

IMPROVING THE *SNA* TREATMENT OF MULTINATIONAL ENTERPRISES

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Core measures in the *System of National Accounts (SNA)* may reflect distortions based on the treatment of multinational enterprises (MNEs) under the residence concept, which is effectively a *legal* concept rather than an *economic* concept for special purpose entities that lack production. This paper suggests an improvement to the *SNA* treatment of MNEs by proposing an *SNA* framework that offers a dual presentation of measures on *operating entities* and measures on *special purpose entities*. A dual presentation adds information to better understand the role of MNEs and special purpose entities in national accounts. Nevertheless, the proposal also yields a meaningful departure from current *SNA* recommendations and current practice by statistical compilers, which requires careful consideration of practical matters before implementation is feasible.

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1. INTRODUCTION

The primary objective of the *System of National Accounts* (European Commission *et al.*, 2009) (*SNA*) is to summarize economic activity for a given economy. As a result, the *SNA* offers an organizing framework designed with a sequence of balanced accounts that articulate transactions in goods and services produced as well as the related income and its distribution, redistribution, and uses for final consumption or saving. The sequence of accounts also includes a capital account, which articulates transactions in non-financial assets, and includes a financial account, which articulates transactions in financial assets and liabilities that support production and mirror counterpart transactions. The *SNA* framework includes a goods and services account, which is the backbone of the *SNA* because it supports the fundamental accounting identity that the supply of all goods and services must be used for either consumption or capital formation. The *SNA* framework also includes a rest of the world account that captures external transactions and distinguishes the compiling economy from the rest of the

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world. Finally, the *SNA* framework includes a balance sheet that records opening and closing balances as well as changes between them for non-financial assets, financial assets, liabilities, and resulting net worth.

The most fundamental unit of observation in the *SNA* is referred to as an institutional unit, and the *SNA* attributes stocks of assets and liabilities and related flows to an economy based on the residence of a unit. Residence is the economic territory in which an institutional unit has a center of predominant economic interest, which is generally defined in the *SNA* as a physical location from which the unit engages in economic activity and transactions. An economic territory in the *SNA* enjoys legal jurisdiction to which an institutional unit is subject. The *SNA* concepts of economic territory and residence are designed to attribute the stocks and flows of an institutional unit based on residence in a single economic territory.

The scope of the residence concept includes stocks and flows within multinational enterprises (MNEs), which are a special category of foreign direct investment that results when a direct investor has control over a foreign direct investment enterprise.¹ Given this control, MNEs play a unique and important role in national economies and in the global economy. The treatment of MNEs imposes two challenges for economic accountants. First, transactions within MNEs are valued using transfer pricing methods that may fail to reflect market outcomes, which is the preferred basis for all transactions recognized in the *SNA*. While such failure inevitably affects economic accounting statistics, any distortions that result from mispriced transactions are presumably limited because transfer prices are subject to strict regulatory scrutiny and enforcement by national tax authorities (Marques and Pinho, 2016). A second challenge for economic accountants is the appearance of transactions when MNEs are structured with special purpose entities that lack production because such structuring simply facilitates the artificial location of production and related income as well as the strategic location of financial assets and liabilities. The result is a wedge between the location of production, the location of underlying factors of production, and the location of means for financing production, which affects the accuracy and the interpretability of *SNA* core measures.

In the case of a special purpose entity that lacks production, location is determined in the *SNA* as the economic territory under whose legal jurisdiction the entity is incorporated or registered. If the entity is legally located in the same economy as its parent, the entity is combined with the parent and not recognized as a separate institutional unit because it does not satisfy *SNA* criteria for an institutional unit. However, if the entity is legally located in an economy different from its parent, the entity is recognized as a separate institutional unit. Thus, the residence of special purpose entities in the *SNA* is effectively a *legal* concept rather than an *economic* concept. As a result, the *SNA* rest of the world account includes stocks and flows within MNEs regardless of economic activity that exists under production.

¹Control exists when a direct investor owns more than 50 percent of the voting power in the direct investment enterprise. In this case, the direct investment enterprise is referred to as a subsidiary.

The *SNA* recommendation to recognize an institutional unit based on legal location of special purpose entities introduces an exception to an otherwise economic concept of residence. The recommendation is consistent with complementary recommendations in statistical companions to the *SNA*, including the *Balance of Payments and International Investment Position Manual (BPM)* (International Monetary Fund, 2009) and the *Benchmark Definition of Foreign Direct Investment (BD)* (Organisation for Economic Co-operation and Development, 2008a), which facilitates the integration and harmonization of macroeconomic statistics. Like other guidance in the *SNA*, *BPM*, and *BD*, the recommendation to recognize an institutional unit is a deliberate decision based on extensive consideration and consultation among international organizations and national statistics offices. The recommendation is particularly important in the *BPM* for tracking financial transactions and international investment positions and for monitoring exposure to global financial risks. However, the recommendation may generate distortions, which is actively acknowledged with specific recommendations in both the *BPM* and the *BD* for international investment positions, financial transactions, and income flows but is not actively acknowledged in the *SNA*.

Since special purpose entities are generally described as entities that have few or no attributes of physical location and engage in little or no production—i.e., pass-through entities—data sources on special purpose entities should not reflect any production or related income as a result of pass-through flows that lack economic substance. However, the proliferation of intra-firm transactions that artificially reflect production and related income but that actually lack economic substance is evident in efforts by national tax authorities and international bodies to mitigate the increasing erosion of tax bases through income shifting, which is accomplished through structuring that includes special purpose entities. In addition, the legal location of special purpose entities has been shown empirically to generate questionable results for some published income-based economic accounting measures in the U.S., which are consistent with the *SNA* (Lipse, 2010; Rassier and Koncz-Bruner, 2015; Rassier, 2014). Thus, a residence concept that includes the legal location of special purpose entities has important implications for the future of national accounts as long as transactions that artificially reflect production and related income but that actually lack economic substance continue to grow. As the global economy evolves and as the role of MNEs evolves, an accurate and complete picture of economically meaningful flows within MNEs, and consequently, between a compiling economy and the rest of the world is increasingly important for policy makers and researchers who rely on economic accounting statistics.

Recent papers suggest supplementing supply and use tables compiled from the *SNA* goods and services account with breakdowns on domestic- and foreign-owned resident entities (Ahmad and Ribarsky, 2014; Fetzner and Strassner, 2015) or supplementing the *SNA* primary income accounts with separate statistics on foreign direct investment income flows (Harrison, 2014). In addition, the *BPM* and the *BD* recommend measures that are designed to provide insight into the role of pass-through funds and special purpose entities in official statistics but that are not included in the *SNA* framework. Regardless of supplemental measures and regardless of recommendations under statistical companions to the

SNA, achieving the fundamental linkages of the *SNA* rest of the world account with the goods and services account via imports and exports, with the income accounts via property income, and with the financial account and balance sheet via financial assets and liabilities becomes challenging when the economic residence and the legal residence of MNE subsidiaries do not overlap. Likewise, achieving a clear distinction between the compiling economy and the rest of the world becomes challenging when the economic residence and the legal residence of MNE subsidiaries do not overlap.

This paper suggests an improvement to the current *SNA* treatment of MNEs. In particular, the paper proposes an *SNA* framework that offers a dual presentation of measures on *operating entities* and measures on *special purpose entities*. Operating entities satisfy *SNA* criteria for an institutional unit and fit the *SNA* definition of an enterprise—they are engaged in production. Special purpose entities do not satisfy the criteria or fit the definition—they are pass-through entities that are not engaged in production. While *SNA* national aggregates such as national income and national wealth may not be affected when the economic residence and the legal residence of MNE subsidiaries do not overlap, *SNA* domestic aggregates such as domestic product, disposable income, saving, and net lending/net borrowing may become less accurate and less relevant to the objectives of the *SNA*.²

The paper has two objectives. The first objective is to identify potential distortions in current *SNA* core measures as a result of attributing stocks and flows within MNEs under a concept of legal residence. The second objective is to propose two alternative treatments for MNEs. One alternative—the “imputation” alternative—is to treat special purpose entities resident in economies other than their parents as separate institutional units, which is consistent with current *SNA* recommendations. Another alternative—the “reclassification” alternative—is to reclassify special purpose entities to the economies of their parents, which is a fundamental change from current *SNA* recommendations. Under each alternative, the dual presentation adds information to better understand the role of MNEs and special purpose entities in particular.

The dual presentation proposed in this paper yields information on the extent of potential distortions that may be introduced under the current *SNA* recommendations. Equally important, the proposal improves the information content of national accounts while preserving the global allocation of production, income, assets, and liabilities in *SNA* core measures under the imputation alternative or in supplemental measures under the reclassification alternative. Moreover, the imputation alternative preserves in core measures requisite information that is fully consistent with the *BPM* while the reclassification alternative allows users to recover necessary information based on supplemental measures. Nevertheless, the proposal also yields a meaningful departure from current *SNA* recommendations and current practice by statistical compilers, which requires careful consideration of practical matters before implementation is feasible.

²However, even *SNA* national aggregates may be affected by a lack of overlap in the case of corporate inversions as discussed in Hanson *et al.* (2015).

The paper is organized in five sections that follow. The next section summarizes the concepts of institutional units, enterprises, and residence in the *SNA* and related international guidelines. The third section provides an overview of previous related literature on MNEs that supports a concept of economic residence in lieu of legal residence. The fourth section identifies the potential distortions in current *SNA* core measures and proposes the two alternative treatments for MNEs. The fifth section introduces some practical considerations. The last section concludes.

2. INSTITUTIONAL UNITS, ENTERPRISES, AND RESIDENCE

In the *SNA*, an institutional unit satisfies four attributes. First, it is entitled to own assets and incur liabilities. Second, it is capable of engaging in economic activities and making economic decisions. Third, it can be held legally responsible for its activities and decisions. Fourth, it must have a complete set of financial accounts or a complete set must be possible. A complete set of accounts is a necessary condition for recognition of an institutional unit, but it is not a sufficient condition if the other three attributes are not satisfied. The two types of institutional units in the *SNA* are households and legal or social entities, which include corporations, governments, and non-profit institutions. Corporations are either legally incorporated enterprises or unincorporated enterprises that operate so independently of the units that own them that it is possible to construct for them a complete set of financial accounts. In either case, an enterprise in the *SNA* is defined as an institutional unit that engages in production of goods or services. As a result, a corporation in the *SNA* is also an institutional unit that engages in production of goods or services.

The residence of an institutional unit in the *SNA* is the economic territory in which the unit has its center of predominant economic interest. The center of predominant economic interest is generally based on attributes of physical location such as dwelling in the case of households or place of production in the case of enterprises. For an enterprise with few or no attributes of physical location, residence is determined as the economic territory under whose legal jurisdiction the enterprise is incorporated or registered, which still fits the *SNA* definition of an enterprise as long as the unit is engaged in production of goods or services. The *SNA* examples of such enterprises include banks, insurance companies, investment funds, securitization vehicles, trusts, foundations, virtual manufacturers, and some special purpose entities. In addition, the *SNA* emphasizes that the use of economic territory as the scope of economic statistics means that an entity that is part of a group of affiliated enterprises is resident in its economy of physical or legal location rather than the economy of its parent's location. Thus, the scope of the residence concept includes stocks and flows within MNEs, which are often structured with special purpose entities that lack production but that nevertheless play a key role in financing and holding arrangements as well as channeling funds within MNEs.

2.1. *Special Purpose Entities*

While the *SNA* and related international guidelines do not offer a definition for special purpose entities, they do offer a set of characteristics that generally

describe special purpose entities. In particular, the *BD* provides the clearest set of criteria for identifying a special purpose entity: 1) it is a legal entity; 2) it is controlled by a non-resident parent; 3) it has few or no employees, little or no physical presence, and engages in little or no production; 4) its assets and liabilities represent investments in or from other countries; and 5) its core purpose is group financing activities or holding functions. Moreover, the *BD* explains that special purpose entities may be created to shift income, avoid regulation, or maintain confidentiality. Thus, even though special purpose entities lack employees, physical presence, and production, their role in the MNE may confound the actual location of production and related income as well as the actual location of financial assets and liabilities. Examples of special purpose entities include conduits, shell companies, holding companies, financing companies, and licensing companies.

Special purpose entities impose a unique challenge under the *SNA* concepts of institutional units, enterprises, and residence. Any assets or liabilities attributed to a special purpose entity may only be a matter of legal ownership with no real assumption of risk related to economic ownership of the assets or liabilities. In addition, a lack of employees, physical presence, and production means that a special purpose entity has a limited ability to engage in economic activities even though it may channel funds and even though its records may reflect production and related income. Likewise, a special purpose entity may very well not be capable of making economic decisions independently of its parent. Moreover, the extent to which a special purpose entity can be held legally responsible for its activities and decisions is subject to question. Thus, special purpose entities may very well not satisfy all of the *SNA* criteria for an institutional unit. Furthermore, special purpose entities generally do not fit the *SNA* definition of an enterprise if they do not engage in production.

While special purpose entities may not satisfy the *SNA* criteria for an institutional unit, the use of special purpose entities as non-resident vehicles to facilitate financing and holding arrangements as well as channeling funds within MNEs exposes MNEs and compiling economies to global financial risks that are of interest to users of economic accounts, including central banks and other institutions responsible for supervising financial markets. Thus, a special purpose entity cannot simply be dismissed as long as it is resident in an economy other than its parent. As a result, the *SNA* recommendation for recognizing a special purpose entity as an institutional unit depends on the legal location of the entity in relation to its parent. If the entity is legally located in the same economy as its parent and is not autonomous, the entity is not recognized as a separate institutional unit from its parent. However, if the entity is legally located in an economy different from its parent, the entity is recognized as a separate non-resident institutional unit in the *SNA* corporations sector. In other words, an institutional unit is recognized and treated as an enterprise even though special purpose entities may not satisfy *SNA* criteria for an institutional unit and may not fit the *SNA* definition of an enterprise.

2.2. *Scope of Rest of the World Flows*

Figure 1 depicts the scope of rest of the world flows under the residence concept. In Figure 1, operating entities satisfy the *SNA* criteria for an institutional

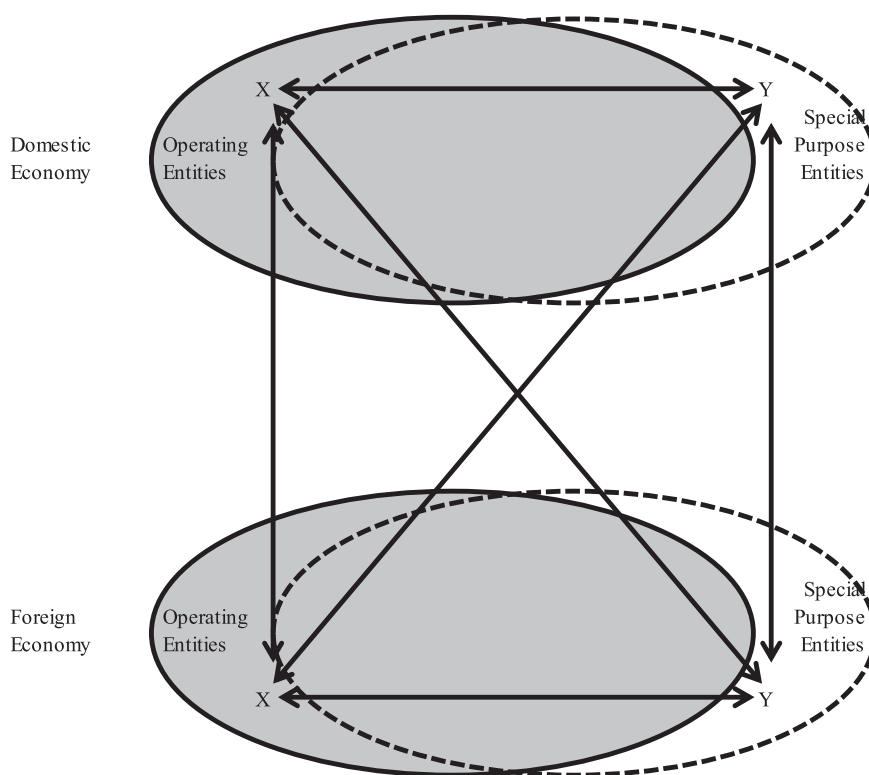


Figure 1. Scope of Rest of the World Flows Under the Residence Concept

Note: Operating entities are represented for each economy by the shaded areas labeled X, and special purpose entities are represented for each economy by the non-shaded areas labeled Y. Under a concept of legal residence for special purpose entities that lack production, the scope of rest of the world transactions includes the shaded and non-shaded areas. Under a concept of economic residence, the scope of rest of the world transactions is limited to the shaded areas. Thus, a concept of legal residence yields rest of the world transactions that do not exist under a concept of economic residence.

unit and fit the *SNA* definition of an enterprise—they are engaged in production. In contrast, special purpose entities do not satisfy the *SNA* criteria for an institutional unit and do not fit the *SNA* definition of an enterprise because they are pass-through entities that are not engaged in production. Operating entities are represented in the domestic economy and in the foreign economy by the shaded areas labeled X, and special purpose entities are represented for each economy by the non-shaded areas labeled Y. If all entities are operating entities, which may likely be the case for unaffiliated enterprises, then the overlap between special purpose entities and operating entities is complete, and the scope of rest of the world flows is the same under a legal residence concept and an economic residence concept. However, as the overlap decreases between special purpose entities and operating entities, which may be the case for subsidiaries that do not satisfy the *SNA* criteria for an institutional unit and do not fit the *SNA* definition of an enterprise, then the scope of rest of the world flows increases. Thus, a concept of legal

residence yields rest of the world flows that do not exist under a concept of economic residence.

The arrows in Figure 1 show possible combinations of flows that result for entities in each economy under the residence concept. For each entity, there are three possible combinations. An operating entity may transact with a special purpose entity in the same economy or may transact with an operating entity or a special purpose entity in the other economy. Likewise, a special purpose entity may transact with an operating entity in the same economy or may transact with an operating entity or a special purpose entity in the other economy. Thus, there are six possible combinations of flows for each economy, and five of the six flows involve at least one special purpose entity. Any changes to the residence concept would affect the treatment of all five flows for a given economy.

2.3. *Related International Guidelines*

The concepts of institutional units, enterprises, and residence in the *BPM* and the *BD* are consistent with the *SNA*. The objective of the *BPM* is to set the global standard for balance of payments statistics and international investment position statistics. The objective of the *BD* is to set the global standard for foreign direct investment statistics. The shared objectives of the *SNA*, *BPM*, and *BD* are to measure and attribute economic activity and transactions to economies based on the residences of transacting institutional units. Thus, a consistent set of concepts across the *SNA*, *BPM*, and *BD* is important to facilitate the integration and harmonization of macroeconomic statistics.

To meet their objectives, both the *BPM* and the *BD* recommend a presentation of foreign direct investment statistics based on the asset-liability principle and on the directional principle. Presentation under the asset-liability principle reflects aggregate totals of foreign direct investment claims on and obligations to non-residents. Presentation under the directional principle reflects the direction of influence for foreign direct investment based on either inward or outward investment. Statistics compiled under the asset-liability principle and under the directional principle are recorded on an immediate counterparty basis, which may be an operating entity or a special purpose entity.

Statistics recommended in the *BPM* and in the *BD* under the asset-liability principle are compiled for all entities, including operating entities and special purpose entities, and for all flows and positions, including those resulting from pass-through funds. Thus, the statistics are designed to reflect all flows and positions between direct investors and direct investment enterprises regardless of the underlying economic substance, which is intended to promote symmetry and consistency across compiling economies. Given the potential distortionary effects of special purpose entities and pass-through funds, the *BD* recommends separate supplemental statistics for resident special purpose entities under the asset-liability principle, and the *BPM* suggests supplemental statistics on pass-through funds. However, statistics recommended under the asset-liability principle are the only measures included in the *SNA* framework.

Statistics recommended in the *BPM* and in the *BD* under the directional principle are not included in the *SNA* framework. Nevertheless, in light of the potential distortions resulting from special purpose entities, the *BD* recommends that statistics under the directional principle be compiled separately for resident operating entities and resident special purpose entities. Likewise, the *BD* recommends that supplemental statistics under the directional principle be compiled for non-resident special purpose entities by “looking through” the immediate counterparty to the next direct investment enterprise. However, given the challenges associated with “looking through” the immediate counterparty, the *BD* stops short of recommending that statistics be compiled separately for non-resident operating entities and non-resident special purpose entities.

The *SNA* recommendation to recognize an institutional unit based on legal location of special purpose entities introduces an exception born out of necessity for tracking financial transactions and international investment positions and for monitoring exposure to global financial risks, which satisfies the objective of the *BPM*. Core statistics on financial transactions and international investment positions recommended under the *BPM* are fully integrated with the rest of the world sector in the *SNA* financial account and balance sheet, respectively. Likewise, core statistics on transactions in goods and services under the *BPM* are fully integrated with the rest of the world sector in the *SNA* production account, and core statistics on foreign direct investment income flows under the *BPM* are fully integrated with the rest of the world sector in the *SNA* income accounts. Thus, core measures under the current concept of legal residence for special purpose entities in the *SNA* framework are subject to the same distortions that are readily acknowledged for financial transactions and international investment positions in the *BPM* and the *BD*. In addition, core measures of production and related income are subject to distortions.

3. RELATED LITERATURE ON MULTINATIONAL ENTERPRISES

The following related lines of literature provide context for the current paper: 1) economic literature on the formation of MNEs, 2) global guidance on the taxation of MNEs, and 3) economic measurement literature on alternatives to the residence concept. An underlying theme in each line of literature is the necessity of a physical presence in order for economic activity to take place, which is consistent with physical location that is generally recommended in the *SNA* under the concepts of institutional units and enterprises.³

3.1. *Formation of Multinational Enterprises*

Economic literature on the formation of MNEs focuses on adapting general equilibrium trade models to include endogenous MNEs. Thus, the models assume

³Even though the *SNA* recommends residence based on legal location in the case of an enterprise with few or no attributes of physical location, such as banks, insurance companies, and virtual manufacturers, the requirement of production under the enterprise concept implies some degree of physical presence is satisfied. For example, banks, insurance companies, and virtual manufacturers cannot operate without offices and personnel.

firms operate in imperfectly competitive markets.⁴ Current economic theories explain the formation of MNEs based on the organization of production into one of two types: vertical integration and horizontal integration. Vertical integration results when firms divide the production process among affiliates in order to take advantage of lower relative factor prices. Horizontal integration results when firms replicate production at affiliates in order to serve local markets. Helpman (1984) constructs one of the first theoretical models of vertical integration, and Brainard (1993) offers an empirical assessment of the model in which she finds very little MNE activity is explained by differences in factor prices. Markusen (1984) constructs one of the first theoretical models of horizontal integration, which is supported by empirical evidence in Brainard (1997). Markusen (1997) argues that the outcomes identified by vertical and horizontal models face limitations based on underlying assumptions and constructs an alternative knowledge-capital model, which explains a more comprehensive set of outcomes. Estimates in Carr *et al.* (2001) lend empirical support to the knowledge-capital model.

A common feature of the formation models is the inclusion of a local input such as labor and a firm-specific input such as intangibles, which can be used simultaneously by multiple entities within the enterprise. In other words, the firm-specific input is a shared input. In Helpman (1984) and Markusen (1984), the shared input is immobile but can serve multiple affiliates remotely. In Markusen (1997), knowledge is a shared input that is geographically mobile. In either case, shared inputs do not need to be physically present for production to take place, but shared inputs cannot generate output without the local input. In other words, production in Helpman (1984) and Markusen (1984, 1997) requires a physical presence. Thus, the *SNA* concept of legal residence for special purpose entities that have few or no attributes of physical location and engage in little or no economic activity is not consistent with economic literature on the formation of MNEs, which is based on fundamental trade theory. In contrast, economic literature on the formation of MNEs seems to support a concept of economic residence.

3.2. *Taxation of Multinational Enterprises*

Horst (1971) constructs a partial equilibrium model to demonstrate the income shifting behavior of MNEs through transfer pricing decisions. Grubert and Mutti (1991) initiate a large body of empirical work that supports the theoretical results in Horst (1971). More recently, Gresik (2001) provides a comprehensive look at the challenges imposed on national tax authorities by the ability of MNEs to shift production and resources across national boundaries. From a measurement perspective, income shifting also imposes challenges for economic accountants. However, rather than focusing on income shifting behavior per se, the focus in this paper is on responses of national tax authorities and international bodies such as the Organisation for Economic Co-operation and

⁴In early work, Caves (1971) argues that direct investment generally takes place in industries characterized by oligopolistic market structures rather than competitive market structures upon which trade theory is built. Likewise, Horst (1971) argues that the competitive market assumptions required in general equilibrium models do not accurately reflect the reality of profit-maximizing MNEs with market power.

Development (OECD) that may be of use to economic accountants for improving the *SNA*.

Economic accountants and national tax authorities face similar challenges with respect to MNEs. Economic accountants want to know where within an MNE investment and production are taking place, and national tax authorities want to know where income from investment and production is earned. Current global guidance on international taxation is provided in the OECD's *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations* (OECD, 2010b). The OECD transfer pricing guidelines generally recommend transactions within MNEs be recognized at market values (or "arm's length" values) as if the transactions are taking place among unrelated entities. Many national tax authorities impose and enforce the arm's length standard, which is subject to a number of practical challenges. Thus, the OECD recently concluded a project that includes final reports on fifteen actions at the request of the G-20 finance ministers to address base erosion and profit shifting (BEPS). The objective of the BEPS project is to encourage MNEs to align their tax models with their operating models. Among the participants, BEPS working groups and consultations included over 80 developing countries. While guidance under BEPS does not have the authority of regulation, OECD countries are moving forward with BEPS-related regulatory initiatives. In addition, a number of developing countries have shown a strong interest in implementing recommendations under the BEPS project.

The BEPS project calls for documentation that includes country-by-country reporting (OECD, 2015a). Under country-by-country reporting, MNEs are required to report to national tax authorities, by country, earnings, revenues, income taxes paid and accrued, stated capital, accumulated earnings, number of employees, and tangible assets. Some respondents to the BEPS project expressed strong concern that country-by-country reporting is suggestive of a method of formulary apportionment, which the OECD transfer pricing guidelines explicitly reject as a substitute for the arm's length standard. However, the OECD asserts that the purpose of country-by-country reporting is to provide tax regulators with indicators regarding the location of economic activity in order to target audit risk rather than to replace the arm's length standard. Regardless of substitution between formulary apportionment and the arm's length standard, the indicators recommended under country-by-country reporting suggest the OECD considers economic activity to be determined in part by physical presence.

The BEPS project also includes an action on the artificial avoidance of permanent establishment status (OECD, 2015b), which is related to a prior report on the attribution of profits to permanent establishments (OECD, 2008b). A permanent establishment is a taxable presence that results in a jurisdiction based on an enterprise engaging in economic activity in the jurisdiction. The OECD model tax convention defines a permanent establishment as a fixed place of business, such as an office or a factory, which also includes dependent agents who act on behalf of an enterprise and who have authority to conclude contracts in the name of the enterprise but are not employees of the enterprise (OECD, 2010a). Under the authorized OECD approach for permanent establishments, the profits attributable to a permanent establishment should be congruent with "the profits that the permanent establishment would have earned at arm's length if it were a legally distinct and separate

enterprise performing the same or similar functions under the same or similar conditions” (OECD, 2008b paragraph 10). Furthermore, the assumption of risk and the economic ownership of assets that underlie the arm’s length result should be determined by the place of performance of “significant people functions” in the case of non-financial enterprises or by the location of “key entrepreneurial risk takers” in the case of financial enterprises rather than just the location of contracts. Thus, economic activity and the related attribution of profits to a permanent establishment are determined in part by a physical presence.⁵

Overall, the *SNA* concept of legal residence for special purpose entities does not seem consistent with global guidance on the taxation of MNEs, which shares closely related objectives with economic accounting. However, global guidance on the taxation of MNEs seems to support a concept of economic residence, which is determined at least in part by a physical presence.⁶ Thus, both the economic literature on the formation of MNEs and global guidance on the taxation of MNEs appear to support a concept of economic residence in lieu of legal residence. Furthermore, both the economic literature on the formation of MNEs and global guidance on the taxation of MNEs consider physical presence to be a necessary condition to determine economic activity.

3.3. *Alternatives to the Residence Concept*

Challenges encountered under the residence concept are widely addressed in international discourse and in economic measurement literature. The United Nations *et al.* (2011) recently published a collection of papers that address the impact of globalization on national accounts. Three papers are dedicated to identifying and explaining challenges associated with allocating production of MNEs to compiling economies under the residence concept. However, none of the papers propose any solutions.

In addition to the United Nations *et al.* (2011) papers, Lipsey (2010) argues that shared inputs such as intangibles and some services impose a challenge under the residence concept because returns to shared inputs may be attributed anywhere in the world and may result in transactions that lack economic substance when an MNE is structured for purposes other than production. As a result, Lipsey (2010) suggests but does not develop an alternative location-based framework to accompany the residence-based framework for measuring transactions in intellectual property and services. Lipsey’s (2010) argument is supported with an alternative formulary apportionment framework in Rassier and Koncz-Bruner (2015) and Rassier (2014). In particular, Rassier (2014) treats a reduction in transactions

⁵In the case of electronic commerce, the commentary to the OECD model tax convention clarifies that computer equipment at a location may constitute a permanent establishment even if no personnel are required to operate the equipment. However, the attribution of profits to the permanent establishment would still depend on the performance of “significant people functions” under the authorized OECD approach, which implies little or no profit would be attributed to the permanent establishment (OECD, 2008b, paragraph 95).

⁶In addition to global guidance on the taxation of MNEs, which focuses on economic substance, the International Accounting Standards Board (IASB) generally highlights the importance of economic substance over legal form. In particular, the IASB highlights the importance of economic substance over legal form for determining the disclosure of related party relationships and transactions in financial statements in International Accounting Standard 24 (IASB, 2009).

in outward direct investment income that result for MNEs under formulary apportionment as an implied increase in domestic product for the U.S.

Earlier work also suggests an alternative ownership-based framework for organizing direct investment and trade statistics. Baldwin and Kimura (1998) and Kimura and Baldwin (1998) use results for the U.S and Japan to highlight the usefulness of an ownership-based framework. More recently, Federico (2015) applies bilateral data on 44 countries to the Baldwin and Kimura (1998) framework. While an ownership-based framework may address some of the challenges encountered under the residence concept, an ownership-based framework is not designed to identify the location of economic activity and transactions within MNEs, which is the centerpiece for economic accounting purposes.

4. ALTERNATIVE TREATMENTS FOR MULTINATIONAL ENTERPRISES

The scope of rest of the world flows outlined in Figure 1 is instructive for the *SNA* treatment of MNEs. In particular, the rest of the world account should include flows within MNEs but flows for operating entities should be separately presented from flows for special purpose entities that lack production because the latter may generate distortions in *SNA* core measures. Tables 1 and 2 outline an *SNA* framework that offers a dual presentation of measures on operating entities and measures on special purpose entities. Consistent with the notation in Figure 1, an X in Tables 1 and 2 denotes measures for operating entities, and a Y denotes measures for special purpose entities. Recall that operating entities satisfy the *SNA* criteria for an institutional unit and fit the *SNA* definition of an enterprise, but special purpose entities do not satisfy the *SNA* criteria for an institutional unit and do not fit the *SNA* definition of an enterprise. In other words, special purpose entities lack economic activity. Thus, a Y indicates a potential distortion introduced for a particular measure under a concept of legal residence. Stocks and flows for operating entities are shown in the odd numbered columns, and stocks and flows for special purpose entities are shown in the even numbered columns.

Under the current *SNA* treatment of MNEs, no distinction is made between measures for operating entities and measures for special purpose entities in the rest of the world account or the goods and services account. Current *SNA* core measures in Tables 1 and 2 are determined by the sum of X and Y for each account. Thus, current core measures throughout the *SNA* framework reflect potential distortions introduced by special purpose entities that lack production. The *SNA* financial corporations sector includes a subsector for captive financial institutions and money lenders, which does provide information on special purpose entities resident in the compiling economy but does not provide information on non-resident special purpose entities sponsored by institutional units in the compiling economy.

Under alternative *SNA* treatments, the dual presentation also amounts to recognizing operating entities and special purpose entities as separate subsectors. However, the treatment of special purpose entities as separate institutional units in the economy of their residence or as an integral part of their parents may yield

TABLE 1
SNA CURRENT ACCOUNTS UNDER THE RESIDENCE CONCEPT

		Uses						Resources												
		Goods and Services			Rest of World			Total Economy			Goods and Services			Rest of World			Total Economy			
		Operating	Special	Operating	Special	Operating	Special	Operating	Special	Operating	Special	Operating	Special	Operating	Special	Operating	Special	Operating	Special	Operating
		Entites	Purpose	Entites	Purpose	Entites	Purpose	Entites	Purpose	Entites	Purpose	Entites	Purpose	Entites	Purpose	Entites	Purpose	Entites	Purpose	Entites
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
		Total		Total		Total		Total		Total		Total		Total		Total		Total		Total
		X+Y	Y	X	Y	X	Y	X+Y	Y	X	Y	X+Y	Y	X	Y	X+Y	Y	X	Y	X+Y
		X+Y		X		X		X+Y		X		X+Y		X		X+Y		X		X+Y
		X+Y		X		X		X+Y		X		X+Y		X		X+Y		X		X+Y
		X+Y		X		X		X+Y		X		X+Y		X		X+Y		X		X+Y
Production Account																				
Imports of goods and services																				
Exports of goods and services																				
Output																				
Intermediate consumption																				
Value-added (domestic product)																				
External balance of goods and services																				
Generation of Income Account																				
Value added (domestic product)																				
Compensation of employees																				
Taxes on production																				
Subsidies on production (-)																				
Operating surplus																				
Mixed income																				

Table 1 Continued

Total	Uses						Resources												
	Goods and Services			Rest of World			Total Economy			Goods and Services			Rest of World			Total Economy			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	
Code																			
Allocation of Primary Income Account																			
		B2																	
		B3																	
X		D1	X																
		D2																	
X+Y		D3	X	X															
		D4			Y														
X		B5		X															
Secondary Distribution of Income Account																			
		B5																	
X		D5	X	X															
X		D61	X	X															
X		D62	X	X															
X+Y		D7	X	X	Y														
X+Y		B6		X	Y														
Use of Disposable Income Account																			
		B6																	
X		P3	X	X															
X+Y		B8		X	Y														
X		B12		X															

Note: An X denotes transactions for operating entities, and a Y denotes transactions for special purpose entities that lack production.

TABLE 2
SNA ACCUMULATION ACCOUNTS AND BALANCE SHEET UNDER THE RESIDENCE CONCEPT

Liabilities and Net Worth														
Assets						Liabilities and Net Worth								
Goods and Services			Rest of World			Total Economy			Rest of World			Goods and Services		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	Total		
Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities		
Code														
Capital Account														
Savings														
	B8					X	Y					X+Y		
Current external balance														
X	B12			X				X		X		X		
Capital formation														
	P5					X		X			X	X		
Capital transfers, receivable														
	D9r					X		X			X	X		
Capital transfers, payable														
	D9p					X		X			X	X		
Changes in net worth due to saving and capital transfers														
X+Y	B101	X		X	Y	X	Y	X				X+Y		
Net lending / net borrowing														
Financial Account														
Net lending / net borrowing														
	B9					X	Y	X				X+Y		
Net acquisition of financial assets and liabilities														
X+Y	F	X	Y	X	Y	X	Y	X	Y			X+Y		
Other Changes in the Volume of Assets Account														
Produced non-financial assets														
X	AN1			X										
Non-produced non-financial assets														
X	AN2			X										
Financial assets and liabilities														
X	AF			X		X		X				X		
Changes in net worth due to OCVA														
	B102					X						X		
Revaluation Account														
Non-financial assets														
X	AN			X										
Financial assets and liabilities														
X+Y	AF	X	Y	X	Y	X	Y	X	Y			X+Y		
Changes in net worth due to holding gains and losses														
	B103					X	Y	X	Y			X+Y		

very different results in *SNA* core measures. This section first identifies potential distortions in current *SNA* core measures as a result of treating flows within MNEs under a concept of legal residence. The section then discusses two alternative treatments for MNEs. One alternative is to treat special purpose entities resident in an economy other than their parents as separate institutional units—i.e., the “imputation” alternative—which is consistent with current *SNA* recommendations. Another alternative is to reclassify special purpose entities to the economy of their parents—i.e., the “reclassification” alternative—which is a fundamental change from current *SNA* recommendations on special purpose entities resident in an economy other than their parents. Under each alternative, the dual presentation adds information to better understand the role of MNEs and special purpose entities in particular.

4.1. *Potential Distortions in Current SNA Core Measures*

The *SNA* current accounts are presented in Table 1. As shown at the top of Table 1, transactions with special purpose entities may affect imports and exports of goods and services. While trade in goods may be subject to the effects of special purpose entities in cases where intangible inputs are an important part of production, trade in services has been identified by Lipsey (2009) as particularly vulnerable to the concept of legal residence. In Lipsey’s (2009, p. 44) words, “The measurement of trade in more and more services places a great deal of weight on the definition of residence, because the identification of residence can change what is, on the face of it, a domestic transaction into an international transaction”. In the context of the *SNA*, the fundamental linkages between the rest of the world account and the goods and services account via imports and exports become blurry when the economic residence and the legal residence of MNE subsidiaries do not overlap. Thus, value-added and the external balance of goods and services are both subject to distortions based on special purpose entities that lack production.

In the primary distribution of income account in Table 1, operating surplus is affected to the extent of any distortions in value-added. In addition, property income is subject to distortions as a result of transactions based on legal residence. Thus, the fundamental linkages between the *SNA* rest of the world account and the income accounts via property income also become blurry when the economic residence and the legal residence of MNE subsidiaries do not overlap. However, national income should not be affected because national income includes interest, dividends, and reinvested earnings that result under foreign direct investment. Thus, any distortions in operating surplus or property income that result from special purpose entities should be offset in national income by the reallocation of income back to the direct investor.⁷

Most of the transactions in the secondary distribution of income account in Table 1 are unaffected by special purpose entities. However, other current

⁷As discussed in Hanson *et al.* (2015), an exception for national income may result under a corporate inversion. A corporate inversion is a legal reorganization in which a domestic parent becomes a wholly owned subsidiary of a foreign enterprise. The result affects both dividends and reinvested earnings that result under direct investment.

transfers may be affected by rest of the world transactions in non-life insurance when the transactions are conducted within MNEs. In particular, MNEs are often structured with non-resident reinsurance affiliates in order to grow their domestic non-life insurance business and in order to take advantage of lower capital requirements in some jurisdictions. If a reinsurance affiliate is created as a special purpose entity with no economic activity, the result will yield artificial transactions in net premiums and claims that are recorded as other current transfers in the secondary distribution of income account. Thus, disposable income is affected to the extent that transactions in net premiums and claims are conducted with special purpose entities rather than operating entities.

Any effect on disposable income is carried forward to the use of disposable income account at the bottom of Table 1, which subsequently affects saving. The current external balance at the bottom of the use of disposable income account is not affected as long as any effect on rest of the world transactions in goods and services is offset by related rest of the world transactions in income.

The *SNA* accumulation accounts and balance sheet are presented in Table 2. Given the *SNA* treatment of foreign-owned land and immovable assets as notional residents and the limited effect of special purpose entities on capital transfers, the only effects shown in Table 2 for the capital account are carried over with saving from the use of disposable income account. Any effects from saving also affect changes in net worth due to saving and capital transfers as well as net lending/net borrowing. In addition, transactions in financial assets and liabilities in the financial account have an equal effect on net lending/net borrowing in the financial account as long as three counterpart transactions based on legal residence are recorded in the financial account: 1) payments for imports and exports, 2) payments of dividends or reinvestment of earnings on foreign direct investment, and 3) unearned premiums and claims outstanding on non-life insurance. Financial account transactions that do not have counterpart transactions outside the financial account, such as additional equity or debt invested in a legally resident foreign direct investment enterprise, also impose a distortionary effect on the acquisition and disposal of financial assets and liabilities but do not affect net lending/net borrowing. Regardless of counterpart transactions, a dual presentation of measures on operating entities and measures on special purpose entities in the financial account provide useful information on sources of exposure to global financial risks. Moreover, a dual presentation clarifies the fundamental linkages between the *SNA* rest of the world account and the financial account via transactions in financial assets and liabilities.

The other changes in the volume of assets (OCVA) account in Table 2 does not show any effect based on special purpose entities because the OCVA account does not include rest of the world flows. The revaluation account does include rest of the world flows and will be affected to the extent that special purpose entities hold financial assets and liabilities that have experienced changes in prices. The residual changes in net worth due to holding gains and losses are also affected in the revaluation account. Likewise, financial assets and liabilities in the balance sheet will be affected to the extent that special purpose entities hold financial assets and liabilities. The balance sheet is also affected to the extent of any effect on changes in net worth due to saving and capital transfers in the

capital account and changes in net worth due to holding gains and losses in the revaluation account. In addition, the balance sheet is affected to the extent of any international investment positions that result under legal residence, and the dual presentation of measures on operating entities and measures on special purpose entities helps users assess each dimension. Thus, a dual presentation also clarifies the fundamental linkages between the *SNA* rest of the world account and the balance sheet via financial assets and liabilities. Finally, net worth in the balance sheet is not affected by special purpose entities that lack production because net worth is a national concept that includes financial assets and liabilities that result under foreign direct investment.

4.2. *Special Purpose Entities as Separate Institutional Units*

Tables 1 and 2 are useful to understand alternative *SNA* treatments for MNEs. One alternative is to treat special purpose entities resident in economies other than their parents as separate institutional units. This alternative is consistent with current *SNA* recommendations. In other words, *SNA* core measures under the alternative would still be determined in Tables 1 and 2 by the sum of X and Y for each account. However, rather than a combined presentation in which operating entities and special purpose entities are indistinguishable, the dual presentation features operating entities and special purpose entities as separate subsectors.

While separate subsectors for special purpose entities may already be offered for some resident entities under the *SNA* captive financial institutions and money lenders subsector, the imputation alternative proposed here offers a more comprehensive accounting of special purpose entities throughout the *SNA* framework, including the rest of the world account and the goods and services account. Thus, the dual presentation improves the information content of national accounts. In addition, imputing institutional units for special purpose entities that are not resident in the economy of their parents preserves the global allocation of production, income, assets, and liabilities under current *SNA* recommendations. Furthermore, imputing institutional units for special purpose entities preserves requisite information that is fully consistent with the *BPM* to track financial transactions and international investment positions and to monitor exposure to global financial risks.

A simple example based on paragraph 4.57 of the *SNA* demonstrates the imputation alternative. Suppose country H hosts a special purpose entity that is sponsored by an MNE in country S. An unrelated operating entity in country H sells services valued at \$10 to the special purpose entity who in turn charges the MNE \$15 to cover the costs of the services plus a mark-up designed to shift income from country S to country H. The treatment of the transactions under the proposed alternative is presented in Table 3 and Table 4 for country H and country S, respectively. In addition to the transactions, Tables 3 and 4 include the related stocks and flows of financial assets and liabilities in the balance sheet.

In Table 3, value-added for country H reflects the domestic transaction between the unrelated operating entity and the special purpose entity and the external transaction between the special purpose entity and the MNE. Total

TABLE 3
 EXAMPLE OF SPECIAL PURPOSE ENTITIES AS SEPARATE INSTITUTIONAL UNITS: COUNTRY H

	Goods and Services			Rest of World			Total Economy			Goods and Services			Total
	Operating Entities	Special Purpose Entities	Total Economy Entities	Operating Entities	Special Purpose Entities	Total Economy Entities	Operating Entities	Special Purpose Entities	Total Economy Entities	Operating Entities	Special Purpose Entities	Total Economy Entities	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
	Code												
Uses													Resources
15	Production Account												15
	Exports of goods and services												
		P6											
25	Output												25
10	Intermediate consumption												10
		P1											
		P2											
15	Value-added (domestic product)												15
-15	External balance of goods and services												-15
		B1											
		B11											
Uses	Generation of Income Account												Resources
15	Value added (domestic product)												15
		B1											
		B2											
15	Operating surplus												15
		B1											
		B2											
Uses	Allocation of Primary Income Account												Resources
5	Operating surplus												5
		B2											
		D4											
5	Property income												5
		5											
10	Balance of primary incomes (national income)												10
		B5											
Uses	Use of Disposable Income Account												Resources
-10	Current external balance												-10
		B12											

Table 4 *Continued*

Total	Goods and Services		Rest of World		Total Economy		Code	Total					
	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities	Operating Entities	Special Purpose Entities							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	Total	
<i>Changes in Assets</i>													
<i>Capital Account</i>													
B12 Current external balance													
0			10	-10			B9	Net lending / net borrowing					10
<i>Changes in Liabilities and Net Worth</i>													
<i>Financial Account</i>													
B9 Net lending / net borrowing													
20			15	5			F	Net acquisition of financial assets and liabilities					10
<i>Balance Sheet</i>													
<i>Opening balance sheet</i>													
300			100	200			AF	Financial assets and liabilities					10
<i>Stocks and Changes in Assets</i>													
B90 Net worth													
							B90	Net worth					180
<i>Changes in Liabilities and Net Worth</i>													
<i>Opening balance sheet</i>													
20			15	5			AF	Net acquisition of financial assets and liabilities					10
<i>Closing balance sheet</i>													
320			115	205			AF	Financial assets and liabilities					10
<i>Stocks and Changes in Liabilities and Net Worth</i>													
B90 Net worth													
							B90	Net worth					180

value-added generated is \$15 for country H, but national income is only \$10 because of actual or deemed dividends of \$5 paid from the special purpose entity to the MNE. The external balance of goods and services is a surplus of \$15, but the property income between the special purpose entity and the MNE yields a current external surplus of \$10. Thus, the transactions result in net lending from country H to country S of \$10. Total net worth for country H remains unchanged in the opening and closing balance sheets because the only changes are in financial assets and liabilities. Likewise, the only changes in the composition of net worth are for the operating entity in country H—increase of \$10—and the MNE in the rest of the world—decrease of \$10—because of the property income transactions between the special purpose entity and the MNE. In Table 4, the accounts for country S reflect the external transaction between the non-resident special purpose entity and the MNE, and the results for country S are counterparts to the related results for country H in each account.

4.3. *Special Purpose Entities Reclassified with their Parents*

Rather than treating special purpose entities that are resident in economies other than their parents as separate institutional units, another alternative is to reclassify special purpose entities to the economies of their parents. This alternative is consistent with current *SNA* recommendations on resident artificial subsidiaries, which are special purpose entities that are resident in the same economy as their parents and that do not satisfy the *SNA* criteria for an institutional unit or fit the *SNA* definition of an enterprise. However, the reclassification alternative is a fundamental change from current *SNA* recommendations on special purpose entities that are resident in an economy other than their parents since no institutional unit is recognized. Under the alternative, *SNA* core measures would be determined in Tables 1 and 2 only by operating entities—i.e., X—rather than the sum of X and Y. In addition to the core measures, supplemental measures on special purpose entities as shown in the even-numbered columns of Tables 1 and 2 may be offered.

Core measures under the reclassification alternative do not reflect potential distortions introduced by special purpose entities that lack production. In addition, the dual presentation of core measures on operating entities and supplemental measures on special purpose entities effectively achieves the fundamental linkages of the *SNA* rest of the world account with the other *SNA* accounts and effectively achieves a clear distinction between the compiling economy and the rest of the world when the economic residence and the legal residence of MNE subsidiaries do not overlap. However, core measures under the reclassification alternative do not preserve the global allocation of production, income, assets, and liabilities under current *SNA* recommendations. Moreover, the core measures do not preserve requisite information that is fully consistent with the *BPM* to track financial transactions and international investment positions and to monitor exposure to global financial risks. Nevertheless, the supplemental measures under the dual presentation allow users to recover necessary information.

Based on the same information for the example in Tables 3 and 4, the treatment of the transactions and the related stocks under the reclassification alternative is presented in Tables 5 and 6 for country H and country S, respectively.

TABLE 6
EXAMPLE OF SPECIAL PURPOSE ENTITIES RECLASSIFIED WITH THEIR PARENTS: COUNTRY S

Total	Goods and Services			Rest of World			Total Economy			Total									
	(1) Operating Entities	(2) Special Purpose Entities	(2') Reclassification	(3) Operating Entities	(4) Special Purpose Entities	(4') Reclassification	(5) Operating Entities	(6) Special Purpose Entities	(6') Reclassification		(7) Operating Entities	(8) Special Purpose Entities	(8') Reclassification	(9) Operating Entities	(10) Special Purpose Entities	(10') Reclassification	(11) Operating Entities	(12) Special Purpose Entities	(12') Reclassification
Uses																			
10	15	-5																	Resources
																			10
10																			
-10																			
10	15	-5		15	-5		15	-5		15	-5		15	-5		15	-5		
Uses																			
-10																			Resources
																			10
Uses																			
0				5	-5		5	-5		5	-5		5	-5		5	-5		
-10																			
Uses																			
10				10	0		10	0		10	0		10	0		10	0		Resources

Tables 5 and 6 include core measures in the odd-numbered columns for each account. Supplemental measures in Tables 5 and 6 include for each account an even-numbered column to disclose the legal residence of special purpose entities and an even-numbered column marked with a prime (') to demonstrate the adjustment required to reclassify the special purpose entity. Thus, the sum of the odd- and even-numbered columns for each account yields the core measures. In addition, the even-numbered columns marked with a prime indicate the reallocation of production, income, assets, and liabilities between countries.

In Table 5, value-added for country H does not reflect the domestic transaction between the unrelated operating entity and the special purpose entity because the special purpose entity is reclassified with the MNE in country S. Thus, value-added for country H reflects only the external transaction between the operating entity in country H and the MNE in country S. The export of the service from country H to country S is adjusted by the amount of the income shifted to the special purpose entity—i.e., \$5. Total value-added and national income are both \$10 for country H because the reclassification yields a net property income flow of zero. Likewise, the external balance of goods and services and the current external balance are both \$10 because the direct investment property income flow is eliminated. All transactions in the financial account are also eliminated by the reclassification adjustments, except the asset acquired by country H and the liability incurred by country S on the provision of services. In the opening and closing balance sheets, stocks of financial assets and liabilities for country H are reduced by the amounts held by the special purpose entity as a result of the reclassification.

The accounts for country S in Table 6 also reflect the external transaction between the operating entity in country H and the MNE in country S with adjustments required to reclassify the non-resident special purpose entity to country S. In this case, the adjustments consist entirely of the income reattributed from the special purpose entity to the MNE and the financial assets and liabilities reattributed from the special purpose entity to the MNE. Since the special purpose entity is combined with the MNE and not treated as a separate institutional unit, no adjustment is required for output. The results for country S are otherwise counterparts to the related results for country H in each account.

5. PRACTICAL CONSIDERATIONS

Since the *SNA* is an organizing framework built on economic concepts, some recommendations are made to facilitate practical considerations. However, facilitating practical considerations may yield statistics that are inconsistent with the objectives of the *SNA*. The treatment of goods for processing is an example of a recent change in the *SNA* that is intended to bridge a gap between recommendations based on practical considerations and recommendations based on sound economic accounting principles.

Goods for processing may take place between affiliated enterprises or between unaffiliated enterprises. The 1993 version of the *SNA* recommends recognizing a change in economic ownership on goods sent abroad for processing even

when no actual change in economic ownership occurs. The recognized change in economic ownership is recommended because trade in goods statistics are generally measured using customs data, which include the value of merchandise crossing territorial borders regardless of changes in economic ownership. Under the 2008 version of the *SNA*, transactions are limited to those in which economic ownership actually changes, which means a change in economic ownership is no longer recognized on good for processing. Thus, customs documentation either needs to identify changes in economic ownership or additional data are required to adjust customs data. In either case, company accounting records are expected to be a reasonable source for the requisite information.

The change in treatment of goods for processing was introduced under the 2008 version of the *SNA* in order to more accurately reflect the contribution of global production arrangements in core measures of the *SNA* and the *BPM* frameworks. The change is an example of a change that is conceptually sound, but practical challenges associated with implementing the change have been demonstrated in international discourse that includes two collaborations led by the United Nations—the Expert Group on the Impact of Globalization on National Accounts and the Task Force on Global Production. The work of each group has resulted in guides (United Nations *et al.*, 2011; United Nations, 2015) with chapters devoted to practical considerations on implementing difficult concepts including economic ownership and goods for processing. While a number of countries have implemented the new recommendations on goods for processing under the 2008 version of the *SNA*, some countries still measure goods for processing based on recommendations under the 1993 version of the *SNA* because no practical solutions are available for identifying changes in economic ownership or for adjusting customs data. However, the change in the international guidelines is a critical first step to improvements.

The *SNA* recommendation to recognize an institutional unit in the case of special purpose entities that lack production is also a recommendation that facilitates practical considerations—i.e., tracking financial transactions and international investment positions and monitoring exposure to global financial risks—but departs from sound economic accounting principles for some measures such as production and income. The dual presentation of measures on operating entities and measures on special purpose entities proposed in this paper is a conceptually sound proposal, but it does yield a meaningful departure from current *SNA* recommendations and current practice by statistical compilers, which requires careful consideration of practical matters before implementation is feasible. Overall, the imputation alternative may be more widely embraced than the reclassification alternative.

From a practical perspective, at least two alternatives are possible to implement a dual presentation of measures on operating entities and measures on special purpose entities: separate accounting and formulary apportionment. Under separate accounting, company accounting records distinguish measures for operating entities from measures for special purpose entities as long as separate records on MNE subsidiaries are maintained. If special purpose entities can be identified, company accounting records can be used to compile measures on special purpose entities. Thus, separate accounting yields measures on operating entities and yields measures on special purpose entities. Under formulary

apportionment, company accounting records are consolidated and measures are attributed to economic territories based on factors that reflect where economic activity takes place—such as compensation, tangible property, and sales—which are also available in company accounting records. Thus, formulary apportionment yields measures on operating entities with measures on special purpose entities as a residual between consolidated measures and formulary measures. Nevertheless, statistical compilers may face data collection challenges for entities outside their legal jurisdiction.

Separate accounting methods are widely used in economic accounting, which is consistent with the arm's length standard under the OECD transfer pricing guidelines as long as transactions reflect market outcomes. Formulary apportionment methods are used in areas of economic accounting such as constructing sub-national geographic aggregates or allocating measures to industries. In addition, formulary apportionment methods are suggested in the *SNA* for attributing the market value of MNEs to economic territories. The methods are also demonstrated in Rassier (2014) by allocating foreign direct investment income for U.S. balance of payments statistics using survey data collected on MNEs. Formulary apportionment methods are also used in business taxation for businesses that operate in multiple states of federations and have been proposed but not approved as an option for businesses that operate in multiple European Union countries under the European Commission's directive for a Common Consolidated Corporate Tax Base (European Commission, 2011).

While methods of separate accounting are well established and accepted in the economic accounting profession, the scale of formulary apportionment methods that would be required under the proposal in this paper is less established and less accepted to date because of statistical asymmetries that may result for at least two reasons. First, different apportionment factors yield different results, which may be remedied by an internationally agreed apportionment factor such as compensation. As long as compensation reflects the value marginal product of labor, it generates related variation across countries and across industries. However, an internationally agreed apportionment factor such as compensation simply assumes equal variation in the measures being apportioned. Second, data required under formulary apportionment may not be available to statistical compilers. While data required under formulary apportionment are available in company accounting records, the data may not be collected or reported in data sources. However, in response to the OECD BEPS project, a number of developed countries and developing countries are implementing regulations under country-by-country reporting that would make the requisite data more widely collected and reported. In spite of the challenges, formulary apportionment may eventually become more universally established and accepted with further developments and is nevertheless an important practical consideration in the treatment of MNEs.

6. CONCLUSIONS

Multinational enterprises play a unique and important role in national economies and in the global economy. Core measures in the *SNA* are affected by

the treatment of MNEs under the residence concept, which is effectively a *legal* concept rather than an *economic* concept for special purpose entities that lack production. A concept of legal residence may generate distortions throughout the *SNA* framework. In addition, economic literature on the formation of MNEs, global guidance on the taxation of MNEs, and economic measurement literature on alternatives to the residence concept all lend support to a concept of economic residence in lieu of legal residence.

This paper suggests an improvement to the *SNA* treatment of MNEs by proposing an *SNA* framework that offers a dual presentation of measures on *operating entities* and measures on *special purpose entities*. A dual presentation adds information to better understand the role of MNEs and special purpose entities in national accounts. Nevertheless, the proposal also yields a meaningful departure from current *SNA* recommendations and current practice by statistical compilers, which requires careful consideration of practical matters before implementation is feasible.

REFERENCES

- Ahmad, N. and J. Ribarsky, "Trade in Value Added, Jobs and Investment," 33rd General Conference of the International Association for Research in Income and Wealth, Rotterdam, 2014.
- R. E. Baldwin and F. Kimura, "Measuring U.S. International Goods and Services Transactions," in R. E. Baldwin, R. E. Lipsey, and J. D. Richards (eds), *Geography and Ownership Bases for Economic Accounting*, The University of Chicago Press, Chicago, IL, 9-48, 1998.
- Brainard, S. L., "An Empirical Assessment of the Factor Proportions Explanation of Multinational Sales," National Bureau of Economic Research, Working Paper No. 4583, 1993.
- , "An Empirical Assessment of the Proximity-Concentration Trade-Off between Multinational Sales and Trade," *The American Economic Review*, 87, 520-44, 1997.
- Carr, D. L., J. R. Markusen, and K. E. Maskus, "Estimating the Knowledge-Capital Model of the Multinational Enterprise," *The American Economic Review*, 91, 693-708, 2001.
- Caves, R. E., "International Corporations: The Industrial Economics of Foreign Investment," *Economica*, 38, 1-27, 1971.
- European Commission, *Proposal for a Council Directive on a Common Consolidated Corporate Tax Base (CCCTB)*, COM(2011), 121, Brussels, 2011.
- , International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, and World Bank, *System of National Accounts 2008*, United Nations, New York, 2009.
- Federico, S., "How does Multinational Production affect the Measurement of Competitiveness?" March OECD Working Group on International Investment Statistics, Paris, 2015.
- Fetzer, J. J. and E. H. Strassner, "Identifying Heterogeneity in the Production Components of Globally Engaged Business Enterprises in the United States," 23rd International Input- Output Conference, Mexico City, 2015.
- Gresik, T. A., "The Taxing Task of Taxing Transnationals," *Journal of Economic Literature*, 39, 800-38, 2001.
- Grubert, H. and J. Mutti, "Taxes, Tariffs and Transfer Pricing in Multinational Corporate Decision Making," *Review of Economics and Statistics*, 73, 285-93, 1991.
- Hanson, J. M., H. I. Krakower, R. J. Mataloni Jr., and K. L.S. Pinard, "The Effects of Corporate Inversions on the International and National Economic Accounts," *Survey of Current Business*, 95, 1-2, 2015.
- Harrison, A., "Global Corporate Income," 33rd General Conference of the International Association for Research in Income and Wealth, Rotterdam, 2014.
- Helpman, E., "A Simple Theory of International Trade with Multinational Corporations," *Journal of Political Economy*, 92, 451-71, 1984.
- Horst, T., "The Theory of the Multinational Firm: Optimal Behavior under Different Tariff and Tax Rates," *The American Economic Review*, 67, 376-89, 1971.
- International Accounting Standards Board, *Related Party Disclosures*, International Accounting Standard 24, 2009.

- International Monetary Fund, *Balance of Payments and International Investment Position Manual* (Sixth Edition), International Monetary Fund, Washington, 2009.
- Kimura, F. and R. E. Baldwin, "Application of a Nationality-Adjusted Net Sales and Value- Added Framework: The Case of Japan," in R. E. Baldwin, R. E. Lipsey, and J. D. Richards (eds), *Geography and Ownership Bases for Economic Accounting*, 49–82, The University of Chicago Press, Chicago, IL, 1998.
- Lipsey, R. E., "Measuring International Trade in Services," in M. Reinsdorf and M. J. Slaughter (eds), *International Trade in Services and Intangibles in the Era of Globalization*, 27–74, The University of Chicago Press, Chicago, IL, 2009.
- , "Measuring the Location of Production in a World of Intangible Productive Assets, FDI, and Intrafirm Trade," *Review of Income and Wealth*, 56, S99–S110, 2010.
- Markusen, J. R., "Multinational, Multi-Plant Economies, and the Gains from Trade," *Journal of International Economics*, 16, 205–26, 1984.
- , "Trade versus Investment Liberalization," National Bureau of Economic Research, Working Paper No. 6231, 1997.
- Marques, M. and C. Pinho, "Is Transfer Pricing Strictness Deterring Profit Shifting within Multinationals? Empirical Evidence from Europe," *Accounting and Business Research*, 46, 703–30, 2016.
- Organisation for Economic Co-operation and Development, *OECD Benchmark Definition of Foreign Direct Investment*, Organisation for Economic Co-operation and Development, Paris, 2008a.
- , *Report on the Attribution of Profits to Permanent Establishments*, 2008b.
- , *Articles of the OECD Model Tax Convention on Income and Capital*, 2010a.
- , *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations*, Organisation for Economic Co-operation and Development, Paris, 2010b.
- , *Transfer Pricing Documentation and Country-by-Country Reporting*, 2015a.
- , *Preventing the Artificial Avoidance of Permanent Establishment Status*, 2015b.
- Rassier, D. G., "Formulary Measures for the U.S. Current Account: Accounting for Transactions Attributable to Special Purpose Entities of Multinational Enterprises," *Journal of Economic and Social Measurement*, 39, 257–81, 2014.
- Rassier, D. G. and J. Koncz-Bruner, "A Formulary Approach for Attributing Measured Production to Foreign Affiliates of U.S. Parents," in S. N. Houseman and M. Mandel (eds), *Measuring Globalization: Better Trade Statistics for Better Policy*, 229–262, W.E. Upjohn Institute for Employment Research, Kalamazoo, 2015.
- United Nations, Eurostat, and Organisation for Economic Co-operation and Development *The Impact of Globalization on National Accounts*, United Nations, New York and Geneva, 2011.
- United Nations, *Guide to Measuring Global Production*, United Nations, New York and Geneva, 2015.