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Effects of Globalization on IT Services

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Effects of Globalization on IT Service Measurements

Introduction

Economic globalization has helped to accelerate a kind of economic Darwinism that influences companies in both developed and developing countries. This evolution of the business model can be readily observed as companies attempt to maximize profits and gain competitive advantage through geographic arbitrage.¹ Three of the most popular terms used to describe this adaptive business model are offshoring, offshore outsourcing and nearshoring. Before proceeding further it may be useful to draw at least a minimal distinction between the terms. The definitions used below are simplistic but will serve for the purpose of this brief report.

- Offshoring: Relocating a business process to a subsidiary or other type of affiliate in another country.
- Offshore Outsourcing: Contracting with an external company to perform primary or support business processes in a country other than the one where the services are actually developed.
- Nearshoring: Sourcing service activities to a foreign affiliate or external company that is geographically close. Nearshoring is not a precise term but is often used in reference to time zones, such as no more than 3 time zones distant. Nearshoring for U.S. companies could include services sourced in Mexico or Canada, but not India or China.

Outsourcing, whether offshore or nearshore, is generally thought to be driven by cost savings (mostly labor), competitive advantage or enabling a company to increase focus on core business processes. On the other hand, offshoring, whether to a subsidiary or affiliate, appears to be driven by a somewhat different priority of motivations. Cost savings and competitive advantage certainly play a role in offshoring, but the U.S. Bureau of Economic Analysis (BEA) has found that the most important motivation for Multinational companies (MNCs) to offshore “seems to be access to large and prosperous markets”. In a BEA report, Kozlow (2006), says that the data suggests that market access tends to drive MNC foreign investment more than access to low wages.²

Aggregate Services Trade Data

Detailed data on cross-border trade in services has been somewhat sketchy until recently. Prior to 2006 BEA was not able to publish detailed data on affiliated trade.³ For the

¹ Geographic arbitrage often boils down to labor arbitrage although advantages other than reduced labor costs are commonly targeted.

² Presentation to the American Economic Association 2006 Annual meeting, Boston, MA., January 6, 2006. Presentation slides available at www.bea.gov/papers/pdf/AEAMNCpresentation5.pdf.

³ BEA obtains trade data from several mandatory surveys as well as other sources “including U.S. Customs and Border Protection, other Federal agencies, private sources and partner countries”.

purposes of BEA surveys, “affiliated transactions consist of intrafirm trade within MNCs—specifically trade between U.S. parent companies and their foreign affiliates and trade between U.S. affiliates and their foreign parent groups”. BEA expanded and improved the collection of trade data in 2006 using new surveys that allowed more detailed estimates for affiliated trade, especially for the category “Business, professional and technical services” (BPT).⁴ BEA published a complete description of the survey improvements in their October 2008 issue of “Survey of Current Business”, pages 16-37. BEA also makes available the actual surveys used to collect cross-border trade data at www.bea.gov/surveys/iussurv.htm in the section titled “International Surveys: U.S. International Services Transactions”.

Aggregate BEA data on trade in services is shown below. An important fact that is not shown in table 1 is that U.S. sales of services to foreign markets sold through foreign affiliates were over \$800 billion in 2006. BEA uses the acronym MOFA (majority owned foreign affiliate) for this type of transaction. MOFAs are not included in the cross-border trade numbers but clearly are the most important source of U.S. sales to foreign markets. Conversely, foreign sales of services to U.S. markets sold through U.S. affiliates were over \$600 billion in 2006 (the most recent year for this type of data). BEA uses the acronym MOUSA (majority owned U.S. affiliates) for this type of transaction. MOUSAs are also excluded from cross-border trade numbers and are the most important source of foreign sales to U.S. markets, exceeding services imports by more than \$250 billion.

Table 1. U.S. Cross-Border Trade in Services 2006-2007⁵
(Millions of dollars)

	2006 Exports	2006 Imports	2007 Exports	2007 Imports
Total private services	415,321	313,865	479,980	341,126
Unaffiliated	305,188	246,074	347,810	264,411
Affiliated	110,133	67,792	132,170	76,716

Globalization has expanded trading opportunities in general but with uneven effects. Unlike U.S. trade in goods which have run large deficits for many years, U.S. trade in services has consistently produced surpluses. The data from table 1 show a U.S. trade surplus in services of more than \$138 billion in 2007. The contrast with trade in goods is remarkable. In 2007, the U.S. trade deficit in goods was almost \$831 billion dollars.⁶ Not only has cross border trade in services helped to offset at least some of the U.S. balance of trade deficit, but the growth in services exports has consistently outpaced the growth of U.S. GDP. Table 2 shows annual growth for U.S. services exports compared to annual growth in U.S. GDP and U.S. services imports.

⁴ Affiliated transactions are now collected by BEA on the BE-120, BE-125 and BE-185 surveys.

⁵ http://www.bea.gov/scb/pdf/2008/10%20October/services_tables.pdf

⁶ http://www.bea.gov/newsreleases/international/trade/trad_time_series.xls

Table 2. Annual Growth of U.S. Services Exports, GDP and Services Imports 2002-2007⁷

	Services Exports % Change	GDP % Change	Services Imports % Change
2003	3.8	2.5	6.1
2004	15.9	3.6	16.3
2005	9.6	2.9	8.3
2006	12.7	2.8	12.3
2007	15.6	2.0	8.7
Total Growth 2003-2007	71.7	14.7	63.1

Detailed Services Trade Data

While the aggregate data in tables 1 and 2 show U.S. trade in services has been and continues to be an important engine of economic growth, data at a more disaggregate level may be more analytically useful. Of particular interest is the services category—BPT—because it is most often associated with offshoring and offshore outsourcing.⁸ The most important types of services included in BPT along with recent trade data are shown in table 3.

Table 3. U.S. Cross-Border Trade in BPT Services⁹
(millions of dollars)

	2006 Exports	2006 Imports	2007 Exports	2007 Imports
BPT services	89692	61068	107675	68763
Computer and information services	10341	13604	12728	14815
Management and consulting services	22058	19361	24699	20475
R&D and testing services	12821	9429	14698	11437
Operational leasing	10389	1161	11664	1046
Other BPT services	34083	17513	43887	20990

Using data from tables 1 and 3, we can see that BPT services accounts for about 22 percent of all U.S. services exports and about 20 percent of all U.S. services imports. Services related to IT are primarily measured in the Computer and information services (C&I) component of BPT services. U.S. exports and imports of CI have followed a steady upward trend since 1997 that is partly due to the ubiquitous presence of the Internet and general declines in the cost of telecommunication. However, unlike other

⁷ From BEA interactive National Income and Product Account tables at <http://www.bea.gov/national/nipaweb/Index.asp>

⁸ GAO report to Congress, October 2005, “U.S. and India Data on Offshoring Show Significant Differences”. Pg. 2. (www.gao.gov).

⁹http://www.bea.gov/scb/pdf/2008/10%20October/services_tables.pdf; tables 1 and 2.

components of BPT services, the U.S. surplus in C&I services shifted to a deficit in 2004 that has continued through the most recent data in 2007.

C&I services are not explicitly defined in NAICS or ISIC but as used in the BEA trade survey BE-125, C&I includes services such as data entry processing; computer systems analysis, design, and engineering; custom software and programming (including web design); integrated hardware/software systems; and other computer services (timesharing, maintenance, web site management, and repair).¹⁰ In other words C&I services can also be broadly thought of as IT services.

Table 4. U.S. Cross-Border Trade in Computer and Information Services 2006-2007¹¹
(millions of dollars)

	2006 Exports	2006 Imports	2007 Exports	2007 Imports
Total	10341	13604	12728	14815
Unaffiliated	7950	3006	9396	3380
Affiliated	2391	10598	3332	11435
By Region				
Canada	1333	2077	1333	2562
Europe	5704	6389	7384	5751
UK	3035	2273	3289	1513
Germany	453	1218	565	1317
Latin America	855	489	1005	428
Africa	273	(D)	276	75
Middle East	362	(D)	351	136
Asia & Pacific	1814	4256	2380	5873
Australia	479	262	461	267
Japan	421	458	650	439
China	126	246	259	543
India	151	2787	193	4070

D Suppressed to avoid disclosure of individual companies.

The data in table 4 show some of the details of the U.S. trade deficit in C&I services in 2006 and 2007. As previously mentioned, prior to 2006 affiliated trade data was not shown at a detailed level. All major regions are included in table 4, but country detail was limited to the largest or fastest growing to keep the data presentation manageable. For those interested in more country detail the data source is listed in footnote 11. One of the striking facts revealed in table 4 is the importance of affiliated and unaffiliated transactions reverse when comparing exports and imports. For U.S. exports, unaffiliated transactions dominate with 74 percent of sales in 2007, but for U.S. imports, affiliated transactions dominate with 77 percent of sales in the same period. The importance of

¹⁰ www.bea.gov/surveys/pdf/be125.pdf, pg. 16.

¹¹ Ibid, Tables 7.1 and 7.2.

affiliated import sales is driven primarily by payments from U.S. parents to their foreign affiliates (68 percent) rather than payments by U.S. affiliates to their foreign parent groups (32 percent).¹² Unfortunately the BEA cross-border surveys do not identify what portion of the sales data is directly associated with offshoring or offshore outsourcing.

The U.K. is the most important country in terms of U.S. exports of C&I services accounting for approximately 53 percent of C&I exports to Europe and 26 percent of all C&I exports in 2007. India is the most important country in terms of imports of C&I services accounting for approximately 27 percent of all U.S. C&I imports in 2007. India sales of C&I services to the U.S. grew 46 percent in 2007 and much of that growth is undoubtedly due to the effects of globalization, especially offshoring and offshore outsourcing, though details on specifics are lacking. The growth of India's C&I exports is an important reason why the Asia and Pacific region overtook Europe to become the largest regional exporter of C&I services to the U.S. in 2007.

Services Trade Data Clarity and Comparability

The data on international trade continues to improve, but a lack of transparency remains when trying to assess specific trade effects on IT services caused by globalization. For instance it would be helpful to have breakouts of affiliated and unaffiliated trade in IT services at the country level.

Another issue that potentially clouds the view is the degree or lack of comparability in trade data between some countries. India is often cited as one of the prime examples of geographic arbitrage used by companies in developed countries to reduce labor costs in IT services. However, quantifying the geographic shifts in IT services production due to globalization effects is complicated when different methodologies and definitions are used to collect trade data. For instance, a report by the U.S. Government Accountability Office (GAO) in October 2005, "U.S. and India Data on Offshoring Show Significant Differences", points to different data collection methodologies. These collection and methodological differences led the U.S. to report in 2003 that BPT service imports from India as more than 20 times smaller than India's report of BPT exports to the U.S.¹³ The BPT data cited by GAO includes C&I services, but do not drill down to the C&I level. Trade data for 2002-2003 BPT services from India to the U.S. is shown in Chart 1. The biggest gap occurs in 2003 when the U.S. reported imports of BPT services from India of \$420 million and India reported exports of BPT services to the U.S. of \$8.7 billion. The GAO report describes many of the reasons for the discrepancy, but the main contributor appears to be in how BEA and India define BPT services. India's valuation of BPT services are based on Indian trade associations and include services provided by India nationals residing in the U.S.¹⁴ In contrast, BEA "follows international standards for balance-of payments accounting by excluding the compensation paid by U.S. firms to

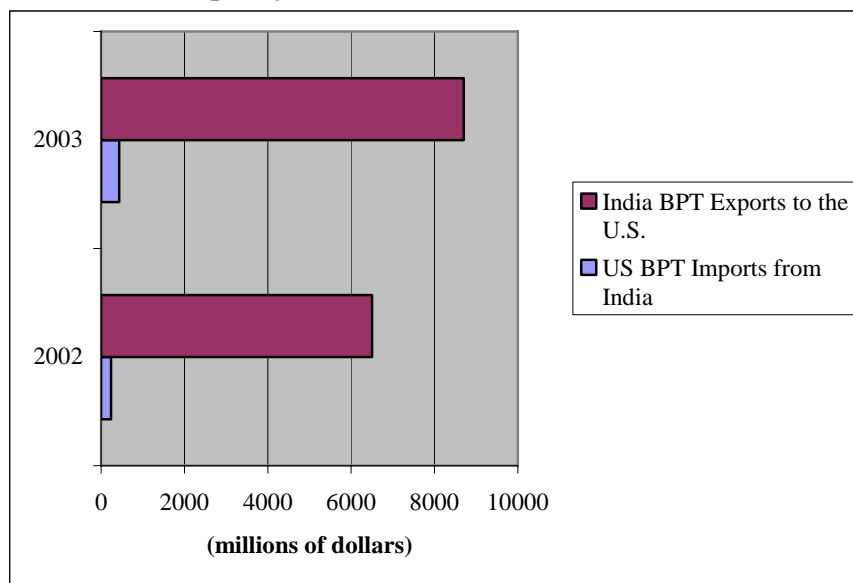
¹² Ibid.

¹³ BEA's discussion of the GAO report can be found on their Web Site (www.bea.gov) under "Frequently Asked Questions"; question number 324.

¹⁴ According to the GAO report; "Indian officials estimate that this factor may account for 40 to 50 percent of the difference between U.S. and Indian data." Pg. 3.

U.S. residents”. Another contributor to the data discrepancy was the previously mentioned inability of the BEA to include affiliated transactions in BPT services prior to 2006.¹⁵ There are several other reasons for the gap in trade statistics between the U.S. and India mentioned in the GAO report, some of which may have been partly addressed in the meantime. However, the main issue was accurately described years ago by Kozlow and Borga (2004) when they stated somewhat obviously that “bilateral and private sector comparisons are difficult” and some questions on offshoring require more transparent data and robust economic models than are currently available. Their comments remain as accurate and relevant today especially when it comes to collecting private sector data on offshoring or offshore outsourcing.¹⁶

Chart 1. Discrepancy Between U.S. and Indian Trade Data for BPT Services



Outsourcing and Industry Classification

A fundamental classification question has been brewing for over a decade in the U.S. concerning how to classify the primary output of companies that outsource the transformation of inputs. The Economic Classification Policy Committee (ECPC) is currently reviewing recommendations on how units that outsource transformation activities for goods should be classified under NAICS.¹⁷ Their work, when completed, will likely provide classification guidance to the PPI on service providers that outsource/offshore all or parts of their outputs. The Office of Budget and Management

¹⁵ In 2006, when BEA began to include affiliated transactions at a more detailed level, they reported imports of BPT services from India at \$4.5 billion.

¹⁶ To add some perspective, BEA has estimated that even if actual growth of services imports was 50 percent faster than official statistics between 1992 and 2003; real GDP and productivity growth would be 0.1 percent lower.

¹⁷ The ECPC includes representatives from statistical agencies in the U.S., Canada and Mexico.

(OMB) released for public comment a Federal Register notice on January 7, 2009 (vol. 74, No. 4) listing the preliminary classification options developed by the ECPC. Included in the Federal Register notice is an extensive background description of the classification issue of which a few small but critical parts are quoted here.

...the classification of units that do not operate factories, plants or mills, yet are a driving force behind goods being available in the market, is not clearly defined in NAICS. A preliminary review of classification choices for factoryless goods producers, that is, units that perform all of the entrepreneurial functions of a manufacturer but outsource the actual transformation to one or more partners or manufacturing service providers, was narrowed down to two possibilities by the ECPC. First, these units could be classified within the manufacturing sector because without these units, the goods would not be produced and brought to market. Alternatively, these units could be classified within the wholesale trade sector, because they purchase critical input transformation services from others and are more like a traditional wholesaler who buys and sells goods....Classification of factoryless goods producers to the manufacturing sector would result in the full value of goods, including returns to intellectual property and entrepreneurial risk, being included in manufacturing. Classification to wholesale trade would result in margins that include returns to intellectual property and entrepreneurial activities, but limit manufacturing to units that are undertaking physical transformation...Classification of factoryless goods producers to either manufacturing or wholesale trade will affect current statistical programs and the estimates that they produce. All of the agencies represented on the ECPC share a concern about the ability to identify and consistently classify factoryless goods producers regardless of the ultimate classification. Beyond that common concern, specific impacts on statistical programs addressing input/output analysis, industry gross domestic product, trade in goods, trade in services, producer prices, productivity and balance of payments must be considered. Additionally, the impact on international standards such as the 2008 revision to the System of National Accounts and the Balance of Payments Manual must be considered.”

It is noteworthy that the classification options described above leave out any mention of input ownership as a classification criterion which for many (in the U.S.) is a step forward. As previously mentioned the current classification review of the ECPC is focused on outsourcing as it relates to the production of goods, however their final decision will inevitably invite parallel conclusions to the outsourcing of services, including offshore outsourcing.

A Hands-On View

It was agreed at last year's Voorburg meeting that papers discussing globalization effects on SPPIs (IT services) should be accompanied by “case studies for selected Multinational companies”. In the U.S., budget constraints eliminated the possibility of travel for on-site visits to conduct in-depth interviews. Instead, several PPI respondents were contacted by phone and asked to provide information for mini-case studies concerning their strategies for dealing with globalization and how it may be affecting their business. Globalization as it relates to outsourcing/offshoring turns out to be a sensitive subject due to the issue of

possible displacement of domestic jobs, especially in the current economic environment. Therefore the amount and detail of information that PPI respondents were willing to divulge was limited. Because the companies contacted are PPI respondents, their identities are confidential; however, they can be generally described as publicly traded companies with international sales of IT services and multiple offices in different countries. Their IT products are broadly based and include some custom software (not necessarily their primary output) and other more general IT consulting services. The discussions with company representatives tended to be somewhat vague and general because of their previously mentioned sensitivity to the subject of offshoring/outsourcing. Despite their reticence, several interesting points were made by the companies. For instance all of the companies contacted indicated that the types of services that they offshore outsourced were the same or approximately the same quality as when produced domestically. If one were to generalize from this very limited sample, then the implication is that offshore outsourcing in itself may not signal the need for quality adjustment in an SPPI that follows the Fixed Input Output Price Index (FIOPI) model. The companies also stated that outsourcing was a small part of their business and not likely to expand in the near-term. Instead, their primary offshore activities are accomplished through subsidiaries with the main purpose of gaining market access rather than reducing labor costs. Another point that the companies agreed on, was that problems with intellectual property laws/enforcement in developing countries tended to limit outsourcing to technical/customer support, testing and development activities. Core processes deemed to be unique because of intellectual property were not outsourced, but limited to in-house domestic operations or offshored to company owned/controlled subsidiaries. Finally, the biggest impact that globalization has on pricing come from fluctuations of the dollar relative to currencies of the countries in which IT services are marketed, though overall pricing strategies continue to be closely tied to competitive conditions in the U.S. market.

Globalization Effects on SPPIs for IT Services

IT services, whether produced in-house, or partially/completely outsourced or offshored always present price practitioners with difficult measurement challenges. Much has been made of instances when part or all of a job previously produced in-house (domestically) is outsourced, especially when the outsourcing is offshore. Usually the concern is that the outsourced job or job component is produced in a lower cost country resulting in a change to the transaction price, margins or both. From a purely SPPI perspective, the use of geographic labor arbitrage to reduce cost is not a concern.¹⁸ The real issue is whether output has changed as a result of a shift from an internal to external production transformation function. As long as outputs are unchanged, the primary interest of an SPPI is to record transaction prices that are tied to the firms revenue function; see Triplett (1983) or Fisher and Shell (1972). If a component of an IT service is offshore outsourced resulting in lower costs for the same service in period 2 compared to when produced domestically in period 1, any price change should be recorded in an output-based SPPI as

¹⁸ This ignores the potential problem of industry classification of the establishment if all primary services are outsourced; the issue is currently under review in the U.S. and outside the scope of this report.

a pure price change (no quality adjustment required). Any cost difference due to a shift to an outsourced transformation activity is irrelevant if output remains unchanged. Understandably, national accountants and productivity staff may have a different view due to their own statistical mission. The different viewpoints may be somewhat institutional in nature depending on how integrated the various statistical programs are organized. In the U.S. the national accounts, productivity and PPI are independent programs, each with their own conceptual targets. For instance, the U.S. PPI recognizes the national accounts as an important client and tries to provide the best deflators while adhering to the FIOPI model as its conceptual foundation.

A different price measurement challenge is presented when a job or components of a job is outsourced and results in qualitatively different inputs. In this situation the FIOPI model has been violated and some type of quality adjustment to account for the change in output quality is required. In FIOPI models, a common approach for valuing quality change is called the resource cost method which requires the respondent to provide information on the marginal cost of new input requirements that account for quality change. The key here is that the respondent is providing cost data on their production function, not the production function of an outsourcing services provider. There has been some discussion about obtaining cost data from outsourcers rather than sampled respondents, but for purposes of a FIOPI based SPPI, this information is not required (nor appropriate) for valuing quality change for the output of a sampled respondent. Valuing changes in output quality continues as to be one of the biggest challenges facing price index practitioners due to difficulties in acquiring appropriate data. There are alternatives to the resource cost approach such as overlap or imputation, but one of the most often discussed is hedonic models. Unfortunately, hedonic techniques do not appear to be a promising option as a quality change valuation tool for IT services at this point. The lack of research and development efforts for hedonic techniques in IT services are due to scarce agency resources, the complexity of outputs (specific IT jobs), and lack of sufficient data to support a robust model. The main point here is that explicitly valuing changes in IT services outputs has always been a problem for statistical agencies whether outsourcing was a factor or not.

Conclusion

There is no question economic globalization has enabled companies to shift operations around the world to gain efficiency, talent and competitive advantage. Such shifts present measurement challenges to government statistical agencies, especially for output and productivity. However, from a U.S. pricing perspective, the conceptual foundation of the transaction output price that is tied directly to the revenue function continues to rule. It would appear that if adjustments to outputs, including foreign trade statistics, are needed due to shifts to offshoring or offshore outsourcing, then such adjustments are best developed in the national accounts. Questions of scope or classification, such as whether a service can be defined as domestic or import depending on the role of offshore outsourcing are currently under review in the U.S.

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