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Introduction

Marshall Reinsdorf and Matthew Slaughter

International trade in services is an increasingly important feature of the U.S. economy. Anecdotal evidence abounds on the rapid growth of new types of services imports made possible by information and communications technology (ICT)—for example, call centers, software programming, legal services, and even medical services such as radiology diagnostics. Moreover, predictions by some economists about the eventual effects of this new type of trade in services indicate that it may shape the future of the U.S. economy in ways that once would have been unimaginable. Now that the ability to deliver services over a wire has circumvented the traditional constraint on the growth of trade in services imposed by the need for physical proximity, what is to prevent trade in services from expanding to a scale that would have large effects on labor markets and on the U.S. balance of payments?

Although news stories, controversies, and even novels about life as a call center worker have given new types of trade in services high visibility, other types of international service transactions also have important roles in the evolving structure of global production. Besides advances in ICT, growth in trade in services has been promoted by liberalized or favorable treatment of services-related foreign direct investment (FDI) by some host countries, by the growing importance of services in general in advanced economies, and by the growing fragmentation of the production process into chains of specialized activities, each of which is located where it can be

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done most efficiently (Feenstra 1998). As a result of these trends, world trade as a whole has grown faster than world production of goods and services, and the services component of trade has tended to grow faster than the goods component.

The importance of services in overall economic activity in the United States means that if services activities are becoming more tradable, the effects on the U.S. economy could be profound. As of April 2007, fully 115.2 million U.S. payroll jobs—83.7 percent of the 137.7 million total—were in service-producing industries. Indeed, many industries within the service sectors individually accounted for more American jobs than the 14.1 million jobs found in all of manufacturing; as an example, professional and business services, which contains many occupations that van Welsum and Reif (chapter 9, this volume) find to be vulnerable to offshoring, had 17.9 million jobs. Clearly, the structure of services employment matters greatly for the overall performance of the American economy.

Changes in sort of services that are tradable could also have important effects on the current account balance of the United States. The United States has maintained a revealed comparative advantage in services trade for some time. In 2007, for example, the overall U.S. trade deficit of \$708.5 billion masked a deficit in goods of \$815.4 billion that was partly offset by a services surplus of \$106.9 billion. It has long been argued that this surplus in services reflects U.S. comparative advantage in activities intensive in human capital. Given its advantages in the production of tradable services, the expanding span of these services could bring the United States new or improved export opportunities. Yet at the same time, expansions in the span of tradable services are also likely to alter trade flows in ways that impart new pressures on some segments of the U.S. labor market and that reduce incentives to invest within the United States in human capital and other assets needed to produce tradable services.

Finally, at the macroeconomic level, the sustainability of large U.S. current-account deficits—which peaked at \$811.5 billion in 2006—is a long-standing concern. Greater tradability of services might foster an additional margin of adjustment for the U.S. economy, in terms of expanding the set of “tradable” activities to which resources must shift for production of exports.

To explore the economic and measurement implications of new types of trade in services and of growing international flows of invisibles of all types, we organized a conference under the auspices of the Conference on Research in Income and Wealth (CRIW) and the National Bureau of Economic Research. The conference, entitled “International Service Flows,” was held in Bethesda, Maryland on April 28–29, 2006.

Happily, the authors who wrote papers for the conference chose to in-

terpret the topic of services in the conference title broadly. This book's title of *International Trade in Services and Intangibles in the Era of Globalization* conveys the breadth of topics covered more clearly than the title used at the conference itself. For example, a theme of several of the papers was the importance of international transactions involving the creation, use, or ownership of intangible assets such as intellectual property in the emerging globalized economy. This result builds on the papers at a previous CRIW conference on *Measuring Capital in the New Economy* (Corrado, Haltiwanger, and Sichel, eds., 2005), which revealed the role of intangible assets as key constituents of the capital stock of a modern service-oriented economy. Besides services and intangibles, another category of invisibles considered by some of the papers is the income recorded in the current account. (Invisibles comprise all elements of the current account in the balance of payments other than merchandise trade.)

Progress on Measurement Challenges

The globalized economy presents some new kinds of measurement challenges for our statistical system, which the papers presented at the conference help us to meet. Equally important, the papers allow us to assess our progress and to identify the gaps and limitations of the data that hinder our ability to understand the emerging globalized economy and to analyze key policy questions. For nominal flows of invisibles, notwithstanding such problems as tax-related distortions of economic flows or transactions in intangibles whose country of residence can be ambiguous, the overall picture is reasonably optimistic. In the face of formidable measurement difficulties, however, development of the price indexes needed to deflate nominal flows is proceeding more slowly. Poorly measured real flows of international services may therefore become an increasingly serious obstacle to knowing how globalization is affecting the U.S. economy.

Nominal Flows

Research that Ascher and Whichard (1991) presented at the 1989 CRIW conference "International Economic Transactions" documented the development at the U.S. Bureau of Economic Analysis (BEA) of comprehensive measures of trade in services. (Data on trade in some services, such as shipping and passenger travel, had long been available for the United States and other countries, as documented by Hoeksta and Stern [1991].) Research attention next turned to products delivered through foreign affiliates of multinationals—which are especially key in the case of services—and the development of the ownership-based framework of the current account. The usefulness of ownership-based accounting in a world where trade is increasingly conducted through affiliates and where intangibles

with no definite geographic location are increasingly important was highlighted in 1995 at the CRIW conference “Geography and Ownership as Bases for Economic Accounting” (Baldwin, Lipsey, and Richardson 1998.)

With these accomplishments behind us, research on trade in services can now be focused on particular commodities that are emerging in importance, changing in character, or where improved measurement techniques have become available. Among such topics covered at the “International Service Flows” conference were trade in banking and insurance services (Borga, chapter 2, this volume), business’ use of offshored services (Yuskavage, Strassner, and Madeiros, chapter 8, this volume), and intangible assets such as R&D (Moris, chapter 5 this volume) and intellectual property in general (Robbins, chapter 4, this volume). Measures of R&D and intellectual property transactions are important both because of these products’ key role in the modern economy and because of the role of R&D assets in the forthcoming revision of the international guidelines for the preparation of national accounts of the 1993 System of National Accounts (SNA93).¹

Reassuringly, no evidence was presented at our conference to corroborate suspicions that imports of ITC-enabled services may have been missed in the U.S. accounts. Nevertheless, the conference uncovered some important gaps in the data and provided striking evidence of ways in which those data that are available could be misleading. In a case study of an important U.S. export, motion pictures, Hanson and Xiang (chapter six, this volume) find that UN Comtrade data misses most of the value of this trade, and that even though BEA data are better, private data sources must be used to obtain the geographic detail needed to study the drivers of this trade. Furthermore, Lipsey (chapter 1, this volume) and Mutti and Grubert (chapter 3, this volume) suggest that some reported patterns of trade in international transactions in intangible assets and their services are heavily influenced by the tax treatment of transactions with affiliates located in tax havens, which could lead to a distorted picture of the true economic flows. Lipsey also notes how the lack of geographical nexus of international transactions in services and other invisibles makes measurement more challenging.

Prices

In the case of the prices needed to deflate international service flows, the recent measurement story is, unfortunately, one of growing ignorance. This is especially disappointing in light of the good foundation laid by ear-

1. Information on the forthcoming revision of the SNA, including draft chapters, is available on the United Nations Statistics website at <http://unstats.un.org/unsd/sna1993/snarev1.asp>.

lier progress on price measurement for traded goods and for nontraded services. For goods, the CRIW conference “International Economic Transactions” included a paper on the development by the Bureau of Labor Statistics (BLS) of comprehensive sets of export and import price indexes (Alterman 1991) and a paper on measuring international trade price competitiveness (Lipse, Molinari, and Kravis 1991). For domestic services, the suspicion that poor price measures for the growing service sector could help to account for a puzzling slowdown in measured productivity growth (Griliches 1992, 3) sparked much research, including CRIW conferences “Output Measurement in the Service Sectors” (Griliches, ed. 1992), “Medical Care Output and Productivity” (Cutler and Berndt 2001), and “Hard-to-Measure Goods and Services” (Berndt and Hulten 2007). Enough progress was made so that the important contribution of the service sector in the post-1995 productivity speedup (see Bosworth and Triplett [2007] and Triplett and Bosworth [2004], chapter 2) could be discovered.

For internationally traded services, as of 2007, BLS’s international price program had developed and released indexes covering only passenger air transportation, air freight, ocean liner freight (inbound only), crude oil tanker freight (inbound), travel and tourism exports, and education services exports. The development of these last two indexes, and of additional new indexes for trade in services, were topics of a paper (not included in this volume) that Kelley Khatchadourian and Alice Wiesner (2006) presented at the “International Service Flows” conference. Subsequently, budget cuts compelled BLS to cease research on indexes for trade in services and to cease producing the just-developed indexes for travel and tourism and education services exports, along with older indexes for inbound ocean liner freight and inbound tanker freight. Missing price information for traded services is thus likely to pose an increasingly serious obstacle to measuring U.S. real output and productivity, to gauging inflationary pressures on the economy, to estimating the substitutability of internationally sourced services for U.S. production, and to assessing trends in U.S. competitiveness. Besides the information lost in the recent reversals at BLS, we lack price indexes for trade in business, professional, and technical (BPT) services. Yuskavage, Strassner, and Medeiros (chapter 8, this volume) note that these indexes are needed to measure these services in real terms, a task that is becoming important for accurate measurement of the growth of the U.S. economy. Prices of BPT service imports may be rising rapidly because dollar-denominated costs are climbing and capacity constraints are tightening in key supplying countries like India, or they may be flat because cost pass-through is low, or they may be falling because new sources of supply are providing increased competition. We simply do not know.

Defining Trade in Services

Besides providing hard evidence on new and emerging trends in trade that have the potential to dramatically reshape the economies of developed and developing nations alike, this book provides background on the key conceptual issues in measuring trade in invisibles. One such issue is the definition of trade in services. Though this question might seem to be rather technical, its importance was made clear by a recent controversy over a large discrepancy between India's reported exports of BPT services to the United States and the imports of BPT services from India reported by the BEA. A Government Accountability Office (2005) report refers to an estimate of \$8.7 billion for India's exports to the United States in 2003, when BEA's estimate of corresponding imports was just \$423 million. (Dossani [2006, 249] reports Indian exports in the \$2.5 to \$3.6 billion range in 2002 to 2004, based on Indian data.) The main explanation turned out to be the definition of trade in services that had been used in calculating India's exports, as Borge (chapter 2, this volume) notes.

To define trade in services requires an answer to the question of what kinds of transactions constitute services and the question of which service transactions constitute trade. Note that trade in services is a broader concept than offshoring of services or international outsourcing of services. Offshoring and outsourcing include only types of services formerly or usually produced in the domestic economy. Moreover, many authors regard the meaning of the term "international outsourcing" as an even narrower concept than "offshoring." They include in the former only purchases from *unaffiliated* establishments of inputs that were formerly produced in house, and use the term "insourcing" for the services produced in a foreign affiliate of a multinational corporation (MNC).

Which Transactions are Services?

Hill (1977, 317–18) observes that services change the condition of a good or person, illustrating this concept with examples of shipment of goods, repairs, cleaning, hairdressing, and dental care. The forthcoming revision of the SNA follows a similar approach. It defines a service as a production activity that changes the condition of a good or a person or that facilitates the exchange of products or financial assets (United Nations 2007, paragraphs 6.17–6.18).

The "production activity" requirement of the definition in the revised SNA is not a topic of controversy, but it can present difficulties. Distributions of property income such as dividends and interest paid to providers of finance are examples of transactions that are excluded from services by this requirement, as passive owners of property used by a business are not

themselves engaged in a production activity.² Yet we must be careful about using the label given to a transaction to decide whether its economic substance is a production activity. Lease payments, for example, normally represent service transactions, but leases that are merely financing arrangements, known as financial leases, are functional equivalents of collateralized loans and must be treated as such. The opposite kind of reclassification can be needed as well. In a chapter in this volume, Maria Borga discusses research on recognizing how interest, including interest that is foregone, can substitute for the explicit payments of premiums or fees in the financial services industries of insurance and banking. Implicitly purchased services are therefore included in the production activities of these industries.

A point of controversy in the definition of services is the line between services and goods. A succinct definition of a service that well describes the practice in official statistics is that a service is any produced item that is not a good, where goods are material in nature (e.g., IMF 2008, paragraph 10.6). Such a definition by exclusion of all that is material leaves room for considerable diversity in the types of transactions included in services. Indeed, even the subset of internationally traded services that can be transmitted over a wire includes, besides the transmission itself, items as dissimilar as motion pictures, financial or legal contracts, information of various sorts, software, data processing, and telephone assistance. Even sales of patents are included in exports of R&D services in the latest edition of the Balance of Payments and International Investment Position Manual (IMF 2008, paragraph 10.134).³

Identifying such a broad set of items as services based on their immateriality is, in Hill's (1999) view, a mistake. Instead, he contends that the definition of a service ought to hinge on whether consumption occurs after production or simultaneously. Goods have to be produced before they are consumed and hence exist at least momentarily as inventories. Services, on the other hand, cannot be put into inventories because their production and consumption are simultaneous (Hill 1999, 437). Hill therefore divides the conventional two categories of goods and services into three categories consisting of ordinary goods, intangible goods, and services. Intangible goods would include immaterial products that are available for use after they have been produced, such as the text of a book, an artistic original, a

2. Originally BEA's international transactions accounts classified as services all current account items other than goods and unilateral transfers. Ascher and Whichard (1991, 207) discuss how this treatment was changed.

3. At present, BEA's practice is generally to record them as services exports of royalties and license fees, though in some cases they are included in the capital account rather than the current account (Yorgenson 2007, 27, fn. 38).

scientific formula, the design for a new machine, or a new computer program.

The concept of stockpiles of services seems paradoxical, but the potential for timing differences between the production and sale of intangible products that Hill highlights means that stocks of these products, either as inventories or as fixed assets, must be recognized if we are to record current production correctly. Moreover, Griliches (1992, 5) identifies as distinctive features of service transactions a lack of change of ownership and the participation of the purchaser in the production process, either directly or as a supplier of an input. These criteria are adopted by the IMF *Balance of Payments and International Investment Position Manual* (IMF 2008, paragraph 10.60) when it excludes goods sent abroad for processing from trade in goods and instead classifies the processing fee as trade in services.

A change in ownership is the very thing that distinguishes transactions in intangible assets themselves from transactions for the use, or services, of such assets. Nonetheless, when the forthcoming revision of the SNA introduces a new category of intangible products called “knowledge-capturing products,” it classifies sales of these products as services (UN 2007, paragraph 6.22). As a practical matter, transactions in the use of intangible assets (such as a royalty to a patent holder) may be difficult to separate out from sales of the intangible asset itself in the available source data. Furthermore, their immateriality is not the only conceptual reason for classifying knowledge-capturing products as services. These products have the service-like properties of changing the condition of the user and of requiring the participation of the user in the production process. For example, a research report written under contract makes the buyer better-informed, but the buyer must provide inputs of the time and effort to read it. Thus, although transactions in intangible assets do not fit neatly into either of the categories of goods and services, their inclusion in trade in services is appropriate.

Which Service Transactions Constitute Trade?

The next question is how to distinguish services transactions that constitute international trade from those that are purely domestic. For goods, physical movement across a border can usually be used to identify trade, but a service can be consumed in the country where it is produced yet still be considered as traded. This occurs when either its consumer or its producer is a nonresident. As a result, the General Agreement on Trade in Services (GATS) recognizes four modes of trade in services: (a) cross-border supply; (b) consumption abroad, such as by tourists or students; (c) commercial presence of foreign affiliates of multinational companies; and (d) presence of natural persons.

The establishment of foreign affiliates by MNCs (Mode 3) and move-

ment of natural persons across borders (Mode 4) are, of course, important elements of globalization. They are also important parts of the picture of international trade in services because many types of services can only be delivered via physical presence. Indeed, for the United States, sales and purchases of services delivered by foreign affiliates have substantially exceeded cross-border trade in services since the late 1990s (Koncz and Flatness 2007). Nevertheless, the movements of productive factors across borders referenced in GATS Modes 3 and 4 tend to blur the significance of national boundaries in ways that raise questions in the construction and interpretation of measures of international transactions. In the Mode 4 case, for example, migration of natural persons across a border changes their residency, but temporary visits (defined in official statistics as remaining in the host country for a less than a year) do not. Whether to treat both parties to a service transaction as residents of the host country or whether to count the transaction as trade can be unclear, either because the length of stay is uncertain (Lipsey, chapter 1, this volume) or because the purpose for which the data are being compiled calls for an alternative approach.

In the case of GATS Mode 3, foreign affiliate trade in services (FATS), the affiliate is unambiguously a resident of its host country. Services that foreign affiliates provide to host country residents are therefore not included in the definition of exports from the standard geography-based accounting framework of national accounts. Yet products delivered through affiliates can be substitutes for cross-border trade and are part of the overall trade picture. An ownership-based accounting framework for international transactions allows insight into the activities of foreign affiliates, as Landefeld, Whichard, and Lowe (1993) and Baldwin and Kimura (1998) explain. This accounting framework shows the combined receipts from exports and the investment income that sales of foreign affiliates generate for their U.S. parent. In interpreting these receipts caution may sometimes be warranted, however, because Mutti and Grubert (chapter 3, this volume) show that some transactions between foreign affiliates have been accounted for in a way that allows the U.S. parent to report smaller receipts of income from them.

Another problem in defining trade in services arises in the treatment of rentals of fixed capital assets. Rentals of such assets are accounted for as service flows from the owner of the asset to the user of the asset. As a result, operating leases for movable capital assets with nonresident lessors are included in imports of services, and those with nonresident lessees are included in exports of services. Ireland, for example, had exports of aircraft leasing services amounting to €3.3 billion—representing more than 2 percent of its GDP—in 2005 (Central Statistics Office 2006.)

On the other hand, the adjective “domestic,” represented by the middle letter in GDP, implies that that concept includes any production that occurs within the borders of a country and excludes any production that oc-

curs outside those borders. A capital asset located within a country's borders seems pretty clearly to be producing its services within those borders, even if its owner resides elsewhere. To resolve the tension between the need to account for rentals as purchases of services from asset owners and the need for a geographically defined measure of total production, the services of immovable fixed capital assets such as land or structures are always deemed to be provided by a resident of the country where they are located.⁴ For example, when a rented structure is owned directly by a nonresident, a notional resident affiliate is effectively credited with receiving the rent, and the payment to the nonresident is classified as a distribution of income. This prevents services of structures leased from foreign owners from being counted as imports of the country where the structure is located.

Royalties and license fees paid to owners of intellectual property (IP) are analogous to payments for the use of fixed capital assets, except that in this case the asset is an intangible one.⁵ A treatment parallel to that given to movable fixed capital assets is generally appropriate for international transactions in royalties and license fees. The services furnished to the user of an IP asset resemble the services that tangible capital assets furnish to their users. Furthermore, transactions for the use of IP often include assistance from the owner of the IP, such as the furnishing of copies of originals, oversight, or advice.

Nevertheless, chapters in this book by Lipsey and by Mutti and Grubert raise questions of whether certain payments for the use of IP have any rationale beyond the shifting of taxable income to a jurisdiction with a low tax rate.⁶ These payments are substantial enough in value to suggest the need for future research on a possible alternative treatment, modeled on the treatment presently given to immovable fixed assets, for certain international transactions for the use of IP. Intangible IP assets share with services the characteristic of the lack of a physical presence in a particular location. This can make it hard to be sure whether an IP asset that is reported to have been acquired by an overseas affiliate via a purchase or cost-sharing arrangement has really been exported. For example, when a U.S. pharmaceutical manufacturer transfers ownership of patents resulting from R&D performed in the United States to a tax haven affiliate, the production attributable to that IP (as measured by royalty payments to the foreign affiliate) counts as an import of services by the United States. Yet the tax haven will often have no material role in either the production of the drug itself or

4. International Monetary Fund (1993), paragraphs 64 and 316.

5. The forthcoming revision of the SNA recommends that the IP created by R&D activities be recognized as an intangible capital asset. This gives a natural interpretation to royalties and license fees paid for the use of these assets as payments for services that these assets produce.

6. In some cases the IRS has determined that the answer to this question is "no." See Drucker (2006). Another example of payments to an overseas affiliate for the use of IP—which have not been challenged by the IRS—is discussed in Simpson (2005b).

in the underlying R&D. Under these circumstances, a portrayal of the transaction as an export of a service by the tax haven probably captures its economic significance less well than a portrayal that adopts the view that the IP in question is still within the United States, so that the payments to the offshore affiliate really represent income transactions.

The Chapters in this Volume: Four Main Themes

The chapters of this volume have been grouped into four noteworthy themes. First, the measurement of trade in services presents some unique challenges. Keeping classification schemes for collecting and organizing measures of services trade up-to-date is difficult when new types or patterns of trade in services emerge.⁷ A paper by Pierre Sicsic (2006) presented at our conference (but not included in this volume) found, for example, that in French data, call centers were sometimes reported in business services (where they are supposed to be) and sometimes reported in communications services. As another example, Borga (chapter 2, this volume) reports that an additional probing question and a sample size expansion were needed in the United States to address an undercount of new kinds of trade in services. Some other measurement challenges arise from the unique features of services trade. The definitions of the price, volume, and even expenditures on many traded services may involve difficult conceptual and analytical questions. Moreover, in the case of services, no physical object exists whose movement across a border can be tracked, and the true country of residence of the financial, intangible, or mobile capital assets that render or facilitate the service, or even of the transactors, may be ambiguous or of dubious meaning. This partly reflects the ease with which items with no tangible presence can be lodged for legal and tax purposes far from the location where they originated.

For example, when a multinational corporation transfers ownership of intellectual property created in the United States to a tax haven affiliate that then collects royalty payments from the United States, do those royalty payments really represent production in the tax haven of intermediate inputs used by U.S. producers? The answer to this question has implications for the interpretation of measures of GDP for both of the trading partners, because even production that consists entirely of capital services is included in the GDP of the host country, not in the GDP of the country of residence of the ultimate beneficial owners of the capital assets used in that production.

A second theme is that, in contrast to trade in goods, where the United States runs large deficits, the production of services for export by affiliates

7. Adoption of the North American Industrial Classification System (AICS) has, however, helped with keeping up with evolving universes of services.

of MNCs and others continues to be an area of strength for the American economy. Production of some traded services cannot move to other countries because they can only be produced in the country where they are consumed (tourism or servicing of visiting aircraft, for example). Other services require concentrations of specialized expertise and resources that would be difficult to recreate in most countries outside the United States. The U.S. trade advantage in services also reflects the way production is now organized for many goods, with research, development, and testing services, as well as some managerial and financial services performed in the United States, while the physical product assembly occurs offshore. These arrangements often involve affiliates of MNCs, including ones based outside the United States.

A third theme is that patterns of trade in services have some unique drivers. The role of improvements in communications and information technology in facilitating offshore sourcing is clear, but questions of job characteristics—whether an activity is entirely codifiable rather than dependent on discretion, judgement, and tacitly communicated knowledge—and the presence of educational, language, or cultural barriers can also be key. Growth in some other kinds of traded services is linked with growth of foreign direct investment and the establishment of foreign affiliates of MNCs because these services are delivered via physical presence in a foreign host country. In other instances, tax and regulatory considerations may be key drivers—or perhaps distorters—of services trading patterns. Finally, some important traded services (such as wholesaling, merchandising, financing, insuring, and shipping) are complementary to trade in goods, with the growth causality running in both directions. In the nineteenth century Alfred Marshall noted that the railroad had made fresh fish available inland in England for the first time, but now shipping and transport technologies allow fresh-cut flowers to be picked on one continent and sold on another.

The fourth and final theme of this volume is that new ways of trading some kinds of services can intensify international competition for jobs, capital investment, economic growth, and tax revenue. Offshore outsourcing of employment in such functions as call centers, technical support, back office functions, and tax preparation is the example of this that looms large in the mind of the general public. However, differences between jurisdictions in the tax, legal, or regulatory environment can also influence foreign direct investment flows sufficiently to cause large shifts in the location of production of capital-intensive services.

As examples, exports of services such as licensing of intellectual property and leasing of aircraft have flourished in the nonburdensome tax and regulatory environment offered by Ireland. They are part of the growth process that took Ireland from among the poorest countries in Europe in the 1980s as measured by GDP per capita to the richest in 2004, excluding

countries with populations below five million. Exports of another asset-intensive service, insurance, have long thrived in the favorable tax and legal environment of Switzerland, but in recent years Caribbean tax havens have also become large exporters of such services.

Part I: Challenges in Measuring Trade in Services

An overview of the topic of international transactions in services, including a conceptual and historical background on trade in services, is provided by Robert Lipsey's chapter, "Measuring International Trade in Services." Measured by exports, world services trade rose from just over 20 percent of goods trade at the end of 1970s to just under 30 percent in 2003, though the official statistics on services trade may overstate their growth because data collection has improved. For the United States, services exports now amount to over 40 percent of goods exports. Imports of services have grown more modestly relative to imports of goods on a balance of payments basis: in the United States they have been flat at about 20 percent of imports of goods since 1987, although they have risen relative to GDP.

Lipsey next examines problems in the measurement of U.S. trade in services. Unlike goods trade, which is often defined in practice by physical movement across a border, trade in services must be defined by reference to the residency of the transactors or owner of the capital asset used to deliver the service.⁸ Yet even this criterion does not resolve all the ambiguities. An example comes from U.S. exports of education services. The non-resident status of the consumers of these services can be questionable, as many of them intend to remain in the United States at the conclusion of their studies.

Some recent developments in international transactions in services, including shifting patterns of location of intellectual property assets and of exports of rights to the use of these assets, also raise questions of interpretation. Lipsey documents some oddities in trade patterns for tax haven countries, and in asset and profit ratios for affiliates that suggest the presence of tax-related distortions in some reported values of trade and foreign direct investment. The values of the financial assets and intellectual property assets attributed to foreign affiliates based in tax havens seem implausible. As a result, residency-based measures of trade in such services as insurance and royalties and license fees may be less meaningful than the alternative ownership-based international transactions accounts.

The data on trade in services published by the BEA and research on improving and expanding that information are the topics of a chapter by Maria Borgia entitled "Improved Measures of U.S. International Services:

8. Even for ordinary goods, change in ownership is the conceptually correct basis for defining trade, even when movement across a border is the more practical alternative. See SNA93, paragraph 14.55.

The Cases of Insurance, Wholesale and Retail Trade, and Financial Services.” The published data cover the two channels of international delivery of services: cross-border trade in services, and sales of services through locally established direct investment enterprises or affiliates. In 2006, the United States exported private services of \$404 billion and it imported services of \$308 billion. The fastest growing categories were royalties and license fees and other private services (a category that includes finance, insurance, education, telecommunications, and business, professional, and technical services), with import growth slightly outpacing export growth both for these specific categories and for services in the aggregate. The rapid rates of growth of trade in services are exceeded by the growth rate of sales of services by affiliates, however, implying that international services are increasingly delivered through a commercial presence in the customers’ country.⁹ In contrast to cross-border trade in services, where the U.S. advantage is narrowing, the majority-owned foreign affiliates of U.S. MNCs are growing faster than the majority-owned U.S. affiliates of foreign MNCs.

Borga next reports on research on new measures of trade in services, starting with insurance. Until 2003, the measurement concept for cross-border insurance services was premiums less claims. Now the concept is premiums less expected losses plus investment earnings on technical reserves (“premium supplements”) plus auxiliary services, which are separate international transactions for items like actuarial services or claims and adjustment services. The new approach has reduced the volatility of the measures of insurance exports and imports, and on average it has raised their level. Borga also develops a new method that could be used to estimate the value of insurance services provided by U.S. affiliates of foreign MNCs. The older measure of output of insurance affiliates did not deduct claims, so the effect of the new method is to cut the estimated value of these services by roughly half.

Borga’s research measures of trade in services include two further types of services. First, in official statistics on exports and imports of goods, wholesale and retail trade margins that cover the cost of distributive services are combined with amounts paid to producers of goods, primarily manufacturers. Supplementary measures of the distributive services included in statistics on goods trade are therefore needed to discern the role of the distributive industries in international trade. Second, for banks, measures of implicitly priced services are included in national and industry accounts, but not yet in the ITAs. Banking services are purchased im-

9. An appendix to Borga’s chapter discusses an alternative ownership-based presentation of the current account that highlights the income receipts that services sales of affiliates generate for their parents. As explained previously, affiliates’ sales in their host country are not included in the definition of exports and imports.

PLICITLY by depositors who accept a lower rate of interest than would be obtainable from an investment that conferred no services, and by borrowers who pay interest rates that include a spread over the banks' cost of funds.

Part II: R&D and Intellectual Property

Readers who want to delve more deeply into the question of effects of tax incentives on measures of trade in services and of location of intellectual property assets should turn to John Mutti and Harry Grubert's chapter, "The Effect of Taxes on Royalties and the Migration of Intangible Assets Abroad." Tax-induced distortions in international sourcing of income are not a new phenomenon—see Grubert and Mutti (1998)—but over the past ten years, a number of developments have enabled U.S. MNCs to attribute more of their global income to affiliates located in tax havens. One of these is a regulation issued by the Internal Revenue Service (IRS) in 1997 that has been nicknamed "check-the-box." The name refers to a box that can be checked if the MNC filing the tax return wants to consolidate multiple controlled foreign corporations (CFCs) into a single hybrid entity. Transactions between the CFC affiliates wrapped up in a hybrid are invisible to the IRS, including transactions that would otherwise be covered by the antiabuse provisions in the Internal Revenue Code covering royalty payments between siblings of an MNC. Check-the-box does *not* prevent the affiliates of the MNC from filing separate *foreign* tax returns, so the affiliate in the high-tax country can continue to claim its royalty payments as a deductible expense.

The authors discover some patterns in the data that indicate that MNCs have responded to the check-the-box regulation by paying royalties and license fees to tax haven affiliates for the use of the affiliate's intellectual property, such as software or patents. These patterns include rapid growth of: (a) nondividend income of CFCs in low-tax countries; (b) payments of royalties by foreign affiliates reported in BEA's surveys; (c) receipts of royalties by tax haven affiliates as measured by BEA surveys; and (d) direct investment service payments. The direct investment service payments are an indicator of cost-sharing for the development of intellectual property that entitles the tax haven affiliate to royalties from the users of the intellectual property. The authors also find that the share of the benefits of parent R&D retained by foreign affiliates after making royalty payments to the parent grew after check-the-box, and that parent R&D became strongly associated with cost-sharing payments instead of with royalty payments.

Although these findings imply a reduction in tax revenues, check-the-box may also have some beneficial effects. It may help prevent the migration of R&D activity offshore by allowing MNCs to conduct their R&D in a nontax haven country yet still receive the associated royalty income in a tax-advantaged location. Indeed, Mutti and Grubert find that MNCs have

not shifted the location of actual R&D activities to low tax countries, and that relatively little R&D activity has migrated away from the United States.

A general picture of royalty payments and license fees for the use of IP assets from an industry perspective is the topic of the chapter by Carol Robbins, “Measuring Payments for the Supply and Use of Intellectual Property.” Totals of explicit purchases of the services of IP assets do not come close to being a comprehensive estimate of the overall importance of such assets in the U.S. economy: intangible assets are often used internally, leaving no record of a transaction that directly measures their services. Still, if intangible IP assets represent an important share of society’s true capital stock, as argued by Corrado, Hulten, and Sichel (2005, 2006), transactions for their use can be expected to occur frequently. Robbins confirms the growing importance of IP property transactions, finding, for example, that IRS totals for royalty receipts have a ten-year average growth rate of 11 percent per year, compared with a growth rate of 6 percent per year for services as a whole.

Robbins’ analysis of BEA surveys of international transactions in royalties and license fees in 2002 shows that industrial processes (which include patents and trade secrets) and general use software account for the bulk of U.S. receipts from unaffiliated parties. In payments to unaffiliated parties, industrial processes licensed by the pharmaceutical industry stand out as important, but in IRS data both this industry and the computer and electronics industry are important recipients of licensing receipts.

Robbins also finds that trade in royalties and license fees is predominantly conducted through affiliates and that the United States has a large trade surplus in both these categories. For royalties and license fees this surplus is \$25 billion in 2002, compared with a trade surplus in services as a whole of \$61 billion. This is consistent with the picture of a reorganized structure of production in which manufacturers separate the location of the research, development, and testing functions from that of the more rote function of product assembly, retaining only the former within the United States.

Next, Robbins investigates the supply and use of royalties and license fees by U.S. industries, including domestic transactions. One mystery is why royalty receipts in the industry data from the Economic Census for 2002 are so low. The Census Bureau royalty receipts total \$24 billion, compared with \$115.9 billion in receipts tabulated from business tax returns by the Statistics of Income (SOI) program of the IRS. Also, respondents to BEA surveys covering just receipts from foreign sources report \$44.5 billion in royalties. The SOI estimates could be affected by double-counting of pass-through transactions, and they include some royalties received by foreign affiliates of MNCs that file consolidated tax returns, so the under-

count in the Economic Census is not as great as might be surmised from comparing it with the SOI figure. Moreover, the BEA royalties include general licenses for the use of software, which, unlike the licenses to reproduce software, do not belong in the intermediate input category of royalties that Robbins and the Census Bureau are trying to measure. Nevertheless, the Census data omit some types of establishments, and in cases of reciprocal arrangements such as cross-licensing agreements they appear to reflect only net payments, not the gross payments and receipts collected by BEA. On the whole, Robbins finds that the SOI data are more complete than the Census data as a basis for estimation of the industries' supply and use of rights to benefit from intellectual property.

The production of much of the intellectual property associated with royalty payments requires R&D. International transactions in research, development, and testing (RDT) services are the topic of a chapter by Francisco Moris, "R&D Exports and Imports: New Data and Methodological Issues." An extensive literature exists on spillovers and disembodied flows of knowledge across borders. Yet in contrast to these implicit transactions, explicit transactions in knowledge between the United States and other countries have not been analyzed in any detail. Moris' study fills this gap in the literature. He finds that MNCs have a large role in the performance of RDT in the United States: out of \$208 billion of RDT expenditures in 2004, \$152 billion was done by U.S. MNCs at home and \$30 billion was done by U.S. affiliates of foreign MNCs. Particularly noteworthy is the role of U.S. affiliates of foreign MNCs as performers of R&D for their parents. These affiliates export a substantial fraction of the RDT that they perform, and their exports of RDT services far exceed their imports. Indeed, they account for most of the overall U.S. trade surplus in RDT services, with the remainder accounted for by U.S. MNC parents. As MNCs segment their production process into activities that can be parceled out among countries in a cost-effective manner, the United States evidently continues to have a comparative advantage in the performance of RDT.

Moris also develops a classification scheme for business R&D and for trade in RDT services. An influential previous proposal, found in the Organization for Economic Cooperation and Development's (OECD's) 1993 and 2003 Frascati Manual, considers only funding and performance of R&D, while measures of trade in business R&D services consider just the use and performance of these services. Moris finds that all three dimensions are important for understanding international transactions in R&D, however. In a comprehensive set of measures that includes the performance, the funding, and the use of R&D, U.S. transfers to fund foreign R&D are seen to be \$31 billion. Unfortunately, data on transfers from abroad to US performers of R&D are unavailable, which prevents an estimate of net transfers to performers of R&D or one of the overall net effect

of R&D services transactions on the U.S. balance on current account. However, the United States uses less R&D services than it performs, leaving it with a trade surplus of almost \$4 billion in this item in 2004.

A distinctive feature of trade in intellectual property services and other information products is the degree to which export success may hinge on the ability to overcome barriers posed by cultural and linguistic differences. In “International Trade in Motion Picture Services” Gordon H. Hanson and Chong Xiang estimate a modified version of the gravity model of trade to investigate the effect of such trade barriers on one of the most successful export products of the United States. To carry out their study, Hanson and Xiang use data from a commercial source to construct measures of trade in motion picture services based on box office receipts by country of origin. Hanson and Xiang also develop indexes of language closeness to English that serve as measures of linguistic and cultural distance from the United States.

Box office revenues for U.S. films in Europe are quite large compared to revenues from domestic sources, with much variation across countries. Econometric models of the sources of variation in the revenues grossed by American movies relative to domestic films confirm that trade costs arising from linguistic and cultural differences have large, statistically significant effects. Hanson and Xiang also find that countries that are better situated to produce domestic films themselves have smaller relative consumption of U.S. films. As is predicted by theories of scale effects for the production of differentiated products, a large domestic market as measured by a country’s GDP relative to the United States confers important advantages in motion picture production. Finally, explicit trade barriers to film imports for European countries are found to have a significant effect in one of the specifications.

Part III: Offshoring of Services

Employees who manufacture goods in wealthier countries have long had to worry about losing their job to a low-wage overseas competitor. Recently, however, advances in information and communications technology (ICT) have led to the phenomenon of offshore sourcing of many service functions previously located in a domestic establishment. As a result, displacement by foreign labor has also become conceivable for many employees in the service sector of wealthier countries. In a global economy where millions of educated employees are willing to work at considerably lower wages than predominate for service workers in the U.S. and where information transmittal has become close to costless, predictions reminiscent of Presidential candidate Ross Perot’s “giant sucking sound” of jobs and capital being drained from the American economy have reentered the debate.

Yet two of the chapters in this volume carefully analyze the effects of services offshoring that has already occurred and obtain results that are in

stark contrast with the dramatic future that has been imagined. The first chapter on this subject, “Does Service Offshoring Lead to Job Losses? Evidence from the United States,” by Mary Amiti and Shang-Jin Wei, notes that news stories on job losses due to offshore outsourcing numbered in the thousands in 2004, suggesting that this phenomenon is quite important. To see if this is so, Amiti and Wei assemble detailed data covering input-output (I-O) tables, trade, and domestic labor markets to estimate effects of offshore outsourcing on domestic employment from 1992 to 2000. In regressions covering 96 manufacturing industries, with instrumental variables techniques to control for endogeneity in changes in imported materials and services inputs, they find no evidence of negative employment effects from growth in imported inputs. Effects at aggregate levels are, however, expected to be smaller than at disaggregated levels because in the flexible labor markets of the United States, labor is mobile across industries. Indeed, after disaggregating the data into 450 industries, services offshoring is found to have a statistically significant negative effect on employment. Nevertheless, the implied effect on manufacturing employment is a modest -0.4 percent over the period covered by the investigation.

A chapter by Robert E. Yuskavage, Erich H. Strassner, and Gabriel W. Medeiros, “Outsourcing and Imported Services in BEA’s Industry Accounts” also uses I-O accounts data to study employment effects of offshore outsourcing. This chapter also provides a guide to where specific types of information on trade in services may be found in the three different sets of accounts at BEA: the ITAs; the National Income and Product Accounts (NIPAs); and the Annual Industry Accounts (AIAs), which include the annual input-output (I-O) accounts and the integrated GDP-by-industry accounts. The differences in treatment of trade in services between these accounts are not always obvious. For example, duties on imported goods are excluded from imports in ITAs and the NIPAs, where goods trade is on a free-on-board (f.o.b.) basis. Yet in the I-O accounts—where we can find commodity detail on imports in the use of commodities tables—duties are included in the value of the goods. To prevent a discrepancy in total imports between the I-O accounts and the NIPAs and ITAs, the duties added to the value of goods imports are subtracted from imports of wholesale trade services, leaving the I-O accounts with a smaller measure of overall imports of services than the NIPAs or the ITAs.

The I-O accounts include the bulk of imported services in a line labeled “noncomparable imports.” The term “noncomparable” means that the imported item has no domestic counterpart, so it is tempting to conclude that imported services are largely not in direct competition with services produced in the United States and hence have little potential to displace domestic employment. This would be a mistake, however, because business, professional, and technical (BPT) services that are outsourced by MNCs to a foreign affiliate are often classified as noncomparable imports. The au-

thors therefore develop corrected estimates of total imports of BPT services that include those treated as noncomparable imports in the I-O accounts.

The authors next use the AIAs to estimate the use by industries of outsourced services and of outsourced services from foreign sources. They find that offshore outsourcing of services is indeed growing rapidly, so that the imported component of the outsourcing-related services doubled between 1997 and 2004. Nevertheless, it has not yet become large enough to account for much of the slowdown in the competing domestic industry that occurred after 2000 or to have substantial effects on domestic employment. For manufacturing, imports supply only 5 percent of all outsourced BPT services in the years after 2001, and for private industries in the aggregate imports supply around 3 percent of these services.

Even though the studies of offshore outsourcing find that its effects thus far on U.S. labor markets and industrial structure have been modest, Blinder (2006) argues that in the not-so-distant future imports of newly tradable types of services may expose tens of millions of employees here to foreign competition, with potentially drastic effects on U.S. labor markets. The potential effect of offshore outsourcing on labor markets in the United States and other OECD countries is the topic of Desirée van Welsum and Xavier Reif's chapter, entitled "We can Work it Out: The Globalization of IT-enabled Services." As background for their inquiry, the authors provide evidence from trade and FDI patterns from many countries pointing to trends toward increasingly globalized production of both services in general and outsourcing-related services (defined as business services plus computer and information services) in particular. To discern the outer limit of where these trends could take us in terms of labor market impacts on OECD countries, we can consider what percentage of jobs is potentially offshorable. The authors estimate these percentages based on counts of employees engaged in detailed occupations that have four offshorability attributes: (a) intensive use of information and communication technologies (ICTs); (b) an output that can be transmitted by ICTs; (c) highly codifiable knowledge content; and (d) no requirement of face-to-face contact.

For the OECD countries that have sufficiently detailed data to be included in the analysis, the results show that 18 to 20 percent of total employment is potentially offshorable. (This estimate is slightly above the share of employment in tradable services found for the United States by Jensen and Kletzer [2006], but the difference is in the range that might be expected given the upper bound interpretation of van Welsum and Reif's results.) For less-skilled offshorable occupations, declines in employment shares in Canada, Australia, and especially the United States suggest that effects of offshoring are already being felt, though other factors, such as technology adoption, could also be responsible for these declines.

The authors next fit fixed effect regressions explaining offshorable em-

ployment as functions of indicators of openness, use and production of ICT goods, flexibility of product markets, and the importance of services in the economy. The results show that exports of business and other information services are associated with increased employment in offshorable occupations, while imports of these services are associated with decreased offshorable employment. Thus, trade in such services does seem to matter in the expected direction. In addition, outward FDI and ICT intensity are associated with increased employment in skilled offshorable occupations and decreased employment in unskilled ones, perhaps because of needs for headquarters staff and complementarities between skill and ICT use and production. Finally, inflexibilities introduced by regulation are negatively associated with employment in both skilled and unskilled offshorable occupations, perhaps because they slow an economy's evolution away from declining goods-producing industries that have little offshorable employment. This finding, together with the finding of a positive association between the importance of services and skilled offshorable occupations, suggest that the future evolution of the economy will tend to increase the share of employment that is potentially offshorable.

Part IV: Topics in the Measurement of Price and Productivity

Several studies have used data from the Annual Industry Accounts published by BEA to investigate industries' contributions to aggregate productivity growth. Another strand of the productivity literature has focused on MNCs, reporting evidence that their productivity level exceeds that of purely domestic firms and that foreign affiliates' adoption of productivity-enhancing technologies creates spillovers for the host economy as domestic firms learn about these technologies and adopt them as well. In "The Contribution of Multinational Corporations to U.S. Productivity Growth, 1977–2000" Carol Corrado, Paul Lengermann, and Larry Slifman unite these two strands of the literature, melding detailed industry data from the AIAs with BEA's data on MNC parents and affiliates to examine the role of MNCs in the productivity performance of the United States.

A striking speedup in productivity growth after 1995 has been credited primarily to the production and use of IT and to an improved performance of wholesale and retail trade brought about by innovations in distribution technologies and organization. Using the merged data set to decompose the private business sector in a different way, the authors discover, however, that MNC parents or affiliates located in the United States played a major role in the productivity speedup. (These estimates are not necessarily inconsistent with the earlier findings: some of the outperformance of the MNCs can be attributed to their overrepresentation in IT manufacturing, for example.) Furthermore, although the MNC sector represented about 25 percent of the gross product of all nonfarm private businesses and about 40 percent of nonfinancial corporate gross product, it accounted for more

than half of the increase for all nonfarm private businesses and all of the increase in the labor productivity of nonfinancial corporations in the late 1990s. This finding raises intriguing questions about the productivity growth advantages that come from having overseas affiliates or an overseas parent. These may include increased ability to benefit from international flows of knowledge or intellectual property, the ability to replicate best practices on a global scale, and the ability to offshore activities with low labor productivity levels. It also raises questions about whether their high productivity levels and growth rates mean that MNCs are destined to play an increasingly dominant role in U.S. economic activity.

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