0.10 percentage point during 1995 to 2004 — a period of rapid growth in globalization. Only part of the bias could be attributed to sourcing substitution bias. They noted that the import price index for computers declined much less than the analogous PPI, which they interpret as evidence that the import price index fails to adequately account for quality change.

What can be done to correct for sourcing substitution bias? Nakamura et al. (2015) suggest using hybrid unit value indices, which is an interesting approach, albeit one that is quite different from current Bureau of Labor Statistics sampling methods, which are not designed to calculate unit values. Another approach, which may ultimately be preferable, is suggested by Alterman (2015). Alterman recommends price collection to be designed to mimic buyer behavior. This approach stands in contrast to standard price indices, which generally collect prices from a sample of sellers, and thus fail to capture opportunities for substitution from higher priced to lower priced sellers. Because this is a novel approach to compiling a price index, he recommends that the project begin with a pilot index. In our view, this approach is most likely to mimic what economists would like to measure, while avoiding some of the sampling problems that might be associated with unit values.

#### **Section IV: Financial vulnerabilities/balance sheets**

The previous sections mainly dealt with the impact of globalization on the recording of production and income generating activities. However, globalization also has significant consequences for the recording and interpretation of financial transactions and positions. This short intermezzo discusses some of the issues related to foreign direct investment (FDI) statistics and the monitoring of financial risks and vulnerabilities through financial exposures to the rest of the world. The latter challenges were exposed during the 2007-2009 economic and financial crisis, when many countries were surprised by their vulnerability to collateralized securities and other risky instruments. While the G-20 Data Gaps Initiative (see e.g. Heath, 2013) has made progress toward filling data gaps and providing better statistical data for dealing with possible future crises, continued work is needed to reach goals for comprehensive and transparent financial data, including FDI and exposures related to portfolio investment. One of the problems in appropriately monitoring these financial risks and vulnerabilities is related to the difference in financial exposure of intra-firm financial connections versus true financial positions between autonomous firms at arm's length.

It is clear that globalization and the set-up of complicated organizational structures using SPEs complicates the economic analysis of FDI. Multinationals not only set up SPEs to arrange worldwide borrowing and lending activities, they also establish SPEs that “intermediate” between the ultimate controlling unit (the parent of the multinational) and the ultimate beneficiary of the investments to minimize the global tax burden or other reasons. Countries like Ireland, Luxembourg, and the Netherlands are very popular destinations for such intermediate SPEs. The direct consequence is that FDI statistics often show these countries as the country of destination and origin of direct investments, while they only have an intermediating role from an economic substance point of view. This has led to compiling more granular FDI statistics, separating out transactions and positions which are related to SPEs. In addition, guidance on the compilation of FDI statistics, such as the OECD *Benchmark Definition of Foreign Direct Investment* (BDM4), recognizes the need for having alternative numbers looking, for outward investments, to the ultimate host country (UHC); and for inward investments to the ultimate investing country (UIC). However, although recommendations on how to define and compile data according to UIC have been put forward, it was not yet possible to provide methodology for monitoring outward FDI according to UHC, as a consequence of which it has been put on the research agenda.

More generally, when assessing the foreign exposures, and therefore the financial risks and vulnerabilities, of a national economy, it makes quite a difference whether the counterparty of financial assets and liabilities is an affiliated enterprise or non-affiliated enterprise. Especially in the case of large financial conglomerates, the impact can be quite substantial. For example, the Bank for International Settlements (BIS) not only produces banking statistics on a locational basis, i.e. applying the residence principles of the 2008 SNA and BPM6, but also from a so-called “nationality” perspective. In the latter statistics, they consolidate the positions of global financial conglomerates, and allocate all financial assets and liabilities of the relevant multinational enterprise to the home country of the parent. In this way, they manage to arrive at statistics showing the link between the controlling unit and the ultimate



borrower or lender from the perspective of the conglomerate bank. One thus arrives at a different perspective of foreign exposures, according to which, for example, positions of resident affiliates of foreign multinationals are excluded, while positions of foreign affiliates of resident multinationals are included. McCauley et al. (2017) include a nice example of how this alternative perspective provides a different view on the declining trend since the 2007-2009 economic and financial crisis of banks' cross-border claims.

The above nationality perspective basically comes down to using the enterprise group as a single institutional unit. Inasmuch as the parent is indeed the ultimate bearer of all the risks and rewards, this certainly makes sense from an economic substance point of view. It is also clear that international intra-concern financial positions are different from other foreign exposures. This is not only true for financial conglomerates but also for multinational enterprises producing non-financial goods and services. The attempts made to have alternative presentations for FDI according to the UIC- and UHC-principles basically go in the same direction. However, it may not always be that clear-cut who bears the ultimate risks. A foreign affiliate may go bankrupt, and the parent may lose the money invested, but that does not necessarily mean that they will have to pay for all the claims towards the foreign affiliate. Indeed, a separate legal unit may be created for the purpose, amongst others, of minimizing liabilities in the event of bankruptcy. Furthermore, such a consolidated perspective may be less suitable when it comes to production and income generating activities. We will come back to that in the next section.

## **Section V: International standards and guidelines – the path forward**

As noted before, the allocation of value added generated by multinational enterprises is, for a large part, driven by tax considerations. Typical routes of minimizing the world wide tax burden consist of transfer pricing and the allocation of the use of intellectual property products and various services within the enterprise group. The use of various SPEs further complicates the picture. Even more disruptive to the traditional analysis and interpretation of GDP is the sudden relocation of economic activities, significantly facilitated by the lack of physical and local constraints on movement of intangible assets and related income from one country to another. Also, relatively minor reorganizations within multinational operations can have quite severe impacts on the allocation of output and value added to countries. So, the key question is how to solve these issues to arrive at a more meaningful framework from a users' perspective. In the following, a distinction is made between possible ways forward which would stay within the conceptual boundaries of the current international standards for compiling national accounts (the 2008 SNA), and possible alternatives which would require a change in the current conceptual framework of national accounts.

### **a. Staying within the boundaries of the current conceptual framework: providing supplementary information**

Staying within the boundaries of the current concepts and definitions, one can distinguish three options, in addition to more advanced types of analysis such as looking at trade in value added, as discussed in other papers presented at this conference: (i) better using available data within the framework of

national accounts; (ii) providing additional details on activities of multinationals; and (iii) defining alternative indicators that can be derived from the current set of national accounts data.

Although the first option is not truly a solution to the problems caused by the allocation of value added to national economies by multinational enterprises, we think it is important to acknowledge that the system of national accounts is a complete and comprehensive framework from which a variety of indicators can be derived, which can provide lots of information on what actually is going on in the economy. All too often, users, policy makers, and researchers seem to focus solely on GDP as the ultimate yardstick for monitoring economic progress. Sudden shocks in GDP due to substantial relocations of economic activity that are difficult to interpret, such as the Irish case, are then used to disqualify the whole system and to ridicule the current international standards as not being able to keep up to its task. However, as noted before, there are other indicators like GNI/NNI, which are much less affected by relocations of activities without requiring substantial physical presence on the geographical territory. In this respect, it came a bit as a surprise that GNI (but not NNI) had a massive impact from the relocation to Ireland, because it was accompanied by a substantial shift of IPPs, as a consequence of which the depreciation of these IPPs led to less reinvested earnings on foreign direct investment, which normally would counterbalance the upward shift of GDP. In this respect, it may be useful to reiterate the point made in § 2.142 of the 2008 SNA: “... *GDP is broadly used even if it is, on a conceptual basis, economically inferior to NDP [net domestic product]*”. One of the reasons for not using net concepts, as explained in the 2008 SNA, is lack of internationally comparable data on depreciation or, in SNA-terminology, consumption of fixed capital. However, one may wonder whether this reason still holds nowadays. It may well be that there simply is a significant amount of reluctance by both producers and users to change the tradition of focusing on the volume growth of GDP. As we see it, the margins of error in adjusting for price changes may well go beyond the margins of error in adjusting for depreciation.

In addition to the above discussion on GDP/NDP and GNI/NNI, it is important to keep on reminding users that GDP is not the appropriate measure of the economic well-being of households. For the latter, the SNA provides significantly superior indicators such as household (adjusted) disposable income. And, as the Irish case, has shown, this indicator is only affected by the relocation of economic activities to Ireland in 2015 to the extent that it concerns true physical presence in the form of additional employment and compensation of employees for households.

The second option is to provide more granularity in the system of national accounts. For example, as part of further improving and enriching the analysis on trade in value added, extended supply and use tables are being defined, in which relevant industries are broken down into enterprises operating domestically, enterprises controlled by domestic multinationals, and foreign controlled affiliates of multinational enterprises. To improve the information content of national accounts, Rassier (2017) proposes a separate identification of transactions and positions of SPEs, different from “operating activities” in the recording of domestic economic activities as well as in the accounts for the rest of the world.

The above breakdowns may indeed be very illustrative in explaining what's happening in the national economy. As part of the previously mentioned G-20 Data Gaps initiative (G-20 DGI), the templates for collecting national data on institutional sector accounts are being reconsidered. One of the proposals in this context consists of having a breakdown of the sectors non-financial corporations and financial corporations along the lines proposed for the extended supply and use tables. Similar to what has been proposed by Rassier (2017), one could also consider a separate identification of SPEs within the subsector foreign-controlled financial corporations. However, all of this is not a straightforward exercise from a practical point of view, as a consequence of which the breakdown according to the extended supply and use tables has only been included on a voluntary basis. Notwithstanding this voluntary basis, many countries – as some of the other papers in the conference show – are beginning to incorporate these breakdowns, because (i) they provide improved insights on the impact of globalization on the domestic economy, (ii) they usually do not require new data collections, and (iii) they improve the overall quality of national accounts. At the international level, no provision has yet been made for a separate identification of SPEs, although in some countries national accounts data, e.g. for financial corporations and the rest of the world, are already being produced with and without SPEs, simply because the sheer magnitude of the transactions and positions of these SPEs completely blurs the overall picture of the national economy.

The third option within the boundaries of the current conceptual framework concerns the definition of alternative indicators that can be derived from the system of national accounts. Some may argue that this option is not truly in line with the 2008 SNA. On the other hand it does leave the recording of transactions and positions unchanged as compared to the current international standards, as it merely rearranges some transactions to arrive at an alternative headline indicator. Perhaps it may not be feasible to agree on the definition of such an alternative at the international level. For example, one may end up with an indicator which does not add up to an exhaustive worldwide estimate, and for that reason the indicator could be considered as less suitable from a conceptual point of view. But applying this option at the national level could be a viable way-out, and this is exactly what Ireland has done in response to the extraordinary circumstances caused by the international relocations in 2015.

As mentioned before, after the 2015 jump in the level of GDP, leading to a concomitant economic growth of 26.3%, the Irish government decided to set up an Economic Statistics Review Group (ESRG), with the objective “... *to provide recommendations for the Central Statistics Office (CSO) on how best to meet user needs for greater insight into Irish economic activity, taking account of the measurement challenges inherent in providing a comprehensive picture of the highly-globalised Irish economy*” (ESRG, 2016). As it was considered “... *essential to have a reliable level indicator of the size of the economy ... for private-sector decision making, fiscal planning and the sustainability of public and private debt stocks*” (ESRG, 2016), one of the most important recommendations concerned the development of an adjusted level indicator, in addition to developing cyclical indicators of “... *underlying investment and underlying domestic demand measures that take account of the impact of intellectual property relocations, contact manufacturing, aircraft leasing and re-domiciled firms*” (ESRG, 2016). As it has long been recognized that GNI is superior to GDP in measuring the size of the Irish economy, an alternative GNI-measure, GNI\*, has been put forward by the review group.

GNI\* is defined as GNI *minus* retained earnings of re-domiciled firms *minus* depreciation of categories of foreign-owned domestic capital assets such as intellectual property. The main reason for the first adjustment is that they prefer to align the treatment of FDI enterprises and portfolio investments, in the sense that in both cases only distributed profits are recorded, whereas GNI treats non-distributed profits of FDI-type affiliates as if they were distributed, in the form of reinvested earnings on foreign direct investment, and subsequently re-invested in the equity of the affiliates. One may indeed dispute this difference in treatment, although there are good reasons for it – for example, in direct investment relationships the owner has a direct influence on whether or not the profits are actually distributed, while this is less so for portfolio shareholders<sup>12</sup> –, but it is somewhat peculiar that this change is limited to the inward flows of retained earnings and not extended to outward flows as well. This may, however, be related to the second deduction, the exclusion of depreciation of foreign-controlled IPPs. Here, the ESRG (2016) states that this depreciation is borne by foreign investors and therefore “... *should not affect a measure that is intended to capture the resources accruing to domestic residents*”. Here, one could argue that not only depreciation but also the profits related to these IPPs, i.e. the total of capital services from foreign-controlled IPPs, are to be excluded, and that may be the reason for not excluding outward reinvested earnings. Whatever the case, it is clear that calculating and summing up GNI\* would not lead to a consistent worldwide aggregate, a property that would be considered essential if it were to be considered as part of the international standards. Furthermore, although it may work at the national level in dealing with some of the adverse impacts of globalization on the measurement of GDP under the 2008 SNA, one wonders whether it would be suitable in addressing other possibly emerging cases. Here, one could think of the example of the reallocation of headquarters, instead of affiliates, with considerable amounts of IPPs. All in all, one would like to look at other solutions that are more sustainable, and arguably better from a conceptual point of view. This is the subject of the following subsection.

Another option to arrive at macro-economic indicators for certain types of analysis is to decompose (volume growth) of GDP into the production factors that have contributed to it. By separating out the contributions of IPPs and other easily movable capital assets, one could arrive at a measure which better reflects, for some types of analysis, those parts of growth in GDP that can be attributed to a certain geographical territory. However, it's not that straightforward to allocate the remaining multifactor productivity – or in the case of level estimates in current prices, the net operating surplus – to the various inputs. In volume terms, one could think of a proportional allocation of the resulting multifactor productivity. For the measurement of an adjusted level estimate for GDP, one may consider to calculate capital services using an exogenous rate of return on invested capital.

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<sup>12</sup> As stated in §7.138 of the 2008 SNA: “*The rationale behind this treatment is that since a foreign direct investment enterprise is, by definition, subject to control, or influence, by a foreign direct investor or investors, the decision to retain some of its earnings within the enterprise must represent a deliberate investment decision on the part of the foreign direct investor(s). In practice, the great majority of direct investment enterprises are subsidiaries of foreign corporations or the unincorporated branches of foreign enterprises, which are completely controlled by their parent corporations or owners*”.

**b. Going beyond the 2008 SNA: possible methods for dealing with distortions**

The main discomfort with the current international standards is related to the fact that the allocation of multinational activities to national economies is not governed by economic substance, but that legal considerations, often related to the minimization of the global tax burden, directly affect the macro-economic statistics including the indicators derived from them. It may not only have quite disruptive impacts on the measurement of economic growth, but it can also significantly hamper an “appropriate” analysis of economic developments. As we’ve seen, the main problems are caused by transfer pricing and by the international allocation of IPPs and related income, with or without the involvement of SPEs. In this section, a number of options going beyond the 2008 SNA will be discussed, gradually departing more and more from the current conceptual framework. Practical issues may seriously affect the current possibilities to apply these alternative concepts. These practicalities will be addressed separately in the next subsection.

The first issue to address concerns the treatment of the SPEs. It is apparent from the start that these SPEs are only considered as separate institutional units because they are resident in an economy different from their parents and/or affiliates. Were this not the case, they would be consolidated into the rest of the multinational enterprise. Similarly, assigning economic ownership of IPPs to these brass plate companies is a matter of practicality or legality, not a way to approximating economic substance. Therefore, as also proposed by Rassier (2017), a first suggestion to be considered in the future international standards for compiling national accounts is the consolidation of SPEs with their ultimate owners. As a consequence, all returns, outlays, financial stocks, and positions of these SPEs would directly end up in the accounts of the country where the headquarters of the multinational are located. The only relationship of the multinational with the economy in which the SPE is located would consist of payment of corporate taxes, payments for administrative services, and potentially a rather negligible amount of wages and salaries, which would need to be recorded as cross-border transactions.

One may argue that affiliates providing ancillary services to the rest of the multinational do not qualify as separate institutional units. Indeed, § 4.66 of the 2008 SNA states the following: *“Units undertaking only ancillary activities will in general not satisfy the conditions of being an institutional unit (for the same sort of reason as artificial subsidiaries do not) but they may sometimes be treated as a separate establishment of the enterprise if this is analytically useful”*. However, given that these establishments usually have a physical presence on the economic territory, by employing paid staff which needs to be accommodated in office buildings, it makes sense to consider them as separate resident entities. The same line of reasoning holds for artificial subsidiaries.

This brings us to the point of how to deal with the relocation of affiliates with high volumes of IPPs and related value added, which have a true physical presence and also economic ownership of the IPPs, such as in the Irish case. Some have argued in favor of defining a “Gross International Product,” according to which the multinational is treated as one single institutional unit, basically putting the institutional unit on a par with the enterprise group without giving any consideration to the physical allocation. All output and value added generated worldwide by the multinational enterprise would thus be allocated to the

country of the ultimate parent, a treatment which resembles the treatment of embassies of foreign governments, although in this case the location of the embassy is not considered part of the economic territory of a country. In the case of multinational enterprises, this looks overdone. As previously stated in the context of ancillary services and artificial subsidiaries, there is true physical presence on the economic territory of the countries where these operational affiliates are located. It thus feels unjustified to exclude the value added generated by these affiliates, or at least the part of value added that is physically located at the economic territory, from the GDP of the relevant countries.

The problem of allocating output and value added of multinational enterprises to national economies first and foremost concerns the parts which are neither physically nor locally constrained, so that it is relatively easy to relocate these assets and the related income. A logical alternative to allocating all output and value added to the country of the ultimate parent is to limit this reallocation to the IPPs and the global profits of the multinational enterprise, and attribute the part of value added with a physical presence, i.e. compensation of employees and depreciation of non-IPP assets, possibly including a return on the investment, to the countries in which the affiliates are located.<sup>13</sup> From a conceptual point of view, this treatment is justified, as the ultimate parent is indeed the true economic owner of the IPPs and the profits generated worldwide, and also because it is practically impossible to find a good rationale for allocating these assets and profits to certain parts of the worldwide production process. Leaving apart the relocation of IPPs and related depreciation, in a sense it would also come down to an “upward shift” of distributed and reinvested earnings from GNI to GDP.

As an alternative to the above allocation of IPPs and profits to the headquarters, it has been proposed, e.g. by Rassier (2017), to apply a formulary apportionment of IPPs and profits: *“Under formulary apportionment, company accounting records are consolidated and measures are attributed to economic territories on factors that reflect where economic activity takes place – such as compensation, tangible property, and sales – which are also available in company accounting records”*. From a conceptual point of view, this alternative seems less attractive, as one would, for example, also allocate IPPs and related income to production facilities in let’s say China, though we know that the economic activities taking place there may be low-skilled labor assembling a final product. As a consequence, the knowledge-intensity of the Chinese economy would increase, while it is fully apparent that this knowledge has been created elsewhere and that the low-skilled operations, as such, do not add to the value added of the goods and services produced. More generally, one can question the economic validity of apportioning IPPs and profits, and consequently value added, to countries. Allocating value added to regional operations in this way is a kind of illusion from the perspective of economic substance. It is in fact very similar to imputing profits on the basis of tax considerations by the relevant enterprises. It says little, if anything at all, about, for example, the economic competitiveness of a certain country or the productivity of a certain part of a multinational enterprise.

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<sup>13</sup> Please note that, for reasons of simplification, we do not dwell upon the treatment of borrowing and lending of multinational enterprises including the related Financial Intermediation Services Indirectly Measured (FISIM) and the payments and receipts of interest.

Although the above solution of apportioning IPPs and profits may be less attractive from a conceptual point of view, it has the clear advantage that a relocation of headquarters does not have a major impact on the level of GDP. Allocating IPPs and profits to the country of the ultimate owner may bear this risk, as the relocation of headquarters would be accompanied by a massive transfer of value added and IPPs from one country to another. This brings us to yet another alternative, i.e. to treat IPPs and profits of multinational enterprises as being a supranational phenomenon, for which it is simply impossible to arrive at an economically meaningful allocation to countries. It would also mean that total value added of countries does not add up to world GDP, similar to the exclusion of international organizations from national estimates. From a certain perspective, such a recording could be interpreted as “the funeral of GDP”, as a major part of value added will be allocated to a supranational “country” of multinationals, and consequently not to the “real” countries. GNI would be less affected though, as this aggregate will keep on including the distributed profits in the form of dividends. Further down, national savings would still be affected by the exclusion of retained earnings of multinationals.

The latter element, the exclusion of retained earnings of multinationals from national savings, but also the “illusionary” nature of allocating profits of multinationals to countries more generally, leads to the consideration of extending the treatment of reinvested earnings to the owners of the corporations. This idea, put forward in a more general context of accounting on an accrual basis, is also included in the SNA research agenda; see SNA 2008, § A4.28-29. As stated in § A4.29: *“This would mean that distribution of earnings from corporations was measured on a strict accrual basis but would also mean that the saving of corporations would always be zero. Such a change would have serious implications for the interpretation of the accounts since it would be built on a different paradigm from the current treatment of dividends and corporate saving”.*

We would like to make one final point here. In all circumstances, looking at the national part of a globally operating enterprise with internationally fragmented production processes may be somewhat similar to looking at the trunk or the left leg of an elephant, and pretending to analyze these parts as if one is dealing with a complete animal. One starts to wonder whether the framework of national accounts should not include as a future objective the compilation of an image of the complete animal. We need to think about compiling international or supranational accounts for multinational enterprises, in which all the national parts are consolidated, both for describing the process of producing goods and services, and for transactions and positions related to income and finance, similar to what is being done by the BIS in compiling banking statistics based on the “nationality” perspective. All of this could be done in a set of supplementary tables, in addition to the traditional core set of national accounts data, with or without including the above amendments to the international standards.

c. ***“In between dream and act there are hindering laws and practical issues”***<sup>14</sup>

A serious complication in the application of the above options or solutions for dealing with the impact of globalization on the compilation of GDP, and national accounts more generally, is the availability of relevant data. When it comes to the options suggested within the boundaries of the 2008 SNA, putting more emphasis on alternative indicators within the framework of national accounts can be implemented immediately, although it may be hard to get away from the traditional analysis of economic growth, based on volume growth of GDP. Furthermore, not all countries may be able to provide results for the net concepts (NDP/NNI), but for advanced economies this should not pose any major problems.

It gets somewhat more difficult to implement the option of providing more breakdowns of industries in the supply and use tables and of the corporations' sectors in the institutional sector accounts. Leaving apart problems related to resources, knowledge and time to implement them, countries should be able to provide these additional breakdowns, if the source data provides the necessary granularity. But it may not be that straightforward to arrive at a set of more granular data that are fully consistent with the current set of national accounts data. It may require a re-design of the production system in which the required granularity is included from the start of the compilation process. The same holds, but to a significantly lesser extent, for the third option, i.e. the definition of alternative macro-economic concept such as GNI\* in Ireland.

The above assumes that the national source data are fully correct. But we all know that this is not true, if one takes a look at the inconsistencies at the international level. Whether it concerns data on foreign trade, foreign direct investment or any other statistics on cross-country transactions and positions, serious inconsistencies exist between the worldwide totals of receipts/stocks of financial assets and the worldwide totals of payments/stocks of liabilities. One may also wonder whether the summation of the parts of a multinational enterprise recorded at the national level actually add up to the complete group. It is highly probable that there may be cases of double counting or missing information, which is why it is important to liaise internationally, to work together across borders in profiling multinational enterprises, and to agree upon the national allocation of the various units comprising the enterprise group. The initiatives at the European level to create and maintain an internationally agreed Euro Groups Register is a good example.

Now addressing the options which go beyond the 2008 SNA, it is clear that all of them require, at least to some extent, the exchange of individual data on multinational enterprises across countries. In the current legal circumstances, this is a major issue that would need to be resolved rather urgently. Two possible ways forward can be distinguished: (i) a top-down approach according to which data on multinational enterprises are collected at the international level, with a subsequent provision of data on the national parts of the multinational enterprises to the countries; and (ii) a bottom-up approach according to which each country collects data on the national parts of the multinational enterprises,

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<sup>14</sup> Quote from the poem “The Marriage” by Willem Elsschot (Flemish author).



which are subsequently exchanged and verified across countries. Given current circumstances, both ways forward require a paradigm shift in allowing for international exchange of individual data within the statistical community and, in the case of the top-down approach, in collecting statistical data and compiling national accounts data. One possible step would be the re-use of the data that will become available from the OECD BEPS initiative.<sup>15</sup> Action 13 of this initiative requires multinational enterprises to provide much more detailed country-by-country reporting on their worldwide business, with more detailed information requested for large multinationals. But it remains unclear whether this data becomes available for statistical purposes as well.

Another layer of complexity is added when one would want to allocating profits to the ultimate owner of the shares. In this paper, it has not yet been well thought through in all its consequences. It is probably also a bit too far-fetched for the time being. One would definitely need very detailed data on the ultimate holdings of securities. On the positive side, it can be noted that in recent years, as part of the G-20 Data Gaps Initiative, much progress has been made in compiling “securities databases” containing very granular data on the issuance and the holdings of publicly traded securities.

Finally, on creating supplementary tables with worldwide accounts for multinational enterprises, several initiatives, including one at the OECD, are underway to set up such databases for multinationals using existing information from public and private sources. The initiative of the Euro Groups Register within the European Union has already been mentioned. Here, the development and implementation of a unique system of Global Legal Entity Identifiers (LEI) may provide huge value added in compiling consistent sets of data on multinational enterprises.

To arrive at a legal framework that would allow for the international exchange of individual data for statistical purposes is most probably a bridge too far for the near future. It would require very tedious legalistic negotiations with a highly uncertain outcome, taking many years, if not decades, to find adequate solutions. That should not prevent statisticians from making maximum use of publicly available information, if only to improve the international consistency. All too often statisticians treat all individual data as being confidential, not taking into consideration that the relevant information is already out there. The development of databases on MNEs may add another useful layer of information, certainly if one would be able to arrive at an appropriate monitoring of the group structures, for example by a wider application of the Legal Entity Identifier (LEI). Whether such information would actually enable alternative recordings of activities of MNEs remains to be seen.

## **Section VI: Concluding comments**

We have seen that effects of globalization can impact both the levels and rates of change of major aggregates such as GDP and GNI. These effects arise for various reasons, but many of them reflect how multinational enterprises respond to tax incentives in allocating their assets and locating their activities.

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<sup>15</sup> See <http://www.oecd.org/ctp/aggressive/beps-2015-final-reports.htm>.

And, as seen in the Irish case, the effects can include large changes to GDP and/or GNI that have little relation to other variables that are traditionally associated with production, such as employment and compensation of employees. Some data users feel that the effects of globalization have diminished the usefulness of national accounts data.

We have suggested several options for moving forward. Although we might wish for a world in which national accounts fit into traditional narratives about domestic production using capital and labor, the way forward involves recognizing that the world has become more complex. While we can supplement the standard SNA to help in the analysis of a globalized economy, in the long term we will need to adapt our data collection and compilation strategies to come up with innovative ways to measure global entities that are engaged in production that is not limited by national boundaries.

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