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Intangible assets and transactions within multinational enterprises: implications for national economic accounts

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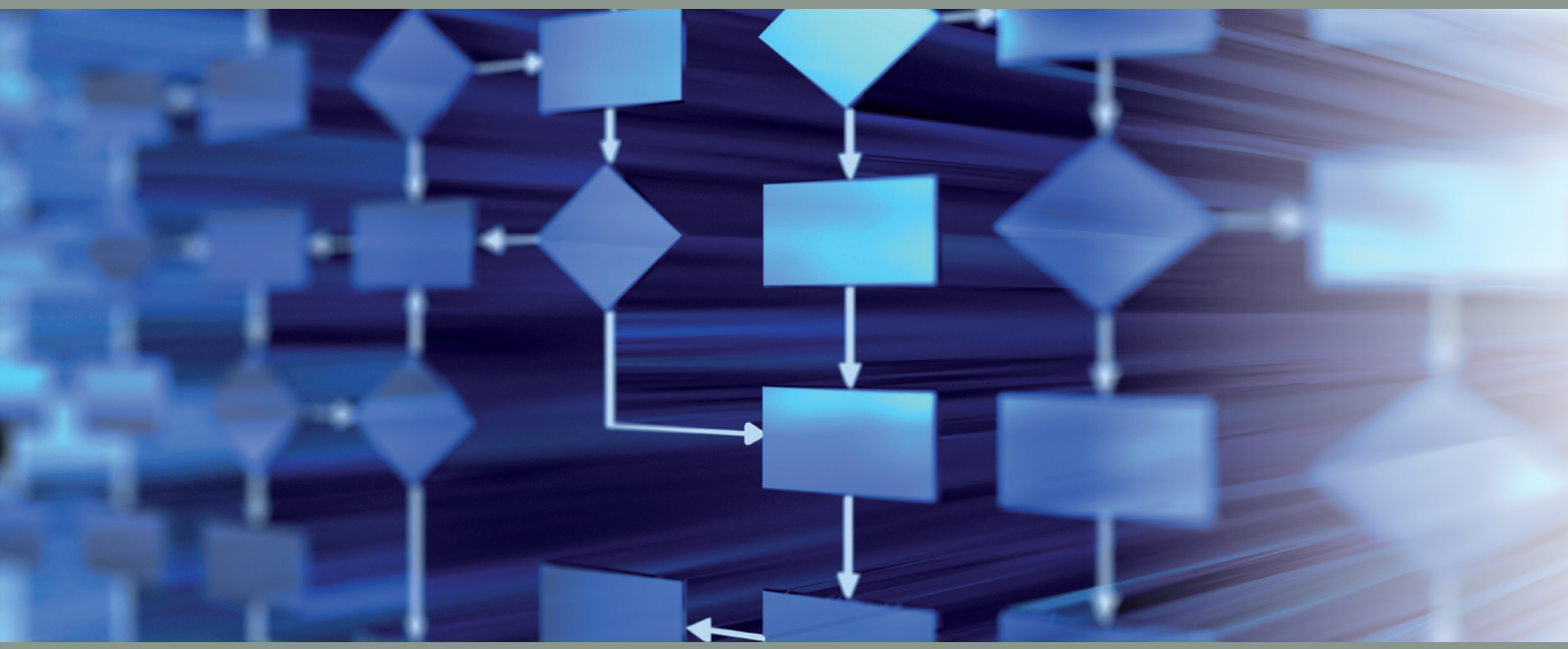

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Dylan G. Rassier*

Abstract

Transactions involving intangible assets within multinational enterprises impose challenges for national economic accountants. In light of the challenges, recent research at the United States Bureau of Economic Analysis aims to identify areas for improving the treatment of multinational enterprises in national economic accounts. This paper summarizes the work and demonstrates implications for gross domestic product – the most widely cited measure in national economic accounts – of the United States.

Keywords: national income and product accounts, multinational firms, profit shifting, intangible assets

JEL Classification: E01, F23, H26, O34

Disclaimers

The views expressed in this paper are those of the author and do not necessarily reflect the views of the World Intellectual Property Organization or its member states, the U.S. Department of Commerce, or the Bureau of Economic Analysis. The statistical analysis of firm-level data on U.S. multinational companies and companies engaged in international transactions was conducted at the Bureau of Economic Analysis, U.S. Department of Commerce, under arrangements that maintain legal confidentiality requirements.

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Introduction

National economic accounts offer a summary of economic activity in a comprehensive, balanced framework that is based on a set of internationally agreed concepts, definitions, classifications, and accounting rules. Built-in to the structure of national economic accounts are a number of measures important for economic analysis and policymaking. The most widely cited measure – gross domestic product (GDP) – summarizes transactions in goods and services produced for final consumption, investment, or export during a given period. In addition to GDP, other measures in national economic accounts – such as disposable income, saving, and net lending/net borrowing – summarize transactions in related income and transactions in financial assets and liabilities that support production and mirror counterpart transactions.

Under international standards set forth in the *System of National Accounts* (European Commission et al., 2009) (*SNA*), the value of transactions is generally determined by prevailing prices in active markets, and the location of production and related income is generally determined by the physical location from which an entity engages in economic activity. The *SNA* scope of transactions includes cross-border transactions that take place within multinational enterprises (MNEs). In the case of transactions involving intangible assets within MNEs, both valuation and location impose challenges for national economic accountants. Determining values is a challenge when intangible assets are unique to a firm and have no comparable market-based prices. Determining location is a challenge when an MNE is structured with entities that lack physical location in order to facilitate the legal ownership of intangible assets, which is made possible by their mobility.

The challenges of determining values and location are amplified when prices are set or entities are created within an MNE for international tax purposes. While distortions that result from mispriced transactions are presumably limited because intrafirm prices are subject to regulatory scrutiny and enforcement by national tax authorities (Marques and Pinho, 2016), wider distortions may result from the appearance of transactions when global structuring simply accommodates the artificial location of production and related income. The outcome is a wedge between the measured location of production and the true location of underlying factors of production, which may affect the accuracy and interpretability of GDP and other key measures in national economic accounts (Rassier, forthcoming).

In the United States (U.S.), the Bureau of Economic Analysis's (BEA's) treatment of transactions within MNEs is consistent with recommendations outlined in the *SNA*. Cross-border transactions between U.S. parents and their foreign affiliates and between foreign parents and their U.S. affiliates are included in the U.S. National Income and Product Accounts (NIPAs) and in the U.S. International Transactions Accounts (ITAs). However, in light of the challenges related to determining valuation and location, recent research at BEA aims to identify areas for improving the treatment of MNEs in national economic accounts. This paper summarizes the work and demonstrates implications of transactions involving intangible assets within U.S. MNEs for U.S. GDP.

1. Measurement of Transactions within MNEs

In the *SNA*, transactions are attributable to economies based on the residences of transacting entities, which includes affiliated entities that are resident in different economies. 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 location is considered resident in its economy of legal incorporation or registration. In the latter case, the entity is not combined with a related entity of physical substance unless the related entity is resident in the same economy. A trend in recent years is MNEs that are structured with one or more special purpose entities, which are characterized by features that include little or no physical presence and little or no production or economic activity. Special purpose entities include financing companies and holding companies such as intellectual property licensing companies that may play a significant role in transactions involving intangible assets within U.S. MNEs. According to the *SNA*, cross-border transactions conducted with special purpose entities should be reflected in national economic accounts. While the *SNA* recommendation on special purpose entities is designed to provide information for central banks and other regulators to monitor and assess global financial transactions and exposure to global financial risk, the recommendation also has unintended consequences for "real" transactions in goods and services.

Lipsey (2010) concludes that some supplemental financial and operating statistics published by BEA on foreign affiliates of U.S. MNEs under *SNA* guidelines demonstrate the effects of excess profits attributed to special purpose entities in tax haven countries under a method of separate accounting. Under separate accounting, financial accounting records are maintained separately for each entity within an MNE. As a result, financial accounting measures such as profits may be attributed to an entity based on the entity's purpose within the structure of the MNE but not necessarily based on production or real economic activity of the entity. Thus, statistics that result from financial accounting records under a method of separate accounting may also not accurately reflect production or real economic activity.

In light of Lipsey (2010), Rassier and Koncz-Bruner (2015) propose formulary apportionment as an alternative to separate accounting for attributing profits to foreign affiliates of U.S. MNEs. Under formulary apportionment, accounting records for each entity in an MNE (parent and affiliates) are consolidated and profits are attributed to countries based on each entity's proportionate share of factors that reflect physical location, such as compensation, tangible property, and sales. Rassier and Koncz-Bruner (2015) find that the measured effects revealed in Lipsey (2010) are considerably reduced or eliminated entirely under formulary apportionment. Rassier (2014) treats reductions in earnings on U.S. direct investment abroad – i.e., an increase in domestic profits – that result under formulary apportionment as an implied increase in U.S. expenditure-based GDP, which is a necessary counterpart to the increase in domestic profits in income-based GDP. However, Rassier (2014) does not consider effects on national economic accounting measures other than GDP and does not consider effects on time series of measures, which are two important aspects for economic analysis and policymaking that rely on economic indicators other than GDP or on growth rates.

While previous work focuses on GDP measurement, there are also implications for measurement of other important economic statistics, such as productivity. In joint work, Guvenen, Mataloni, Rassier, and Ruhl (2017) use a formulary framework to study the effects of profit shifting by U.S. MNEs and foreign MNEs on measured U.S. productivity growth since 1973. The results indicate profit shifting yields lower measured cumulative productivity growth,

which is most apparent for industries with relatively high expenditures on research and development (R&D).

Suppose a U.S. MNE establishes a licensing affiliate in Ireland and transfers legal ownership of intangible assets to the affiliate through a contractual arrangement for the purpose of reducing taxes on profits of all non-U.S. operations (Drucker, 2010). Profits attributed to the Irish affiliate under separate accounting may reflect the legal ownership of the intangible assets but do not necessarily reflect the appropriate attribution of returns within the MNE. If the U.S. parent remains the economic owner of the intangible assets through assumption of risk and other means, the higher returns to the U.S. parent should be reflected in U.S. exports for payments made on intellectual property from the Irish affiliate to the U.S. parent, and the lower returns to the Irish affiliate should be reflected in earnings on U.S. direct investment abroad. As long as payments from the Irish affiliate to the U.S. parent are complete and adequately valued, there is no effect on U.S. GDP or earnings on U.S. direct investment abroad. If payments are missing or undervalued, the result generates a downward effect in U.S. GDP and an upward effect in earnings on U.S. direct investment abroad. Any reattribution of profits to the U.S. parent under formulary apportionment in lieu of separate accounting yields insight into the extent of the resulting measured effects.

2. Data

BEA collects annual survey data on financial and operating characteristics of U.S. parents and their foreign affiliates. The survey data provide a source for apportionment factors, which include compensation and sales to unaffiliated parties reported for each entity (i.e., parent and affiliates) in a given firm. Property, plant, and equipment are also reported for some survey years. The survey data also provide a source for reported profits of each entity and a U.S. parent's share of voting interest in a foreign affiliate. The data are reported under a method of separate accounting consistent with U.S. generally accepted accounting principles. Thus, a "formulary adjustment" can be calculated between profits reported for each entity under separate accounting and profits calculated for each entity under formulary apportionment. The aggregate adjustment yields the reattribution of profits from foreign affiliates to U.S. parents.

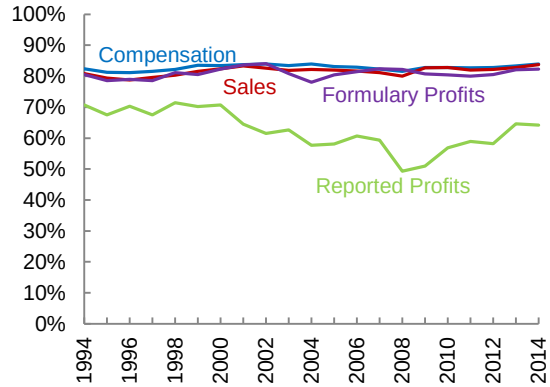
The survey data do not include information on intangible assets owned by U.S. MNEs, but they do include information on R&D expenditures incurred by U.S. parents and their foreign affiliates. Assuming R&D intensive firms are more likely to own intangible assets, R&D intensive firms can be identified using a ratio of firm-level R&D expenditures to firm-level unaffiliated sales. In most cases, R&D intensive firms include U.S. parents classified to industries that are also considered to be R&D intensive: chemical manufacturing, computer and electronic product manufacturing, transportation and equipment manufacturing, publishers, computer systems design, and scientific R&D services (Guvenen, Mataloni, Rassier, and Ruhl, 2017). However, even non-R&D intensive firms may own significant intangible assets such as organizational capital.

3. Empirical Results

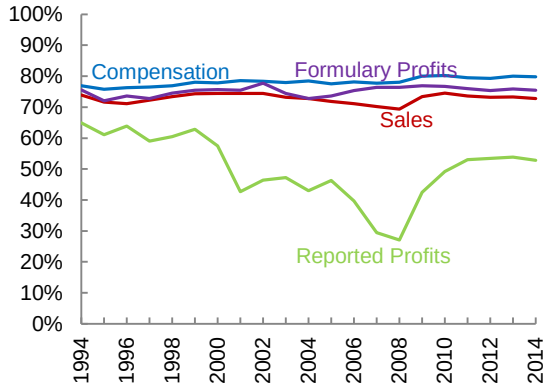
Figure 1 presents the U.S. MNE parent shares of operating measures reported under separate accounting on BEA's surveys for 1994 to 2014. Panel (A) presents shares for all parents and reveals the parent shares of reported profits are less than the parent shares of reported compensation and unaffiliated sales. Panels (B) and (C) reveal that the parent shares of reported profits for R&D intensive firms are lower than non-R&D intensive firms in every year of the sample. Likewise, the parent shares of reported compensation and unaffiliated sales for R&D intensive firms are lower than non-R&D intensive firms in every year.

Figure 1: U.S. MNE Parent Shares of Operating Measures

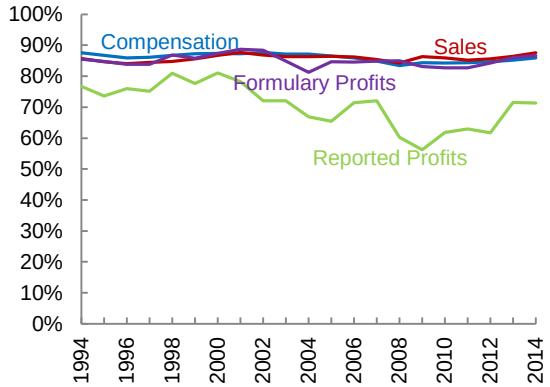
(A) All U.S. Parents



(B) R&D Intensive Firms



(C) Non-R&D Intensive Firms



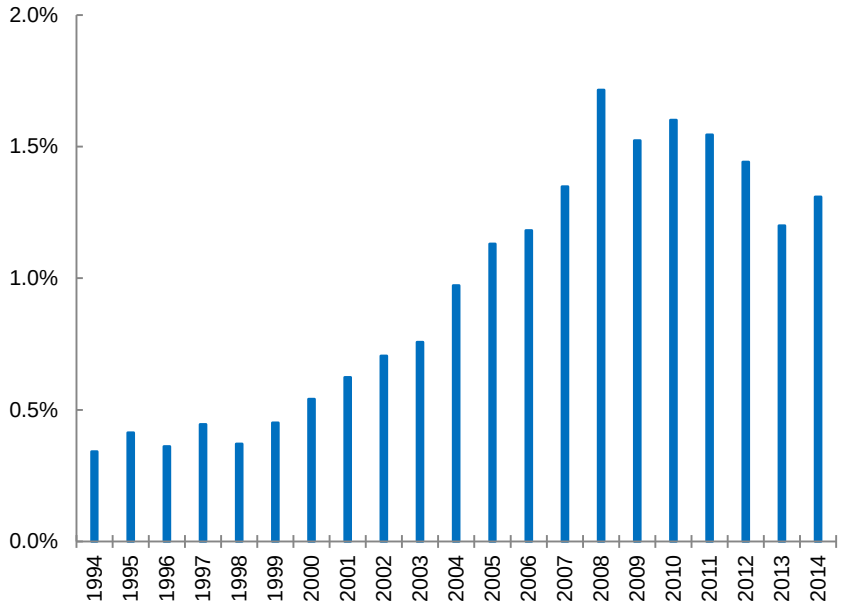
Source: Authors' calculations using BEA survey data on U.S. direct investment abroad.
Note: Shares are calculated by dividing the aggregate value for U.S. parents by the aggregate value for U.S. parents and foreign affiliates. Sales include only sales to unaffiliated parties. Formulary profits include reported profits adjusted by formulary apportionment based on a weighted average of compensation and sales (each weighted 50 percent).

While the parent shares for reported profits provide some evidence that R&D intensive firms are more inclined to book profits to foreign affiliates than to U.S. parents, the corresponding lower parent shares for compensation and unaffiliated sales call into question whether the lower parent shares for R&D intensive firms may be a matter of profit shifting or real economic activity. Thus, each panel of figure 1 also includes a series for the parent shares of profits calculated under formulary apportionment. The formulary profits series in panels (B) and (C) reflect the pattern demonstrated for the corresponding apportionment factors—i.e., the parent shares are lower for R&D intensive firms than for non-R&D intensive firms. However, the difference between the parent shares of formulary profits and reported profits (i.e., the formulary adjustment) is higher for R&D intensive firms for each year. The average difference across all years 1994 to 2014 is 25.0 percentage points for R&D intensive firms and 14.0 percentage points for non-R&D intensive firms.

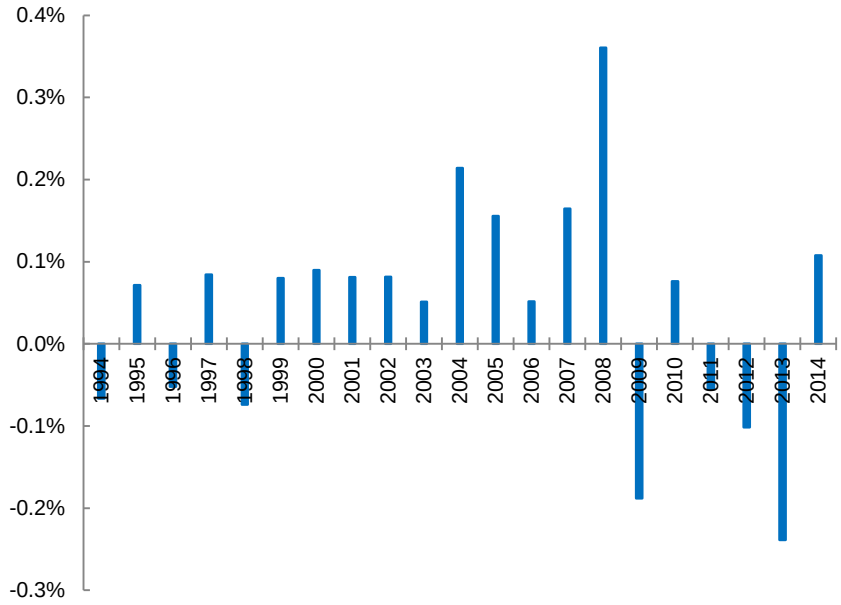
Figure 2 reports the effects of the formulary adjustments for U.S. MNEs on U.S. GDP. Panel (A) reports the percentage difference between real GDP levels adjusted under formulary apportionment for all U.S. MNEs and unadjusted real GDP levels. The percentage difference grows from 0.3 percentage points in 1994 to 1.3 percentage points in 2014 and is as high as 1.7 percentage points in 2008. Panel (B) of figure 2 reports the percentage point difference between log growth of adjusted and unadjusted real GDP under formulary apportionment for all U.S. MNEs. The percentage point difference is generally positive over the period and is as high as 0.36 percent in 2008 and as low as -0.24 percent in 2013. The average percentage point difference in real GDP growth across all years 1994 to 2014 is 0.04 percent.

Figure 2: Effects of Formulary Adjustments for U.S. MNEs on U.S. GDP

(A) Percentage Difference between Adjusted and Unadjusted Real GDP Levels



(B) Percentage Point Difference between Adjusted and Unadjusted Real GDP Growth



Source: Authors' calculations using BEA survey data on U.S. direct investment abroad and BEA published data on GDP and industry value-added.
Note: In panel (A), the percentage difference is calculated by dividing the level of adjusted real GDP by the level of unadjusted real GDP and subtracting one. In panel (B), the percentage point difference is calculated by subtracting the log growth of unadjusted real GDP from the log growth of adjusted real GDP.

4. Conclusions

There are three conclusions that can be drawn from this work. First, transactions involving intangible assets within MNEs impose challenges for national economic accountants. Second, U.S. parent shares of profits reported under a method of separate accounting are lower than U.S. parent shares calculated under a method of formulary apportionment for both R&D intensive firms and non-R&D intensive firms but the difference is much wider for R&D intensive firms. Third, formulary adjustments generate notable differences between adjusted and unadjusted real U.S. GDP levels and between adjusted and unadjusted real U.S. GDP growth. Overall, transactions involving intangible assets within U.S. MNEs appear to have a meaningful effect on both the level and the growth of real U.S. GDP. These results are consistent with findings for base erosion and profit shifting under recent work at the OECD (OECD, 2015).

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