Characteristics of Special Purpose Entities in Measures of U.S. Direct Investment Abroad[*]

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Abstract

Under international guidelines, official statistics on international trade and investment include transactions within multinational enterprises (MNEs) and positions on foreign direct investment. A complicating factor in the interpretation and understanding of the official statistics is the role of transactions and positions for MNEs structured with one or more special purpose entities (SPEs). In contrast to operating entities (OEs), SPEs generally have few or no employees, little or no physical presence, and little or no production or economic activity. While recent research explores the effects of SPEs on some U.S. macroeconomic statistics, very little is known from a microeconomic perspective about the underlying characteristics of SPEs. This paper provides an empirical look at non-resident SPEs whose transactions are included in official statistics on U.S. direct investment abroad. In particular, the paper treats OE affiliates as a benchmark group in a univariate and a multivariate analysis of characteristics available in survey data. The results reveal a large number of non-resident SPEs sponsored by U.S. MNEs, which are not isolated to a few industries or a single global region. Significant differences exist between SPE affiliates and OE affiliates in their balance sheet components, income statement components, and measured production. Given the fact pattern demonstrated in the microdata, measured production attributed to SPE affiliates appears to be incongruent with reported economic activity.

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1. Introduction

Under international guidelines, official statistics on international trade and investment include transactions within multinational enterprises (MNEs) and positions on foreign direct investment (FDI). A complicating factor in the interpretation and understanding of the official statistics is the role of transactions and positions for MNEs structured with one or more special purpose entities (SPEs). In contrast to operating entities (OEs), SPEs generally have few or no employees, little or no physical presence, and little or no production or economic activity. Examples of SPEs include finance and holding companies, royalty and licensing companies, leasing companies, and securitization vehicles. The international guidelines recommend that transactions with SPEs and positions in SPEs be included in official statistics, but the guidelines also recommend that supplemental information be provided to better understand the role of SPEs and the pass-through nature of the transactions in which they engage.

The U.S. international accounts and national accounts do not distinguish statistics for foreign-sponsored SPEs hosted by the U.S. on inbound FDI (i.e., resident SPEs) or for U.S.-sponsored SPEs that are hosted by foreign countries on outbound FDI (i.e., non-resident SPEs). However, given the U.S. regulatory environment and other factors, the U.S. is not a likely location for pass-through activities associated with resident SPEs. Moreover, data on U.S. affiliates of foreign MNEs are generally collected on the basis of a full U.S. consolidation, which combines operating activities of U.S. affiliates with what are likely to be very few non-operating activities for U.S. affiliates. In contrast, data collected on foreign affiliates of U.S. MNEs suggest the presence of non-resident SPEs on outbound FDI appears to be relatively large. Thus, a distinction between SPEs and OEs on FDI in the U.S. (FDIUS) may not be particularly

informative, but a distinction on U.S. direct investment abroad (USDIA) may be worthy of further consideration.

While recent research explores the effects of non-resident SPEs on some U.S. macroeconomic statistics (Lipsey 2010, Rassier 2015a) very little is known from a microeconomic perspective about the underlying characteristics of the non-resident SPEs. Thus, this paper provides an empirical look at non-resident SPEs whose transactions are included in official statistics on USDIA. In particular, the paper presents a statistical analysis of characteristics of non-resident SPEs using survey data collected by the U.S. Bureau of Economic Analysis (BEA) on U.S. parents and their foreign affiliates. The analysis includes a univariate approach that focuses on mean comparison tests of characteristics between SPE affiliates and their OE counterparts and includes a multivariate approach that focuses on comparing coefficient estimates from regressions of reported sales on measured value-added and its components over SPE affiliates and OE affiliates.

The results reveal a large number of non-resident SPEs sponsored by U.S. MNEs, which are not isolated to a few industries or a single global region. In addition, significant differences exist between SPE affiliates and OE affiliates in their balance sheet components such as assets and equity and in their income statement components such as sales and net income. Significant differences also result for measured value-added. In particular, variation in measured value-added does not appear to generate adequate variation in consequent sales for SPE affiliates, which implies value-added is over-attributed to SPE affiliates. Moreover, the lack of variation is most evident in the profits component of value-added, which is consistent with Lipsey's (2010) results using aggregate statistics on activities of MNEs. Given the fact pattern demonstrated in

the microdata, measured production attributed to SPE affiliates appears to be incongruent with reported economic activity.

The paper is organized in six sections that follow. The next section provides an overview of related literature including literature on the formation of MNEs as well as literature on measurement issues related to MNEs. The third section outlines a simple model of production attributable to foreign affiliates and an overview of BEA's measurement framework for value-added attributable to foreign affiliates. The fourth section presents the empirical framework. The fifth section describes BEA's survey data utilized in the analysis. The sixth section presents results. The last section concludes.

2. Related Literature

Two strands of literature provide context for this work. First, features are borrowed from trade literature on the formation of MNEs to outline a basic model of production attributable to foreign affiliates and to construct an empirical framework to estimate whether production measured for SPE affiliates is congruent with economic activity reported for the affiliates. Second, international guidelines on economic accounting are described for organizing official statistics on FDI and trade. In particular, the description focuses on the definitions and concepts that underlie residence, which may result in production attributed to SPE affiliates.

2.1. Trade Literature

The economic literature on formation of MNEs focuses on adapting general equilibrium trade models to include endogenous MNEs.[1] Current theory explains the formation of MNEs based on the organization of production into one of two types: vertical integration and horizontal

[1] The models assume firms operate in imperfectly competitive markets. In earlier work, Caves (1971) argues that direct investment generally takes place in industries characterized by oligopolistic market structures rather than competitive market structures upon which trade theory is built. Likewise, Horst (1971) argues that the competitive market assumption required in a general equilibrium model does not accurately reflect the reality of profit-maximizing MNEs with market power.

integration. Vertical integration results when firms divide the production process among affiliates in order to take advantage of lower relative factor prices (Helpman 1984, Brainard 1993). Horizontal integration results when firms replicate production at affiliates in order to serve local markets (Markusen 1984, Brainard 1997). In addition, an alternative knowledge-capital model mitigates some limitations that are introduced by underlying assumptions in vertical and horizontal models (Markusen 1997, Carr et al. 2001). Regardless of how production is organized, a useful feature of each of the models 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), 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. From an economic accounting perspective, shared inputs may give rise to SPE affiliates if the latter condition is not satisfied.

2.2. International Guidelines on Economic Accounting

International guidelines on economic accounting are provided in the *System of National Accounts* (*SNA*) and in the *Balance of Payments and International Investment Position Manual* (*BPM*). The shared objective of the *SNA* and the *BPM* is to measure and attribute production to the economy in which production is actually taking place based on the residence of a productive entity. Thus, the residence concept corresponds to the economy in which an entity is engaged in a significant amount of production or economic activity. For an entity with few or no attributes of location and with little or no economic activity, residence in the *SNA* and in the *BPM* is determined by the entity's country of legal incorporation or registration.

The scope of the residence concept includes international transactions conducted within MNEs. Likewise, the scope of the residence concept includes international transactions with SPEs. The *SNA* and the *BPM* 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.

Challenges encountered with SPEs under the residence concept are widely addressed in international discourse on economic measurement. A recent report by the European Central Bank et al. (2013) addresses practical considerations related to separate statistics on SPEs. The United Nations et al. (2011) also published a collection of papers with three papers dedicated to identifying and explaining challenges associated with allocating production of MNEs and SPEs to national economies under the residence concept. In addition, Lipsey (2010) argues that shared inputs such as intangibles and some services impose a challenge under the residence concept because returns to shared inputs may be attributed anywhere in the world and may result in transactions that lack economic substance when an MNE is structured for purposes other than production. Lipsey's (2010) argument is supported with an alternative formulary apportionment framework in Rassier and Koncz-Bruner (2015) and in Rassier (2015a).

Earlier work suggests an alternative ownership-based framework for organizing direct investment and trade statistics (Baldwin and Kimura 1998, Kimura and Baldwin 1998), which is supported in recent work by Federico (2015) with an application of bilateral data on 44 countries. However, an ownership-based framework is not designed to identify the location of production within MNEs, which is the centerpiece for economic accounting purposes. Thus, Rassier

(2015b) suggests a more fundamental alternative to the current *SNA* and *BPM* recommendations, which would limit the basis for recognizing transactions within MNEs to entities with *economic* residence in lieu of the current effective concept of *legal* residence.

3. Production Attributable to Foreign Affiliates

3.1. Production Model

Assume a U.S. parent has already implemented decisions regarding foreign direct investment, the organization of production, and the location of investment. Assume also that an affiliate's production and cost functions are separable from the rest of the firm. The affiliate chooses locally purchased inputs such as labor and property, plant, and equipment (PPE) and shared inputs such as intangible property (e.g., patents, trademarks, formulas, and processes) and headquarter services (e.g., accounting, finance, and marketing). Assume the affiliate purchases the shared input from the U.S. parent at a price determined by the parent, which reflects an arm's length price that maximizes the multinational firm's profits. In other words, the affiliate is a price taker in all inputs. Assume also that the affiliate takes output prices as given.

Consider an MNE with one U.S. parent and one or more wholly owned foreign affiliates. Suppose an affiliate produces output, denoted Q, with locally purchased inputs, denoted L, and shared inputs, denoted H, according to a Cobb-Douglas technology:[2]

$$Q(L,H) = L^{\alpha} H^{1-\alpha}. \tag{3.1}$$

The empirical framework is based on the dual cost function (Diewert 1974, Shephard 1970), denoted $C(w_L, w_H, Q)$, in which w_L and w_H are prices of local and shared inputs, respectively. The cost minimization problem is as follows:

$$\min_{\{L,H\}} w_L L + w_H H \tag{3.2}$$

[2] While the Cobb-Douglas is a restrictive functional form, the simplicity of the resulting cost function is preferable. In addition, no conclusions are drawn based on the elasticity of substitution between local inputs and shared inputs.

$$s.t. \quad Q = L^{\alpha} H^{1-\alpha} .$$

Using the Lagrange multiplier to form the unconstrained problem and solving for the related first-order conditions yields the affiliate's cost function as follows:

$$C(w_L, w_H, Q) = A w_L^{\alpha} w_H^{1-\alpha} Q, \tag{3.3}$$

where $A = \alpha^{-\alpha}(1-\alpha)^{\alpha-1}$. Thus, the affiliate's optimal cost structure is an increasing function of local and shared input prices and of output.

Given duality, solving equation (3.3) for the associated technology yields the Cobb-Douglas function of equation (3.1). Substituting equation (3.1) for Q in equation (3.3) yields the following composite function:

$$C(w_L, w_H, Q(L,H)) = A(w_L L)^{\alpha} (w_H H)^{1-\alpha} . \tag{3.4}$$

In equation (3.4), factor prices and factor quantities are combined, which are merely the cost and profit components of measured value-added.

3.2. Measuring Production Attributable to Foreign Affiliates

In economic accounting, production is a value-added measure. At the affiliate level, value-added can be estimated as the residual between gross output and intermediate inputs. Alternatively, value-added can be estimated as the sum of costs incurred, other than costs of intermediate inputs, and profits earned in production. BEA uses the latter approach to measure and attribute value-added to foreign affiliates of U.S. parents in supplemental statistics on activities of MNEs. Figure 1 summarizes the contribution of each of the components and subcomponents to value-added. Costs incurred include four categories: compensation, capital consumption allowance (CCA), indirect business taxes (IBT), and net interest paid (IP). BEA measures compensation and CCA directly from affiliates' income statements. Compensation

includes payroll taxes. CCA is an accounting rather than an economic measure of depreciation.[3] IBT includes taxes related to business operations other than income taxes and payroll taxes.[4] IBT is adjusted for government subsidies received and production royalty payments to foreign governments for natural resources. Net IP includes interest expensed or capitalized adjusted for interest income. Profits earned are referred to as profit-type return (PTR) in BEA's multinational statistics and include net income adjusted for foreign income taxes paid, depletion, income from equity investments in foreign affiliates, and holding gains.

Using the context of the production model, the components of value-added that reflect returns to local inputs and shared inputs can be identified. In particular, compensation and CCA are considered to only reflect returns to local inputs. Compensation and CCA are returns for services provided by labor and PPE, respectively, which need to be physically located at an affiliate in order to provide service. In contrast, IBT reflects payments to the host government for the privilege of existing in a location, such as fees for licenses and registration, in addition to payments for conducting operations in the location, such as sales taxes and property taxes. Licenses and registration do not require a physical location, but sales taxes and property taxes are considered to require a physical location. Likewise, net IP and PTR can reflect returns to local inputs, shared inputs, or both. However, absent any compensation and CCA, measured value-added that includes only net IP and PTR calls into question the production of actual output based on a presumed lack of local inputs that are required to produce actual output in the production model.

[3] In the U.S. national accounts, consumption of fixed capital is the measure of economic depreciation. Given that depreciation is a cost in affiliates' accounting records, any difference between CCA and consumption of fixed capital is reflected in profits. Thus, measured value-added is unaffected (Mataloni and Goldberg 1994).

[4] Indirect business taxes include sales tax, value-added tax, consumption tax, excise tax, taxes on property and other assets, duties, license fees, fines, penalties, and any other taxes that are not payroll taxes or income taxes.

4. Empirical Framework

Based on the simple production model presented above, the empirical framework presented here seeks to determine the effect of measured production attributed to foreign affiliates on the economic activity reported for the affiliates. Treating OE affiliates as a benchmark group, a multivariate analysis is employed to determine whether the effect of measured production is different for OE affiliates and SPE affiliates. If a different effect exists, then production measured for SPE affiliates may be incongruent with the economic activity reported for the affiliates.

Suppose an affiliate *j* belongs to parent *h*, operates in industry *i*, and is located in country *k*. Equations (3.3) and (3.4) can be log linearized and rewritten as the following estimating equations in which the α s and the β s are parameter estimates and ε and μ are stochastic error terms:

$$\ln C_{jhik} = \alpha_0 + \alpha_L \ln w_{L_{jhik}} + \alpha_H \ln w_{H_{jhik}} + \alpha_Q \ln Q_{jhik} + \varepsilon_{jhik} \tag{4.1}$$

and

$$\ln C_{jhik} = \beta_0 + \beta_{w_L} \ln w_{L_{jhik}} + \beta_L \ln L_{jhik} + \beta_{w_H} \ln w_{H_{jhik}} + \beta_H \ln H_{jhik} + \mu_{jhik}. \tag{4.2}$$

If affiliate-level data are applied to equations (4.1) and (4.2), identification is based on variation across all affiliates in the sample.

While the available data include measured production, complete data on exogenous prices of inputs are not available. However, the data structure allows the inclusion of fixed effects to control for unobserved factor prices, which is consistent with previous work using the same data (Hanson et al. 2005). In particular, the data generally include multiple affiliates owned by the same U.S. parent and often classified in the same industry and located in the same

country. As a result, the following specifications can be estimated in which θ is a parent-industry-country fixed effect and υ and η are stochastic error terms:

$$C_{jhik} = \alpha_0 + \alpha_Q Q_{jhik} + \theta_{hik} + \upsilon_{jhik} \tag{4.3}$$

and

$$C_{jhik} = \beta_0 + \beta_L L_{jhik} + \beta_H H_{jhik} + \theta_{hik} + \eta_{jhik}\,. \tag{4.4}$$

In equations (4.3) and (4.4), identification is based on variation across affiliates owned by the same parent, classified in the same industry, and located in the same country. Thus, equations (4.3) and (4.4) control for factor prices by assuming affiliates owned by the same parent, classified in the same industry, and located in the same country face the same local factor prices and by assuming a parent charges the same transfer price to its affiliates classified in the same industry and located in the same country. The log notation is removed in equations (4.3) and (4.4) because in practice the firm-level measures can be positive, zero, or negative. However, since the analytic objective is to compare coefficient estimates across SPE affiliates and OE affiliates, the log transformation is not critical to the interpretation of the results.

Equations (4.3) and (4.4) do not make a statistical distinction between SPE affiliates and OE affiliates. However, the equations can be altered to include an indicator variable, denoted *D*, which takes a value of one for SPE. SPE affiliates are identified as affiliates with no local inputs, and OE affiliates are identified as all other affiliates. Under the most restrictive criterion, affiliates with no local inputs include affiliates with no compensation. In addition, other regressors may be interacted with *D* in order to determine how reported economic activity varies with measured production and its components in the absence of local inputs. The specifications corresponding to equations (4.3) and (4.4), respectively, are as follows:

$$C_{jhik} = \alpha_0 + D_{jhik} + \alpha_Q Q_{jhik} + \alpha_{QD}(Q_{jhik} \times D_{jhik}) + \theta_{hik} + \upsilon_{jhik} \tag{4.5}$$

and

$$C_{jhik} = \beta_0 + D_{jhik} + \beta_L L_{jhik} + \beta_H H_{jhik} + \beta_{HD}(H_{jhik} \times D_{jhik}) + \theta_{hik} + \eta_{jhik}. \quad (4.6)$$

The indicator variables and the interactions in equations (4.5) and (4.6) indicate whether the coefficients estimated over OE affiliates are equal to the coefficients estimated over SPE affiliates.[5]

5. Data

The data include survey data collected by BEA on MNEs for 2009 based on financial statements compiled in accordance with U.S. generally accepted accounting principles. In particular, the data include those collected for U.S. parents and their majority-owned foreign affiliates on the 2009 Benchmark Survey of U.S. Direct Investment Abroad (form BE-10). A majority-owned foreign affiliate is an affiliate in which the combined direct and indirect ownership interest of the U.S. parent is more than 50 percent. A parent is defined as a person with an investment, either directly or indirectly, of 10 percent or more in a foreign business enterprise. Data on U.S. parents generally pertain to the fully consolidated U.S. business enterprise and none of the foreign affiliates. Data on a given foreign affiliate generally pertain only to the activities of the affiliate and not the U.S. parent or another affiliate.

Data collected on the benchmark survey forms include income statement information and balance sheet information. Income statement information includes sales by type, location, and affiliation. Other types of income such as income from equity investments and holding gains are also collected. In addition, income statement information includes detailed expenses such as

[5] Previous work estimates affiliate-level cost functions to answer a variety of inquiries, which under a familiar production model implies profit maximization at the affiliate level rather than the firm level. However, MNE parents may make decisions for affiliates to maximize profits at the firm level. Since the analysis in this paper focuses solely on a comparison of coefficient estimates on measured production between SPE affiliates and OE affiliates in order to draw inferences on measured production attributed to SPEs, the analysis does not yield any inferences regarding a firm-level cost function.

compensation, accounting depreciation, interest, and taxes. BEA uses information from the income statement to measure value-added for each affiliate. Balance sheet information includes details regarding assets, liabilities, and equity.

5.1. Data on Economic Activity

The measure of economic activity includes sales reported for the affiliate. For affiliates operating in competitive markets, sales capture economic costs. From an economic accounting perspective, sales capture gross output. The sales data include sales of goods, sales of services, and investment income. Sales may include transactions with related parties as well as transactions with unrelated parties. Results reported for the analysis are based on total sales.

5.2. Data on Measured Production

Measured production includes value-added estimated for the affiliate. In addition to value-added, the data include each of the components of value-added: compensation, CCA, IBT, net IP, and PTR. Likewise, the data include each of the PTR subcomponents of value-added: net income, foreign income taxes paid, depletion, income from equity investments, and holding gains. Thus, in addition to determining the effect of measured value-added on economic activity in equations (4.3) and (4.5), the analysis is able to determine with equations (4.4) and (4.6) the components of value-added that drive the results in equations (4.3) and (4.5).

5.3. Sample Selection and Summary Statistics

Before restrictions, the sample included 55,236 observations of which 3,920 were U.S. parents and 51,316 were majority-owned foreign affiliates. The working sample excludes foreign affiliates whose U.S. parents are classified to the following industries: funds and trusts, holding companies, religious and civic organizations, and public administration. The working sample also excludes foreign affiliates whose U.S. parents appear to have no economic activity

based on a lack of compensation. After restrictions, the sample includes 54,426 observations of which 3,690 are U.S. parents and 50,736 are majority-owned foreign affiliates.

Table 1 presents summary statistics for U.S. parents and all foreign affiliates in the sample. The average parent has sales of $2,474.9 million, and the average affiliate has sales of $93.4 million. In both cases, variation in sales is relatively high. For parents and affiliates, the largest component of value-added is compensation followed by PTR. Net income is the largest subcomponent of PTR but is offset in part by income from equity investments and holding gains. The component shares of value-added vary considerably across parents and affiliates. The percentage of parents classified to manufacturing, professional, and wholesale trade industries exceeds 10 percent. The percentage of affiliates that exceed the same threshold includes affiliates classified to finance, management of companies, manufacturing, and wholesale trade. Relatively low numbers of affiliates are located in Africa, Canada, and the Middle East.

Tables 2 and 3 present for U.S. parents and foreign affiliates, respectively, correlation coefficients on reported sales and measured value-added and its components. Correlations are generally lower for foreign affiliates. In addition, correlations for parents are generally positive with the exception of net interest paid. Likewise, correlations for affiliates are generally positive with the exception of net interest paid, income on equity investments, and holding gains, which are all quite small.

6. Results

The goal is to provide an empirical look at non-resident SPEs whose transactions are included in official statistics on USDIA. This section presents results of both a univariate analysis and a multivariate analysis, which treat OE affiliates as a benchmark group that is more likely than SPE affiliates to engage in real production. The univariate analysis focuses on mean

comparison tests of characteristics between SPE affiliates and OE affiliates. The multivariate analysis focuses on comparing coefficient estimates from regressions of reported sales on measured value-added and its components over SPE affiliates and OE affiliates.

Prior to discussing results of the mean comparison tests and the regressions, table 4 presents sales weighted averages for financial statement components and measured value-added of U.S. parents, OE affiliates, and SPE affiliates. Each measure in table 4 is a ratio of a given component summed across all entities to sales summed across all entities. While sales weighted averages for OE affiliates are generally a bit lower than sales weighted averages for parents, the measures are comparable. However, sales weighted averages for SPE affiliates are much higher than parents and OE affiliates for total income, net income, assets, liabilities, equity, and the PTR component of value-added. In addition, the sales weighted average of total value-added for SPE affiliates is much lower than parents and OE affiliates, which reflects the definition of SPE affiliates based on no compensation.

6.1. Industry and Location Characteristics

Table 5 reports mean comparison tests between OE affiliates and SPE affiliates for industrial classification and global regions. At a 5 percent level of significance, differences in the concentration of OE affiliates and SPE affiliates exist for all industries except accommodation, health care, and transportation. Based on a threshold of 10 percent for the mean, OE affiliates are concentrated in manufacturing, professional, and wholesale trade industries, and SPE affiliates are concentrated in finance, management, and manufacturing industries. Differences in the concentration of OE affiliates and SPE affiliates also exist for all global regions except Europe. Lower concentrations of SPE affiliates are located in Asia, Canada, and Middle East. Higher concentrations of SPE affiliates are located in Africa and Latin

America. Most SPE affiliates are located in Asia, Europe, and Latin America, which is consistent with OE affiliates. Overall, table 5 demonstrates that SPE affiliates are not simply isolated to a few industries or a single global region.

6.2. Operating and Financial Characteristics

Tables 6 and 7 present mean comparison tests between OE affiliates and SPE affiliates for income statement and balance sheet components. Total income and total expenses in table 6 are significantly higher for OE affiliates than for SPE affiliates. However, net income is significantly higher for SPE affiliates. No differences exist in interest receipts and payments. SPE affiliates have no material R&D expenditures, but they do receive more and pay less in royalties than their OE counterparts. Royalty receipts are not statistically higher, however. The balance sheet components in table 6 reveal SPE affiliates have significantly higher assets and equity than OE affiliates. There is no statistical difference in liabilities. The difference in assets between the two groups is explained in large part by equity investments in foreign affiliates with some additional differences explained by receivables due from U.S. parents.

Sales in table 7 are parsed by destination, affiliation, and type of product. Sales of goods are relatively large for OE affiliates and SPE affiliates and all differences are significant. Sales of services are smaller than sales of goods, and there are no detectable differences between the two groups in sales of services to local affiliates and other foreign affiliates. Most sales of goods and services are made to non-affiliates in the local economy. Investment income is the smallest component of sales for both OE affiliates and SPE affiliates, and the difference in investment income from all sources is not statistically significant. Just over 70 percent of sales by OE affiliates are made to non-affiliates, which implies the typical OE affiliate is established to serve unrelated parties. While just over 50 percent of sales by SPE affiliates are made to non-affiliates,

the same implication does not necessarily apply because the amount of sales to non-affiliates by SPEs is less than 15 percent of the amount of sales to non-affiliates by OEs.

The results in tables 6 and 7 reveal different operating and financial structures for OE affiliates and SPE affiliates. SPE affiliates report stronger operating results than OE affiliates, which is consistent with the sales weighted averages reported in table 4. In addition, SPE affiliates have stronger balance sheets than OE affiliates, but the results are not nearly as conclusive as the sales weighted averages reported in table 4. Thus, the averages in table 6 may be diluted by the number of SPE affiliates with very low balance sheet components.

6.3. Production and Trade Characteristics

Tables 8 and 9 include mean comparison tests between OE affiliates and SPE affiliates for trade in goods and for measured value-added, respectively. The components of trade in goods include exports of goods to U.S. parents, other foreign affiliates, and non-affiliates and include imports of goods from U.S. parents, other foreign affiliates, and non-affiliates. For all components, trade in goods is significantly lower for SPE affiliates than for OE affiliates. Likewise, value-added and its components are significantly lower for SPE affiliates than for OE affiliates. However, the net income and equity income subcomponents of PTR are significantly higher for SPE affiliates, which is reflective of the pass-through nature of SPEs.

While the univariate results presented so far provide a useful descriptive look at characteristics of SPE affiliates relative to OE affiliates, a multivariate analysis provides a more robust look at production attributable to each group. For the typical affiliate in the sample, equations (4.3) and (4.5) yield the change in economic activity associated with a change in output, and equations (4.4) and (4.6) yield the change in economic activity associated with a change in each of the components of output. If measured production is congruent with reported

economic activity, then the coefficient estimates should not be different between the two groups. In other words, reported economic activity for an affiliate should change by an equivalent amount for a given change in measured production regardless of whether the affiliate has local inputs. Alternatively, if measured production is incongruent with reported economic activity, then one of two outcomes is possible. First, if measured production is over-attributed to SPE affiliates, the coefficient estimates for OE affiliates should be higher than the coefficient estimates for SPE affiliates because lower coefficient estimates for SPE affiliates indicate relatively less change in economic activity induced by a given change in output. Second, if measured production is under-attributed, the coefficient estimates for OE affiliates should be lower than the coefficient estimates for SPE affiliates because higher coefficient estimates for SPE affiliates indicate relatively more change in economic activity induced by a given change in output.

Total Value-Added

Table 10 provides results from regressions of foreign affiliate total sales on total value-added. Results in column (1) of table 10 are based on equation (4.3), and results in column (2) are based on equation (4.5). Since SPE affiliates are identified based on the presence of local inputs (i.e., compensation), column (1) reports coefficients estimated over all foreign affiliates regardless of the presence of local inputs, and column (2) reports coefficients estimated over foreign affiliates conditioned on the absence of local inputs. Thus, the magnitude and significance of the SPE indicator and the interaction of value-added with the SPE indicator reveal any differences or similarities between SPE affiliates and OE affiliates in the effects of value-added on sales.

In table 10, the constant term in column (1) indicates that fixed costs attributable to the typical foreign affiliate are $60,003, and the coefficient estimate on value-added indicates every dollar in value-added generates $1.78 in additional sales. From an economic accounting perspective, every dollar in value-added generates approximately $0.78 in intermediate consumption.[6] Column (2) of table 10 indicates that both the constant term and the coefficient estimate on value-added are significantly lower for SPE affiliates than for OE affiliates. In other words, SPE affiliates have a dampening effect on the relationship between value-added and sales. In general, variation in measured production does not appear to generate adequate variation in consequent reported economic activity for SPE affiliates, which implies value-added may be over-attributed to SPE affiliates.

Value-Added Components and Subcomponents

Tables 11 and 12 report results from regressions of foreign affiliate total sales on value-added components and subcomponents, respectively. Results in column (1) of tables 11 and 12 are based on equation (4.4), and results in column (2) are based on equation (4.6). Since value-added components and subcomponents are only a part of total value-added, the effect of any single component or subcomponent is not comparable to the effect of total value-added on total sales.[7]

The coefficient estimates on value-added components in column (1) of table 11 reflect the relative contribution of each component to total sales—compensation has the largest effect and returns to capital have the smallest effect—which is generally consistent with each component's relative contribution to total value-added in table 9. Results for compensation,

[6] In the U.S. annual industry accounts, every dollar in value-added generates approximately $0.73 in intermediate consumption for all private industries.

[7] In addition to the results shown in tables 11 and 12, Wald tests are calculated on the joint significance of each component and subcomponent and on the equality of all components and subcomponents. In each case, the null hypothesis is rejected.

CCA, IBT, and net IP in column (1) of table 12 are comparable to results in table 11. In addition, the signs and magnitudes on the coefficient estimates for net income, equity income, holding gains, and foreign taxes paid in column (1) of table 12 generally reflect each subcomponent's relative contribution to the PTR component of value-added in table 9. The negative sign on equity income demonstrates the offsetting effects between net income and equity income.

The SPE indicator in column (2) of tables 11 and 12 indicates that fixed costs do not change in the absence of local inputs once value-added is broken down into its components and subcomponents. In addition, results for compensation, CCA, IBT, and net IP are comparable in column (2) of tables 11 and 12. In both tables, the coefficient estimate on IBT is much larger in the absence of local inputs since a large proportion of costs attributed to SPEs are probably generated by registration and other legal requirements. In table 11, the PTR component of value-added is the only component of value-added that is significantly lower for SPE affiliates than for OE affiliates. Likewise, in table 12, the net income subcomponent of PTR is the only subcomponent of PTR that is significantly lower for SPE affiliates. Moreover, the offsetting effects between net income and equity income are also reflected in the absence of local inputs. Thus, in addition to the dampening effect on the relationship between total value-added and total sales demonstrated in table 10, SPE affiliates have a dampening effect on the relationship between PTR and total sales and on the relationship between net income and total sales. These results are consistent with Lipsey's (2010) results obtained using aggregate statistics on activities of MNEs.

Robustness

The multivariate analysis includes four robustness checks. First, SPE affiliates are identified in the reported results based on affiliates with no compensation. Under a less restrictive criterion, SPE affiliates are identified based on affiliates with no compensation, no PPE, and no inventories. The less restrictive criterion yields a robust set of results. Second, total sales used in the reported results include sales to related parties as well as unrelated parties. Since sales to related parties may include noise related to intrafirm financing arrangements and intrafirm transactions in goods and services, the analysis also uses unaffiliated sales as a measure of economic activity, which does not change conclusions. Third, the sample includes 3,242 records created by BEA because of non-response or inconsistent responses. Reported results are robust to the exclusion of these records. Finally, since 2009 was affected by a global recession, the analysis was replicated with data collected on U.S. parents and their majority-owned foreign affiliates on the 2004 Benchmark Survey of U.S. Direct Investment Abroad (form BE-10). The additional analysis does not change conclusions.

7. Conclusions

This paper provides an empirical look at non-resident SPEs whose transactions are included in official statistics on USDIA. In particular, the paper treats OE affiliates as a benchmark group in a univariate and a multivariate analysis of characteristics available in survey data. The results reveal a large number of non-resident SPEs sponsored by U.S. MNEs, which are not isolated to a few industries or a single global region. In addition, significant differences exist between SPE affiliates and OE affiliates in their balance sheet components such as assets and equity and in their income statement components such as sales and net income. Significant differences also result for measured value-added. In particular, variation in measured value-

added does not appear to generate adequate variation in consequent sales for SPE affiliates, which implies value-added is over-attributed to SPE affiliates. Moreover, the lack of variation is most evident in the profits component of value-added, which is consistent with Lipsey's (2010) results using aggregate statistics on activities of MNEs. Given the fact pattern demonstrated in the microdata, measured production attributed to SPE affiliates appears to be incongruent with reported economic activity.

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Figure 1: Measurement Framework for Value-Added Attributable to Foreign Affiliates

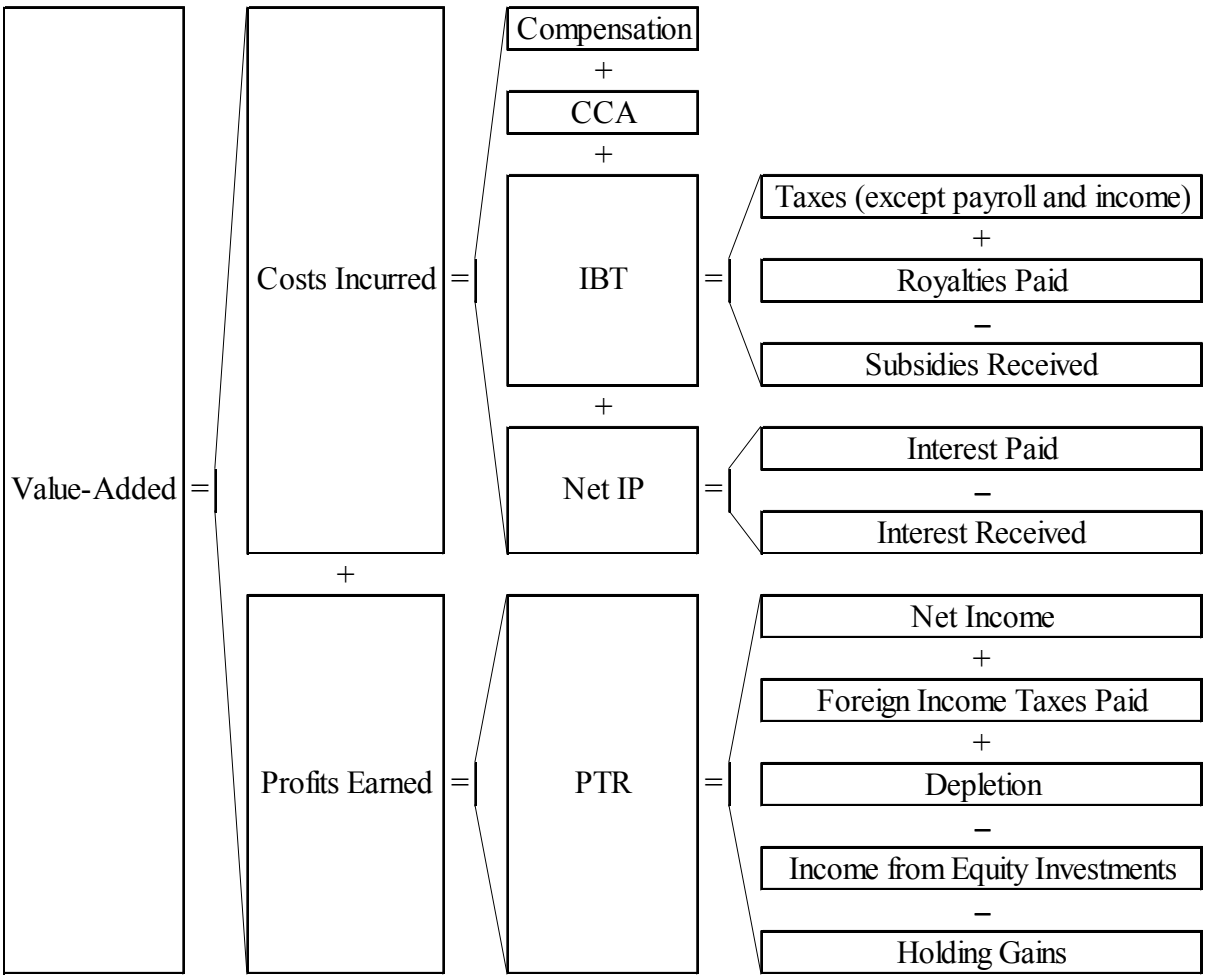

Table 1
Summary Statistics for U.S. Parents and Foreign Affiliates

	U.S. Parents		*Foreign Affiliates*	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*
Sales (millions USD)	2,474.9	9,955.5	93.4	617.5
Value-added (millions USD)	698.4	2,689.8	22.3	175.4
Compensation	427.3	1,479.3	9.4	53.8
Capital consumption allowance	97.9	604.4	2.3	23.0
Indirect business taxes	49.6	431.4	3.6	89.1
Net interest paid	- 7.3	472.5	- 0.9	35.8
Profit-type return	130.9	914.7	7.8	103.2
Net income	168.3	2,032.1	15.3	209.9
Equity income	82.0	725.4	10.4	185.5
Holding gains	- 1.4	1,806.9	- 0.6	63.2
Foreign taxes paid	36.7	351.4	2.1	38.0
SPE indicator	0.000	0.000	0.369	0.483
Industry Indicators				
Accommodation and food	0.008	0.088	0.009	0.093
Administration	0.020	0.138	0.024	0.152
Construction	0.009	0.094	0.006	0.074
Farming, fishing, forestry	0.004	0.061	0.002	0.047
Finance	0.044	0.206	0.100	0.300
Health care	0.004	0.064	0.002	0.049
Information	0.098	0.298	0.069	0.254
Insurance	0.024	0.152	0.022	0.147
Management of companies	0.001	0.033	0.106	0.308
Manufacturing	0.453	0.498	0.316	0.465
Mining	0.018	0.134	0.035	0.184
Miscellaneous services	0.015	0.121	0.010	0.097
Professional, scientific, technical	0.118	0.322	0.091	0.287
Real estate	0.022	0.147	0.029	0.167
Retail trade	0.024	0.154	0.017	0.130
Transportation and warehousing	0.025	0.155	0.023	0.150
Utilities	0.008	0.088	0.005	0.072
Wholesale trade	0.106	0.307	0.134	0.341
Global Region Indicators				
Africa			0.029	0.168
Asia			0.249	0.432
Canada			0.062	0.242
Europe			0.477	0.499
Latin America			0.167	0.373
Middle East			0.017	0.128
Observations	3,690		50,736	

Table 2
Correlation Coefficients for U.S. Parents

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*
(1) Sales	1.00										
(2) Value-added	0.81	1.00									
(3) Compensation	0.80	0.88	1.00								
(4) Capital consumption allowance	0.52	0.69	0.49	1.00							
(5) Indirect business taxes	0.70	0.59	0.46	0.32	1.00						
(6) Net interest paid	- 0.11	0.08	- 0.17	0.04	0.07	1.00					
(7) Profit-type return	0.46	0.75	0.51	0.41	0.28	- 0.05	1.00				
(8) Net income	0.39	0.39	0.34	0.23	0.20	- 0.05	0.37	1.00			
(9) Equity income	0.50	0.33	0.38	0.25	0.42	- 0.10	0.04	0.33	1.00		
(10) Holding gains	0.09	0.05	0.05	0.01	- 0.00	0.01	0.04	0.88	0.00	1.00	
(11) Foreign taxes paid	0.39	0.56	0.40	0.25	0.31	0.02	0.70	0.30	0.21	0.07	1.00
Observations	3,690										

Table 3
Correlation Coefficients for Foreign Affiliates

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*
(1) Sales	1.00										
(2) Value-added	0.63	1.00									
(3) Compensation	0.53	0.52	1.00								
(4) Capital consumption allowance	0.38	0.53	0.30	1.00							
(5) Indirect business taxes	0.41	0.66	0.16	0.16	1.00						
(6) Net interest paid	- 0.07	0.10	0.01	0.06	0.02	1.00					
(7) Profit-type return	0.38	0.71	0.16	0.37	0.13	- 0.20	1.00				
(8) Net income	0.14	0.23	0.05	0.09	0.03	- 0.14	0.37	1.00			
(9) Equity income	0.00	- 0.01	- 0.00	- 0.00	0.01	- 0.02	- 0.01	0.87	1.00		
(10) Holding gains	- 0.03	- 0.09	0.01	- 0.04	- 0.05	- 0.05	- 0.08	0.23	- 0.01	1.00	
(11) Foreign taxes paid	0.20	0.44	0.13	0.40	0.13	0.07	0.46	0.10	0.02	0.16	1.00
Observations	50,736										

Table 4
Sales Weighted Averages for Financial Statement Components and Measured Value-Added of U.S. Parents and Foreign Affiliates

	U.S. Parents	*OE Affiliates*	*SPE Affiliates*
Income Statement			
Total income	1.045	1.038	1.996
Total expenses	0.977	0.963	1.047
Net income	0.068	0.075	0.949
Interest receipts	0.064	0.033	0.168
Interest payments	0.043	0.022	0.123
R&D expenditures	0.023	0.009	0.000
Balance Sheet			
Assets	2.998	2.373	17.626
Liabilities	2.289	1.662	8.028
Equity	0.709	0.710	9.599
Value-Added			
Value-added	0.282	0.253	0.115
Compensation	0.173	0.112	0.000
Capital consumption allowance	0.040	0.025	0.029
Indirect business taxes	0.020	0.042	0.012
Net interest paid	- 0.003	- 0.005	- 0.047
Profit-type return	0.053	0.079	0.121
Observations	3,690	32,010	18,726

Table 5
Mean Comparison Tests for Industries and Global Regions of Foreign Affiliates

	OE Affiliates		*SPE Affiliates*		*P-Value* $H_0: \mu_{OE} - \mu_{SPE} = 0$ $H_A: \mu_{OE} - \mu_{SPE} \neq 0$
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	
Industry Indicators					
Accommodation and food	0.008	0.092	0.009	0.096	0.336
Administration	0.026	0.159	0.020	0.139	0.000
Construction	0.005	0.071	0.006	0.080	0.039
Farming, fishing, forestry	0.003	0.053	0.001	0.034	0.000
Finance	0.055	0.228	0.176	0.381	0.000
Health care	0.002	0.047	0.003	0.052	0.280
Information	0.083	0.275	0.047	0.211	0.000
Insurance	0.020	0.141	0.025	0.156	0.000
Management of companies	0.010	0.100	0.271	0.444	0.000
Manufacturing	0.409	0.492	0.157	0.364	0.000
Mining	0.022	0.146	0.057	0.232	0.000
Miscellaneous services	0.012	0.111	0.005	0.067	0.000
Professional, scientific, technical	0.109	0.311	0.061	0.238	0.000
Real estate	0.012	0.109	0.057	0.233	0.000
Retail trade	0.023	0.151	0.007	0.082	0.000
Transportation and warehousing	0.023	0.150	0.023	0.149	0.890
Utilities	0.005	0.068	0.006	0.079	0.015
Wholesale trade	0.173	0.378	0.069	0.253	0.000
Global Region Indicators					
Africa	0.024	0.152	0.038	0.192	0.000
Asia	0.278	0.448	0.198	0.399	0.000
Canada	0.071	0.257	0.047	0.212	0.000
Europe	0.475	0.499	0.479	0.500	0.489
Latin America	0.134	0.340	0.223	0.417	0.000
Middle East	0.018	0.133	0.014	0.119	0.002
Observations	32,010		18,726		

Table 6
Mean Comparison Tests for Financial Statement Components of Foreign Affiliates (millions USD)

	OE Affiliates		*SPE Affiliates*		*P-Value* $H_0: \mu_{OE} - \mu_{SPE} = 0$ $H_A: \mu_{OE} - \mu_{SPE} \neq 0$
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	
Income Statement					
Total income	137.8	753.0	51.6	444.3	0.000
Sales	132.9	729.7	25.9	340.4	0.000
Equity income	2.9	120.7	23.2	260.9	0.000
Holding gains	- 0.7	70.1	- 0.4	49.3	0.639
U.S. parent share	- 0.4	48.5	- 0.5	40.0	0.831
Total expenses	127.9	708.7	27.1	338.3	0.000
Net income	9.9	162.9	24.5	271.9	0.000
U.S. parent share	3.9	79.9	8.5	187.7	0.000
Interest receipts	4.4	73.2	4.4	53.6	0.919
Interest payments	3.0	48.7	3.2	36.2	0.628
R&D expenditures	1.2	17.2	0.0	0.0	0.000
Own account	1.0	16.1	0.0	0.0	0.000
Others	0.0	1.5	0.0	0.0	0.088
Royalty receipts	0.6	27.8	0.9	49.7	0.515
Royalty payments	1.7	53.3	0.3	17.1	0.001
Balance Sheet					
Assets	315.2	5,126.6	455.9	3,475.7	0.001
Liabilities	220.8	4,844.7	207.7	2,900.1	0.735
Equity	94.4	841.1	248.2	1,638.8	0.000
Observations	32,010		18,726		

Table 7
Mean Comparison Tests for Sales of Foreign Affiliates
(millions USD)

	OE Affiliates		*SPE Affiliates*		*P-Value* $H_0: \mu_{OE} - \mu_{SPE} = 0$ $H_A: \mu_{OE} - \mu_{SPE} \neq 0$
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	
Total Sales to:					
All sources	132.9	729.7	25.9	340.4	0.000
U.S. parents	8.7	132.3	2.5	74.5	0.000
Local affiliates	6.5	120.3	4.2	84.3	0.022
Other foreign affiliates	21.0	265.7	5.7	134.6	0.000
U.S. non-affiliates	2.5	48.3	0.7	22.8	0.000
Local non-affiliates	76.1	429.7	8.4	99.3	0.000
Other foreign non-affiliates	18.1	238.6	4.3	149.7	0.000
Sales of Services to:					
All sources	24.2	192.7	6.3	94.3	0.000
U.S. parents	1.0	21.8	0.4	9.9	0.000
Local affiliates	0.9	24.0	1.3	55.4	0.238
Other foreign affiliates	1.3	47.1	1.5	43.1	0.712
U.S. non-affiliates	0.6	33.3	0.2	6.2	0.092
Local non-affiliates	18.5	152.9	2.1	24.9	0.000
Other foreign non-affiliates	1.9	45.2	0.8	38.6	0.007
Sales of Goods to:					
All sources	104.3	689.1	16.1	321.0	0.000
U.S. parents	7.5	129.8	1.8	73.4	0.000
Local affiliates	5.4	117.1	2.3	62.2	0.001
Other foreign affiliates	19.5	260.7	3.7	126.7	0.000
U.S. non-affiliates	1.8	34.2	0.3	14.7	0.000
Local non-affiliates	54.3	387.3	4.6	89.7	0.000
Other foreign non-affiliates	15.9	230.8	3.3	143.4	0.000
Investment Income from:					
All sources	4.3	73.7	3.5	45.2	0.151
U.S. parents	0.2	7.8	0.3	8.3	0.258
Local affiliates	0.2	8.0	0.6	10.4	0.000
Other foreign affiliates	0.2	9.3	0.4	9.3	0.010
U.S. non-affiliates	0.1	7.0	0.2	15.6	0.190
Local non-affiliates	3.3	59.7	1.7	29.9	0.001
Other foreign non-affiliates	0.3	21.7	0.3	15.2	0.799
Observations	32,010		18,726		

Table 8
Mean Comparison Tests for Trade in Goods Components of Foreign Affiliates (millions USD)

	OE Affiliates		*SPE Affiliates*		*P-Value* $H_0: \mu_{OE} - \mu_{SPE} = 0$ $H_A: \mu_{OE} - \mu_{SPE} \neq 0$
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	
Exports of Goods to:					
U.S. parents	5.4	81.0	0.5	18.2	0.000
U.S. non-affiliates	1.1	24.0	0.0	2.9	0.000
Imports of Goods from:					
U.S. parents	6.0	121.7	1.2	67.5	0.000
U.S. non-affiliates	1.2	19.6	0.2	11.7	0.000
Observations	32,010		18,726		

Table 9
Mean Comparison Tests for Measured Value-Added of Foreign Affiliates (millions USD)

	OE Affiliates		*SPE Affiliates*		*P-Value* $H_0: \mu_{OE} - \mu_{SPE} = 0$ $H_A: \mu_{OE} - \mu_{SPE} \neq 0$
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	
Value-added	33.6	207.3	3.0	96.8	0.000
Compensation	14.9	67.1	0.0	0.0	0.000
Capital consumption allowance	3.3	26.5	0.7	15.4	0.000
Indirect business taxes	5.6	111.9	0.3	8.2	0.000
Net interest paid	- 0.7	32.4	- 1.2	41.1	0.106
Profit-type return	10.5	110.7	3.1	88.7	0.000
Net income	9.9	162.9	24.5	271.9	0.000
Equity income	2.9	120.7	23.2	260.9	0.000
Holding gains	- 0.7	70.1	- 0.4	49.3	0.639
Foreign taxes paid	2.6	40.9	1.3	32.5	0.000
Observations	32,010		18,726		

Table 10
Regression of Foreign Affiliate Total Sales on Total Value-Added

	(1)		*(2)*	
	Coefficient	*P-Value*	*Coefficient*	*P-Value*
Value-added	1.779	0.000	1.921	0.000
Value-added × SPE indicator			- 1.428	0.000
Constant	60,003	0.000	95,255	0.000
SPE indicator			- 68,422	0.000
F test for fixed effects	88.450	0.000	52.740	0.000
Within R^2	0.289		0.310	
Observations	21,931		21,931	
Groups	6,851		6,851	

Note: Estimation includes fixed effects for parent-industry-country groups, and p-values are based on standard errors clustered by parent-industry-country groups. The SPE indicator takes a value of 1 if a foreign affiliate has no local inputs (i.e., no compensation) and takes a value of 0 if a foreign affiliate has local inputs.

Table 11
Regression of Foreign Affiliate Total Sales on Value-Added Components

	(1)		*(2)*	
	Coefficient	*P-Value*	*Coefficient*	*P-Value*
Compensation	4.197	0.000	4.163	0.000
Capital consumption allowance	3.316	0.007	3.108	0.012
Indirect business taxes	1.907	0.000	1.873	0.000
Indirect business taxes × SPE indicator			3.877	0.005
Net interest paid	- 0.596	0.200	- 0.945	0.142
Net interest paid × SPE indicator			0.118	0.882
Profit-type return	1.049	0.001	1.308	0.000
Profit-type return × SPE indicator			- 1.264	0.005
Constant	37,809	0.000	50,138	0.001
SPE indicator			- 24,259	0.225
F test for fixed effects	25.400	0.000	30.090	0.000
Within R^2	0.370		0.381	
Observations	21,931		21,931	
Groups	6,851		6,851	

Note: Estimation includes fixed effects for parent-industry-country groups, and p-values are based on standard errors clustered by parent-industry-country groups. The SPE indicator takes a value of 1 if a foreign affiliate has no local inputs (i.e., no compensation) and takes a value of 0 if a foreign affiliate has local inputs.

Table 12
Regression of Foreign Total Affiliate Sales on Value-Added Components and Subcomponents

	(1)		*(2)*	
	Coefficient	*P-Value*	*Coefficient*	*P-Value*
Compensation	4.119	0.000	4.117	0.000
Capital consumption allowance	3.689	0.003	3.494	0.005
Indirect business taxes	1.962	0.000	1.959	0.000
Indirect business taxes × SPE indicator			3.652	0.006
Net interest paid	- 0.359	0.420	- 0.250	0.687
Net interest paid × SPE indicator			- 0.635	0.391
Net income	1.182	0.001	1.570	0.000
Net income × SPE indicator			- 1.652	0.000
Equity income	- 1.164	0.001	- 1.556	0.000
Equity income × SPE indicator			1.635	0.000
Holding gains	- 0.671	0.132	- 0.959	0.050
Holding gains × SPE indicator			1.479	0.022
Foreign taxes paid	0.224	0.596	- 0.002	0.997
Foreign taxes paid × SPE indicator			1.087	0.172
Constant	38,925	0.000	53,764	0.000
SPE indicator			- 31,477	0.116
F test for fixed effects	18.540	0.000	20.170	0.000
Within R^2	0.376		0.392	
Observations	21,931		21,931	
Groups	6,851		6,851	

Note: Estimation includes fixed effects for parent-industry-country groups, and p-values are based on standard errors clustered by parent-industry-country groups. The SPE indicator takes a value of 1 if a foreign affiliate has no local inputs (i.e., no compensation) and takes a value of 0 if a foreign affiliate has local inputs.