Formulary Measures for the U.S. Current Account: Accounting for Transactions Attributable to Special Purpose Entities of Multinational Enterprises

Dylan G. Rassier (Bureau of Economic Analysis, USA)

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Dylan G. Rassier
U.S. Bureau of Economic Analysis
Washington, DC
dylan.rassier@bea.gov

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Abstract

Consistent with the residence concept of *BPM6* and the *SNA2008*, the U.S. current account reflects international transactions within multinational enterprises (MNEs), including international transactions conducted with special purpose entities (SPEs). To better understand the role of SPEs in economic accounting statistics, international guidelines on foreign direct investment (FDI) positions and transactions recommend that compilers distinguish resident SPEs for inbound FDI and encourage compilers to offer supplemental measures on non-resident SPEs for outbound FDI. While U.S. economic accounting statistics are not significantly affected by resident SPEs, recent empirical evidence calls into question the extent to which U.S. statistics may be affected by non-resident SPEs (Lipsey 2009, 2010). In this paper, I explore formulary apportionment as an accounting treatment for transactions related to outbound FDI in the U.S. current account in order to better understand the effects of non-resident SPEs on U.S. economic accounting statistics. The empirical results reveal that formulary apportionment significantly reduces total U.S. exports of services and total U.S. imports of services but the combined effect on U.S. net exports is negligible with no noticeable effect on U.S. gross domestic product (GDP). Likewise, formulary apportionment significantly reduces total U.S. income receipts, which reduces U.S. gross national product by 1.1 percent. The results imply that transactions attributable to non-resident SPEs do not affect U.S. net exports or U.S. GDP. Likewise, non-resident SPEs appear to play a larger role in income-based measures of production than in expenditure-based measures of production.

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1. Introduction

In the *System of National Accounts 2008* (*SNA2008*) and the *Balance of Payments and International Investment Position Manual*, Sixth Edition (*BPM6*), transactions are attributable to economic territories based on the residences of transacting entities. Transacting entities that are residents in the same economic territory yield domestic transactions, and transacting entities that are residents in different economic territories yield international transactions. The residence of an entity is generally the economic territory in which most of the entity's economic activity takes place. In the case of an entity with little or no economic activity, residence is determined as the economic territory in which the entity is legally incorporated or registered.

The scope of the residence concept includes affiliated entities that are residents in different economic territories. Thus, economic accounts include international transactions conducted within multinational enterprises (MNEs). A new topic of focus in the *SNA2008* and *BPM6* is MNEs that are structured with one or more special purpose entities (SPEs). Examples of SPEs include financing and holding companies, royalty and licensing companies, leasing companies, and securitization vehicles. While the *SNA2008* and *BPM6* do not offer a universal definition of an SPE, the guidelines generally agree that an SPE is characterized by features that include few or no employees, little or no physical presence, and little or no production or economic activity. In addition, an SPE is always affiliated with at least one entity, which is often resident in a country other than the country in which the SPE is resident. Thus, according to the residence concept, international transactions conducted with SPEs should also be reflected in economic accounts.

In addition to the *SNA2008* and *BPM6*, guidance on economic accounting for foreign direct investment (FDI) positions and transactions is available in the *OECD Benchmark*

Definition of Foreign Direct Investment, Fourth Edition 2008 (*BD4*). The *BD4* is written to be

fully compatible with the concepts and definitions of *BPM6* and to follow the concepts of the

SNA2008. Thus, *BD4* adopts the residence concept shared by the *SNA2008* and *BPM6*.

As a result of the potential inflationary effects that SPEs may have on FDI statistics, *BD4*

recommends that a country hosting a significant number of resident SPEs should distinguish in

its FDI statistics measures attributable to resident SPEs and measures attributable to resident

non-SPEs. Likewise, *BD4* encourages a country sponsoring a significant number of non-resident

SPEs to offer supplemental measures that "look through" the SPE host country to reattribute FDI

statistics to the "first non-resident non-SPE" entity encountered. However, given the practical

challenges associated with "looking through" an SPE host country, *BD4* suggests further

research on supplemental measures.[1]

Consistent with the residence concept, the U.S. International Transactions Accounts

(ITAs) published by the U.S. Bureau of Economic Analysis (BEA) reflect international

transactions conducted within MNEs, including international transactions conducted with SPEs.

The current account of the ITAs includes trade in goods and trade in services as well as income

receipts on U.S. direct investment abroad (USDIA) and income payments on FDI in the U.S.

(FDIUS). Likewise, related measures in the U.S. National Income and Product Accounts

(NIPAs) reflect international transactions conducted within MNEs and with SPEs because

foreign transactions in the NIPAs are derived from the ITAs.

BEA does not currently distinguish FDI statistics that are attributable to foreign-

sponsored SPEs hosted by the U.S. (i.e., resident SPEs). However, given the U.S. regulatory

environment and other factors, the U.S. is not a likely location for pass-through transactions

associated with resident SPEs. Moreover, BEA collects data from foreign MNEs based on a full

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[1] A "host" refers to the recipient country of FDI. A "sponsor" refers to the investing country of FDI.

U.S. consolidation, which combines operating activities of U.S. affiliates with what are likely to be very few non-operating activities of U.S. affiliates. Indeed, the data collected on U.S. affiliates of foreign parents suggest the presence of resident SPEs appears to be very small—less than 1 percent of total U.S. affiliates' sales and approximately 1 percent of total U.S. income payments for the period 2006 to 2008. Thus, a distinction between SPEs resident in the U.S. and non-SPEs resident in the U.S. would not be particularly informative.

BEA also does not currently publish supplemental measures on U.S.-sponsored SPEs that are hosted by foreign countries (i.e., non-resident SPEs). In contrast to the survey data collected on U.S. affiliates of foreign parents, survey data collected on foreign affiliates of U.S. parents suggest the presence of non-resident SPEs appears to be relatively large—between 3 and 5 percent of total foreign affiliates' sales and between 15 and 20 percent of total U.S. income receipts for the period 2006 to 2008. Thus, supplemental measures on U.S.-sponsored SPEs that are hosted by foreign countries may be informative, which requires an appropriate accounting treatment.

Previous evidence on the presence of U.S.-sponsored SPEs that are hosted by foreign countries is offered in Lipsey (2009, 2010) using financial and operating statistics published by BEA on foreign affiliates of U.S. MNEs. Lipsey (2009, 2010) concludes that some of the financial and operating statistics are distorted because they are constructed under a method of separate accounting. Under separate accounting, financial accounting records are maintained separately for each entity within an MNE based on U.S. generally accepted accounting principles. As a result, financial accounting measures such as profits and costs are attributable to an entity based on the entity's purpose within the structure of the MNE but not necessarily on production or economic activity of the entity. Thus, financial and operating statistics that result

from financial accounting measures under a method of separate accounting also may not accurately reflect production or economic activity. Lipsey (2009, 2010) calls into question the potential effects of separate accounting on measures in the U.S. current account and suggests but does not develop an alternative location-based accounting treatment to accompany the residence-based accounting treatment of the *SNA2008* and *BPM6*.

In response to Lipsey (2009, 2010), Rassier and Koncz-Bruner (2013) propose formulary apportionment as an alternative accounting treatment for attributing some components of income-based value-added measures to foreign affiliates of U.S. MNEs. In contrast to separate accounting, formulary apportionment is based on consolidated financial accounting measures. Formulary apportionment is commonly required by U.S. state business income tax regulations to determine the income attributable to a state for a business that operates in multiple states. Rather than keeping separate financial accounting records for operations in each state, the business keeps consolidated records and attributes income to a state based on prescribed apportionment factors such as employment, property, and sales that reflect where income is actually earned. Rassier and Koncz-Bruner (2013) conclude that formulary apportionment yields measures of value-added that more accurately reflect production and economic activity than measures constructed under a method of separate accounting. In particular, the distortions in value-added that are revealed in Lipsey (2009, 2010) are considerably reduced under a method of formulary apportionment. Rassier and Koncz-Bruner (2013) briefly mention preliminary results under formulary apportionment for the U.S. current account and U.S. gross domestic product (GDP), but the authors postpone a more complete picture of the results for a future paper.

In this paper, I explore formulary apportionment as an accounting treatment for transactions in the U.S. current account. In particular, I construct formulary measures of

transactions in services and intellectual property between U.S. parents and foreign affiliates and of transactions in income between U.S. parents and foreign affiliates for the period 2006 to 2008. While the empirical analysis is limited to transactions related to outbound FDI because of data limitations, formulary apportionment is general enough to also be considered as a method for transactions related to inbound FDI where requisite data are available. Thus, the paper lends insight into the general feasibility of formulary apportionment as an accounting treatment for current account transactions and into the specific effects of formulary apportionment on U.S. current account measures and on measures of U.S. GDP and U.S. gross national product (GNP). Moreover, the paper lends insight into the practicality of formulary apportionment for additional information on transactions with SPEs in general and into the practicality of formulary apportionment for supplemental measures on transactions with non-resident SPEs in particular.

For two reasons, formulary apportionment may be more practical for accurate supplemental measures on non-resident SPEs than merely "looking through" the SPE host country to reattribute FDI transactions to the "first non-resident non-SPE" entity as suggested in *BD4*. First, accurate identification of the "first non-resident non-SPE" entity may not be feasible if a statistical compiler lacks adequate data on FDI ownership chains or if the compiler is faced with an overwhelming number of MNEs. In the U.S. for example, BEA collects data on ownership chains but also collects data on income receipts related to USDIA on almost 2,500 U.S. MNEs. In contrast, formulary apportionment does not require identification of the "first non-resident non-SPE" entity. Second, even if an entity is accurately and systematically identified, simply reattributing FDI transactions to the entity is not ideal because the SPE may be associated with multiple "first non-resident non-SPE" entities or may affect transactions attributable to more distant non-resident non-SPE entities rather than only the first. As an

alternative, formulary apportionment takes into account the entire MNE and attributes FDI transactions based on each entity's proportionate share of economic activity as embodied by the chosen apportionment factors.

For the period 2006 to 2008, the empirical results reveal that formulary apportionment reduces total U.S. exports of services by 7.6 percent on average and reduces total U.S. imports of services by 9.9 percent on average. The combined effects on exports and imports yield a negligible effect on U.S. net exports of goods and services and no noticeable effect on U.S. GDP. Since formulary apportionment reduces the effects of transactions that lack economic substance, the results for U.S. net exports and U.S. GDP imply that transactions between U.S. parents and non-resident SPEs do not affect U.S. net exports or U.S. GDP. The empirical results also reveal that formulary apportionment reduces total U.S. income receipts by 20.3 percent on average over the period 2006 to 2008, which reduces U.S. GNP by 1.1 percent on average. Thus, income-based transactions and their related measures of production appear to be more affected by a lack of economic substance than expenditure-based transactions and their related measures of production. Likewise, to the extent that formulary apportionment reflects transactions with SPEs, non-resident SPEs appear to play a larger role in income-based measures than in expenditure-based measures. Overall, formulary apportionment appears to be a feasible accounting treatment for current account transactions and a practical solution for additional information on SPEs.

The paper is organized in five sections that follow. The next section provides an overview of related literature. The third section outlines the accounting treatment of transactions within MNEs under a method of formulary apportionment. The fourth section describes BEA's

survey data that are used for the empirical analysis. The fifth section presents the results of the empirical analysis. The last section concludes.

2. Related Literature

The following four distinct but related lines of literature provide context for the current paper: 1) industrial-organization (IO) literature on FDI and trade, 2) international guidelines on economic accounting, 3) literature on alternative measurement frameworks for organizing official statistics on FDI and trade, and 4) formulary apportionment literature.

2.1. Industrial-Organization Literature

The IO literature on FDI and trade focuses on adapting general equilibrium trade models to include endogenous MNEs. Early work explains the origination 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, 2002) 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) and Markusen and Maskus (2001) lend empirical support to the knowledge-capital model.

Regardless of how production is organized, a useful feature of each of the IO models on FDI and trade is the inclusion of a local input and a firm-specific input, which can be used simultaneously by multiple affiliates. 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, 2002), 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 addition to a shared input in the production function, general equilibrium in each model results under assumptions that include foreign affiliates that produce with constant returns to scale and operate in perfectly competitive markets. The models also assume that production is separable across affiliates and that markets are segmented.

2.2. International Guidelines

International guidelines on economic accounting are provided in the *SNA2008* and *BPM6*. The shared objective of the *SNA2008* and *BPM6* is to measure and attribute production to the economy in which production is actually taking place. In addition to the *SNA2008* and *BPM6*, *BD4* is a source for guidance on FDI positions and transactions. The objective of *BD4* is to set the global standard for FDI statistics. Thus, *BD4* offers recommendations not found in the *SNA2008* or *BPM6* for treating SPEs because of their unique role in FDI and because of their implications for FDI statistics under the residence concept.

Residence and Special Purpose Entities

In paragraph 4.23 of the *SNA2008*, an economy is defined as "…the entire set of resident institutional units." Similarly, paragraph 4.11 of *BPM6* defines an economy as "…all the institutional units that are resident in a particular economic territory." As a result, the following

definitions of economic territory, institutional unit, and residence in the *SNA2008* and *BPM6* are designed to ensure that an institutional unit is associated with a single economic territory for statistical purposes (*SNA2008*, para. 4.12; *BPM6*, para. 4.6):

Economic territory. An economic territory is defined broadly to include any geographic area or jurisdiction for which statistics are required (*SNA2008*, para. 4.10; *BPM6*, para. 4.3). The most commonly used concept of economic territory is the area under the effective economic control of a single government (*SNA2008*, para. 4.10; *BPM6,* para. 4.4).

Institutional unit. An institutional unit is determined according to a broad list of attributes that include 1) an entitlement to own assets, 2) an ability to incur liabilities, 3) an ability to engage in economic activities, and 4) the feasibility of a meaningful set of accounts (*SNA2008*, para. 4.2; *BPM6*, para. 4.13). Institutional units include households and legal or social entities such as corporations, nonprofit institutions, and governments (*SNA2008*, para. 4.3; *BPM6*, para. 4.14).

Residence. Residence is determined for an institutional unit based on the economic territory with which the unit has its center of predominant economic interest (*SNA2008*, para. 4.10; *BPM6*, para. 4.113). Thus, the residence concept corresponds to the economic territory in which a unit is engaged in a significant amount of production of goods or services. For a unit with few or no attributes of location, residence is determined by the unit's place of incorporation (*SNA2008*, para. 4.15(f); *BPM6*, para. 4.115(d)). In the *SNA2008* and *BPM6*, a unit with few or no attributes of location is referred to as an SPE.

Multinational Enterprises and Special Purpose Entities

According to paragraph 4.12 of the *SNA2008* and paragraph 4.6 of *BPM6*, "The use of an economic territory as the scope of economic statistics means that each member of a group of affiliated enterprises is part of the economy in which it is resident, rather than being attributed to

the economy of its head office." Thus, the scope of the residence concept includes international transactions conducted within MNEs. Likewise, the scope of the residence concept also includes international transactions with SPEs (*SNA2008*, para. 4.64; *BPM6*, para. 4.52). In contrast to operating entities, SPEs may or may not engage in production or economic activity. The *SNA2008* and *BPM6* do not offer a universal definition of an SPE, but the guidelines generally agree that an SPE is characterized by the following features: 1) few or no employees, 2) little or no physical presence, 3) little or no production or economic activity, and 4) affiliation with at least one entity, which is often resident in a country other than the country in which the SPE is resident (*SNA2008*, para. 4.56; *BPM6*, para. 4.50). In addition, *BD4* acknowledges a number of overlapping definitions exist but offers five criteria to assist countries in identifying an SPE (*BD4*, box 6.2).[2]

Figure 1 is replicated from *BD4* (*BD4*, figure 6.1) as a demonstration of a simple MNE structure that includes an SPE. In figure 1, a non-SPE parent resides in country A with FDI positions in non-SPE and SPE entities in country B. The SPE entity in country B has FDI positions in non-SPE entities in countries C and D. The presence of an SPE in the structures of some MNEs may generate distortions in aggregate and detailed FDI statistics (*BD4*, para. 265).[3] As a result of potential distortions, *BD4* recommends that a country hosting a significant number of resident SPEs should distinguish in its aggregate and detailed FDI statistics measures attributable to resident SPEs and measures attributable to resident non-SPEs (*BD4*, paras. 265,

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[2] Box 6.2 of *BD4* recommends the following criteria to identify an SPE: 1) the entity is a legal entity formally registered with a national authority and subject to fiscal and other legal obligations of the economy in which it is resident; 2) the entity is ultimately controlled by a non-resident parent, directly or indirectly; 3) the entity has no or few employees, little or no production in the host economy and little or no physical presence; 4) almost all the assets and liabilities of the entity represent investments in or from other countries; and 5) the core business of the entity consists of group financing or holding activities. The criteria inevitably impose arbitrary thresholds that may miss some entities that are SPEs and may include some entities that are not SPEs. Formulary apportionment does not require identification of an SPE, and thus, does not impose arbitrary thresholds.

[3] Aggregate FDI statistics are not broken down by geographic location or industry classification; detailed FDI statistics are broken down by geographic location and industry classification.

316).[4] Thus, country B in figure 1 should provide a distinction between resident SPEs and resident non-SPEs, which is considered to yield data that are more useful for policy- and decision-making purposes (*BD4*, para. 316). Likewise, *BD4* encourages a country sponsoring a significant number of non-resident SPEs to offer supplemental measures that "look through" the SPE host country to reattribute detailed FDI statistics to the "first non-resident non-SPE" entity in order to obtain an accurate picture of the geographic and industrial composition of FDI (*BD4*, paras. 266, 270, 319).[5] Thus, country A in figure 1 should provide supplemental measures, which are considered to give rise to more economically meaningful FDI statistics (*BD4*, para. 320).

A non-resident SPE may be associated with multiple "first non-resident non-SPE" entities, such as the non-SPE counterparties in countries C and D in figure 1, or may affect statistics attributable to more distant non-resident non-SPE entities rather than only the first. Thus, *BD4* acknowledges challenges associated with "looking through" an SPE host country and suggests that the host country offer origin-destination matrices as one possible solution for the

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[4] Paragraph 265 of *BD4* is as follows: "Recourse to complex financial structures by MNEs in their cross-border investments is more and more frequent. Funds transmitted through intermediate entities of different types are common practice. Such investment patterns distort the analysis of the source and destination of FDI and may lead to undesirable statistical and analytical results when they are recorded strictly according to the immediate counterparty. Moreover, they result in the overstatement or multiplication of direct investment transactions (also referred to as the "inflation" of FDI data) both at the country and at regional or global levels. Countries hosting the intermediate entities (SPEs or other entities acting on behalf of the parent), observe artificially high investment statistics. These pass-through investments have no real immediate economic impact such as job creation, productivity gains, etc. on the host economy. To circumvent such problems, the present edition of the *Benchmark Definition* recommends, while preserving consistency of geographical (industrial) breakdowns provided by different countries, that compilers exclude SPEs resident in their economies when presenting FDI statistics on a directional basis."

[5] Paragraph 319 of *BD4* is as follows: "Not only may the amounts of FDI shown in statistical presentations be inflated (by the inclusion of *resident* SPEs), the geographical and industry breakdowns of FDI statistics may also be distorted (by the inclusion of *non-resident* SPEs). In the latter context, if the non-resident counterpart is an SPE, the economic impact of investments is generally expected to occur in a country other than the country of that SPE (the immediate counterpart country)…This *Benchmark Definition* therefore recommends this distortion be addressed as well, and to differentiate between non-resident SPEs and non-resident non-SPEs. If the non-resident counterpart is an SPE, countries are encouraged to *look through* the country where it is located, and to reallocate on a supplemental basis the reported amounts to the country of the direct investor or direct investment enterprise corresponding to the first non-resident non-SPE encountered. When the reporting SPE is part of a chain of entities, the reallocation should aim at the first non-SPE encountered. Countries are encouraged to provide supplemental breakdowns of positions and transactions on the basis of '*first non-SPE*' counterparts."

SPE sponsor country (*BD4*, para. 566). However, origin-destination matrices are also subject to challenges, so *BD4* includes the "future development of a pragmatic methodology" in the research agenda (*BD4*, para. 668).

2.3. Literature on Alternative Measurement Frameworks

Challenges encountered under the residence-based framework are widely addressed in international discourse and academic literature. The United Nations (UN) recently published a collection of papers that address the impact of globalization on national accounts (UN, 2011). Three papers are dedicated to identifying and explaining challenges associated with allocating production of MNEs and SPEs to national economies under the residence-based framework. One paper offers practical guidance for implementing the recommendations in *BD4* regarding SPEs. In addition to the UN papers, Lipsey (2009, 2010) concludes that some U.S. financial and operating statistics on foreign affiliates of U.S. MNEs are distorted because of global structuring of MNEs and the mobility of some factors of production such as intangibles. As a result, Lipsey (2009, 2010) suggests but does not develop an alternative location-based framework to accompany the residence-based framework for measuring transactions in services and intellectual property.

Early work also suggests supplemental frameworks for organizing FDI and trade statistics based on ownership. Baldwin and Kimura (1998) find that net sales activities of U.S. affiliates of foreign-based MNEs to Americans and net sales activities of foreign affiliates of U.S.-based MNEs to foreigners are almost as high as measured U.S. imports and exports, respectively. Kimura and Baldwin (1998) find an even larger role of FDI in the Japanese economy. In each case, the authors use their results to highlight the usefulness of an ownership-based framework. Landefeld et al. (1993) explain and evaluate ownership-based trade measures

and propose an alternative residence-based trade measure that includes an adjustment for the net effect on the U.S. economy of the operations of U.S.-owned companies abroad and of foreign-owned companies in the U.S. As a result of the early work on alternative organizing frameworks, BEA publishes annual ownership-based measures for the current account of the ITAs as a supplement to the residence-based framework (Whichard and Lowe, 1995). The ownership-based framework is fully consistent with the *SNA2008* and *BPM6*, and it combines with the residence-based measures of U.S. imports and exports the transactions of affiliates that are not captured in the residence-based framework. While the ownership-based framework may address some of the challenges encountered under the residence-based framework, the ownership-based framework is not intended to identify the location of production, which is the centerpiece for economic accounting purposes.

2.4. Formulary Apportionment Literature

While formulary apportionment is historically used in U.S. multistate taxation practice, the treatment of global income under formulary apportionment is also explored in research.[6] In particular, some researchers suggest formulary apportionment as an alternative to the complexity and subjectivity of determining transfer prices and applying the arm's length standard in the determination of international tax obligations of MNEs. However, the determination of international tax obligations under formulary apportionment also faces some policy concerns.

Martens-Weiner (2006) discusses challenges related to replacing separate accounting for companies operating in Europe with a system of formulary apportionment for the European Union (EU). The work discussed in Martens-Weiner (2006) is a result of the European Commission's directive and resulting guidance on the EU's Common Consolidated Corporate

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[6] Some research also explores U.S. multistate taxation under formulary apportionment (Goolsbee and Maydew, 2000; Gordon and Wilson, 1986; McLure, 1980).

Tax Base (CCCTB). The issues span a spectrum including business attitudes toward formulary apportionment, designing an apportionment formula, and tax administration and compliance. In related work, Fuest et al. (2007) find that smaller European countries that currently attract a relatively large tax base under separate accounting would have a much smaller tax base under formulary apportionment. Avi-Yonah and Clausing (2007) propose a system of formulary apportionment that would include sales as a single apportionment factor. Avi-Yonah and Clausing (2007) argue that their proposed method would protect the U.S. tax base by preventing income shifting to low-tax countries. Avi-Yonah (2010) proposes a hybrid system in which separate accounting is used to the extent that income can be attributed based on observed determinants and the residual profit is attributed under formulary apportionment. Altshuler and Grubert (2010) simulate firm behavior and U.S. revenue collection and find that different responses to tax incentives yield similar revenue under separate accounting and formulary apportionment. In contrast, Hines (2010) presents evidence that the determination of international tax obligations under formulary apportionment may distort actual income attributable to a given country due to income that is unexplained by apportionment factors and may lead to inefficient allocation of productive resources due to differences in tax rates across countries.[7]

Using formulary apportionment to measure economic accounting statistics for MNEs does not face the policy concerns described above for international taxation because MNEs

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[7] In addition to the literature summarized here, the OECD *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations* rejects formulary apportionment as a substitute for the arm's length standard, which underlies current transfer pricing regulations and practices. However, the OECD is currently working on a project at the request of the G20 finance ministers to address base erosion and profit shifting (BEPS). Two recommendations currently under consideration in the BEPS action plan are suggestive of a formulary approach: 1) country-by-country reporting and 2) treatment of financial payments. Under country-by-country reporting in BEPS action 13, MNEs would be required to report for each constituent entity tangible assets, number of employees, and compensation in order to provide tax administrators with indicators regarding the location of economic activity. Under financial payments in BEPS action 4, a formulary approach is explicitly suggested as one alternative for deductible interest payments.

presumably do not make operating or investment decisions based on surveys intended solely for statistical purposes. However, formulary apportionment may affect the picture of global production, which could have policy implications.

Rassier and Koncz-Bruner (2013) propose formulary apportionment as an alternative accounting treatment for attributing some components of income-based value-added measures to foreign affiliates of U.S. MNEs. Value-added attributable to foreign affiliates of U.S. MNEs is a supplemental measure – it does not affect measures in the U.S. NIPAs or the U.S. ITAs – that is constructed from reported profits earned and costs incurred. In particular, income-based value-added is composed of five major components: compensation, capital consumption allowance (CCA), profit-type return (PTR), indirect business taxes (IBT), and net interest paid (NIP). Rassier and Koncz-Bruner (2013) propose formulary apportionment for the PTR, IBT, and NIP components of value-added because the components may reflect returns to factors of production located anywhere in an MNE. The authors conclude that the distortions in value-added that are revealed in Lipsey (2009, 2010) are considerably reduced under a method of formulary apportionment.

Figure 2 demonstrates the distortions in value-added under separate accounting (Lipsey, 2009, 2010) and the reductions in distortions under formulary apportionment (Rassier and Koncz-Bruner, 2013). The figure reports ratios of value-added to compensation for majority-owned foreign affiliates of U.S. parents by geographic location. As seen on the left side of the figure, value-added attributable to foreign affiliates in all countries is approximately 2.5 times greater than compensation attributable to foreign affiliates in all countries. In other words, every dollar of compensation generates approximately $2.50 in value-added. For many countries and geographic regions, similar ratios result under separate accounting and formulary apportionment.

However, for some countries, ratios under separate accounting are much higher than would be expected based on the global average of $2.50. For example, the ratio for Barbados suggests every dollar of compensation generates over $40 in value-added. In contrast, value-added attributable to Barbados is reduced to just over 5 times greater than compensation under a method of formulary apportionment.

Given the definitions and concepts underlying the international guidelines on economic accounting and given the practical challenges encountered for MNEs and SPEs under the residence concept, I next draw upon the related IO literature to outline a simple production model for MNEs and present a related empirical framework for constructing supplemental measures of transactions within MNEs and with SPEs under formulary apportionment.

3. Supplemental Measures on Special Purpose Entities

In order to understand formulary apportionment as a useful method for constructing supplemental measures on SPEs, I first outline a simple production model based very loosely on Helpman (1984) and Markusen (1984, 1997, 2002). Consider a firm structured with entities that include one parent and one or more foreign affiliates. In other words, the firm is an MNE. Assume the firm has already implemented decisions on the location of FDI and on the organization of production. Assume also that each entity within the firm has a production function that is separable from the rest of the firm. Each entity chooses locally purchased inputs such as labor and property, plant, and equipment (PPE). Each entity also chooses shared inputs such as intellectual property (e.g., formulas, processes, etc.) and headquarters services (e.g., accounting, finance, marketing, etc.). Shared inputs may be unique to the firm, which is likely the case for intellectual property. Shared inputs may also be located anywhere in the firm and provide service simultaneously to multiple entities in the firm, which is likely the case for

intellectual property and headquarters services. In other words, shared inputs are mobile and have characteristics of public goods. Each entity purchases local inputs at market prices and shared inputs at a price determined by the parent, which maximizes the firm's profits.

Within the firm, each entity generates actual production, denoted Q^*, with locally purchased inputs, denoted L, and shared inputs, denoted H, as follows:

$$Q^* = f(L, H). \tag{1}$$

I do not assume a functional form because the empirical framework is based on an accounting model rather than a statistical model. However, even without a particular functional form, I assume shared inputs cannot be utilized without local inputs (i.e., $L > 0$). In contrast, I assume local inputs do not necessarily require shared inputs (i.e., $H \geq 0$). In this way, an empirical framework under formulary apportionment is congruent with the production model because the chosen apportionment factors reflect economic activity embodied by local inputs.

In practice, a statistician does not observe actual production attributable to an entity. However, measured production, denoted Q^E, can be estimated for the entity based on transactions conducted outside the firm and transactions conducted within the firm. As long as transactions are based on market prices, measured production should accurately reflect actual production. However, a discrepancy may exist between actual production and measured production to the extent that transactions are not based on market prices. For example, if an MNE owns intellectual property that is unique to the firm or engages in intrafirm financing arrangements that are unique to the firm, there may be no active markets from which to determine the values of the transactions. In addition, a discrepancy may exist between actual production and measured production to the extent that transactions are attributable to an entity that is created in the firm for some purpose other than production or economic activity. For

example, an MNE may create one or more SPEs to hold assets and liabilities for non-resident entities or to channel funds between non-resident entities. The greater the role played by shared inputs in the production process, the greater the potential for discrepancies because of the uniqueness and mobility of shared inputs.

The discrepancy, denoted E, between actual production, Q^*, and measured production, Q^E, can be written as follows:

$$E = Q^* - Q^E. \tag{2}$$

The objective is to choose an accounting treatment to minimize E. Determining E is challenging because actual production is unobserved; however, the recommendations in *BD4* to distinguish between resident SPEs and resident non-SPEs and also to provide supplemental measures on non-resident SPEs may lend some insight into the magnitude of E for international transactions within MNEs.

3.1. Supplemental Measures Based on "Looking Through"

As explained, *BD4* encourages a country sponsoring a significant number of non-resident SPEs to offer supplemental measures that "look through" the SPE host country to reattribute FDI statistics to the "first non-resident non-SPE" entity. However, accurate identification of an entity in the "first non-resident non-SPE" entity may not be feasible if a statistical compiler lacks adequate data on FDI ownership chains or if the compiler is faced with an overwhelming number of MNEs. Even if accurate and systematic identification is feasible, simply reattributing FDI statistics to the entity is not ideal because the SPE may be associated with multiple "first non-resident non-SPE" entities or may affect statistics attributable to more distant non-resident non-SPE entities rather than only the first. Thus, "looking through" the SPE may not accurately reflect E in equation (2). As a result, *BD4* further encourages a country that hosts a significant

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number of SPEs to voluntarily provide information on the transactions of SPEs via origin-destination matrices. However, *BD4* acknowledges that the practical reality of constructing and sharing origin-destination matrices may be as challenging as "looking through" the SPE.

3.2. Supplemental Measures Based on Formulary Apportionment

Consistent with our simple production model, consider an MNE *m* with one parent and one or more foreign affiliates. Let *q* denote production measured under a method of separate accounting for each entity *n* (i.e., parent and its affiliates) belonging to the MNE *m*. For flexibility, *q* may include total measured production or may include components of measured production such as transactions in services or transactions in income. Under separate accounting, a transaction may be recognized regardless of any economic substance underlying the transaction. Thus, *q* may be affected by transactions with SPEs because *q* is determined under separate accounting.

Let *x* denote apportionment factor *j* for each entity *n*, and let α denote the weight associated with apportionment factor *j*, where $\sum_j \alpha_j = 1$. Apportionment factor *j* may include employment, property, sales, or any other factor that reflects economic activity specific to the entity.

Under formulary apportionment, measured production, denoted $\overline{q}$, attributable to entity *n* within MNE *m* is calculated as follows:

$$\overline{q}_n = \underbrace{\left(\sum_j \alpha_j \frac{x_{j,n}}{\sum_n x_{j,n}} \right)}_{\substack{Apportionment \\ Weight}} \underbrace{\left(\sum_n q_n \right)}_{\substack{MNE \\ Production}} \qquad \forall \ n \in m. \qquad (3)$$

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As noted under the horizontal brackets in equation (3), production attributable to an entity under formulary apportionment, $\bar{q}$, is a weighted average of the consolidated transactions determined for the MNE (i.e., parent and its affiliates) under separate accounting. Each apportionment weight is a combination of each apportionment factor and its associated weight.

Equation (3) assumes symmetric transactions between entities within the MNE. In other words, transactions originate and terminate within the MNE. Likewise, any production or economic activity associated with the transactions take place within the MNE. Under formulary apportionment, transactions are recognized only when the transactions reflect economic activity. Thus, measured production attributable to entity n in equation (3) is proportionate to the entity's economic activity embodied by the chosen apportionment factors.

Depending on the component of measured production – e.g., exports, imports, income receipts, or income payments – the difference, denoted ε, between production under formulary apportionment and production under separate accounting is the amount attributable to a lack of economic substance as follows:

$$\varepsilon_n = \bar{q}_n - q_n.^8 \tag{4}$$

For imports and income receipts related to outbound FDI, ε is determined based only on foreign affiliates. For exports related to outbound FDI, ε is determined based only on domestic parents. For exports and income payments related to inbound FDI, ε is determined based only on domestic affiliates. For imports related to inbound FDI, ε is determined based only on foreign parents.[9]

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[8] Although equations (2) and (4) look similar, I do not claim that the formulary measure in equation (4) is actual production in equation (2).

[9] Alternatively, ε may be determined as follows: $\varepsilon = -\bar{q}$. In this case, ε is determined for imports and income receipts related to outbound FDI based only on domestic parents and for exports related to outbound FDI based only

The amounts obtained from equation (4) may be aggregated across entities regardless of geographic region and industry sector as follows:

$$\sum_{n} \varepsilon_n \, . \tag{5}$$

Alternatively, the amounts obtained from equation (4) may be aggregated across entities by geographic region, denoted k, or by industry sector, denoted i, as follows:

$$\sum_{n \in k} \varepsilon_n \;\; \text{or} \; \sum_{n \in i} \varepsilon_n \, . \tag{6}$$

Equation (4) reflects transactions for which an entity may lack sufficient local inputs, and thus, sufficient economic substance, to be considered transactions under formulary apportionment. In the case of exports from a domestic parent to a foreign affiliate, equation (4) reflects excess imports by the foreign affiliate from the domestic parent.[10] In other words, the formulary adjustment for exports related to outbound FDI reflects production reattributed from the domestic parent to the foreign affiliate, which should be zero or close to zero for a non-resident SPE. Thus, in the case of exports related to outbound FDI, equation (4) does not yield any additional information on non-resident SPEs. Likewise, in the case of imports related to inbound FDI, equation (4) does not yield any additional information on resident SPEs. In the case of imports by a domestic parent from a foreign affiliate, equation (4) reflects excess exports from the foreign affiliate to the domestic parent.[11] In other words, the formulary adjustment for imports related to outbound FDI reflects production reattributed to the domestic parent, which may be greater than zero for a non-resident SPE. In the case of income received by a domestic

on foreign affiliates. Likewise, ε is determined for exports and income payments related to inbound FDI based only on foreign parents and for imports related to inbound FDI based only on domestic affiliates.

[10] For example, a domestic parent with no local inputs may export to a foreign affiliate under separate accounting, but the domestic parent cannot export to the foreign affiliate under formulary apportionment. Symmetrically, the foreign affiliate cannot import from the domestic parent.

[11] For example, a foreign affiliate with no local inputs may export to a domestic parent under separate accounting, but the foreign affiliate cannot export to the domestic parent under formulary apportionment. Symmetrically, the domestic parent cannot import from the foreign affiliate.

parent from a foreign affiliate, equation (4) reflects excess income paid by the foreign affiliate to the domestic parent.[12] In other words, the formulary adjustment for income receipts related to outbound FDI reflects production reattributed to the domestic parent, which may be greater than zero for a non-resident SPE. Thus, in the case of imports related to outbound FDI and in the case of income receipts related to outbound FDI, equation (4) yields additional information on non-resident SPEs. Likewise, in the case of exports related to inbound FDI and in the case of income payments related to inbound FDI, equation (4) yields additional information on resident SPEs. In particular, equation (4) yields an upper bound on domestic imports attributable to non-resident SPEs and domestic exports attributable to resident SPEs and an upper bound on domestic income receipts attributable to non-resident SPEs and domestic income payments attributable to resident SPEs.

4. Data

For the empirical analysis, I apply data to q in equation (3) separately on 1) exports of services and intellectual property from U.S. parents to foreign affiliates, 2) imports of services and intellectual property by U.S. parents from foreign affiliates, and 3) income received by U.S. parents on USDIA. In other words, I apply data on transactions related to USDIA or outbound FDI. I do not apply data on transactions related to FDIUS or inbound FDI because BEA does not collect data on foreign parents, which are required for formulary apportionment.

I use survey data collected by BEA on U.S. MNEs for 2006 to 2008. Different surveys are conducted on financial and operating activities, international transactions in services, and international transactions in income. The data on financial and operating activities include balance sheet information and income statement information for U.S. parents and their foreign

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[12] For example, income may be attributable to a foreign affiliate with no local inputs under separate accounting, but income may not be attributable to the foreign affiliate under formulary apportionment. Symmetrically, the domestic parent cannot receive income from the foreign affiliate.

affiliates on outbound FDI and for U.S. affiliates on inbound FDI. The data on international transactions include exports and imports of private services by type between U.S. parents and foreign affiliates and between U.S. affiliates and foreign parents. Data on international transactions in goods are outside the scope of this paper because the data are compiled by the U.S. Census Bureau based on customs documentation. The data on transactions include income received by U.S. parents from foreign affiliates and include income paid by U.S. affiliates to foreign parents.

4.1. Data on Financial and Operating Activities

The data on financial and operating activities include amounts reported for nonbank U.S. parents and their nonbank foreign affiliates on the Annual Survey of U.S. Direct Investment Abroad (form BE-11) and include amounts reported for U.S. affiliates on the Annual Survey of Foreign Direct Investment in the United States (form BE-15). An affiliate is an enterprise whose voting stock is owned 10 percent or more by the parent. An affiliate may be a majority-owned affiliate. A majority-owned affiliate is an affiliate in which the combined direct and indirect ownership interest of all interests is more than 50 percent. A parent is defined as a person with a direct investment in a business enterprise.

Surveys on financial and operating activities are required to be completed for all U.S. parents. In addition, surveys on financial and operating activities are required to be completed for all foreign affiliates based on thresholds for assets, sales, and net income. Surveys on financial and operating activities are also required to be completed for all U.S. affiliates but no surveys on financial and operating activities are required to be completed for foreign parents. Thus, I do not have a complete picture of financial and operating activities for foreign MNEs.

I use the data on financial and operating activities for U.S. parents and foreign affiliates as a source for apportionment factors including sales, compensation, and PPE. I also use the data on financial and operating activities as a source for net income attributable to U.S. parents and foreign affiliates and as a source for a U.S. parent's voting interest in a foreign affiliate. Income statement information collected on the surveys includes sales by location and affiliation. Sales are collected separately for goods, services, and investment income. In addition, income statement information includes details regarding compensation and other expenses and net income. Balance sheet information collected on the surveys includes details regarding assets, liabilities, and owner's equity. Asset details include PPE amounts reported gross and net of accumulated depreciation for foreign affiliates in all years and for U.S. parents in benchmark years (i.e., years ending in 4 or 9). I use linear interpolation between 2004 and 2009 to generate net PPE on U.S. parents for the period 2006 to 2008.

4.2. Data on International Transactions in Services

The data on international transactions in services include annual tabulations of amounts reported for U.S. reporters (i.e., U.S. parents and U.S. affiliates) on the Quarterly Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons (form BE-125), the Quarterly Survey of Insurance Transactions by U.S. Insurance Companies with Foreign Persons (form BE-45), and the Quarterly Survey of Financial Services Transactions between U.S. Financial Services Providers and Foreign Persons (form BE-185). I include the following types of private services: 1) royalties and license fees, 2) financial services, 3) insurance services, 4) telecommunication services, and 5) business, professional, and technical (BPT) services. BPT services are broken down further into computer and information, management consulting, research and development (R&D), operational leasing, and other.

Surveys on international transactions in services are required to be completed for U.S. reporters based on thresholds for different types of services. Transactions for a given U.S. reporter are collected by country and affiliation. In other words, the transactions amounts may include transactions with more than one entity in a given country. In addition, the international transactions data do not include corresponding apportionment factors. Furthermore, there is no unique identifier common to both the international transactions data and the financial and operating data, which do include corresponding apportionment factors. Thus, in order to use the apportionment factors from the financial and operating data with the international transactions data, Barefoot and Koncz-Bruner (2012) aggregate the financial and operating data for foreign affiliates by U.S. parent and country and link the transactions data to the aggregated financial and operating data by U.S. parent and country.[13]

4.3. Data on International Transactions in Income

The data on income receipts include annual tabulations of amounts reported for U.S. parents on the Quarterly Survey of U.S. Direct Investment Abroad Direct Transactions of U.S. Reporter with Foreign Affiliate (form BE-577). The data on income payments include annual tabulations of amounts reported for U.S. affiliates on the Quarterly Survey of Foreign Direct Investment in the United States Transactions of U.S. Affiliate with Foreign Parent (form BE-605). Transactions in income include earnings and net interest. Earnings include a U.S. parent's share of a foreign affiliate's net income or a foreign parent's share of a U.S. affiliate's net income, which is either distributed as dividends or reinvested as further direct investment. Net interest for income receipts is calculated as the U.S. parent's receipts from the foreign affiliate

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[13] Given the lack of a common unique identifier, the link is accomplished largely by the U.S. parent's name. I calculate coverage statistics on the linked data as a ratio of the sum of linked exports to published exports and the sum of linked imports to published imports. Coverage statistics on exports from U.S. parents to their foreign affiliates are 84.9 percent, 91.2 percent, and 94.2 percent for 2006, 2007, and 2008, respectively. Coverage statistics on imports by U.S. parents from their foreign affiliates are 77.4 percent, 91.0 percent, and 90.5 percent, respectively.

less the U.S. parent's payments to the foreign affiliate. Net interest for income payments is calculated as the U.S. affiliate's payments to the foreign parent less the U.S. affiliate's receipts from the foreign parent.

Surveys on income receipts and income payments are required to be completed based on thresholds for assets, sales, and net income. Similar to the international transactions data, the income receipts and income payments data do not include corresponding apportionment factors. In order to use the apportionment factors from the financial and operating data on U.S. parents and foreign affiliates with the income receipts data, I link the income receipts data to the financial and operating data using unique identifiers that are available for each foreign affiliate in each data set. In order to use the apportionment factors from the financial and operating data on U.S. affiliates with the income payments data, I link the income payments data to the financial and operating data using unique identifiers that are available for each U.S. affiliate in each data set.

The data on income payments do not include information on the foreign parent's net income. The data on income receipts also do not include information on the U.S. parent's net income. In order to get a complete picture of the net income attributable to a given U.S. MNE, which is necessary for formulary apportionment in equation (3), I use net income reported in the financial and operating data for U.S. parents and foreign affiliates. Conceptually, a U.S. parent's share of a foreign affiliate's net income reported in the income receipts data (i.e., earnings) should equal net income reported for the foreign affiliate in the financial and operating data times the U.S. parent's voting interest. In practice, the coverage of net income reported in the financial and operating data is 92.7 percent, 100.1 percent, and 94.6 percent for 2006, 2007, and

2008, respectively.[14] In addition, I do not use data on the net interest component of income receipts. However, the share of earnings in U.S. income receipts is greater than 98 percent for each year 2006 to 2008. Thus, using net income reported in the financial and operating data should provide a very close approximation to a U.S. parent's income receipts.

4.4. Apportionment Factors

The choice of apportionment factors and their associated weights influences the results obtained from formulary apportionment. I consider three apportionment factors that are available in the financial and operating data: compensation of employees, PPE net of accumulated depreciation (i.e., net PPE), and unaffiliated sales. Compensation and net PPE reflect local inputs employed in production. Unaffiliated sales may also reflect local inputs that may not be reflected in compensation and net PPE. For example, unaffiliated sales may reflect intellectual property employed by a foreign affiliate. In contrast, unaffiliated sales may also reflect shared inputs that are not employed by the affiliate. For example, unaffiliated sales may reflect intellectual property employed by a U.S. parent.

Compensation reflects number of employees employed and also reflects wages. Thus, if workers are paid their value marginal product, compensation reflects variation in economic activity across industries and countries. In other words, using compensation as an apportionment factor yields relatively more production attributable to high margin industries and high wage countries and relatively less production attributable to low margin industries and low wage

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[14] I determine coverage as the following ratio: U.S. parent's share of a foreign affiliate's net income reported in the financial and operating data aggregated across all foreign affiliates / U.S. parent's share of a foreign affiliate's net income reported in the income receipts data (i.e., earnings) aggregated across all foreign affiliates. In addition, I determine coverage based on each U.S. parent whose share of all its foreign affiliates' net income reported in the financial and operating data falls within 10 percent of the U.S. parent's share of all its foreign affiliates' net income reported in the income receipts data (i.e., earnings). The ratio in this case is as follows: U.S. parent's share of a foreign affiliate's net income reported in the income receipts data (i.e., earnings) aggregated for all U.S. parents that meet the 10-percent criterion / U.S. parent's share of a foreign affiliate's net income reported in the income receipts data (i.e., earnings) aggregated across all foreign affiliates. The resulting coverage is 95.2 percent, 99.6 percent, and 90.2 percent for 2006, 2007, and 2008, respectively.

countries. In addition, compensation is based on market transactions rather than accounting conventions, which may affect both net PPE and unaffiliated sales. Thus, weighting compensation 100 percent may provide the most objective measure of economic activity.

Despite the argument to weight compensation 100 percent, I follow Rassier and Koncz-Bruner (2013) and weight compensation, net PPE, and unaffiliated sales 60 percent, 25 percent, and 15 percent, respectively. Thus, transactions attributable to an entity based on equation (3) are proportionate to the economic activity embodied by compensation, net PPE, and unaffiliated sales. If an entity has no compensation or net PPE, transactions are still attributable to the entity under formulary apportionment if unaffiliated sales are greater than zero. Likewise, if an entity has no unaffiliated sales, transactions are still attributable to the entity under formulary apportionment if compensation or net PPE are greater than zero.

5. Results

The goal is to explore formulary apportionment as an accounting treatment for current account transactions and for additional information on SPEs. In particular, the goal is to construct formulary measures of transactions in services and intellectual property between U.S. parents and foreign affiliates and of transactions in income between U.S. parents and foreign affiliates in order to study the effects of non-resident SPEs on U.S. current account measures and on measures of U.S. GDP and U.S. GNP. The empirical analysis here is limited to transactions related to USDIA because BEA does not collect data on foreign parents, which are required to analyze transactions related to FDIUS under formulary apportionment.

I divide the discussion of the results into three subsections: 1) report formulary adjustments for transactions in services and intellectual property between U.S. parents and foreign affiliates and transactions in income between U.S. parents and foreign affiliates, 2)

evaluate the implications of the formulary adjustments on U.S. GDP and U.S. GNP, and 3) interpret the results for non-resident SPEs in the context of our simple production model.

5.1. Formulary Adjustments for the U.S. Current Account

Tables 1.1, 1.2, and 1.3 report results for the U.S. current account based on equations (3) and (4) and the related summation (5). Table 1.1 presents a modified version of the U.S. current account that includes formulary adjustments for transactions related to USDIA. Italicized lines in table 1.1 indicate lines with formulary adjustments and lines that are intended to provide additional information on SPEs. Non-italicized lines in table 1.1 indicate measures under separate accounting that are published in accordance with international guidelines. Tables 1.2 and 1.3 present dollar shares and percentage shares, respectively, of the formulary adjustments that are included in the published U.S. current account measures.

I summarize the results using simple averages of the percentage shares for the period 2006 to 2008. Based on line 1 of table 1.3, the formulary adjustments for exports and income receipts on USDIA explain on average 7.9 percent of total exports and income receipts for the period 2006 to 2008. Based on line 23 of table 1.3, the formulary adjustment for imports on USDIA explains on average 1.2 percent of total imports and income payments for the period 2006 to 2008.

Transactions in Services and Intellectual Property

Formulary adjustments for transactions in services and intellectual property related to USDIA are shown on lines 13 and 35 of table 1.1. For the period 2006 to 2008, adjustments on line 13 average \$36.5 billion and adjustments on line 35 average \$36.3 billion. The percentage shares reported on lines 4 and 26 of table 1.3 indicate that the formulary adjustments explain on average 7.6 percent of total U.S. exports of services and explain on average 9.9 percent of total

U.S. imports of services. The percentage shares reported on line 46 of table 1.3 indicate that the formulary adjustments explain a very small amount of U.S. net exports of services—the average over the period 2006 to 2008 is negligible. Likewise, the percentage shares reported on line 47 of table 1.3 indicate that the formulary adjustments explain a negligible amount of U.S. net exports of goods and services.

In addition to formulary adjustments on lines 13 and 35 of table 1.1, lines 14 and 36 of table 1.1 report tabulations for foreign affiliates with no local inputs. I define a foreign affiliate with no local inputs as a foreign affiliate with no reported compensation, net PPE, and unaffiliated sales. Thus, lines 14 and 36 provide a reference for the formulary adjustments based on foreign affiliates with no physical presence according to the definition for local inputs. Exports from U.S. parents to foreign affiliates with no local inputs are $7.4 billion on average for 2006 to 2008, which is approximately a fifth of the formulary adjustment. Imports by U.S. parents from foreign affiliates with no local inputs are approximately $11.6 billion on average for 2006 to 2008, which is approximately a third of the formulary adjustment.

Table 3 reports results for exports from U.S. parents to foreign affiliates and for imports by U.S. parents from foreign affiliates based on summation (6). The table presents formulary adjustments as a percentage of published U.S. current account measures by type of private service and by geographic region for the period 2006 to 2008. For exports by type of service, the percentage shares reported on lines 3 and 9 of table 3 indicate that formulary adjustments for royalties and license fees and for BPT services exceed on average 10 percent of receipts attributable under separate accounting. For exports by region, the percentage shares reported on line 13 indicate that formulary adjustments for exports from U.S. parents to foreign affiliates in Europe exceed on average 10 percent of receipts attributable under separate accounting. For

imports by type of service, the percentage shares of imports reported on lines 21, 22, and 25 of table 3 indicate that formulary adjustments for financial services, insurance services, and BPT services exceed on average 10 percent of payments attributable under separate accounting. For imports by region, the percentage shares reported on lines 29, 30, and 31 indicate that formulary adjustments for imports by U.S. parents to foreign affiliates in Europe, Latin America, and Middle East, respectively, exceed on average 10 percent of payments attributable under separate accounting.

By construction, formulary apportionment reduces exports from U.S. parents to foreign affiliates and reduces imports by U.S. parents from foreign affiliates because some production is inevitably reattributed to foreign affiliates in the case of exports and some production is inevitably reattributed to U.S. parents in the case of imports. However, using 10 percent as a threshold, the results in table 3 that exceed the threshold may lend insight into the local presence of U.S. MNEs in some foreign countries. For exports, the results for royalties and license fees and for BPT services imply that U.S. MNEs have more local presence in foreign countries, especially European countries, than is implied under separate accounting. For imports, the results for financial services, insurance services, and BPT services imply that U.S. MNEs have less local presence in foreign countries, especially European, Latin American, and Middle Eastern countries, than is implied under separate accounting.

Transactions in Income

Formulary adjustments for transactions in income receipts related to USDIA are shown on line 19 of table 1.1. For the period 2006 to 2008, adjustments on line 19 average $159.2 billion. The percentage shares reported on line 16 of table 1.3 indicate that the formulary adjustments explain on average 20.3 percent of total U.S. income receipts.

Tabulations of income receipts for foreign affiliates with no local inputs are shown for reference on line 20 of table 1.1. For the period 2006 to 2008, income receipts by U.S. parents from foreign affiliates with no local inputs are $142.5 billion on average, which is close the average formulary adjustment of $159.2 billion. While there are no formulary adjustments for income payments related to FDIUS because of the lack of data on foreign parents, tabulations of income payments for U.S. affiliates with no local inputs are shown on line 42 of table 1.1. For the period 2006 to 2008, income payments by U.S. affiliates with no local inputs to foreign parents are $7.1 billion on average, which is only 1 percent of total U.S. income payments.[15]

Table 4 includes income received by U.S. parents from foreign affiliates and income paid by U.S. affiliates to foreign parents based on summation (6). The table presents formulary adjustments as a percentage of published U.S. current account measures by geographic region and by industry sector for the period 2006 to 2008. The percentage shares reported for income receipts on lines 3, 4, 5, 6, and 7 of table 4 indicate that formulary adjustments for income received by U.S. parents from foreign affiliates in Asia, Canada, Europe, Latin America, and Middle East, respectively, exceed on average 10 percent of income receipts on USDIA attributable under separate accounting. The percentage shares reported for income receipts on lines 8, 10, 11, 14, and 15 of table 4 indicate that formulary adjustments for income received by U.S. parents from foreign affiliates classified to finance, insurance, management of companies, PST, and wholesale trade, respectively, exceed on average 10 percent of income receipts on USDIA attributable under separate accounting. There are no formulary adjustments for income

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[15] For FDIUS, BEA collects data on the full U.S. consolidation. If a foreign MNE has a U.S. holding company, the holding company either has U.S. operations or is combined with the operations of other U.S. affiliates owned by the MNE. Given the U.S. regulatory environment and other factors, the U.S. is not a likely location for pass-through transactions associated with SPEs. In other words, most U.S. affiliates have a physical presence with real economic activity. Thus, even if BEA collected data on foreign parents, the formulary adjustment for income payments related to FDIUS is likely to be very small as reflected in the tabulation on line 42 of table 1.1.

payments on FDIUS by region and by industry sector because of the lack of data on foreign parents.

Similar to table 3, using 10 percent as a threshold, the results in table 4 that exceed the threshold may lend insight into the local presence of U.S. MNEs in some foreign countries. The positive average percentage share for Canada implies that U.S. MNEs have more local presence in Canada than is implied under separate accounting. Likewise, the negative average percentage shares for Asia, Europe, Latin America, and Middle East imply that U.S. MNEs have less local presence in their countries than is implied under separate accounting. Moreover, the positive average percentage shares for PST industries and wholesale industries imply that U.S. MNEs have more foreign operations in those industry sectors than is implied under separate accounting, and the negative average percentage shares for finance industries, insurance industries, and management of companies industries imply that U.S. MNEs have fewer foreign operations in those industry sectors than is implied under separate accounting.

5.2. Implications for U.S. GDP and U.S. GNP

Tables 2.1, 2.2, and 2.3 report results for U.S. GDP and U.S. GNP based on equations (3) and (4) and the related summation (5). Table 2.1 presents a modified version of U.S. GDP and U.S. GNP that includes formulary adjustments for transactions related to USDIA. Italicized lines in table 2.1 indicate lines with formulary adjustments and lines that are intended to provide additional information on SPEs. Non-italicized lines in table 2.1 indicate measures under separate accounting that are published in accordance with international guidelines. Tables 2.2 and 2.3 present dollar shares and percentage shares, respectively, of the formulary adjustments that are included in the published U.S. GDP and U.S. GNP measures.

In table 2.1, lines with transactions related to USDIA and FDIUS are replicated from equivalent lines in table 1.1. In table 2.3, line 4 is the same as line 47 in table 1.3. Line 1 of table 2.3 reveals that the negligible effects of the formulary adjustments on U.S. net exports of goods and services on line 4 of table 2.3 yields no noticeable effect on U.S. GDP for the period 2006 to 2008. In contrast, line 34 of table 2.3 reveals that formulary adjustments for income receipts on USDIA explain on average 1.1 percent of total U.S. GNP for the period 2006 to 2008.[16] Overall, income-based transactions and their related measures of production appear to be more affected by a lack of economic substance than expenditure-based transactions and their related measures of production.

5.3. Interpretations for Transactions Attributable to Non-Resident Special Purposes Entities

Based on our simple production model and the related empirical framework, excess transactions may be attributable to an entity under separate accounting based on the availability of shared inputs within an MNE. In contrast, formulary apportionment attributes transactions based on an entity's proportionate share of economic activity that is reflected in the chosen apportionment factors. In other words, transactions that lack economic substance under separate accounting are no longer transactions under formulary apportionment. Consistent with our simple production model, the results of our empirical analysis reveal that excess transactions related to USDIA appear to be attributable to U.S. parents and foreign affiliates under separate accounting. According to the discussion on equation (4), the excess transactions related to USDIA yield additional information on transactions attributable to non-resident SPEs.

The formulary adjustments reported for income receipts on line 19 of table 1.1 and for imports on line 35 of table 1.1 yield an upper bound for transactions attributable to non-resident

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[16] While formulary adjustments for income payments on FDIUS may offset or enhance the formulary adjustments for income receipts on USDIA, the offset or enhancement is likely to be very small as reflected in the tabulation on line 33 of table 2.1.

SPEs. The formulary adjustments reported for exports on line 13 of table 1.1 do not yield an upper bound for transactions attributable to non-resident SPEs because the adjustments reflect production that is reattributed from U.S. parents to foreign affiliates. However, the tabulations reported for exports on line 14 of table 1.1 yield a lower bound for transactions attributable to non-resident SPEs because the tabulations presumably reflect transactions that lack economic substance. Likewise, the tabulations reported for imports on line 36 of table 1.1 yield a lower bound for transactions attributable to non-resident SPEs. The tabulations reported for income receipts on line 20 of table 1.1 do not yield a lower bound for transactions attributable to non-resident SPEs because some income is reattributed among foreign affiliates.

Detailed transactions by geographic region and type of service in table 3 and by geographic region and industry sector in table 4 imply considerable differences in economic activity reflected under formulary apportionment and economic activity reflected under separate accounting. Recall formulary apportionment does not yield any additional information on non-resident SPEs in the case of exports related to USDIA. However, to the extent that formulary apportionment reflects transactions with SPEs, the percentage shares for imports related to USDIA in table 3 imply that non-resident SPEs play a large role in imports of financial services, insurance services, and BPT services from countries in Europe, Latin America, and the Middle East. Likewise, the percentage shares for income receipts related to USDIA in table 4 imply that non-resident SPEs classified in finance industries, insurance industries, and management of companies industries play a large role in income receipts from Asia, Europe, Latin America, and the Middle East.

Since formulary apportionment reduces the effects of transactions that lack economic substance, which includes transactions attributable to SPEs, the results for U.S. net exports of

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goods and services on line 47 of table 1.3 or line 4 of table 2.3 and the results for U.S. GDP on line 1 of table 2.3 imply that transactions between U.S. parents and non-resident SPEs do not affect U.S. net exports or U.S. GDP. Likewise, to the extent that formulary apportionment reflects transactions with SPEs, the results for U.S. GNP on line 34 of table 2.3 imply that non-resident SPEs appear to play a larger role in income-based measures of production than in expenditure-based measures of production.

6. Conclusions and Future Work

Overall, formulary apportionment appears to be a feasible accounting treatment for current account transactions and a practical solution for additional information on SPEs. This conclusion applies to supplemental measures on non-resident SPEs and applies to measures that distinguish resident SPEs from resident non-SPEs. However, the empirical analysis in this paper is limited to non-resident SPEs because BEA does not collect data on foreign parents, which are required to analyze resident SPEs under formulary apportionment. Thus, the conclusions drawn from the empirical results are based only on an analysis of non-resident SPEs.

For the period 2006 to 2008, the empirical results reveal that formulary apportionment reduces total U.S. exports of services by 7.6 percent on average and reduces total U.S. imports of services by 9.9 percent on average. The combined effects on exports and imports yield a negligible effect on U.S. net exports of goods and services and no noticeable effect on U.S. GDP. Since formulary apportionment reduces the effects of transactions that lack economic substance, the results for U.S. net exports and U.S. GDP imply that transactions between U.S. parents and non-resident SPEs do not affect U.S. net exports or U.S. GDP. The empirical results also reveal that formulary apportionment reduces total U.S. income receipts by 20.3 percent on average over the period 2006 to 2008, which reduces U.S. GNP by 1.1 percent on average. Thus, income-

based transactions and their related measures of production appear to be more affected by a lack of economic substance than expenditure-based transactions and their related measures of production. Likewise, to the extent that formulary apportionment reflects transactions with SPEs, non-resident SPEs appear to play a larger role in income-based measures than in expenditure-based measures.

The results in this paper offer at least two avenues for future work. First, the difference in outcomes between income-based measures and expenditure-based measures calls into question whether transactions attributable to non-resident SPEs affect the U.S. statistical discrepancy. The answer to the question may be found in BEA's adjustment to U.S. corporate profits for foreign source income, which I plan to consider in future work. Second, formulary apportionment has implications for returns on USDIA, which have been historically high relative to returns on FDIUS. The results for income receipts in this paper imply considerable decreases in U.S. returns, which I intend to explore in a future paper.

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Figure 1: A Simple MNE Structure that includes an SPE

Country A Non-SPE

Country B Non-SPE | SPE

Country C Non-SPE

Country D Non-SPE
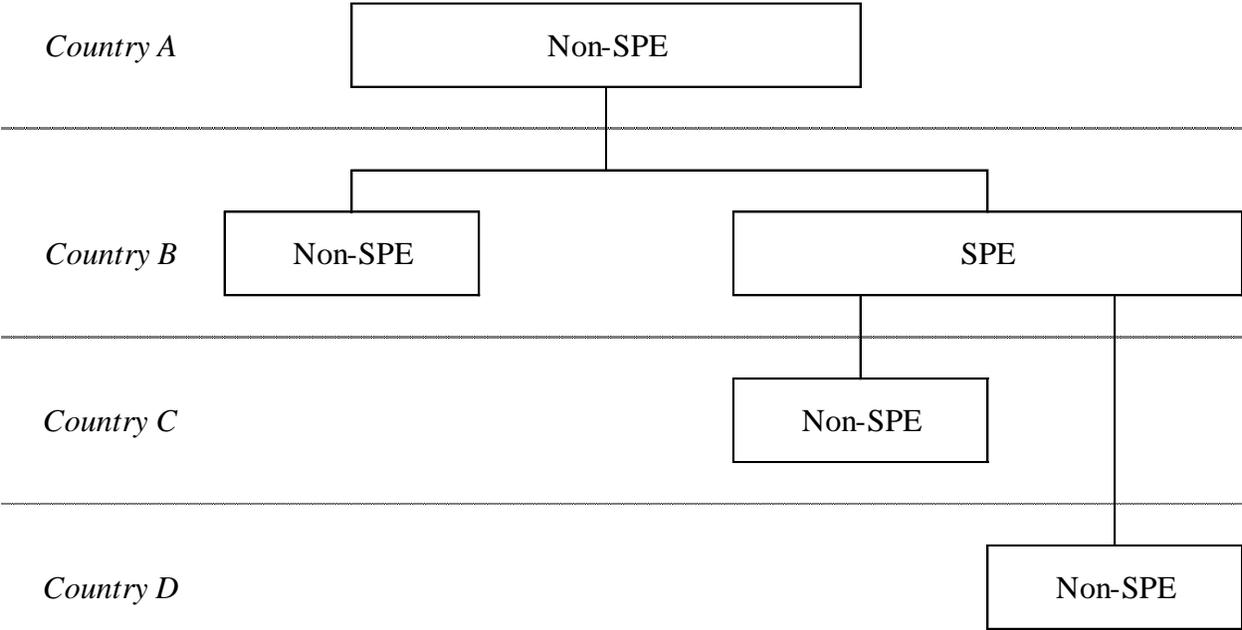
Note: The figure is replicated from *BD4* figure 6.1.

Figure 2: Ratios of Value-Added to Compensation for Foreign Affiliates of U.S. Parents
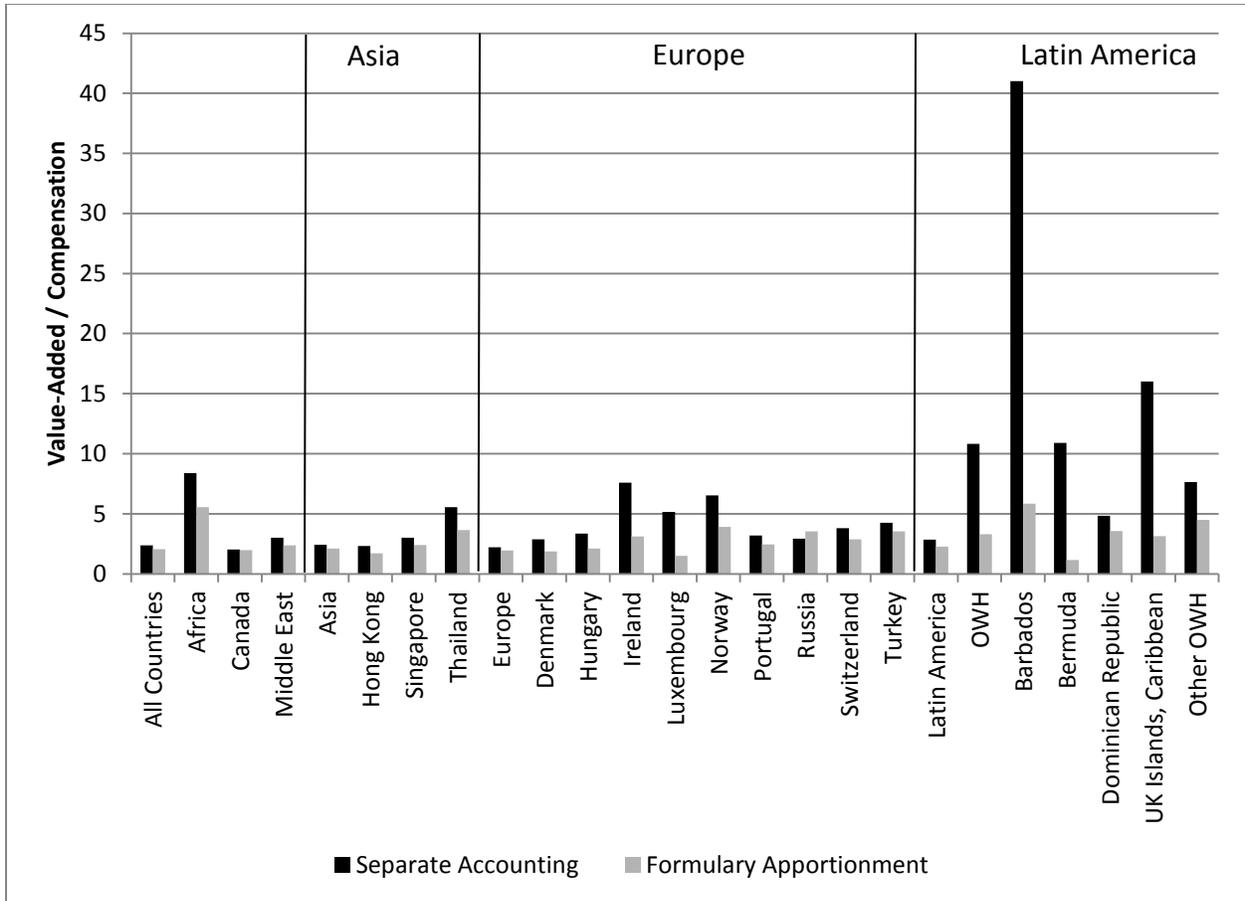
Note: Results based on Lipsey (2009, 2010) and Rassier and Koncz-Bruner (2013).

Table 1.1: Modified U.S. Current Account (billions USD)

Line		2006	2007	2008
1	**Exports of goods and services and income receipts**	2,145.5	2,486.8	2,654.4
2	Exports of goods and services	1,460.8	1,652.9	1,840.3
3	Goods, balance of payments basis	1,039.4	1,163.6	1,307.3
4	Services	421.4	489.3	533.0
5	Transfers under U.S. military agency sales contracts	15.6	17.4	14.9
6	Travel, passenger fares, other transportation	143.6	163.2	185.4
7	Royalties and license fees, other private services	260.8	307.1	330.9
8	U.S. receipts from unaffiliated foreigners	151.7	174.5	189.8
9	U.S. affiliates' receipts from foreign parent groups	23.3	25.4	28.8
10	*Of which: Attributable to resident SPEs*	---	---	---
11	U.S. parents' receipts from their foreign affiliates	85.8	107.2	112.3
12	*Of which: Attributable to non-resident SPEs*	---	---	---
13	*Formulary adjustment*	*30.4*	*38.0*	*41.2*
14	*Foreign affiliates with no local inputs*	*7.1*	*6.9*	*8.2*
15	U.S. government miscellaneous services	1.3	1.5	1.8
16	Income receipts	684.7	834.0	814.1
17	Direct investment receipts on U.S.-owned assets abroad	324.8	370.8	413.7
18	*Of which: Attributable to non-resident SPEs*	---	---	---
19	*Formulary adjustment*	*109.5*	*129.3*	*238.8*
20	*Foreign affiliates with no local inputs*	*121.8*	*153.4*	*152.5*
21	Other private receipts, U.S. government receipts	354.8	458.0	395.0
22	Compensation of employees	5.1	5.2	5.4
23	**Imports of goods and services and income payments**	2,854.5	3,085.3	3,210.6
24	Imports of goods and services	2,213.2	2,351.9	2,542.6
25	Goods, balance of payments basis	1,878.2	1,986.3	2,141.3
26	Services	335.0	365.6	401.3
27	Direct defense expenditures	25.1	25.9	26.2
28	Travel, passenger fares, other transportation	154.9	160.6	169.0
29	Royalties and license fees, other private services	152.7	176.7	203.4
30	U.S. payments to unaffiliated foreigners	84.8	100.5	117.4
31	U.S. affiliates' payments to foreign parent groups	31.5	33.4	37.9
32	*Of which: Attributable to resident SPEs*	---	---	---
33	U.S. parents' payments to their foreign affiliates	36.5	42.8	48.1
34	*Of which: Attributable to non-resident SPEs*	---	---	---
35	*Formulary adjustment*	*31.4*	*37.3*	*40.3*
36	*Foreign affiliates with no local inputs*	*10.4*	*12.8*	*11.6*
37	U.S. government miscellaneous services	2.2	2.4	2.7
38	Income payments	641.3	733.3	667.9
39	Direct investment payments on foreign-owned assets in U.S.	150.8	126.2	129.4
40	*Of which: Attributable to resident SPEs*	---	---	---
41	*Formulary adjustment*	---	---	---
42	*U.S. affiliates with no local inputs*	*11.9*	*6.0*	*3.6*
43	Other private payments, U.S. government payments	474.1	591.4	521.4
44	Compensation of employees	16.4	15.7	17.1
45	**Balance on goods**	-838.8	-822.7	-834.0
46	**Balance on services**	86.4	123.7	131.7
47	**Balance on goods and services**	-752.4	-699.1	-702.3

Note: Amounts on lines 10, 32, and 41 are not available because of the lack of data on apportionment factors for foreign parents.

Table 1.2: Formulary Dollar Shares in U.S. Current Account Measures (billions USD)

Line		2006	2007	2008
1	**Exports of goods and services and income receipts**	-139.9	-167.3	-280.0
2	Exports of goods and services	-30.4	-38.0	-41.2
3	Goods, balance of payments basis	0.0	0.0	0.0
4	Services	-30.4	-38.0	-41.2
5	Transfers under U.S. military agency sales contracts	0.0	0.0	0.0
6	Travel, passenger fares, other transportation	0.0	0.0	0.0
7	Royalties and license fees, other private services	-30.4	-38.0	-41.2
8	U.S. receipts from unaffiliated foreigners	0.0	0.0	0.0
9	U.S. affiliates' receipts from foreign parent groups	---	---	---
10	*Of which: Attributable to resident SPEs*	---	---	---
11	U.S. parents' receipts from their foreign affiliates	-30.4	-38.0	-41.2
12	*Of which: Attributable to non-resident SPEs*	---	---	---
13	*Formulary adjustment*	*30.4*	*38.0*	*41.2*
14	*Foreign affiliates with no local inputs*	*7.1*	*6.9*	*8.2*
15	U.S. government miscellaneous services	0.0	0.0	0.0
16	Income receipts	-109.5	-129.3	-238.8
17	Direct investment receipts on U.S.-owned assets abroad	-109.5	-129.3	-238.8
18	*Of which: Attributable to non-resident SPEs*	---	---	---
19	*Formulary adjustment*	*109.5*	*129.3*	*238.8*
20	*Foreign affiliates with no local inputs*	*121.8*	*153.4*	*152.5*
21	Other private receipts, U.S. government receipts	0.0	0.0	0.0
22	Compensation of employees	0.0	0.0	0.0
23	**Imports of goods and services and income payments**	-31.4	-37.3	-40.3
24	Imports of goods and services	-31.4	-37.3	-40.3
25	Goods, balance of payments basis	0.0	0.0	0.0
26	Services	-31.4	-37.3	-40.3
27	Direct defense expenditures	0.0	0.0	0.0
28	Travel, passenger fares, other transportation	0.0	0.0	0.0
29	Royalties and license fees, other private services	-31.4	-37.3	-40.3
30	U.S. payments to unaffiliated foreigners	0.0	0.0	0.0
31	U.S. affiliates' payments to foreign parent groups	---	---	---
32	*Of which: Attributable to resident SPEs*	---	---	---
33	U.S. parents' payments to their foreign affiliates	-31.4	-37.3	-40.3
34	*Of which: Attributable to non-resident SPEs*	---	---	---
35	*Formulary adjustment*	*31.4*	*37.3*	*40.3*
36	*Foreign affiliates with no local inputs*	*10.4*	*12.8*	*11.6*
37	U.S. government miscellaneous services	0.0	0.0	0.0
38	Income payments	---	---	---
39	Direct investment payments on foreign-owned assets in U.S.	---	---	---
40	*Of which: Attributable to resident SPEs*	---	---	---
41	*Formulary adjustment*	---	---	---
42	*U.S. affiliates with no local inputs*	*11.9*	*6.0*	*3.6*
43	Other private payments, U.S. government payments	0.0	0.0	0.0
44	Compensation of employees	0.0	0.0	0.0
45	**Balance on goods**	0.0	0.0	0.0
46	**Balance on services**	1.0	-0.6	-0.8
47	**Balance on goods and services**	1.0	-0.6	-0.8

Note: Amounts on lines 10, 32, and 41 are not available because of the lack of data on apportionment factors for foreign parents.

Table 1.3: Formulary Percentage Shares in U.S. Current Account Measures

Line		2006	2007	2008
1	**Exports of goods and services and income receipts**	-6.5%	-6.7%	-10.5%
2	Exports of goods and services	-2.1%	-2.3%	-2.2%
3	Goods, balance of payments basis	0.0%	0.0%	0.0%
4	Services	-7.2%	-7.8%	-7.7%
5	Transfers under U.S. military agency sales contracts	0.0%	0.0%	0.0%
6	Travel, passenger fares, other transportation	0.0%	0.0%	0.0%
7	Royalties and license fees, other private services	-11.7%	-12.4%	-12.4%
8	U.S. receipts from unaffiliated foreigners	0.0%	0.0%	0.0%
9	U.S. affiliates' receipts from foreign parent groups	---	---	---
10	*Of which: Attributable to resident SPEs*	---	---	---
11	U.S. parents' receipts from their foreign affiliates	-35.4%	-35.4%	-36.6%
12	*Of which: Attributable to non-resident SPEs*	---	---	---
13	*Formulary adjustment*	*100.0%*	*100.0%*	*100.0%*
14	*Foreign affiliates with no local inputs*	---	---	---
15	U.S. government miscellaneous services	0.0%	0.0%	0.0%
16	Income receipts	-16.0%	-15.5%	-29.3%
17	Direct investment receipts on U.S.-owned assets abroad	-33.7%	-34.9%	-57.7%
18	*Of which: Attributable to non-resident SPEs*	---	---	---
19	*Formulary adjustment*	*100.0%*	*100.0%*	*100.0%*
20	*Foreign affiliates with no local inputs*	---	---	---
21	Other private receipts, U.S. government receipts	0.0%	0.0%	0.0%
22	Compensation of employees	0.0%	0.0%	0.0%
23	**Imports of goods and services and income payments**	-1.1%	-1.2%	-1.3%
24	Imports of goods and services	-1.4%	-1.6%	-1.6%
25	Goods, balance of payments basis	0.0%	0.0%	0.0%
26	Services	-9.4%	-10.2%	-10.1%
27	Direct defense expenditures	0.0%	0.0%	0.0%
28	Travel, passenger fares, other transportation	0.0%	0.0%	0.0%
29	Royalties and license fees, other private services	-20.5%	-21.1%	-19.8%
30	U.S. payments to unaffiliated foreigners	0.0%	0.0%	0.0%
31	U.S. affiliates' payments to foreign parent groups	---	---	---
32	*Of which: Attributable to resident SPEs*	---	---	---
33	U.S. parents' payments to their foreign affiliates	-86.0%	-87.3%	-83.8%
34	*Of which: Attributable to non-resident SPEs*	---	---	---
35	*Formulary adjustment*	*100.0%*	*100.0%*	*100.0%*
36	*Foreign affiliates with no local inputs*	---	---	---
37	U.S. government miscellaneous services	0.0%	0.0%	0.0%
38	Income payments	---	---	---
39	Direct investment payments on foreign-owned assets in U.S.	---	---	---
40	*Of which: Attributable to resident SPEs*	---	---	---
41	*Formulary adjustment*	---	---	---
42	*U.S. affiliates with no local inputs*	---	---	---
43	Other private payments, U.S. government payments	0.0%	0.0%	0.0%
44	Compensation of employees	0.0%	0.0%	0.0%
45	**Balance on goods**	0.0%	0.0%	0.0%
46	**Balance on services**	1.1%	-0.5%	-0.6%
47	**Balance on goods and services**	-0.1%	0.1%	0.1%

Note: Amounts on lines 10, 32, and 41 are not available because of the lack of data on apportionment factors for foreign parents.

Table 2.1: Modified U.S. GDP and U.S. GNP (billions USD)

Line		2006	2007	2008
1	**Gross domestic product**	13,857.9	14,480.3	14,720.3
2	**Personal consumption expenditures**	9,297.5	9,744.4	10,005.5
3	**Gross private domestic investment**	2,680.6	2,643.7	2,424.8
4	**Net exports of goods and services**	-762.4	-709.8	-713.2
5	Exports	1,478.5	1,665.7	1,843.1
6	Goods	1,048.1	1,165.3	1,297.6
7	Services	430.4	500.4	545.5
8	U.S. receipts from unaffiliated foreigners	321.3	367.8	404.4
9	U.S. affiliates' receipts from foreign parent groups	23.3	25.4	28.8
10	*Of which: Attributable to resident SPEs*	---	---	---
11	U.S. parents' receipts from their foreign affiliates	85.8	107.2	112.3
12	*Of which: Attributable to non-resident SPEs*	---	---	---
13	*Formulary adjustment*	*30.4*	*38.0*	*41.2*
14	*Foreign affiliates with no local inputs*	*7.1*	*6.9*	*8.2*
15	Imports	2,240.9	2,375.5	2,556.4
16	Goods	1,896.5	2,000.3	2,146.4
17	Services	344.5	375.3	410.0
18	U.S. payments to unaffiliated foreigners	276.5	299.1	324.0
19	U.S. affiliates' payments to their foreign parent groups	31.5	33.4	37.9
20	*Of which: Attributable to resident SPEs*	---	---	---
21	U.S. parents' payments to foreign affiliates	36.5	42.8	48.1
22	*Of which: Attributable to non-resident SPEs*	---	---	---
23	*Formulary adjustment*	*31.4*	*37.3*	*40.3*
24	*Foreign affiliates with no local inputs*	*10.4*	*12.8*	*11.6*
25	**Gov't consumption expenditures and gross investment**	2,642.2	2,801.9	3,003.2
26	Plus: Income receipts from the rest of the world	724.2	875.5	856.8
27	*Of which: Attributable to non-resident SPEs*	---	---	---
28	*Formulary adjustment*	*109.5*	*129.3*	*238.8*
29	*Foreign affiliates with no local inputs*	*121.8*	*153.4*	*152.5*
30	Less: Income payments to the rest of the world	655.7	749.1	683.8
31	*Of which: Attributable to resident SPEs*	---	---	---
32	*Formulary adjustment*	---	---	---
33	*U.S. affiliates with no local inputs*	*11.9*	*6.0*	*3.6*
34	**Equals: Gross national product**	13,926.3	14,606.8	14,893.2

Note: Amounts on lines 10, 20, and 32 are not available because of the lack of data on apportionment factors for foreign parents.

Table 2.2: Formulary Dollar Shares in U.S. GDP and U.S. GNP Measures (billions USD)

Line		2006	2007	2008
1	**Gross domestic product**	1.0	-0.6	-0.8
2	**Personal consumption expenditures**	0.0	0.0	0.0
3	**Gross private domestic investment**	0.0	0.0	0.0
4	**Net exports of goods and services**	1.0	-0.6	-0.8
5	Exports	-30.4	-38.0	-41.2
6	Goods	0.0	0.0	0.0
7	Services	-30.4	-38.0	-41.2
8	U.S. receipts from unaffiliated foreigners	0.0	0.0	0.0
9	U.S. affiliates' receipts from foreign parent groups	---	---	---
10	*Of which: Attributable to resident SPEs*	---	---	---
11	U.S. parents' receipts from their foreign affiliates	-30.4	-38.0	-41.2
12	*Of which: Attributable to non-resident SPEs*	---	---	---
13	*Formulary adjustment*	*30.4*	*38.0*	*41.2*
14	*Foreign affiliates with no local inputs*	---	---	---
15	Imports	-31.4	-37.3	-40.3
16	Goods	0.0	0.0	0.0
17	Services	-31.4	-37.3	-40.3
18	U.S. payments to unaffiliated foreigners	0.0	0.0	0.0
19	U.S. affiliates' payments to their foreign parent groups	---	---	---
20	*Of which: Attributable to resident SPEs*	---	---	---
21	U.S. parents' payments to foreign affiliates	-31.4	-37.3	-40.3
22	*Of which: Attributable to non-resident SPEs*	---	---	---
23	*Formulary adjustment*	*31.4*	*37.3*	*40.3*
24	*Foreign affiliates with no local inputs*	---	---	---
25	**Gov't consumption expenditures and gross investment**	0.0	0.0	0.0
26	Plus: Income receipts from the rest of the world	-109.5	-129.3	-238.8
27	*Of which: Attributable to non-resident SPEs*	---	---	---
28	*Formulary adjustment*	*109.5*	*129.3*	*238.8*
29	*Foreign affiliates with no local inputs*	---	---	---
30	Less: Income payments to the rest of the world	---	---	---
31	*Of which: Attributable to resident SPEs*	---	---	---
32	*Formulary adjustment*	---	---	---
33	*U.S. affiliates with no local inputs*	---	---	---
34	**Equals: Gross national product**	-109.5	-129.3	-238.8

Note: Amounts on lines 10, 20, and 32 are not available because of the lack of data on apportionment factors for foreign parents.

Table 2.3: Formulary Percentage Shares in U.S. GDP and U.S. GNP Measures

Line		2006	2007	2008
1	**Gross domestic product**	0.0%	0.0%	0.0%
2	**Personal consumption expenditures**	0.0%	0.0%	0.0%
3	**Gross private domestic investment**	0.0%	0.0%	0.0%
4	**Net exports of goods and services**	-0.1%	0.1%	0.1%
5	Exports	-2.1%	-2.3%	-2.2%
6	Goods	0.0%	0.0%	0.0%
7	Services	-7.1%	-7.6%	-7.5%
8	U.S. receipts from unaffiliated foreigners	0.0%	0.0%	0.0%
9	U.S. affiliates' receipts from foreign parent groups	---	---	---
10	*Of which: Attributable to resident SPEs*	---	---	---
11	U.S. parents' receipts from their foreign affiliates	-35.4%	-35.4%	-36.6%
12	*Of which: Attributable to non-resident SPEs*	---	---	---
13	*Formulary adjustment*	100.0%	100.0%	100.0%
14	*Foreign affiliates with no local inputs*	---	---	---
15	Imports	-1.4%	-1.6%	-1.6%
16	Goods	0.0%	0.0%	0.0%
17	Services	-9.1%	-9.9%	-9.8%
18	U.S. payments to unaffiliated foreigners	0.0%	0.0%	0.0%
19	U.S. affiliates' payments to their foreign parent groups	---	---	---
20	*Of which: Attributable to resident SPEs*	---	---	---
21	U.S. parents' payments to foreign affiliates	-86.0%	-87.3%	-83.8%
22	*Of which: Attributable to non-resident SPEs*	---	---	---
23	*Formulary adjustment*	100.0%	100.0%	100.0%
24	*Foreign affiliates with no local inputs*	---	---	---
25	**Gov't consumption expenditures and gross investment**	0.0%	0.0%	0.0%
26	Plus: Income receipts from the rest of the world	-15.1%	-14.8%	-27.9%
27	*Of which: Attributable to non-resident SPEs*	---	---	---
28	*Formulary adjustment*	100.0%	100.0%	100.0%
29	*Foreign affiliates with no local inputs*	---	---	---
30	Less: Income payments to the rest of the world	---	---	---
31	*Of which: Attributable to resident SPEs*	---	---	---
32	*Formulary adjustment*	---	---	---
33	*U.S. affiliates with no local inputs*	---	---	---
34	**Equals: Gross national product**	-0.8%	-0.9%	-1.6%

Note: Amounts on lines 10, 20, and 32 are not available because of the lack of data on apportionment factors for foreign parents.

Table 3: U.S. Exports and Imports of Private Services by Type and by Region

Line		Published (billions USD)			Formulary Percentage Shares		
		2006	*2007*	*2008*	*2006*	*2007*	*2008*
1	**Total exports**	404.5	470.3	516.3	-7.5%	-8.1%	-8.0%
	By type:						
2	Travel, passenger fares, other transport	143.6	163.2	185.4	---	---	---
3	Royalties and license fees	83.5	97.8	102.1	-23.7%	-24.0%	-24.3%
4	Other private services	177.3	209.3	228.8	-6.0%	-6.9%	-7.2%
	Of which:						
5	Financial services	47.9	61.4	63.0	-5.4%	-4.5%	-3.8%
6	Insurance services	9.4	10.8	13.4	-5.4%	-4.7%	-5.8%
7	Telecommunication services	7.1	8.2	10.0	-2.2%	-2.6%	-3.6%
8	Other services	26.4	27.0	29.8	---	---	---
9	BPT services	86.4	101.8	112.6	-8.5%	-10.9%	-11.4%
	By region:						
10	Africa	7.5	8.6	10.0	-5.1%	-6.7%	-5.7%
11	Asia	103.8	112.2	121.0	-6.0%	-8.0%	-7.9%
12	Canada	37.6	42.5	44.9	-6.4%	-7.2%	-7.1%
13	Europe	167.7	201.9	223.7	-11.2%	-10.7%	-10.6%
14	Latin America	75.1	89.9	98.8	-3.3%	-3.9%	-4.0%
15	Middle East	10.7	13.1	15.6	-1.0%	-1.4%	-1.5%
16	Unallocated	2.2	2.2	2.3	---	---	---
17	**Total imports**	307.6	337.3	372.5	-10.2%	-11.1%	-10.8%
	By type:						
18	Travel, passenger fares, other transport	154.9	160.6	169.0	---	---	---
19	Royalties and license fees	25.0	26.5	29.6	-7.6%	-11.2%	-10.8%
20	Other private services	127.7	150.3	173.8	-23.1%	-22.9%	-21.4%
	Of which:						
21	Financial services	14.7	19.2	17.2	-21.0%	-19.1%	-14.9%
22	Insurance services	39.4	47.5	58.9	-27.4%	-27.6%	-22.9%
23	Telecommunication services	6.3	7.3	7.8	-0.9%	-1.1%	-0.8%
24	Other services	5.5	5.9	6.3	---	---	---
25	BPT services	61.7	70.4	83.6	-25.1%	-24.9%	-25.1%
	By region:						
26	Africa	4.5	5.2	6.0	-9.5%	-7.9%	-7.0%
27	Asia	77.4	84.9	87.5	-4.3%	-7.3%	-8.4%
28	Canada	23.2	25.0	25.1	-3.9%	-4.9%	-5.6%
29	Europe	137.6	152.4	167.1	-14.3%	-13.8%	-9.6%
30	Latin America	58.2	63.0	77.4	-10.9%	-12.3%	-18.6%
31	Middle East	6.1	6.7	8.2	-12.1%	-10.5%	-9.9%
32	Unallocated	0.7	0.1	1.2	---	---	---

Note: Total exports of services on line 1 do not include transfers under U.S. military agency sales contracts or U.S. government miscellaneous services, which are included under exports of services in the U.S. current account. Total imports of services on line 17 do not include direct defense expenditures or U.S. government miscellaneous services, which are included under imports of services in the U.S. current account.

Table 4: U.S. Income Receipts and Income Payments by Region and by Industry

Line		Published (billions USD) 2006	2007	2008	Formulary Percentage Shares 2006	2007	2008
1	**Total income receipts**	304.1	350.2	393.0	-33.7%	-34.8%	-57.7%
	By region:						
2	Africa	7.2	6.7	8.1	-8.8%	-3.4%	1.1%
3	Asia	60.1	66.3	65.5	-1.3%	-17.2%	-63.1%
4	Canada	23.5	21.2	31.4	37.0%	67.3%	-15.4%
5	Europe	153.7	175.7	197.0	-50.6%	-50.6%	-61.1%
6	Latin America	53.5	72.6	82.1	-55.2%	-45.3%	-66.7%
7	Middle East	6.0	7.7	8.8	-38.0%	-37.7%	-60.9%
	By industry:						
8	Finance	26.3	27.1	28.9	-36.7%	-0.5%	-119.5%
9	Information	11.5	11.1	14.4	-25.3%	-15.0%	28.0%
10	Insurance	13.1	15.7	14.7	-22.5%	-32.6%	-229.9%
11	Management	120.9	146.6	179.7	-97.7%	-95.0%	-76.4%
12	Manufacturing	57.7	66.4	60.1	28.2%	7.6%	-26.6%
13	Mining	29.8	32.3	39.8	-2.5%	20.4%	-15.5%
14	PST	9.5	9.0	6.9	41.7%	50.2%	25.5%
15	Wholesale	24.3	28.5	28.8	18.3%	16.9%	12.9%
16	Other	11.0	13.5	19.6	---	---	---
17	**Total income payments**	144.8	121.0	125.7	---	---	---
	By region:						
18	Africa	0.2	0.2	0.1	---	---	---
19	Asia	23.4	22.3	5.5	---	---	---
20	Canada	14.6	9.8	8.7	---	---	---
21	Europe	98.3	80.2	105.7	---	---	---
22	Latin America	7.1	8.1	6.3	---	---	---
23	Middle East	1.2	0.4	-0.6	---	---	---
	By industry:						
24	Finance	-3.4	-8.1	10.5	---	---	---
25	Information	5.7	5.8	4.6	---	---	---
26	Insurance	11.2	14.6	15.4	---	---	---
27	Management	20.2	12.9	10.6	---	---	---
28	Manufacturing	55.3	46.9	36.3	---	---	---
29	Mining	8.7	7.1	8.1	---	---	---
30	PST	1.6	1.5	3.0	---	---	---
31	Wholesale	25.3	24.2	22.7	---	---	---
32	Other	20.1	16.0	14.4	---	---	---

Note: Total income receipts on line 1 and total income payments on line 17 do not include a current-cost adjustment, which is included in direct investment receipts and direct investment payments in the U.S. current account. The "other" industry includes accommodation and food, administration, construction, depository institutions, farming, fishing, forestry, health, miscellaneous, real estate, retail trade, transportation, and utilities.