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Volume Title: Challenges of Globalization in the Measurement of National Accounts

Volume Authors/Editors: Nadim Ahmad, Brent Moulton, J. David Richardson, and Peter van de Ven, editors

Volume Publisher: University of Chicago Press

Volume ISBNs: 9780226825892 (cloth), 9780226825908 (electronic)

Volume URL:

<https://www.nber.org/books-and-chapters/challenges-globalization-measurement-national-accounts>

Conference Date: March 9-10, 2018

Publication Date: May 2023

Chapter Title: Multinational Profit Shifting and Measures throughout Economic Accounts

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Chapter URL:

<https://www.nber.org/books-and-chapters/challenges-globalization-measurement-national-accounts/multinational-profit-shifting-and-measures-throughout-economic-accounts>

Chapter pages in book: p. 153 – 205

# Multinational Profit Shifting and Measures throughout Economic Accounts

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## 5.1 Introduction

Economic accounts offer a comprehensive summary of stocks and flows for a given economy. To promote consistency and comparability of economic accounting measures across economies and time, economic accounts are based on internationally agreed principles that reflect organizing conventions from business accounting and definitions and concepts from economic theory. The primary sources of guidance on economic accounts are the *System of National Accounts (SNA)* (European Commission et al. 2009) and the *Balance of Payments and International Investment Position Manual (BPM)* (International Monetary Fund 2009). The *SNA* framework is designed with a set of interrelated balanced accounts for five domestic institutional sectors and an additional account for transactions and positions with the rest of

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For comments and helpful questions, we thank Ray Mataloni, Brent Moulton, Marshall Reinsdorf, Peter van de Ven, Dan Yorgason, and especially our discussant, Steve Redding. The statistical analysis of firm-level data on US multinational companies and companies engaged in international transactions was conducted at the Bureau of Economic Analysis, US Department of Commerce, under arrangements that maintain legal confidentiality requirements. The views expressed in this paper are solely those of the authors and not necessarily those of the US Department of Commerce or the Bureau of Economic Analysis. For acknowledgments, sources of research support, and disclosure of the authors' material financial relationships, if any, please see <https://www.nber.org/books-and-chapters/challenges-globalization-measurement-national-accounts/multinational-profit-shifting-and-measures-throughout-economic-accounts>.

world. The *BPM* framework is also designed with a set of interrelated balanced accounts that provide more detail on the *SNA* rest of world account. The *SNA* and *BPM* frameworks are intentionally harmonized to ensure a consistent treatment of rest of world transactions, other flows, and positions in each framework.

Under *SNA* and *BPM* recommendations, rest of world transactions are attributable to economies based on the residences of transacting entities. Under this treatment, affiliates within multinational enterprises (MNEs) are considered resident in the economies in which they are located. While the residence of an entity is generally the economy in which the entity is physically located, an entity with few or no attributes of physical presence—such as a holding company or a special purpose entity—is considered resident in its economy of legal incorporation or registration. In this case, the entity is not consolidated with its parent unless the entity is resident in the same economy as its parent. As a result, economic accounts for a given economy reflect transactions, other flows, and positions that are recorded in each resident entity's separate accounting records—known as the method of separate accounting.

A trend in the last couple of decades is MNEs that are structured with holding companies or special purpose entities that are created for purposes other than production. In particular, MNEs have access to countries that vary widely in corporate tax rates, which enables profit-maximizing MNEs to legally take advantage of differences in national tax regimes and shift profits from high tax countries to low tax countries through transfer pricing and complex global structuring that generally includes holding companies or special purpose entities. Sanchirico (2015) describes these strategies as “unsoundably elaborate and only rarely publicly visible” (page 210), and they have generated concern among official statistics compilers and users of official statistics regarding the *SNA* and *BPM* treatment of transactions within MNEs and their effects on economic accounting measures.<sup>1</sup>

In the US economic accounts, the treatment of transactions within MNEs under the residence concept is generally consistent with *SNA* and *BPM* recommendations. As a result, Guvenen et al. (2017) study offshore profit shifting within MNEs as a source of the measured slowdown in US productivity growth.<sup>2</sup> Under the international guidelines, profits shifted out of the United States may generate low measures of domestic real value-added growth in official statistics, yielding a slowdown in related measured productivity growth. In contrast to the method of separate accounting, the authors construct an adjusted time series of business sector real value added that is based on a measurement methodology known as formulary apportion-

1. See, for example, Lipsey (2010), Rassier (2017), and United Nations et al. (2011).

2. Other studies that consider possible measurement explanations for the recent productivity slowdown include Brynjolfsson and McAfee (2011), Byrne, Fernald, and Reinsdorf (2016), Byrne, Oliner and Sichel (2015), Mokyr (2014), and Syverson (2017).



ment. Under formulary apportionment, the total worldwide earnings of MNEs are attributed to locations based on apportionment factors such as compensation and sales that aim to capture the true location of economic activity. Since earnings by US MNEs are disproportionately booked to low tax jurisdictions in which little real economic activity occurs, the result is a net reattribution of earnings on US direct investment abroad (USDIA) from tax-advantaged locations to US parents. Holding prices constant, the reattribution generates an implied increase in measured domestic business sector real value added and related measured labor productivity growth.<sup>3</sup>

In this chapter, we use the same adjustments of profit shifting by US MNEs calculated in Guvenen et al. (2017) for value added in the production account to empirically demonstrate how “offshore profit shifting”—profit shifting accomplished through rest of world transactions—affects other key economic accounting measures throughout the *SNA* and *BPM* frameworks for the United States in 2014. We limit the scope of adjustments to US MNEs because complete data are not available for foreign MNEs operating in the United States. Consistent with Guvenen et al. (2017), we determine offshore profit shifting as the difference between measures derived under formulary apportionment and measures derived under separate accounting. We then apply the aggregate adjustments to relevant published aggregates in each of the *SNA* and *BPM* frameworks. We focus on the effects of our adjustments on nominal measures and do not attempt to split the adjustments into volume and price effects. In addition to effects on key economic accounting measures, we present implications for common analytic uses of the US economic accounts, including the labor share of income, national saving rates, returns on domestic nonfinancial business, returns on foreign direct investment, and external balances.

For 2014, we find notable changes in key economic accounting measures throughout the US economic accounts, which may have significant implications for their analytic uses. Our adjustments yield a 3.5 percent increase in US operating surplus, which generates a 1.5 percent increase in US gross domestic product (GDP) as a result of an implied increase in output that is used as services exports. Likewise, we find a 33.5 percent decrease in US income receivable from the rest of world, which is overwhelmingly attributable to a decrease in earnings on USDIA with a small amount attributable to net interest receivable on USDIA. In dollar amounts, the increase in operating surplus is offset by a larger decrease in income receivable from the rest of

3. Guvenen et al. (2017) do not adjust price indices for any effects that may be caused by transfer pricing. The authors apply their nominal adjustment series to nominal value added and deflate the adjusted measures of value added using existing price indices—both aggregate and industry-level indices. Thus, the authors make an implicit assumption that profit shifting made possible by global structuring primarily affects volume measures rather than price measures. If transfer prices are consistent over time or reflect arm’s length values, this assumption is reasonable.



world. As a result of these offsetting effects, US gross national income (GNI) and gross national disposable income decrease by 0.1 percent, while gross national saving decreases by 0.8 percent and national borrowing increases by 6.9 percent. Finally, net worth in the balance sheet decreases by 0.3 percent.

The results for analytic uses include a decrease for the labor share of income of 1.4 to 2.4 percentage points because the additional domestic income accrues to capital rather than labor and includes a decrease for the return on USDIA of 5.0 percentage points because the adjusted income on USDIA decreases proportionally more than the decrease in the stock of direct investment assets. The results for analytic uses also include an increase for the trade in services balance as a percentage of GDP of 1.4 percentage points because the additional services exports are proportionally higher than the increase in GDP and include an increase for the return on domestic nonfinancial business of 1.3 percentage points, assuming no change in the stock of produced assets. Changes for the national saving rate and the current account balance as a percentage of GDP are negligible.

The rest of the chapter is organized as follows. The next section describes related tax literature and measurement literature. Section 5.3 outlines the *SNA* and *BPM* frameworks. Section 5.4 explains our empirical approach and the data. Section 5.5 presents results and a related discussion. Section 5.6 summarizes our conclusions.

## 5.2 Related Literature

Most of the evidence on MNE profit shifting comes from cross-country regressions of MNE profits on tax rates, which generally find a strong relationship between differential tax rates and income attribution. Dharmapala (2014) provides a comprehensive survey of the profit shifting literature. In early work, Hines and Rice (1994) use cross-country regressions to study profit shifting behavior of US MNEs in 1982. They find that US MNEs report high profit rates in tax havens and that the revenue-maximizing tax rate for a typical haven is between 5 and 8 percent. Clausing (2016) uses estimates of the elasticity of MNE income to tax rates to compute the cross-country distribution of MNE income and determine foregone US tax revenue. She finds that profit shifting amounts to about \$258 billion in 2012. Dowd, Landefeld, and Moore (2017) also compute elasticities to determine how MNEs alter the global allocation of profits in response to changes in tax rates. They find that log-linear specifications may understate the sensitivity of profits in low-tax jurisdictions with the opposite effect in high-tax jurisdictions. In addition to these academic studies, country-level indicators of base erosion and profit shifting are offered by the Organisation for Economic Co-operation and Development (2015a).

Measurement challenges imposed on economic accountants by MNE profit shifting are widely addressed in the literature. Under separate

accounting, profit shifting has been shown empirically to generate questionable outcomes for some published supplemental income-based value-added measures on US MNEs (Lipsey 2010; Rassier and Koncz-Bruner 2015). However, no empirical study comprehensively traces the effects of profit shifting throughout the *SNA* and *BPM* frameworks. Three papers in United Nations et al. (2011) are dedicated to identifying and explaining challenges associated with allocating production of MNEs and special purpose entities to national economies. In addition, Lipsey (2010) concludes that some US supplemental statistics on financial and operating activities of foreign affiliates of US MNEs are affected by global structuring and the mobility of some factors of production such as intangible assets. Lipsey (2010) suggests, but does not develop, an alternative to separate accounting for measuring transactions in services and intellectual property. Early work by Baldwin and Kimura (1998) and Kimura and Baldwin (1998) also suggests supplemental concepts for organizing foreign direct investment and trade statistics based on ownership. Landefeld, Wichard, and Lowe (1993) evaluate ownership-based trade measures and propose an alternative residence-based trade measure.

Formulary apportionment has been primarily applied in multijurisdictional tax practice. The treatment of global income under formulary apportionment is explored in multidisciplinary research (Gordon and Wilson 1986; Clausen and Avi-Yonah 2007), and formulary apportionment has been proposed as an alternative to the complexity and subjectivity of transfer pricing for the allocation of international tax obligations within multinationals in studies such as Avi-Yonah (2010) and Fuest, Hemmelgarn, and Ramb (2007). However, formulary apportionment also presents challenges from a tax policy perspective, which is demonstrated in Altshuler and Grubert (2010) and Hines (2010). Because firm-level data collected on statistical surveys may only be used for statistical purposes and not for the purpose of taxation or regulation, formulary apportionment applied in economic accounting faces fewer challenges compared to its use in international taxation.

### 5.3 Accounting Frameworks

Offshore profit shifting imposes two challenges for the treatment of MNEs in the *SNA* and *BPM* frameworks. First, transactions within MNEs are valued using transfer pricing methods that may fail to resemble market outcomes, which is the preferred basis for all transactions recognized in the *SNA* and *BPM*. Second, MNEs are structured with holding companies and special purpose entities that may not engage in actual production because such structuring simply facilitates the strategic location of intangible productive assets and related income, as well as the artificial characterization of financial claims and liabilities.



One common arrangement among MNEs is a series of sublicensing transactions on intellectual property that results when the intellectual property is legally owned, in whole or in part, by a holding company in a low-tax jurisdiction. In economic accounts, these arrangements can affect production and related income measures such as GDP and operating surplus because legal ownership of intellectual property is often used as a practical solution to determine economic ownership. Another common arrangement is the characterization of a financial instrument as debt in one jurisdiction and as equity in another jurisdiction to take advantage of differences in taxability of interest and dividend flows. In this case, economic accounting measures such as GNI can be affected as a result of interest and dividend flows. The consequences of these and similar arrangements is a wedge between the location of production, the location of underlying factors of production, and the location of means for financing production, which affects the interpretability of key economic accounting measures in the *SNA* and *BPM* frameworks.

### 5.3.1 Overview of the *SNA* and *BPM* Frameworks

The *SNA* framework is divided into five domestic institutional sectors that include financial corporations, nonfinancial corporations, general government, households, and nonprofit institutions serving households. For each sector, the *SNA* groups accounts according to whether they include current transactions or transactions and flows in the accumulation of assets and liabilities. The “current accounts” include a production account and multiple income accounts that reflect the generation, distribution, redistribution, and use of income. The “accumulation accounts” include a capital account that records transactions in nonfinancial assets and a financial account that records transactions in financial assets and liabilities. The accumulation accounts also include accounts for other changes in assets and liabilities that are not a result of transactions. In addition to the current accounts and the accumulation accounts, the *SNA* framework includes a balance sheet that records opening and closing stocks as well as changes between them for nonfinancial assets, financial assets, liabilities, and resulting net worth.

The balanced structure of the *SNA* is made possible by the inclusion of a goods and services account and by balancing items or residuals in each account. The goods and services account supports the fundamental accounting identity that the supply of goods and services from domestic output and imports must equal the uses of goods and services for intermediate consumption, final consumption, capital formation, and exports. The balancing items link one account to the next in a sequence of accounts that includes the production account, income accounts, capital account, and financial account. The *SNA* balancing items are generally considered key measures in the *SNA* framework because they help guide macroeconomic



policy—they include items such as value added, operating surplus, national income, disposable income, saving, net lending/borrowing, and net worth.

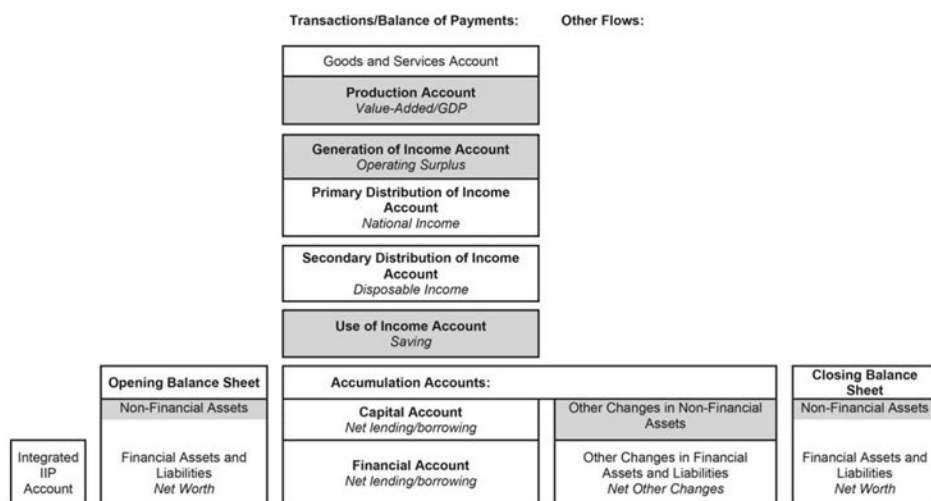
In addition to the five domestic institutional sectors, the *SNA* framework includes a set of accounts for transactions and positions with the rest of world, which are also included with more detail in the *BPM* framework. Like the *SNA* framework, the *BPM* framework is a sequence of accounts with balancing items or residuals. In addition, concepts and definitions are intentionally harmonized between the *SNA* and *BPM*. There are, however, two notable differences in scope and two notable organizational differences between the two frameworks.

One difference in scope is that the *SNA* framework includes three core accounts that are not necessary in the *BPM* framework: production account, generation of income account, and use of income account. The second difference in scope is that every transaction in the *SNA* framework is recorded from the perspective of each institutional sector to the transaction, which requires a quadruple entry accounting system with a debit and a credit for each sector. As a result, rest of world transactions in the *SNA* framework are recorded from the perspective of the rest of world. In contrast, each transaction in the *BPM* framework is recorded only from the perspective of resident institutional sectors, which allows for a more traditional double entry accounting system.

One organizational difference is that the *BPM* groups accounts according to whether they contribute to the balance of payments or the international investment position. The “balance of payments” consists of a current account, a capital account, and a financial account. The current account in the balance of payments includes a goods and services account and two income accounts. Entries in the current account generally capture current transactions, which is akin to the current accounts of the *SNA*. The “international investment position” records beginning and ending positions as well as changes between them for financial assets (i.e., claims of residents on non-residents or reserves) and liabilities (i.e., claims of non-residents on residents), which is akin to the balance sheet of the *SNA*. Changes between beginning and ending positions are attributable to financial account transactions and other changes in financial assets and liabilities that are not a result of transactions.

The second organizational difference between the *SNA* and *BPM* frameworks is classification of financial assets and liabilities. The *SNA* classifies financial assets and liabilities by type of instrument (e.g., currency, debt, equity, etc.). In addition to instrument classification, the *BPM* classifies financial assets and liabilities by functional category (e.g., direct investment, portfolio investment, reserve assets, etc.). Transactions among MNE parents and affiliates are included in the direct investment category.

Like balancing items in the *SNA* framework, balancing items in the *BPM* framework are generally considered key measures because they have implica-



**Figure 5.1 Overview of the SNA and BPM frameworks**

*Note:* The figure is adapted from *BPM*, 6th edition, figure 2.1. Account names are shown in bold, and *SNA* balancing items are shown in italics. Shaded areas do not appear in the *BPM* framework.

tions for macroeconomic policy—they include items such as the balance on goods and services, the current account balance, net lending/borrowing, and the net international investment position. Figure 5.1 provides an overview of the *SNA* and *BPM* frameworks.

### 5.3.2 Institutional Units and Residence

The most basic unit of observation in the *SNA* and *BPM* is an institutional unit, which satisfies four criteria including the right to own assets and incur liabilities, the ability to make economic decisions and to be held legally accountable for the decisions, and the existence of a complete set of financial accounting records for the unit (or the feasibility of compiling a complete set). The *SNA* and *BPM* attribute stocks of assets and liabilities and related flows to an economy based on the residence of the institutional unit. Residence is the economic territory in which an institutional unit has a center of predominant economic interest, which is generally defined in the *SNA* and *BPM* as a physical location from which the unit engages in economic activity and transactions. An economic territory in the *SNA* and *BPM* is defined as the legal jurisdiction to which an institutional unit is subject. The *SNA* and *BPM* concepts of economic territory and residence are designed to attribute the stocks and flows of an institutional unit based on residence in a single economic territory, including stocks and flows within MNEs.

In the case of an MNE structured with a holding company or a special



purpose entity that lacks physical presence, residence for the holding company or special purpose entity is determined in the *SNA* and *BPM* as the economic territory under whose legal jurisdiction the unit is incorporated or registered. If the unit is legally located in the same economy as its parent, the unit is consolidated with the parent and not recognized as a separate institutional unit because it does not satisfy the four *SNA* and *BPM* criteria for an institutional unit. However, if the unit is legally located in an economy different from its parent, the unit is recognized as a separate institutional unit. As a result, the *SNA* and *BPM* frameworks include stocks and flows within MNEs regardless of any physical economic activity.

The *SNA* and *BPM* recommendations to recognize an institutional unit based on *legal* registration or incorporation of holding companies and special purpose entities introduces an exception to the recommendation for determining residence based on predominant *economic* interest. The recommendation raises concerns for effects on “real” economic accounting measures such as GDP and GNI, since holding companies and special purpose entities are used by MNEs for transactions in intellectual property and other services. However, the recommendation is important to users of economic accounts such as central banks and other institutions responsible for supervising financial markets, since holding companies and special purpose entities are also used by MNEs to facilitate financing arrangements and to channel funds in a way that can expose MNEs and compiling economies to global financial risks.

### 5.3.3 Accounting Identities and Relationships

Based on the formulary methodology that we outline in section 5.4, we will be making adjustments to three measures: operating surplus, earnings on USDIA, and net interest receivable on USDIA. Before we make our adjustments, we first outline the relationships among the measures. We focus on production and primary income measures because we do not make adjustments to secondary income measures or measures of capital formation.

The most fundamental accounting identity in the *SNA* framework is the supply-use identity, which is embodied in the goods and services account. The intuition of the supply-use identity is that the total amount of goods and services available for use in an economy for a given period must be supplied by either domestic output ( $Q$ ) or imports ( $M$ ). The uses of goods and services include intermediate consumption ( $Z$ ), final consumption ( $C$ ), capital formation ( $I$ ), and exports ( $X$ ). The following equation summarizes the supply-use identity:

$$(1) \quad Q + M = Z + C + I + X.$$

If we rearrange equation (1) as follows, the result yields two familiar approaches to measuring GDP:



$$(2) \quad Q - Z = C + I + X - M.$$

The left side of equation (2) yields the production approach, and the right side yields the expenditure approach—both government expenditures and private expenditures are included in  $C$  and  $I$ .

An additional approach to measuring GDP is the income approach, which is a matter of summing the incomes generated through production. Incomes generated through production include compensation of employees ( $W$ ), taxes ( $T$ ) less subsidies ( $S$ ) on production and imports, and operating surplus ( $O$ ).<sup>4</sup> Each of the approaches to GDP can be summarized as follows:

$$(3) \quad \text{GDP} = \underbrace{Q - X}_{\text{Production Approach}} = \underbrace{C + I + X - M}_{\text{Expenditure Approach}} = \underbrace{W + T - S + O}_{\text{Income Approach}}.$$

In the *SNA* sequence of accounts, the production account reflects the production approach to measuring GDP. In addition, the generation of income account reflects the income approach, and the goods and services account reflects the expenditure approach.

### 5.3.3.1 Operating Surplus

In the *SNA* framework, operating surplus is a domestic measure—i.e., it is not calculated in the rest of world account and it is not included in the *BPM* framework. To better understand operating surplus, we start with a simplified version of net income ( $\pi$ ) for a domestic firm (either MNE or non-MNE), which is the difference between total income and total expenditures.<sup>5</sup> Total income includes sales of output ( $q$ ), holding gains ( $h$ ), earnings on equity ( $d$ ), and interest receivable ( $i_r$ ).<sup>6</sup> Total expenditures include intermediate inputs ( $z$ ), payments for labor ( $w$ ), income taxes payable ( $t$ ), and interest payable ( $i_p$ ). Net income for the firm can be written as follows:

$$(4) \quad \pi = \underbrace{(q + h + d + i_r)}_{\text{Total Income}} - \underbrace{(z + w + t + i_p)}_{\text{Total Expenditures}}.$$

Note that earnings on equity and interest flows may include transactions with directly held foreign affiliates when the domestic firm is an MNE.

To derive a measure of operating surplus, equation (4) is adjusted to exclude all components that do not result directly from current production,

4. Operating surplus may either be measured as a residual or measured directly, in which case the primary components include entrepreneurial income of enterprises and rental income on owner-occupied housing.

5. In this simplified version, we ignore taxes and subsidies on production and imports, economic depreciation on property, plant and equipment, rents on natural resources, and other income and expenditures, such as transfers, that are not explicitly included. We also assume the domestic firm has no indirect holdings in foreign affiliates.

6. For economic accounting purposes, the scope of sales ( $q$ ) may include explicit sales of products to customers or may include implicit sales of output such as own-account software.

including holding gains, earnings on equity, interest receivable, income taxes payable, and interest payable. The result is as follows:

$$(5) \quad \text{Operating Surplus} = q - z - w.$$

The first two terms in equation (5) (i.e.,  $q$  minus  $z$ ) reflect a measure of value added, and the last term (i.e.,  $w$ ) is a measure of compensation, which reflects labor's contribution to value added. Thus, operating surplus is invariant to all flows that do not result directly from current production.<sup>7</sup>

### 5.3.3.2 Income on Foreign Direct Investment

In the *SNA* and *BPM* frameworks, foreign direct investment by a domestic firm is treated as a financial asset, and income on foreign direct investment reflects a return on that asset. Income on foreign direct investment includes two components: earnings and net interest receivable. Earnings on foreign direct investment include the domestic firm's share of a foreign affiliate's earnings, whether distributed or reinvested. Since they reflect a return on a financial asset, earnings on foreign direct investment are derived by adjusting net income from equation (4) for the foreign affiliate to exclude holding gains only.<sup>8</sup> The calculation of earnings on direct investment in a wholly owned foreign affiliate ( $f$ ) is as follows:<sup>9</sup>

$$(6) \quad \text{Earnings on FDI} = q^f - z^f - w^f + d^f + i_p^f - i^f - t^f.$$

Foreign income taxes payable directly by the foreign affiliate are included in equation (6) because they reduce the domestic firm's return.

Net interest receivable on foreign direct investment includes interest receivable by the domestic firm from the foreign affiliate less interest payable by the domestic firm to the foreign affiliate. Net interest receivable by the domestic firm from the foreign affiliate is exactly equal to net interest payable by the foreign affiliate to the domestic firm, which if all interest flows in equation (6) are between the domestic firm and the foreign affiliate, can be calculated as follows:

7. Operating surplus is measured for all institutional sectors except the rest of world in the *SNA* framework. In contrast, entrepreneurial income is only measured for the nonfinancial and financial corporations sectors. To derive a measure of entrepreneurial income, operating surplus in equation (5) is adjusted to include earnings on equity, interest receivable, and interest payable. Thus, entrepreneurial income is only invariant to holding gains and income taxes payable. We do not articulate a measure of entrepreneurial income separate from operating surplus in this paper because we present all sectors as one total economy.

8. Since holding gains reflect changes in prices rather than production, they are not included in *SNA* and *BPM* measures of income. They are instead reflected in the *SNA* and *BPM* revaluation accounts, which contribute to changes in net worth and the international investment position.

9. For a majority-owned foreign affiliate that is not 100 percent owned, equation (6) would need to include the parent firm's ownership share in the foreign affiliate.



$$(7) \quad \text{Net Interest Receivable on FDI} = i_p^f - i_r^f.$$

Adding equations (6) and (7) yields the following equation for income on foreign direct investment:

$$(8) \quad \text{Income on FDI} = q^f - z^f - w^f + d^f - t^f.$$

Note that equation (6) can be subtracted from equation (8) to obtain a measure of net interest receivable on foreign direct investment as shown in equation (7)—this is the approach we take in computing the adjustment for net interest receivable. Since equation (7) assumes that all interest flows are between the domestic firm and the foreign affiliate, equation (8) includes no interest flows. However, interest flows may likely exist between the foreign affiliate and unrelated firms.

Intuitively, income on foreign direct investment reflects “actual” income after the elimination of intra-firm interest flows, and earnings on foreign direct investment reflect amounts booked to each part of the firm. Measures comparable to equations (6) and (8) for the foreign affiliate can also be calculated for the domestic firm in order to generate consolidated measures of earnings and income for the entire MNE.

### 5.3.3.3 Gross National Income

The difference between GDP and GNI in the *SNA* framework is income receivable from and payable to the rest of world, which can be summarized as follows:

$$(9) \quad \text{GNI} = \text{GDP} + \text{Income Receivable from RoW} - \text{Income Payable to RoW}.^{10}$$

Income receivable from and payable to the rest of world includes income on foreign direct investment, income on portfolio investment, income on other investment, and income on reserve assets. Offshore profit shifting may affect each of the right-side components of equation (9). However, we only calculate adjustments for GDP and income receivable from the rest of world due to limited data on foreign MNEs that would be required to adjust income payable to rest of world.

## 5.4 Empirical Approach and Data

Our objective is to demonstrate the effects of offshore profit shifting on key US economic accounting measures that are compiled under a method of separate accounting. As explained in section 5.3, profit shifting within

10. GNI is an *SNA* term for income earned by domestic-owned factors of production anywhere in the world. In the United States, the equivalent of GNI is gross national product (GNP), which is derived from expenditure-based GDP by adding income receivable from the rest of world and subtracting income payable to the rest of world.



MNEs is generally accomplished under separate accounting through transfer pricing and global structuring that includes the use of holding companies or special purpose entities with very little physical presence and very little economic activity. While the identification of a typical institutional unit under the *SNA* and *BPM* recommendations depends on the four criteria that generally reflect economic substance, the *SNA* and *BPM* make an exception for holding companies and special purpose entities that are located in economies other than their parents or other affiliated entities. As a result, key measures throughout the *SNA* and *BPM* frameworks may not adequately capture the economic activity of some MNE entities. Thus, we follow Guvenen et al. (2017) and design an empirical framework to attribute economic accounting measures based on physical presence and other attributes of economic activity within MNEs. In particular, we use formulary apportionment to reattribute operating surplus, earnings, and net interest received by US parents from their foreign affiliates.

Formulary apportionment attributes measures to locations based on apportionment factors intended to reflect economic activity of each entity in an MNE—the essence of the *SNA* and *BPM* concepts of institutional unit and residence. For our apportionment factors, we use compensation and sales to unaffiliated parties. Compensation reflects labor's contribution to production. In contrast to employment, which only captures number of employees, compensation captures variation in returns to labor across entities located in different countries and industries, assuming workers are paid their marginal products. Likewise, the market presence of each entity is captured by the sales measure, and restricting sales to unaffiliated parties mitigates problems with transfer pricing and global structuring. Under each factor, formulary apportionment allocates less economic activity (e.g., operating surplus) to locations with low-paid workers and low market presence than to locations with high-paid workers and high market presence.<sup>11</sup>

In addition to the conceptual basis of our chosen apportionment factors, there are two practical considerations that support formulary apportionment as a reasonable alternative to separate accounting. First, formulary apportionment is suggested in the *SNA* as a potential alternative to allocate the market value of global firms in the balance sheet. As a result, formulary apportionment should also be a reasonable potential alternative to allocate production and income measures. Second, in contrast to the opacity of separate accounting under complex global structuring, formulary apportionment promotes transparency because it is easy to understand and easy to apply if appropriate data are available.

In lieu of formulary apportionment, another option for allocating mea-

11. Under country-by-country reporting, the Organisation for Economic Co-operation and Development (2015b) asserts that indicators such as profits, income taxes paid, revenue, number of employees, and tangible assets of individual MNE entities should help tax administrations determine the location of economic activity and evaluate the presence of audit risk.

tures on holding companies and special purpose entities is a treatment that either consolidates them entirely with their parents or considers them supranational entities with no location, as suggested for intellectual property products in Moulton and van de Ven (2018). If the apportionment factors for a holding company or special purpose entity reflect no economic activity (e.g., no compensation and no unaffiliated sales), then formulary apportionment allocates measures away entirely from the holding company or special purpose entity and toward other entities within the firm where economic activity is evident. The measures are split between the parent and other entities based on their own proportionate shares of economic activity reflected in the apportionment factors. As a result, formulary apportionment strikes a balance between the current treatment of holding companies and special purpose entities as completely separate institutional units and a treatment that either consolidates them entirely with their parents or considers them supranational entities with no location.

Despite the strengths associated with formulary apportionment as a measurement tool, note that we are not proposing formulary apportionment as a replacement for separate accounting in the *SNA* and *BPM* but rather using it to generate a point of reference to estimate the effects of profit shifting under a method of separate accounting.

#### 5.4.1 Formulary Apportionment

Consider an MNE ( $m$ ) that is composed of one domestic parent and at least one foreign affiliate. Let  $\psi$  denote operating surplus, earnings, or income determined under a method of separate accounting for each entity ( $n$ ) (i.e., parent and foreign affiliates). Following Guvenen et al. (2017), we construct for each entity in the MNE an apportionment weight ( $\omega_n$ ) that reflects the entity's share of the total apportionment factors. Weighting unaffiliated sales and compensation equally yields the following apportionment weights for each entity within the MNE:

$$(10) \quad \omega_n = \underbrace{\left( \frac{1}{2} \times \frac{w_i l_i}{\sum_i w_i l_i} \right)}_{\text{Compensation}} + \underbrace{\left( \frac{1}{2} \times \frac{p_i y_i}{\sum_i p_i y_i} \right)}_{\text{Unaffiliated Sales}} \quad \forall n \in m.^{12}$$

Under formulary apportionment, measured operating surplus, earnings, or income ( $F$ ) attributable to each entity  $n$  within MNE  $m$  is calculated as follows:

$$(11) \quad \bar{\psi}_n = \omega_n \sum_i \psi_i \quad \forall n \in m.$$

12. Results will be affected by the chosen apportionment factors, and papers such as Runkel and Schjelderup (2011) contribute to a body of literature that focuses solely on the choice of apportionment factors. Guvenen et al. (2017) present alternative results under different weights on the apportionment factors—weighting compensation 100 percent and unaffiliated sales 100 percent in separate calculations—and find that their results are robust to the alternative weighting schemes. They ultimately settle on a simple average for their core results.



The measure attributable to each entity under formulary apportionment is a weighted average of the consolidated measure determined for the MNE (i.e., parent and foreign affiliates) under separate accounting. Thus, measured operating surplus, earnings, or income attributable to each entity is proportionate to the entity's economic activity embodied by the chosen apportionment factors.

The formulary adjustment for each entity is calculated by subtracting the measure determined under separate accounting from the measure determined under formulary apportionment as follows:

$$(12) \quad \varepsilon_n = \bar{\psi}_n - \psi_n \quad \forall n \in m.$$

The formulary adjustment for each entity reflects an amount of operating surplus, earnings, or income to be added to or subtracted from each entity, depending on whether the adjustment is positive or negative. The aggregate formulary adjustment for US parents is exactly equal (with an opposite sign) to the aggregate formulary adjustment for their foreign affiliates.

#### 5.4.2 Data

We use unpublished firm-level survey data collected by the Bureau of Economic Analysis (BEA) on the financial and operating activities of US MNEs—referred to as the activities of multinational enterprise (AMNE) data—and on the direct investment income transactions of US MNEs for 2014.<sup>13</sup> The AMNE data cover the worldwide operations of US MNEs and contain balance sheet information and income statement information for US parents and their foreign affiliates. For each US parent and foreign affiliate, the data include information on net income and the components of total income and total expenditures consistent with equation (4) under separate accounting. In addition, the data include compensation and unaffiliated sales for each US parent and foreign affiliate necessary for the apportionment weights in equation (10). Moreover, the AMNE data include information necessary to construct measures of operating surplus, earnings, and income equivalent to equations (5), (6), and (8) for each US parent and foreign affiliate. The direct investment income transactions data include data on earnings of foreign affiliates and interest flows between US parents and foreign affiliates.<sup>14</sup>

In addition to the firm-level survey data, we use published data for 2014

13. The financial and operating data are reported on the Benchmark Survey of U.S. Direct Investment Abroad (form BE-10) for all U.S. parents and all foreign affiliates. The income transactions data are reported on the Quarterly Survey of U.S. Direct Investment Abroad Direct Transactions of U.S. Reporter with Foreign Affiliates (form BE-577) subject to thresholds for assets, sales, and net income.

14. The income transactions data do not include information on operations that are needed to construct the apportionment factors. Likewise, the data do not include information on U.S. parents. In order to get a complete picture of each U.S. MNE, we use the AMNE data to generate proxies for earnings and income.



from the US National Income and Product Accounts (NIPAs), the US Industry Economic Accounts (IEAs), the US Integrated Macroeconomic Accounts (IMAs), the US International Transactions Accounts (ITAs), and the US International Investment Position (IIP) accounts. We use the NIPA data and the IEA data to compile the *SNA* current accounts, and we use the IMA data to compile the *SNA* accumulation accounts and balance sheets. We use the ITA data to compile the *BPM* balance of payments, and we use the IIP data to compile the *BPM* international investment position.<sup>15</sup>

#### 5.4.3 Adjustments

We calculate formulary adjustments as shown in equation (12) using the measures constructed from the BEA survey data—operating surplus, earnings, and income—for each US parent and each foreign affiliate. We then tabulate the formulary adjustments for each measure to derive an aggregate adjustment for domestic operating surplus, earnings on USDIA, and income on USDIA. To derive an aggregate formulary adjustment for net interest receivable on USDIA consistent with equation (7), we subtract the aggregate adjustment for earnings on USDIA from the aggregate adjustment for income on USDIA.

Since the scope of our adjustments is limited to US MNEs due to data limitations, we can rewrite equation (9) to focus exclusively on incomes receivable on USDIA as follows:

$$(13) \quad \text{GNI} = \text{GDP} + \text{Earnings on USDIA} + \text{Net Interest Receivable on USDIA} \pm \dots$$

The ellipsis in equation (13) denotes all omitted incomes receivable and payable that account for differences between GDP and GNI. We apply our aggregate formulary adjustments constructed with the unpublished survey data to the relevant published aggregates in each of the *SNA* and *BPM* frameworks. In particular, we apply our aggregate adjustment for operating surplus to US GDP. Likewise, we apply our aggregate adjustment for earnings on USDIA to the portion of earnings on USDIA that is calculated as reinvested, since dividends reflect an actual payment. Finally, we apply our aggregate adjustment for net interest receivable on USDIA to the interest portion of income on USDIA.

## 5.5 Results

Our formulary adjustment for operating surplus in equation (5) amounts to a \$255.5 billion increase in US operating surplus in 2014, which implies that

15. In practice, there are statistical discrepancies between key measures for the U.S.—such as net lending/borrowing and trade balances—in the NIPAs, IMAs, ITAs, and IIP as a result of different source data and measurement methodologies. We do not attempt to reconcile the discrepancies but rather use data as published in each of the accounts.

level of value added attributable to foreign affiliates of US MNEs under a method of separate accounting is instead attributable to US parents under a method of formulary apportionment. Likewise, our adjustment for earnings on USDIA in equation (6) amounts to a \$273.1 billion decrease in earnings on USDIA, which reflects earnings attributable to foreign operations of US-owned firms under separate accounting that are no longer attributable under formulary apportionment because they are accrued domestically. In addition, the adjustment for net interest receivable on USDIA amounts to an \$8.7 billion decrease, which is the difference between the adjustment for income on USDIA of \$281.8 billion calculated with equation (8) and the adjustment for earnings on USDIA of \$273.1 billion. The adjustment for net interest suggests that financing arrangements between US parents and foreign affiliates also raise the measure of income on USDIA under the *SNA* and *BPM* recommendations for separate accounting. For each of the adjustments, about 75 percent of the adjustment is attributable to foreign affiliates classified as holding companies, which is consistent with profit shifting accomplished through the use of holding companies and special purpose entities.

We present three sets of adjusted and unadjusted (i.e., published) measures. The first set (tables 5.1–5.4) shows adjusted and unadjusted measures for the United States in the *BPM* framework. The second set (tables 5.5–5.10) shows adjusted and unadjusted measures for the United States in the *SNA* framework. The *SNA* and *BPM* sets of results demonstrate the effects of offshore profit shifting on the key measures in each framework. The initial entries for our adjustments are outlined in boxes in our presentation of the *SNA* and *BPM* accounts. In addition, the adjustments are shown separately by type: operating surplus, earnings on USDIA, and net interest received on USDIA.<sup>16</sup> The third set of results includes figures to demonstrate implications for five common analytic uses of the US economic accounts: labor share of income, national saving rates, returns on domestic nonfinancial business, returns on foreign direct investment, and external balances.

### 5.5.1 BPM Measures

The *BPM* balance of payments is presented in table 5.1. In the goods and services account, we apply the \$255.5 billion adjustment for operating sur-

16. Although the standard presentation of BEA statistics on direct investment transactions, positions, and associated income is on an asset-liability basis in accordance with international guidelines, we use a directional basis in tables 5.1 to 5.2 and 5.5 to 5.10. For our purposes, the directional basis is more analytically useful, and it is consistent with the recording of direct investment in the U.S. IMAs. For equity, there is no difference between a directional basis and an asset-liability basis. However, there is a difference for debt. Measures of direct investment transactions and earnings are shown with current cost adjustment in tables 5.1 to 5.2 and 5.5 to 5.10. Direct investment positions are shown at market value in tables 5.3 and 5.4. We provide a reconciliation of the direct investment position on a directional basis with current cost adjustment and the direct investment position on an asset-liability basis at market value in appendix table 5A.1.



**Table 5.1** *BPM balance of payments current account and capital account for the United States*

Line	Credits					BPM code	SNA code		Debits					
	Published	Adjustments			Adjusted				Published	Adjustments			Adjusted	
		Operating surplus	Earnings	Net interest						Operating surplus	Earnings	Net interest		
1	(1)	(2)	(3)	(4)	(5)			B12	Current account balance	(6)	(7)	(8)	(9)	(10)
									<i>Goods and Services Account</i>					
2	2,375.9	255.5			2,631.4	1.A	P6/P7		Transactions in goods and services	2,866.2				2,866.2
3							B11		Balance on goods and services	-490.3	255.5			-234.9
4	1,634.0				1,634.0	1.A.a	P61/P71		Goods	2,385.5				2,385.5
5									Balance on trade in goods	-751.5				-751.5
6	1,611.0				1,611.0	1.A.a.1			General merchandise	2,370.0				2,370.0
7	0.3				0.3	1.A.a.2			Net exports of goods under merchandising					
8	22.7				22.7	1.A.a.3			Nonmonetary gold					
9	741.9	255.5			997.4	1.A.b	P72/P82		Services	15.5				15.5
10									Balance on trade in services	480.8				480.8
11	21.1				21.1	1.A.b.2			Maintenance and repair	261.2	255.5			516.6
12	282.6				282.6	1.A.b.3-4			Transport and travel	7.5				7.5
13	124.3				124.3	1.A.b.6-7			Insurance and finance	199.9				199.9
14	129.7	255.5			385.2	1.A.b.8			Charges for the use of intellectual property	75.9				75.9
15	34.7				34.7	1.A.b.9			Telecommunications and information	42.0				42.0
										36.5				36.5

16	128.9	128.9	1.A.b.10	Other business services	94.8	94.8
17	20.5	20.5	1.A.b.12	Government goods and services	24.2	24.2
18	807.1	-273.1	-8.7	<b>Primary Income Account</b>	596.4	596.4
19				Transactions in primary income	210.8	-71.1
20	6.5	-273.1	-8.7	Balance on primary income	17.1	17.1
21	800.6			Compensation of employees	579.3	579.3
22	464.6	-273.1	-8.7	Investment income	187.9	187.9
23	455.6	-273.1		Direct investment	162.4	162.4
24	144.0			Income on equity	67.6	67.6
25	311.6	-273.1	-8.7	Dividends and withdrawals	94.8	94.8
26	9.0			Reinvested earnings	25.4	25.4
27	305.0			Interest	377.5	377.5
28	30.7			Portfolio investment	13.9	13.9
29	0.3			Other investment		
				Reserve assets		
30	140.1	140.1	1.C	<b>Secondary Income Account</b>	234.3	234.3
31				Transactions in secondary income	-94.2	-94.2
32			2	<b>Capital Account</b>	0.0	0.0
33			2.1	Capital account balance		
34	0.0	0.0	2.2	Gross acquisitions	0.0	0.0
35				Capital transfers	-373.8	-400.2
				<b>Net lending/borrowing (current and capital account)</b>	255.5	-8.7



plus as an implied increase in charges for the use of intellectual property (row 14) by foreign affiliates. The increase in measured exports of goods and services is 10.8 percent, which is a result of the increase in US exports of services with no change for trade in goods.

The treatment of the adjustment as charges for the use of intellectual property is consistent with a simple model outlined in Guvenen et al. (2017) that attributes profit shifting made possible by the mobility of intangible capital. Likewise, the treatment is consistent with literature that focuses on intangible capital as an explanation for higher rates of return earned by US MNEs on their direct investments abroad compared with rates of return earned by foreign MNEs on their direct investments in the United States (McGrattan and Prescott 2010; Bridgman 2014). Intangible capital may result from research and development (R&D) efforts, which are generally embodied in observable measures such as patents or formulas in addition to a firm's profits. Intangible capital may also result from efforts other than R&D such as brand and trademark development, management consulting, and workforce training, which are generally less observable but still reflected in the firm's profits. Corrado, Hulten, and Sichel (2009) refer to the latter form of intangible capital as "economic competencies," and subsequent authors have referred to it as "organization capital" (e.g., Eisfeldt and Papanikolaou 2013). We consider transactions (explicit and implicit) in both forms of intangible capital to be candidates for charges for the use of intellectual property.

In the primary income account in table 5.1, we apply the \$273.1 billion adjustment for earnings on USDIA as a decrease in reinvested earnings (row 25). Likewise, we apply the \$8.7 billion adjustment for net interest received on USDIA as a decrease in interest flows (row 26), which we consider a change in the price of intra-firm lending (i.e., arm's length interest rates) rather than a change in the underlying stocks of intra-firm debt.<sup>17</sup> In addition, the adjustment for net interest implies either a decrease in interest received by US parents from their foreign affiliates or an increase in inter-

17. This treatment means we do not adjust the underlying stocks of intra-firm debt. In reality, the result may suggest changes in both the price of intra-firm lending and stocks of intra-firm debt. In either case, the result is counterintuitive if firms engage in intra-firm financing arrangements to shift profits—a practice known as earnings stripping. In a report to Congress, the U.S. Treasury Department (2007) concludes that U.S. MNEs are less inclined to engage in earnings stripping than foreign MNEs operating in the United States because U.S. firms are subject to anti-deferral rules and passive income rules under U.S. Treasury Regulations that do not apply to foreign firms. BEA's published statistics on direct investment seem to support this conclusion. In 2014, U.S. affiliates' payments of interest to foreign parents were \$30.0 billion on \$945.8 billion of debt—an implied interest rate of 3.2 percent—and U.S. affiliates' interest receipts were \$4.6 billion on \$384.7 billion of debt—an implied interest rate of 1.2 percent—which suggests U.S. affiliates incurred a higher interest expense per dollar of debt. In contrast, U.S. parents' payments of interest to foreign affiliates were \$5.7 billion on \$528.0 billion of debt—an implied interest rate of 1.1 percent—and U.S. parents' interest receipts were \$14.7 billion on \$764.6 billion of debt—an implied interest rate of 1.9 percent—which suggests U.S. parents incurred lower interest expense per dollar of debt.

est paid by US parents to their foreign affiliates.<sup>18</sup> The decrease in measured income receivable from non-residents is 34.9 percent. We do not calculate any measured effects in the secondary income account.

The positive effects of the operating surplus adjustment in the goods and services account are more than offset by the larger negative adjustments for earnings and net interest received on USDIA in the primary income account. Thus, the net effect on the current account balance (row 1) in table 5.1 is a \$26.4 billion decrease—7.1 percent. Measured US net borrowing (row 35) increases as a result of changes in the preceding accounts. The only change in the financial account in table 5.2 is on measured equity (rows 5 and 6) as a result of the previous adjustment transactions, which also increases net borrowing in the financial account. The increases in measured US net borrowing in both the current and capital accounts and the financial account are 7.1 percent and 8.1 percent, respectively, the difference of which is a result of the statistical discrepancy between the two accounts.

The *BPM* international investment position for 2014 is presented in table 5.3. Since the international investment position reflects stocks of assets and liabilities, we include accumulations for each of our adjustment measures in the financial account for 1973–2014 using annual estimates from Guvenen et al. (2017). The cumulative adjustments for operating surplus, earnings on USDIA, and net interest received on USDIA (row 3) from the financial account are \$3.457 trillion, \$3.587 trillion, and \$145.4 billion, respectively. The decrease in measured international investment position assets is 1.1 percent because the increases in services exports are less than the decreases in reinvested earnings and net interest receivable on USDIA over time. Thus, the decrease in the measured net international investment position is 4.0 percent.

The *BPM* beginning and ending direct investment positions for 2014 are presented in table 5.4, which provides further detail on rows 2 to 4 in table 5.3. The difference between the international investment position at the beginning and end of the year results from two sources: financial transactions and other changes. Given the modest size of the net adjustments for financial transactions—a decrease of \$26.4 billion—we do not make an adjustment for other changes. For the beginning net direct investment position (column 5), the cumulative adjustments decrease the US net direct investment position by 15.4 percent. For the ending net direct investment position (column 8), the cumulative adjustments decrease the US net direct investment position by 27.8 percent because the increases in services exports are less than the decreases in reinvested earnings and net interest receivable on USDIA over time.

18. The \$8.7 billion decrease reduces net interest received by U.S. parents published for 2014 to almost nothing and could generate a negative net interest received in some years. Since net interest received includes interest received from foreign affiliates less interest paid to foreign affiliates, net interest received can be positive, negative, or zero.



**Table 5.2** *BPM balance of payments financial account for the United States*

Line	Net acquisition of financial assets					BPM Code	SVA Code		Net incurrence of liabilities				
	Published	Adjustments			Adjusted				Published	Adjustments			Adjusted
		Operating surplus	Earnings	Net interest						Operating surplus	Earnings	Net interest	
	(1)	(2)	(3)	(4)	(5)			(6)	(7)	(8)	(9)	(10)	
1								-47.0				-47.0	
2								-326.8	255.5	-273.1	-8.7	-353.2	
3	313.5	255.5	-273.1	-8.7	287.2	B9	Stat. disc. (current and capital-financial account)	212.3				212.3	
4	330.4	255.5	-273.1	-8.7	304.0	FD	Net lending / borrowing (financial account)	146.4				146.4	
5	18.8	255.5	-273.1	-8.7	265.5	F5D	Equity	51.6				51.6	
6	311.6		-273.1		38.5	3.1.1.1	Equity other than reinvestment of earnings	94.8				94.8	
7	-16.8				-16.8	3.1.1.2	Reinvestment of earnings	65.9				65.9	
8	582.7				582.7	F3D	Debt instruments	703.5				703.5	
9	431.6				431.6	FP	Portfolio investment	154.3				154.3	
10	151.1				151.1	F5P	Equity	549.2				549.2	
11						F3P	Debt securities	54.3				54.3	
12	-99.2				-99.2	F7F	Financial derivatives	150.2				150.2	
13	-161.8				-161.8	FO	Other investment	59.7				59.7	
14	68.4				68.4	F2O	Currency and deposits	77.9				77.9	
15	-5.8				-5.8	F4O	Loans	12.6				12.6	
16	-3.6				-3.6	3.4.3	Other						
17	0.0				0.0	3.4.4-6	Reserves						
18	0.0				0.0	FR	Monetary gold						
19	-3.8				-3.8	F11	Special drawing rights						
20	0.2				0.2	F12	Reserve position in the IMF						
21	793.5	255.5	-273.1	-8.7	767.1	3	Totals	1,120.3				1,120.3	

**Table 5.3** *BPM international investment position for the United States*

Line	Assets					SNA code	Liabilities					
	Published	Adjustments			Adjusted		BPM code	Published	Adjustments			Adjusted
		Operating surplus	Earnings	Net interest					Operating surplus	Earnings	Net interest	
	(1)	(2)	(3)	(4)	(5)		(6)	(7)	(8)	(9)	(10)	
1						B90	-6,980.2	3,451.5	-3,587.0	-145.4	-7,261.2	
2	7,189.4	3,451.5	-3,587.0	-145.4	6,908.5	1 AFD	6,369.5				6,369.5	
3	6,040.1	3,451.5	-3,587.0	-145.4	5,759.2	1.1 AF5D	4,895.8				4,895.8	
4	1,149.3				1,149.3	1.2 AF3D	1,473.8				1,473.8	
5	9,704.2				9,704.2	2 AFP	16,921.4				16,921.4	
6	6,770.6				6,770.6	2.1 AF5P	6,642.5				6,642.5	
7	2,933.6				2,933.6	2.2 AF3P	10,278.9				10,278.9	
8	3,252.3				3,252.3	3 AF7F	3,166.8				3,166.8	
9	4,252.4				4,252.4	4 AFO	5,355.1				5,355.1	
10	1,807.1				1,807.1	4.2 AF20	2,890.0				2,890.0	
11	2,398.2				2,398.2	4.3 AF40	2,253.7				2,253.7	
12	47.0				47.0	4.4-7 Other	211.5				211.5	
13	434.3				434.3	5 AFR						
14	315.4				315.4	5.1 AF11						
15	51.9				51.9	5.2 AF12						
16	25.2				25.2	Special drawing rights						
17	41.8				41.8	Reserve position in the IMF						
18	24,832.6	3,451.5	-3,587.0	-145.4	24,551.7	AF	31,812.8				31,812.8	



**Table 5.4** *BPM direct investment position for the United States*

		Assets						Liabilities				
Line		Beginning of year	Changes		End of year	BPM code	SNA code		Beginning of year	Changes		End of year
			Financial transactions	Other changes						Financial transactions	Other changes	
		(1)	(2)	(3)	(4)				(5)	(6)	(7)	(8)
Published	1							Net position	1,305.8	101.2	-587.1	819.8
	2	7,120.7	338.9	-270.2	7,189.4	1	AFD	Direct investment	5,814.9	237.7	316.9	6,369.5
	3	6,054.2	330.4	344.5	6,040.1	1.1	AF5D	Equity	4,443.2	146.4	306.1	4,895.7
	4	1,066.5	8.5	74.3	1,149.3	1.2	AF3D	Debt instruments	1,371.7	91.2	10.8	1,473.8
Adjustments	5							Net position	-201.7	-26.4		-228.0
	6	-201.7	-26.4		-228.0	1	AFD	Direct investment				
	7	-201.7	-26.4		-228.0	1.1	AF5D	Equity				
	8					1.2	AF3D	Debt instruments				
Adjusted	9							Net position	1,104.1	74.8	-587.1	591.8
	10	6,919.0	312.5	-270.2	6,961.3	1	AFD	Direct investment	5,814.9	237.7	316.9	6,369.5
	11	5,852.6	304.0	-344.5	5,812.1	1.1	AF5D	Equity	4,443.2	146.4	306.1	4,895.7
	12	1,066.5	8.5	74.3	1,149.2	1.2	AF3D	Debt instruments	1,371.7	91.2	10.8	1,473.8

### 5.5.2 SNA Measures

The *SNA* current accounts are presented in tables 5.5 and 5.6. The \$255.5 billion adjustment for operating surplus in 2014 is a net reattribution of measured operating surplus from foreign affiliates to US parents, which we apply in the production account as an implied increase in output (row 3) and in the goods and services account as an implied increase in exports (row 2) to account for the increase in receipts on the use of intellectual property, which was presented in the discussion of the *BPM* balance of payments in section 5.5.1. Thus, the supply-use identity is maintained, and the statistical discrepancy is unaffected. The increase in GDP is 1.5 percent, and the percentage increase in operating surplus is 3.5 percent.

The \$273.1 billion adjustment for earnings on USDIA is also a net reattribution of measured earnings from foreign affiliates to US parents, which we apply in the allocation of primary income account as a decrease in reinvested earnings on foreign direct investment (row 20). Likewise, the \$8.7 billion adjustment for net interest received on USDIA reflects a reduction in measured net interest received by US parents from their foreign affiliates, which we also apply in the primary income account as a decrease in interest flows (row 18). The decrease in income receivable from the rest of world for both adjustments is 33.5 percent, which is a bit lower than the *BPM* measures as a result of the difference in the scope of rest of world transactions between the two sets of accounts.<sup>19</sup>

From an accounting perspective, the adjustment for operating surplus in the production and generation of income accounts may be expected to exactly offset the adjustments for earnings and net interest received on USDIA in the allocation of primary income account. However, the effect of the operating surplus adjustment is more than offset by the effect for earnings and net interest received because of the differences in concepts outlined in section 5.3.3. Thus, the net effect on measured GNI is a \$26.4 billion decrease—about 0.1 percent—which we demonstrated is also the change in the current account balance. Absent any related changes in the secondary distribution of income account, the decrease in measured disposable income is also about 0.1 percent. However, measured gross saving in the use of disposable income account decreases by 0.8 percent, and measured net saving decreases by 4.3 percent. The \$26.4 billion decrease in GNI, disposable income, and saving is a contrast to the increase in operating surplus and GDP. However, the \$26.4 billion decrease is small relative to the effects on operating surplus and income on USDIA. In addition, all adjustments—operating surplus, earnings on USDIA, income on USDIA—are of similar magnitudes.

The *SNA* accumulation accounts are presented in tables 5.7 and 5.8. The

19. In the U.S. NIPAs, U.S. territories, Puerto Rico, and the Northern Mariana Islands are included in the rest of world. In the U.S. ITAs, they are treated as part of the United States.





[illegible]



Table 5.6  
SNA current accounts for the United States: Resources[illegible]

15	D2	Taxes on production			1,221.6		1,221.6
16	D3	Subsidies on production (-)			-58.1		-58.1
17	D4	Property income	595.5	595.5	6,481.4	-273.1	-8.7
18	D41	Interest	306.6	306.6	3,076.5		-8.7
19	D42	Distributed income of corporations	193.9	193.9	3,036.8		3,067.8
20	D43	Reinvested earnings on FDI	95.0	95.0	344.6	-273.1	3,036.8
21	D4	Rent			23.5		71.5
22	B5	Gross national income					23.5
<b>Secondary Distrib. of Income Account</b>							
23	B5	Gross national income			17,892.1	255.5	-273.1
24		Current transfers		254.4	6,718.2		-8.7
25	D5	Current taxes on income, wealth, etc.	254.4		2,300.5		6,718.2
26	D61	Net social contributions			1,160.5		2,300.5
27	D62	Social benefits other than STiK			2,498.8		1,160.5
28	D7	Other current transfers			758.4		2,498.8
29	B6	Disposable income, gross					758.4
<b>Use of Disposable Income Account</b>							
30	B6	Disposable income, gross			17,783.1	255.5	-273.1
31	P3	Final consumption expenditure					-8.7
32	B8g	Saving, gross					
33	P51c	Consumption of fixed capital					
34	B8n	Saving, net					
35	B12	Current external balance					





50		Net acquisition of financial assets/liabilities	1,150.6	1,150.6	5,465.5	255.5	-273.1	-8.7	5,439.1
51	F1	Monetary gold and SDRs	0.0	0.0	0.0				0.0
52	F2	Currency and deposits	101.1	101.1	843.7				843.7
53	F3	Debt securities	533.6	533.6	802.5				802.5
54	F4	Loans	136.7	136.7	964.3				964.3
55	F51	Equity	331.9	331.9	805.0	255.5	-273.1	-8.7	778.6
56	F52	Investment fund shares	34.7	34.7	282.0				282.0
57	F6	Insurance, pension and stand. guar. sch.	0.0	0.0	651.4				651.4
58	F8	Other receivables/payables	12.6	12.6	1,116.6				1,116.6
<b>Other Changes in Vol. of Assets Account</b>									
59	B102	Changes in net worth due to OCVA							
<b>Revaluation Account</b>									
60	AN	Non-financial assets				3,064.5			3,064.5
61	AF	Financial assets/liabilities				4,183.5			4,183.5
62	AF1	Monetary gold and SDRs	680.7	680.7	-3.2	-3.3			-3.3
63	AF2	Currency and deposits	-0.2	-0.2	-1.7				-1.7
64	AF3	Debt securities	53.3	53.3	311.7				311.7
65	AF4	Loans	0.0	0.0	0.0				0.0
66	AF5	Equity	608.0	608.0	3,308.7				3,308.7
67	AF5	Investment fund shares	23.1	23.1	480.2				480.2
68	AF6	Insurance, pension and stand. guar. sch.	0.0	0.0	87.9				87.9
69	AF8	Other receivables/payables	-0.3	-0.3	0.0				0.0
70	B103	Changes in net worth due to nominal holding gains and losses							



**Table 5.8** *SNA accumulation accounts for the United States: Changes in liabilities or net worth*

Line	SNA code		Rest of world					Total economy				
			Published	Adjustments			Adjusted	Published	Adjustments			Adjusted
				Operating surplus	Earnings	Net interest			Operating surplus	Earnings	Net interest	
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Capital Account</i>												
36	B8	Saving, net										
37	B12	Current external balance	384.0	-255.5	273.1	8.7	410.4	608.7	255.5	-273.1	-8.7	582.3
38	P5g	Gross capital formation										
39	P5n	Net capital formation										
40	P51g	Gross fixed capital formation										
41	P52	Changes in inventories										
42	P51c	Consumption of fixed capital	0.4					110.6				110.6
43	D9r	Capital transfers, receivable	0.0					-111.0				-111.0
44	D9p	Capital transfers, payable										
45	B101	Changes in net worth due to saving and capital transfers	384.4	-255.5	273.1	8.7	410.8	608.3	255.5	-273.1	-8.7	581.9
46		Reverse stat. disc. (GDP <sup>1</sup> - GDP <sup>E</sup> )						-229.9				-229.9
47	B9	Net lending / borrowing (capital account)										
<i>Financial Account</i>												
48		Stat. disc. (capital-financial account)	50.3				50.3	-45.4				-45.4
49	B9	Net lending / borrowing (financial account)	334.1	-255.5	273.1	8.7	360.5	-339.0	255.5	-273.1	-8.7	-365.4

[illegible]

only change we include in the capital account is the amount carried forward with the saving measure (row 36) from the use of disposable income account. We do not reallocate capital formation in intellectual property products.<sup>20</sup> Likewise, the only change we include in the financial account is in equity (row 55) as a result of the previous adjustment transactions—we assume the additional exports that result from the operating surplus adjustment are financed with equity rather than debt. The balancing items in the capital account and the financial account—net lending/borrowing—are also affected by the net decrease of \$26.4 billion in external transactions. The increase in measured US net borrowing in the capital account is 6.9 percent, and the increase in the financial account is 7.8 percent—the difference between the percentages is a result of the statistical discrepancy between the two accounts. There are no measured effects in the other changes in the volume of assets account or the revaluation account at the bottom of table 5.8.

The *SNA* balance sheets are presented in tables 5.9 and 5.10. Just like the *BPM* international investment position, the *SNA* balance sheets reflect stocks of assets and liabilities, which requires an accumulation of each of our adjustment measures using annual estimates from Guvenen et al. (2017). The opening balance sheet at the top of table 5.9 presents the cumulative adjustments for operating surplus, earnings on USDIA, and net interest received on USDIA for the period 1973–2013. The closing balance sheet at the bottom of table 5.10 presents the cumulative adjustments for the period 1973–2014. Retaining our assumption that the additional exports that result from the operating surplus adjustment are financed with equity rather than debt, the cumulative adjustments decrease measured US equity assets by 0.5–0.6 percent for both the opening balance of equity (row 77) and the closing balance of equity (row 102) because the increases in operating surplus are less than the decreases in income receivable from rest of world over time. Thus, measured US net worth in both the opening balance sheet and the closing balance sheet decreases by 0.3 percent.

### 5.5.3 Analytic Uses

We consider implications for five common analytic uses of the US economic accounts: labor share of income, national saving rates, returns on domestic nonfinancial business, returns on foreign direct investment, and

20. We do not make an effort to reallocate flows and stocks of intellectual property products for three reasons. First, the income measures that we reallocate reflect returns to all intangible capital, but intellectual property products are only a subset of intangible capital. Second, intellectual property products in the U.S. national accounts are measured as a sum of costs and any reallocation under formulary apportionment would, thus, be reduced by the extent to which costs incurred consist of payments to unrelated parties and to labor. Third, to the extent that intellectual property products consist of R&D expenditures, very little reallocation would likely result because the majority of R&D expenditures by U.S. MNEs are incurred by U.S. parents and consist largely of payments to unrelated parties and to labor. Of the \$330.8 billion spent on R&D by U.S. MNEs in 2014, \$275.5 billion—83.3 percent—was incurred by U.S. parents.



**Table 5.9** *SNA balance sheets for the United States: Stocks and changes in assets*

Line	SNA code		Rest of world					Total economy					
			Published	Operating surplus	Earnings	Adjustments		Adjusted	Published	Operating surplus	Earnings	Adjustments	
						Net interest						Net interest	
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
<i>Opening balance sheet</i>													
71	AN	Non-financial assets	21,238.9				21,238.9	70,352.4				70,352.4	
72	AF	Financial assets/liabilities						173,474.4	3,196.0	-3,313.9	-136.7	173,219.8	
73	AF1	Monetary gold and SDRs	54.4				54.4	66.2				66.2	
74	AF2	Currency and deposits	1,418.9				1,418.9	14,694.2				14,694.2	
75	AF3	Debt securities	9,586.9				9,586.9	27,793.4				27,793.4	
76	AF4	Loans	845.1				845.1	24,570.9				24,570.9	
77	AF5	Equity	8,526.3				8,526.3	46,778.3	3,196.0	-3,313.9	-136.7	46,523.7	
78	AF5	Investment fund shares	659.3				659.3	14,391.5				14,391.5	
79	AF6	Insurance, pension and stand. guar. sch.	0.0				0.0	26,914.4				26,914.4	
80	AF8	Other receivables/payables	148.0				148.0	18,265.5				18,265.5	
81	B90	Net worth											
<i>Total changes in assets/liabilities</i>													
82	AN	Non-financial assets						4,014.8				4,014.8	
83	AF	Financial assets/liabilities	1,831.2				1,831.2	9,424.5	255.5	-273.1	-8.7	9,398.1	
84	AF1	Monetary gold and SDRs	-3.2				-3.2	-3.3				-3.3	
85	AF2	Currency and deposits	100.9				100.9	901.8				901.8	
86	AF3	Debt securities	586.9				586.9	776.1				776.1	
<i>(continued)</i>													

(continued)

Table 5.9  
(continued)

**Table 5.10** *S/N/1 balance sheets for the United States: Stocks and changes in liabilities and net worth*

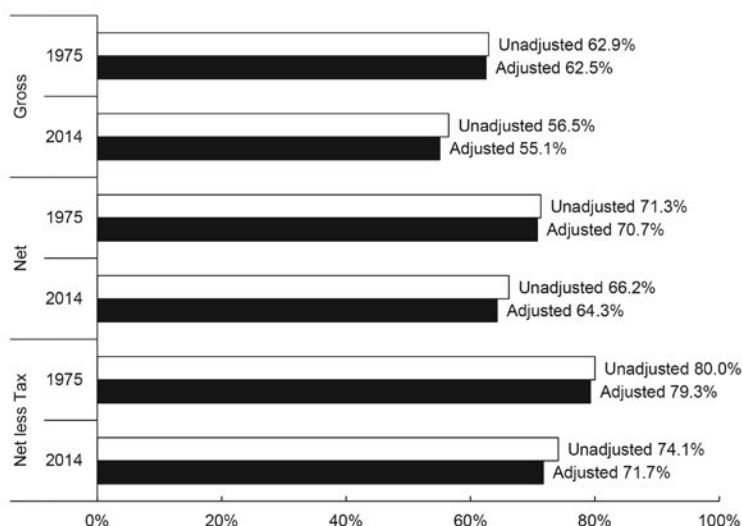
Line	SNA code		Rest of world				Total economy					
			Published	Adjustments		Adjusted	Published	Adjustments		Adjusted		
				Operating surplus	Earnings			Net interest	Operating surplus		Earnings	Net interest
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Opening balance sheet</i>												
71	AN	Non-financial assets	16,717.5	3,196.0	-3,313.9	-136.7	16,462.9	161,476.6				161,476.6
72	AF	Financial assets/liabilities	55.2				55.2	54.4				54.4
73	AF1	Monetary gold and SDRs	1,031.4				1,031.4	15,929.6				15,929.6
74	AF2	Currency and deposits	2,649.5				2,649.5	34,730.8				34,730.8
75	AF3	Debt securities	1,000.8				1,000.8	24,737.1				24,737.1
76	AF4	Loans	11,927.2	3,196.0	-3,313.9	-136.7	11,672.6	34,208.8				34,208.8
77	AF5	Equity	0.0				0.0	15,050.8				15,050.8
78	AF5	Investment fund shares	0.0				0.0	26,914.3				26,914.3
79	AF6	Insurance, pension and stand. guar. sch.	0.0				0.0	9,850.8				9,850.8
80	AF8	Other receivables/payables	53.4				53.4	82,350.2	3,196.0	-3,313.9	-136.7	82,095.6
81	B90	Net worth	4,521.4	-3,196.0	3,313.9	136.7	4,776.0					
<i>Total changes in assets/liabilities</i>												
82	AN	Non-financial assets	743.5	255.5	-273.1	-8.7	717.1	9,081.7				9,081.7
83	AF	Financial assets/liabilities	-3.3				-3.3	-3.2				-3.2
84	AF1	Monetary gold and SDRs	-135.5				-135.5	924.8				924.8
85	AF2	Currency and deposits	217.4				217.4	1,145.9				1,145.9
86	AF3	Debt securities	49.1				49.1	907.2				907.2
87	AF4	Loans										

(continued)



Table 5.10 (continued)

Line	SNA code		Rest of world					Total economy				
			Adjustments				Adjusted	Published	Adjustments			
			Operating surplus	Earnings	Net interest	Operating surplus			Earnings	Net interest		
88	AF5	Equity	622.2	255.5	-273.1	-8.7	595.8	3,508.3				3,508.3
89	AF5	Investment fund shares	0.0				0.0	824.4				824.4
90	AF6	Insurance, pension and stand. guar. sch.	0.0				0.0	834.7				834.7
91	AF8	Other receivables/payables	-6.4				-6.4	939.6				939.6
92	B10	Changes in net worth	1,087.7	-255.5	273.1	8.7	1,114.1	4,357.6	255.5	-273.1	-8.7	4,331.2
93	B101	Saving and capital transfers	384.4	-255.5	273.1	8.7	410.8	608.3	255.5	-273.1	-8.7	581.9
94	B102	Other changes in the volume of assets	-50.2				-50.2	339.6				339.6
95	B103	Nominal holding gains and losses	753.5				753.5	3,410.3				3,410.3
Closing balance sheet												
96	AN	Non-financial assets										
97	AF	Financial assets/liabilities	17,461.0	3,451.5	-3,587.0	-145.4	17,180.1	170,558.3				170,558.3
98	AF1	Monetary gold and SDRs	51.9				51.9	51.2				51.2
99	AF2	Currency and deposits	895.9				895.9	16,854.4				16,854.4
100	AF3	Debt securities	2,866.9				2,866.9	35,876.7				35,876.7
101	AF4	Loans	1,049.9				1,049.9	25,644.3				25,644.3
102	AF5	Equity	12,549.4	3,451.5	-3,587.0	-145.4	12,268.5	37,717.1				37,717.1
103	AF5	Investment fund shares	0.0				0.0	15,875.2				15,875.2
104	AF6	Insurance, pension and stand. guar. sch.	0.0				0.0	27,749.0				27,749.0
105	AF8	Other receivables/payables	47.0				47.0	10,790.4				10,790.4
106	B90	Net worth	5,609.1	-3,451.5	3,587.0	145.4	5,890.0	86,707.8	3,451.5	-3,587.0	-145.4	86,426.9



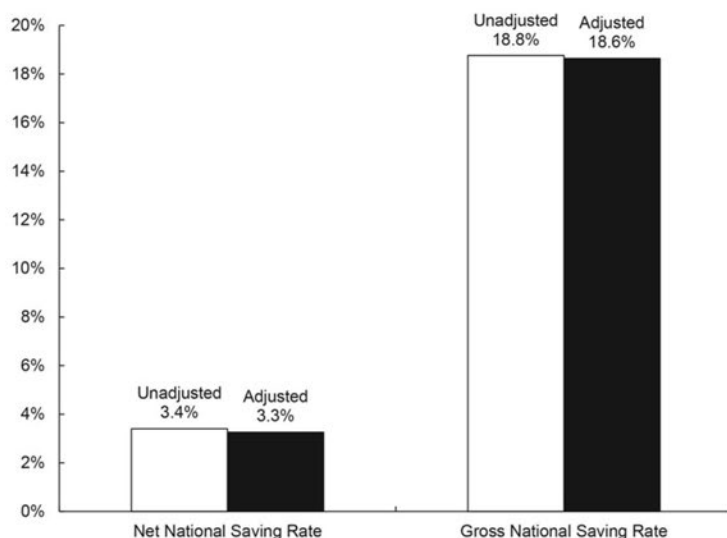
**Figure 5.2 US labor share of income for 1975 and 2014**

*Note:* Shares are calculated as a percentage of value added for corporate business. *Gross* refers to gross value added in the denominator, *net* refers to net value added in the denominator, and *net less tax* refers to net value added minus taxes less subsidies on production and imports in the denominator. See appendix A for a description of calculations.

external balances. We provide additional details on calculations for each of the analytic uses in appendix A.

Karabarbounis and Neiman (2014) and Bridgman (2018) each report declines in the labor share of income since 1975. Following the previous authors, we calculate the labor share for the US corporate business sector by dividing compensation by value added with and without our operating surplus adjustment for 1975 and 2014. Since compensation in the numerator is unchanged, the results yield declines in the labor share. The shares are reported in figure 5.2 for three alternative denominators used in Bridgman (2018): gross value added, net value added, and net value added minus taxes less subsidies on production and imports. The adjusted shares reported in figure 5.2 for 2014 demonstrate a decline of 1.4 percentage points, 1.9 percentage points, and 2.4 percentage points for gross value added, net value added, and net value added minus taxes less subsidies on production and imports, respectively. In addition, the adjusted shares demonstrate a larger decline in the labor share from 1975 to 2014 under each alternative denominator—15.6 percent for gross value added, 25.5 percent for net value added, and 28.8 percent for net value added minus taxes less subsidies on production and imports.

Reinsdorf (2004) presents measures of US personal saving, business saving, and national saving as a percentage of national income. In addition, BEA publishes quarterly and annual measures of net national saving and



**Figure 5.3 US national saving rates for 2014**

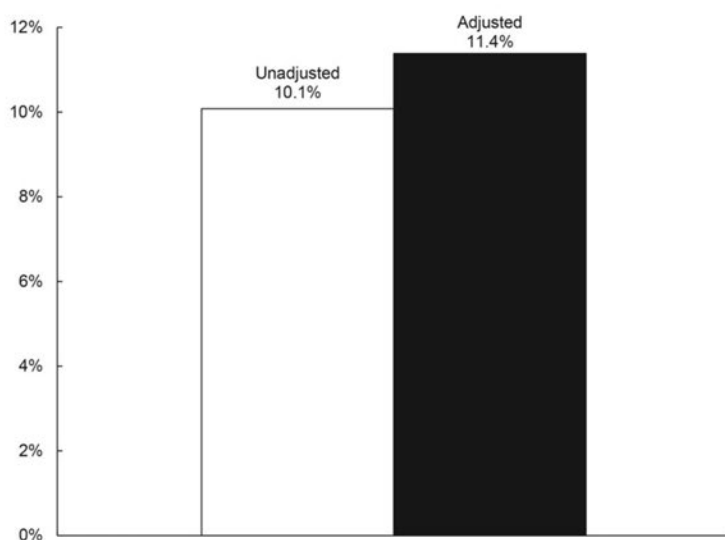
*Note:* Saving rates are calculated as a percentage of GNI. See appendix A for a description of calculations.

gross national saving as a percentage of GNI. We present net and gross national saving rates for 2014 in figure 5.3. We calculate the rates by dividing the national saving measures by GNI, and we apply our formulary adjustments from tables 5.5 and 5.6 to both the numerator and the denominator. The rates in figure 5.3 show relatively small declines of 0.1 and 0.2 percentage point for the net and gross saving measures, respectively, which is a result of the same downward adjustment of \$26.4 billion that affects both the numerator and the denominator in the calculation.

Osborne and Retus (2017) report rates of return for US domestic nonfinancial business. The returns are calculated by dividing net operating surplus by the net stock of produced assets for nonfinancial business. We use the unadjusted rate of return for 2014 directly from Osborne and Retus (2017) and add our formulary adjustments on operating surplus for nonfinancial industries—an amount of \$217.4 billion—to the numerator in their calculation to derive an adjusted rate of return for 2014. As we explained in section 5.5.2, we do not adjust the stock of intellectual property products in the denominator. The result is reported in figure 5.4, which shows a 1.3 percentage point increase in the rate of return after our adjustments are applied.

McGrattan and Prescott (2010) and Bridgman (2014) document a persistent gap since 1982 between rates of return on direct investment abroad by US MNEs and foreign direct investment in the United States (FDIUS) by foreign MNEs. Rates of return are calculated by dividing income on foreign direct investment by the direct investment component of the interna-



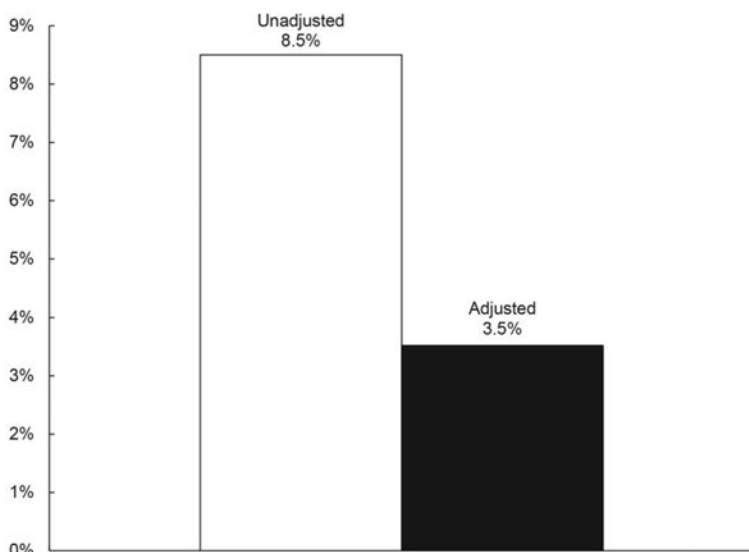


**Figure 5.4 Return on US domestic nonfinancial business for 2014**

*Note:* Returns are calculated by dividing net operating surplus by the net stock of produced assets. See appendix A for a description of calculations.

tional investment position. In 2014, the rate of return on USDIA at current cost was 8.5 percent, and the rate of return on FDIUS at current cost was 5.5 percent (United States Bureau of Economic Analysis 2017a, 2017b). McGrattan and Prescott (2010) focus on the exclusion of intangible assets in the denominator as a source of the gap. Bridgman (2014) focuses on the exclusion of intangible assets and repatriation taxes as a source of the gap. Both studies find a much narrower gap when they make adjustments for the exclusions. Following calculations in table 1 of United States Bureau of Economic Analysis (2017a), we calculate an adjusted rate of return on USDIA at current cost using the adjusted income on USDIA reported in table 5.1 and the adjusted beginning and ending direct investment position assets reported in appendix table 5A.1. The adjusted and unadjusted returns are presented in figure 5.5. Since our formulary adjustments decrease the numerator of the calculation by a larger percentage than the denominator, the adjusted rate of return on USDIA of 3.5 percent is less than half of the unadjusted rate of 8.5 percent. In addition, the adjusted rate of return on USDIA is closer to the rate of return on FDIUS for the year.<sup>21</sup>

21. The unadjusted rate of return of 8.5 percent is closer to the long-run rate of return on an investment portfolio of listed stocks such as the S&P 500. Given the resources that MNEs devote to actively managing their operations abroad, management and owners are unlikely to accept a rate of return that falls significantly short of a return on a passive portfolio over the long run. Drawing a reliable conclusion regarding the accuracy of the unadjusted rate of return over the adjusted rate of return would require an analysis over a much longer period of time than the single year we present here.



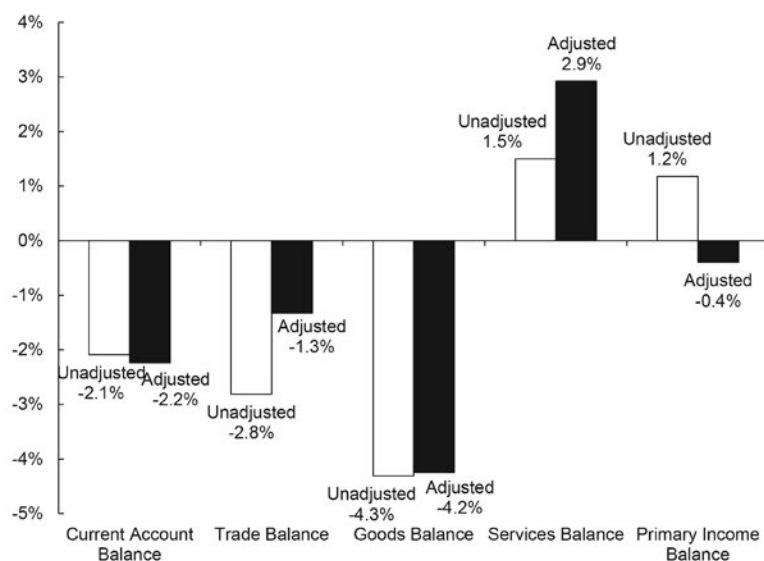
**Figure 5.5 Return on US direct investment abroad for 2014**

*Note:* Returns are calculated by dividing direct investment income at current cost by the average of beginning and ending direct investment asset positions at current cost. See appendix A for a description of calculations.

Figure 5.6 presents adjusted and unadjusted external balances from the current account of the US balance of payments presented in table 5.1. Balances are presented as a percentage of expenditure-based GDP or GNI presented in tables 5.5 and 5.6. Since we treat our adjustments as an implied increase in exports of services, there is no effect on the measured goods balance. However, the goods balance as a percentage of GDP declines slightly because of the implied increase in services exports and the resulting increase in GDP. As a percentage of GDP, the services balance almost doubles from 1.5 percent to 2.9 percent, which increases the trade balance from negative 2.8 percent to negative 1.3 percent. As a percentage of GNI, the primary income balance decreases from 1.2 percent to negative 0.4 percent. The only effect our adjustments have on the current account balance is the decline of \$26.4 billion, which reduces the current account balance from negative 2.1 percent of GNI to negative 2.2 percent of GNI.

## 5.6 Conclusions

Offshore profit shifting accomplished through complex global structuring that includes holding companies and special purpose entities imposes challenges for the treatment of MNEs in the *SNA* and *BPM* frameworks. The international guidelines recommend that transactions and other flows with a holding company or special purpose entity be recognized in economic



**Figure 5.6 US external balances for 2014**

*Note:* Trade balances are shown as a percentage of expenditure-based GDP. Current account and primary income balances are shown as a percentage of GNI. See appendix A for a description of calculations.

accounts if the holding company or special purpose entity is resident in an economy other than its parent. Using results from Guvenen et al. (2017), this chapter empirically demonstrates the effects on the US economic accounts in 2014 of using a method of formulary apportionment in lieu of separate accounting, which results in a reattribution of operating surplus and income on USDIA from foreign affiliates to US parents.

For 2014, we find notable changes in key economic accounting measures throughout the US economic accounts, which may have significant implications for their analytic uses. Our adjustments yield a 3.5 percent increase in US operating surplus, which generates a 1.5 percent increase in US GDP as a result of an implied increase in output that is used as services exports. We find a 33.5 percent decrease in US income receivable from the rest of world, which is overwhelmingly attributable to a decrease in earnings on USDIA with a small amount attributable to net interest receivable on USDIA. In dollar amounts, the increase in operating surplus is offset by a larger decrease in income receivable from the rest of world. As a result of these offsetting effects, US GNI and gross national disposable income decrease by 0.1 percent, while gross national saving decreases by 0.8 percent and national borrowing increases by 6.9 percent. Finally, net worth in the balance sheet decreases by 0.3 percent.

The results for analytic uses include a decrease for the labor share of income of 1.4 to 2.4 percentage points and a decrease for the return on



USDIA of 5.0 percentage points. The results for analytic uses also include an increase for the trade in services balance as a percentage of GDP of 1.4 percentage points and an increase for the return on domestic nonfinancial business of 1.3 percentage points. Changes for the national saving rate and the current account balance as a percentage of GDP are negligible.

## Appendix A

### *Calculations for Analytic Uses*

This appendix provides details on calculations for each of the five analytic uses of the US economic accounts presented in section 5.5.3.

#### **Labor Share of Income**

Calculations are based on data from NIPA tables 1.14 and 7.5 for corporate business. We calculate the 2014 unadjusted gross labor share by dividing compensation by gross value added (GVA) as follows:

$$\begin{aligned} \text{(A1)} \quad \text{Unadjusted Gross Labor Share} &= \frac{\text{Compensation}}{\text{GVA}} \\ &= \frac{5,647.8}{10,000.2} = 56.5\%. \end{aligned}$$

Gross value added is the sum of compensation, taxes less subsidies on production and imports, net operating surplus, and consumption of fixed capital. We calculate the 2014 unadjusted net labor share by dividing compensation by net value added (NVA) as follows:

$$\begin{aligned} \text{(A2)} \quad \text{Unadjusted Net Labor Share} &= \frac{\text{Compensation}}{\text{NVA}} \\ &= \frac{5,647.8}{8,534.5} = 66.2\%. \end{aligned}$$

Net value added excludes consumption of fixed capital. We calculate the 2014 unadjusted net labor share less taxes by dividing compensation by net value added minus taxes less subsidies on production and imports minus current business transfer payments (NVAT) as follows:

$$\begin{aligned} \text{(A3)} \quad \text{Unadjusted Net Labor Share less Taxes} &= \frac{\text{Compensation}}{\text{NVAT}} \\ &= \frac{5,647.8}{7,622.8} = 74.1\%. \end{aligned}$$

We calculate the adjusted shares by adding the \$255.5 billion adjustment for operating surplus (OS) to the denominator in each calculation as follows:

$$\begin{aligned} \text{(A4)} \quad \text{Adjusted Gross Labor Share} &= \frac{\text{Compensation}}{\text{GVA} + \text{OS Adjustment}} \\ &= \frac{5,647.8}{10,000.2 + 255.5} = 55.1\%, \end{aligned}$$

$$\begin{aligned} \text{(A5)} \quad \text{Adjusted Net Labor Share} &= \frac{\text{Compensation}}{\text{NVA} + \text{OS Adjustment}} \\ &= \frac{5,647.8}{8,534.5 + 255.5} = 64.3\%, \end{aligned}$$

and

$$\begin{aligned} \text{(A6)} \quad \text{Adjusted Net Labor Share less Taxes} &= \frac{\text{Compensation}}{\text{NVAT} + \text{OS Adjustment}} \\ &= \frac{5,647.8}{7,622.8 + 255.5} = 71.7\%. \end{aligned}$$

We calculate the 1975 shares in the same manner. Capital shares of income can also be calculated and would be equal to one minus the labor share.

### National Saving Rates

Calculations are based on data from tables 5.5 and 5.6. We calculate the 2014 unadjusted net national saving rate by dividing net national saving (line 34) by GNI (line 22) as follows:

$$\begin{aligned} \text{(A7)} \quad \text{Unadjusted Net Rate} &= \frac{\text{Net National Saving}}{\text{GNI}} \\ &= \frac{608.7}{17,892.1} = 3.4\%. \end{aligned}$$

We calculate the unadjusted gross national saving rate by dividing gross national saving (line 32) by GNI (line 22) as follows:

$$\begin{aligned} \text{(A8)} \quad \text{Unadjusted Gross Rate} &= \frac{\text{Gross National Saving}}{\text{GNI}} \\ &= \frac{3,356.7}{17,892.1} = 18.8\%. \end{aligned}$$

We calculate the adjusted rates by substituting the adjusted measures from tables 5.5 and 5.6 as follows:

$$\begin{aligned}
 \text{(A9)} \quad \text{Adjusted Net Rate} &= \frac{\text{Adjusted Net National Saving}}{\text{Adjusted GNI}} \\
 &= \frac{582.3}{17,865.7} = 3.3\%
 \end{aligned}$$

and

$$\begin{aligned}
 \text{(A10)} \quad \text{Adjusted Gross Rate} &= \frac{\text{Adjusted Gross National Saving}}{\text{Adjusted GNI}} \\
 &= \frac{3,330.3}{17,865.7} = 18.6\%.
 \end{aligned}$$

### Return on US Domestic Nonfinancial Business

Calculations are based on data from Osborne and Retus (2017). We calculate the 2014 unadjusted return by dividing net operating surplus (NOS) for nonfinancial business available in the US NIPAs by the net stock of produced assets for nonfinancial business available in the US Fixed Assets Accounts as follows:

$$\begin{aligned}
 \text{(A11)} \quad \text{Unadjusted Return} &= \frac{\text{NOS}}{\text{Net Stock of Produced Assets}} \\
 &= \frac{1,680.4}{16,670.4} = 10.1\%.
 \end{aligned}$$

We calculate the adjusted return by adding the adjustment of \$255.5 billion (less \$38.1 billion for financial industries) on operating surplus (OS) for nonfinancial industries to the numerator as follows:

$$\begin{aligned}
 \text{(A12)} \quad \text{Adjusted Return} &= \frac{\text{NOS} + \text{OS Adjustment}}{\text{Net Stock of Produced Assets}} \\
 &= \frac{1,680.4 + 255.5 - 38.1}{16,670.4} = 11.4\%.
 \end{aligned}$$

The denominator includes capital measures of intellectual property products, which we do not adjust, as explained in section 5.5.2.

### Return on US Direct Investment Abroad

Calculations are based on data from table 5.1 and appendix table 5A.1. We calculate the 2014 unadjusted return by dividing income on USDIA at current cost presented in table 5.1 (line 22) by the average of beginning and ending direct investment asset positions at current cost presented in appendix table 5A.1 (lines 2 and 14) as follows:



$$\begin{aligned}
 \text{(A13)} \quad \text{Unadj. Return} &= \frac{\text{Unadjusted Income on USDIA}}{(\text{Unadj. Beg. Assets} + \text{Unadj. End. Assets}) \div 2} \\
 &= \frac{464.6}{(5,296.4 + 5,633.1) \div 2} = 8.5\%.
 \end{aligned}$$

We calculate the adjusted return using the income on USDIA reported in table 5.1 (line 22) and the adjusted beginning and ending direct investment asset positions reported in appendix table 5A.1 (lines 10 and 22) as follows:

$$\begin{aligned}
 \text{(A14)} \quad \text{Adj. Return} &= \frac{\text{Adjusted Income on USDIA}}{(\text{Adj. Beg. Assets} + \text{Adj. End. Assets}) \div 2} \\
 &= \frac{182.7}{(5,032.8 + 5,343.2) \div 2} = 3.5\%.
 \end{aligned}$$

### US External Balances

Calculations are based on data from tables 5.1, 5.5, and 5.6. We calculate the 2014 unadjusted balances from table 5.1 as a percentage of unadjusted expenditure-based GDP or GNI from tables 5.5 and 5.6 as follows:

$$\begin{aligned}
 \text{(A15)} \quad \text{Unadjusted Current Account} &= \frac{\text{Unadjusted CA Balance}}{\text{Unadjusted GNI}} \\
 &= \frac{-373.8}{17,892.1} = -2.1\%,
 \end{aligned}$$

$$\begin{aligned}
 \text{(A16)} \quad \text{Unadjusted Trade} &= \frac{\text{Unadjusted Trade Balance}}{\text{Unadjusted GDP}} \\
 &= \frac{-490.3}{17,427.6} = -2.8\%,
 \end{aligned}$$

$$\begin{aligned}
 \text{(A17)} \quad \text{Unadjusted Goods} &= \frac{\text{Unadjusted Goods Balance}}{\text{Unadjusted GDP}} \\
 &= \frac{-751.5}{17,427.6} = -4.3\%,
 \end{aligned}$$

$$\begin{aligned}
 \text{(A18)} \quad \text{Unadjusted Services} &= \frac{\text{Unadjusted Services Balance}}{\text{Unadjusted GDP}} \\
 &= \frac{261.2}{17,427.6} = 1.5\%
 \end{aligned}$$

and

$$\begin{aligned} \text{(A19) } \textit{Unadjusted Primary Income} &= \frac{\textit{Unadjusted Primary Income Balance}}{\textit{Unadjusted GNI}} \\ &= \frac{210.8}{17,892.1} = 1.2\% . \end{aligned}$$

We calculate the adjusted balances from table 5.1 as a percentage of adjusted expenditure-based GDP or GNI from tables 5.5 and 5.6 as follows:

$$\begin{aligned} \text{(A20) } \textit{Adjusted Current Account} &= \frac{\textit{Adjusted CA Balance}}{\textit{Adjusted GNI}} \\ &= \frac{-400.2}{17,865.7} = -2.2\% , \end{aligned}$$

$$\begin{aligned} \text{(A21) } \textit{Adjusted Trade} &= \frac{\textit{Adjusted Trade Balance}}{\textit{Adjusted GDP}} \\ &= \frac{-234.9}{17,683.1} = -1.3\% , \end{aligned}$$

$$\begin{aligned} \text{(A22) } \textit{Adjusted Goods} &= \frac{\textit{Adjusted Goods Balance}}{\textit{Adjusted GDP}} \\ &= \frac{-751.5}{17,683.1} = -4.2\% , \end{aligned}$$

$$\begin{aligned} \text{(A23) } \textit{Adjusted Services} &= \frac{\textit{Adjusted Services Balance}}{\textit{Adjusted GDP}} \\ &= \frac{516.6}{17,683.1} = 2.9\% \end{aligned}$$

and

$$\begin{aligned} \text{(A24) } \textit{Adjusted Primary Income} &= \frac{\textit{Adjusted Primary Income Balance}}{\textit{Adjusted GNI}} \\ &= \frac{-71.1}{17,865.7} = -0.4\% . \end{aligned}$$

Table 5A.1 *BPM direct investment position reconciliation for the United States*

Line	Assets				SNA code		Liabilities			
	Current cost directional basis	Adjustment to market value	Adjustment to asset-liability basis	Asset-liability basis at market value			Current cost directional basis	Adjustment to market value	Adjustment to asset-liability basis	Asset-liability basis at market value
	(1)	(2)	(3)	(4)			(5)	(6)	(7)	(8)
1						Net position	1,975.5	-669.8		1,305.8
2	5,296.4	957.8	866.5	7,120.7	1	AFD	3,320.9	1,627.6	866.5	5,814.9
3	5,096.4	957.8		6,054.2	1.1	AF5D	2,815.7	1,627.6		4,443.2
4	199.9		866.5	1,066.5	1.2	AF3D	505.2		866.5	1,371.7
5						Net position	-263.6			-263.6
6	-263.6			-263.6	1	AFD				
7	-263.6			-263.6	1.1	AF5D				
8					1.2	AF3D				
Adjusted						Net position	1,711.9	-669.8		1,042.1
9	5,032.8	957.8	866.5	6,857.1	1	AFD	3,320.9	1,627.6	866.5	5,814.9
10	4,832.8	957.8		5,790.6	1.1	AF5D	2,815.7	1,627.6		4,443.2
11	199.9		866.5	1,066.5	1.2	AF3D	505.2		866.5	1,371.7
12						Debt instruments				

(continued)



**Table 5A.1** (continued)

	Line	Assets				BPM code	SNA code		Liabilities			
		Current cost directional basis	Adjustment to market value	Adjustment to asset- liability basis	Asset-liability basis at market value				Current cost directional basis	Adjustment to asset- liability basis	Adjustment to market value	Asset-liability basis at market value
Published	13							Net position	2,092.5		-1,272.6	819.9
	14	5,633.1	643.7	912.6	7,189.4	1	AFD	Direct investment	3,540.7		1,916.2	6,369.5
	15	5,396.5	643.7		6,040.1	1.1	AF5D	Equity	2,979.5		1,916.2	4,895.8
	16	236.7		912.6	1,149.3	1.2	AF3D	Debt instruments	561.1			1,473.8
End of Year	17							Net position	-290.0			-290.0
	18	-290.0			-290.0	1	AFD	Direct investment				
	19	-290.0			-290.0	1.1	AF5D	Equity				
	20					1.2	AF3D	Debt instruments				
Adjusted	21							Net position	1,802.5		-1,272.6	529.9
	22	5,343.2	643.7	912.6	6,899.4	1	AFD	Direct investment	3,540.7		1,916.2	6,369.5
	23	5,106.5	643.7		5,750.2	1.1	AF5D	Equity	2,979.5		1,916.2	4,895.8
	24	236.7		912.6	1,149.3	1.2	AF3D	Debt instruments	561.1			1,473.8

*Note:* BEA presents direct investment statistics on two bases: the directional basis and the asset-liability basis. On a directional basis, direct investment claims and liabilities are classified according to whether the direct investor is a US resident or a foreign resident. On this basis, US direct investment abroad is the net claims of a US parent on its foreign affiliates. On the asset-liability basis, direct investment claims and liabilities are classified according to whether the direct investment enterprise that receives the funds is resident in the United States or abroad. A direct investment asset is created when a US parent or a US affiliate establishes a claim on a related foreign person. Similarly, a direct investment liability is established when a foreign person establishes a claim on a related direct investment enterprise in the United States. Furthermore, BEA publishes direct investment statistics based on three valuation methods: historical cost, current cost, and market value. Historical cost is the basis on which BEA's direct investment surveys collect direct investment position data because that is the primary valuation method used in company accounting records. Current cost estimates revalue parents' historical cost equity claims in their affiliates' plant and equipment, land, and inventory stocks to a replacement value of tangible assets. The market value estimates are featured in BEA's international investment position accounts because market valuation is used for other functional categories in these accounts.

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## Comment      Stephen J. Redding

I am delighted to discuss this chapter. Reading it made me think of the following quote from Ben Bernanke: "In many spheres of human endeavor, from science to business to education to economic policy, good decisions depend on good measurement." In my view, this chapter provides an excellent example of good measurement, and not simply for its own sake but also for deepening our understanding of a range of substantive economic issues.

The research question addressed in the chapter is, How should the economic activity of multinational enterprises (MNEs) be apportioned across countries? A distinction is drawn between two main approaches. First, there is "separate accounting," as used in the System of National Accounts (SNA) and Balance of Payments and International Investment Position Manual (BPM). According to this approach, the economic activity of multinational-

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For acknowledgments, sources of research support, and disclosure of the author's material financial relationships, if any, please see <https://www.nber.org/books-and-chapters/challenges-globalization-measurement-national-accounts/comment-multinational-profit-shifting-and-measures-throughout-economic-accounts-redding>.