Measuring the Impact of Trade in Services: Prospects and Challenges

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Executive Summary:

The large share of employment in the service sector and growing services trade present the potential for trade in services to have a significant impact on the U.S. economy and highlight the importance of being able to analyze the impact.

International trade theory and previous empirical work on the manufacturing sector stress several key considerations for understanding the impact of globalization:

1. The prevalence (how many activities?), scale (how much is being traded?), and direction (who is trading with whom?)of trade in services
2. How trade in services evolves over time
3. The factor intensities used in services provision
4. The factor intensities across locations
5. Firm-level heterogeneity (in size, factor intensities, productivity, trade activity) within and across industries and countries

Currently available data on the service sector do not support these data needs. Two broad areas require improvement:

Increased industry and geographic detail in trade in services statistics: Current trade in services statistics are not detailed enough to support robust empirical analysis. Increasing the detail will require increased resources to collect information from larger sample of firms, improved access to an adequate sampling frame to support representative sampling, and lower reporting thresholds.

More Detailed Information on Inputs used Services Production in the U.S.: Current data on service sector production within the U.S. do not provide enough information on the factor inputs used in production. More information should be collected on skill intensity, capital intensity, and purchased services. These data should be collected at the establishment level to the extent possible to increase the industry and geographic detail available.

Improving our ability to analyze the impact of trade in services will require:

More funding for service sector data collection and an

Improved sampling frame for the Bureau of Economic Analysis' data collection. The need for an improved sampling frame and potential efficiencies in data collection suggest the

Costs and benefits of moving data collection activities currently performed by the Bureau of Economic Analysis to the Census Bureau should be investigated.

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1. Introduction

The service sector accounts for a large share of employment in the US. Trade in services is growing rapidly. The large share of employment in the service sector and growing services trade present the potential for trade in services to have a significant impact on U.S. firms and workers.

Despite the potential importance of trade in services, the amount of empirical research on the impact of trade in services relative to empirical research of the impact of trade in goods is quite small. An important source of the relative scarcity of work on the service sector in general and trade in services in particular is the fact that the service sector is not measured as well as the goods producing sector.

The organizers of this conference asked me to 1) provide my perspective on whether measuring the impact of trade in services is potentially important, 2) assess the prospects for measuring the impact of trade in services, and 3) identify any data needs, provide priorities for the data needs, and (somewhat provocatively) suggest organizational changes that might improve the statistical system.

This is not new ground. Other organizations have produced reports on varying aspects of the impact of outsourcing, offshoring, services trade and data availability.[1] I will not report on all previous efforts, but will draw on the MIT/Sloan Offshoring Working Group report (Sturgeon and Levy (2006)) as I was a contributor and I think it still pretty accurately reflects needs and priorities.

The purpose of this paper is to take stock of the current prospects for measuring the impact of trade in services on the US economy. I will describe progress economists have made over the past 10-15 years using detailed, establishment level microdata to examine the impact of trade in goods on the manufacturing sector. I will argue that to investigate the impact (or potential impact) of trade in services on the US, one (or at least I) would want to use similar methods.[2] I will then describe what data would be needed to conduct this research and how much of that data is currently available.

[1] Other organizations that have produced reports on this or related topics include the National Academy of Public Administration, National Academy of Sciences, and Government Accountability Office.

[2] This would be a good place to put my perspective in context. I am someone who has done microdata research examining the impact of trade on the US manufacturing sector and tried to do the same for the service sector; not a necessarily representative perspective but one that should support other types of analysis (aggregate data is only as good as the microdata). So, while not everyone prefers to use microdata to examine these types of issues, conducting similar studies on more aggregated data would require collecting the same information.

I then propose priorities for improving the ability of researchers to examine the impact of trade in services on the US economy. Before I turn to the prospects for measuring the impact of trade in services on the U.S. economy, I first provide a brief overview of developments in the U.S. service sector.

2. The Service Sector

2.1 Service Sector Employment

The service sector accounts for the lion's share of employment in the United States (and most other advanced economies). While services have traditionally been viewed as non-tradable, services trade is growing and there is an increasing sense that technological change is making it easier and less expensive to provide services from a distance.

Table 1

NAICS Code		Sector	Employment 2007	Share of Total Employment 2007	Employment Growth 1997-2007
21		**Mining**	**703,129**	**0.5%**	**38%**
22		**Utilities**	**632,432**	**0.5%**	**-10%**
23		**Construction**	**7,399,047**	**5.5%**	**31%**
31-33		**Manufacturing**	**13,333,390**	**9.9%**	**-21%**
42		**Wholesale trade**	**6,295,109**	**4.7%**	**9%**
44-45		**Retail trade**	**15,610,710**	**11.5%**	**12%**
48-49		**Transportation and warehousing**	**4,435,760**	**3.3%**	**52%**
51-56		**Business Services**	**33,430,809**	**24.7%**	**29%**
	51	Information	3,428,262	2.5%	12%
	52	Finance and insurance	6,562,546	4.9%	12%
	53	Real estate and rental and leasing	2,249,353	1.7%	32%
	54	Professional, scientific, and technical services	8,121,171	6.0%	51%
	55	Management of companies and enterprises	2,915,644	2.2%	11%
	56	Administrative and support and waste remediation services	10,153,833	7.5%	38%
61-81		**Personal Services**	**34,595,857**	**25.6%**	**23%**
	61	Educational services	562,210	0.4%	75%
	62	Health care and social assistance	16,859,513	12.5%	24%
	71	Arts, entertainment, and recreation	2,070,524	1.5%	30%
	72	Accommodation and food services	11,587,814	8.6%	23%
	81	Other services (except public administration)	3,515,796	2.6%	8%
		Federal Government	**2,462,000**	**1.8%**	**--**
		State and Local Government	**16,400,000**	**12.1%**	**--**

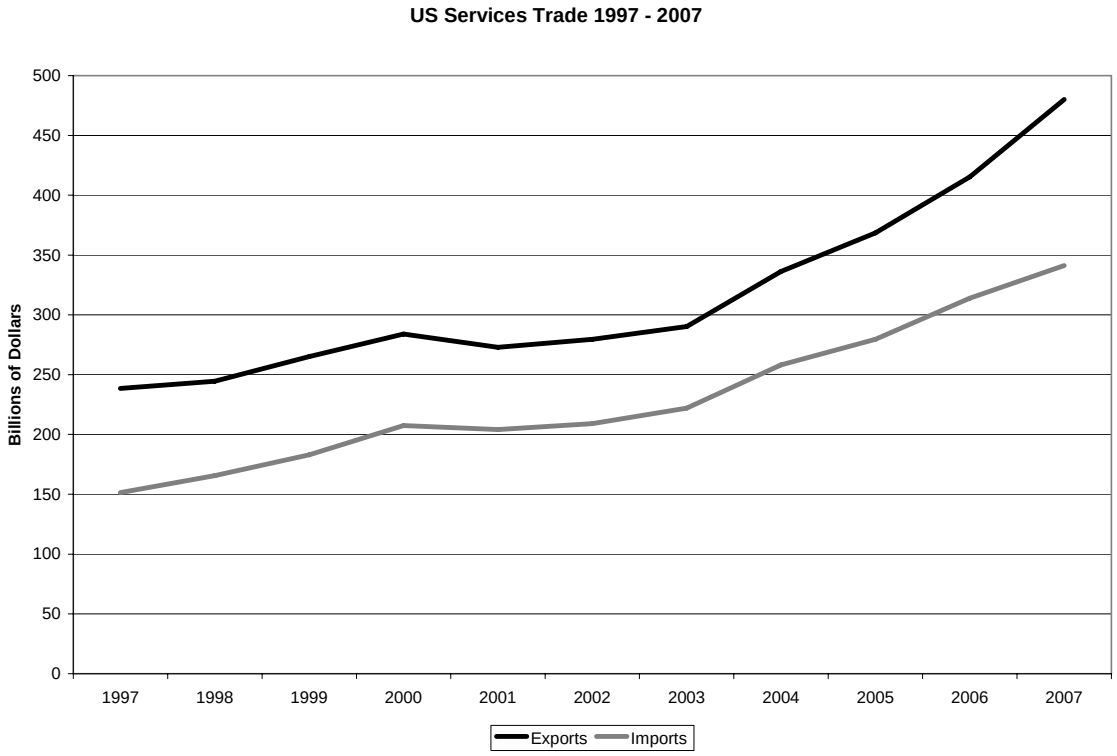
Table 1 presents information on employment and employment growth from the 1997 and 2007 Economic Census. Depending on the definition one uses, the service sector accounts for between more than 60 percent to more than 80 percent of employment. Further, employment in the service sector is growing, in contrast to the manufacturing sector. Services are a large and growing part of the U.S. labor market.

Just because services are a large and growing portion of the U.S. economy does not necessarily imply that trade in services is likely to affect the U.S. economy in a significant way. But the confluence of a variety of changes (e.g. decreasing travel and telecommunication costs, decreasing IT hardware costs, increasing internet availability worldwide) seem to have significantly increased the ease with which services are traded and expanded the scope of service activities that can be provided at a distance. As a result, trade in services is growing.

2.2 Trade in Services: Official Statistics

Figure 1 shows the steady increase in US service imports and exports. Both US services exports and imports about doubled between 1997 and 2007. Services now account for 30 percent of US exports and about 17 percent of US imports.

Figure 1



Source: Bureau of Economic Analysis

Figures 2 and 3 show the composition of U.S. service exports and imports over the period 1992 to 2007. While all of the categories exhibit growth, it is the Other Private Services category s growing the fastest (both imports and exports more than doubling over the period) and contributes the most to overall services import and export growth – Other Private Services account for more than half of the overall increase in services exports and accounts for half of increase in services imports.

Other Private Services are comprised of the following activities: Education, Financial services, Insurance services, Telecommunications, and Business, professional, and technical services. Import and export data for these components of OPS are only available starting in 1997. For both imports and exports, the Business, professional, and technical services category is the largest at the end of the period and contributes the most to OPS growth over the period. A long time series of the BPTS category is not available, so it is not possible to decompose its growth into more detailed components.

Figure 2

Composition of US Service Exports

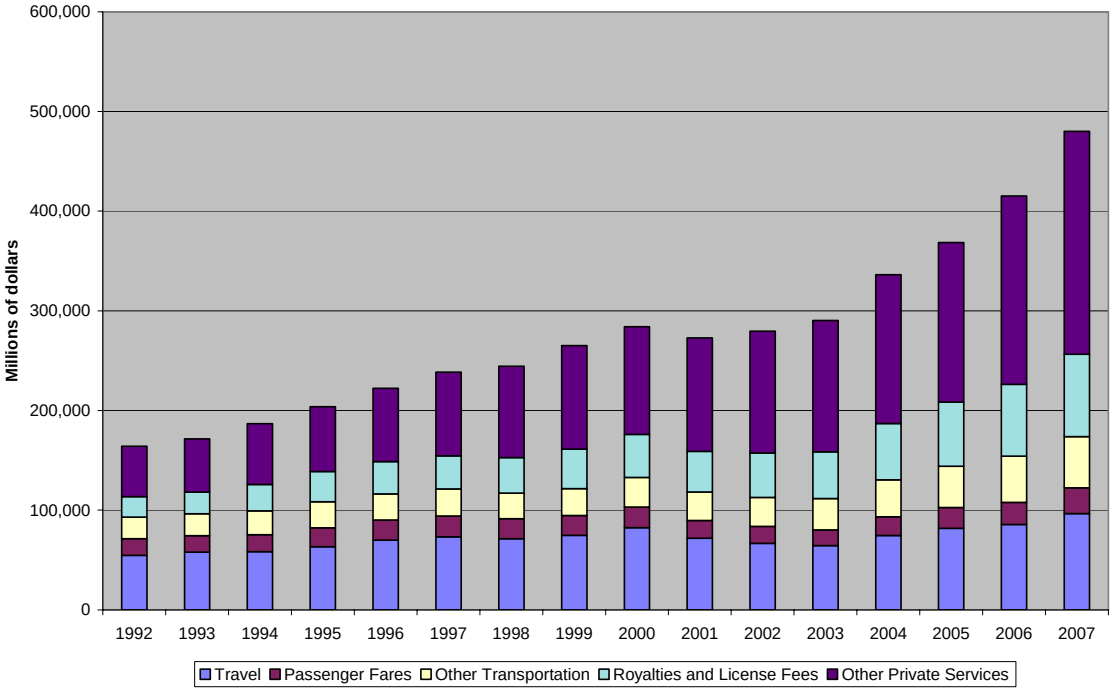
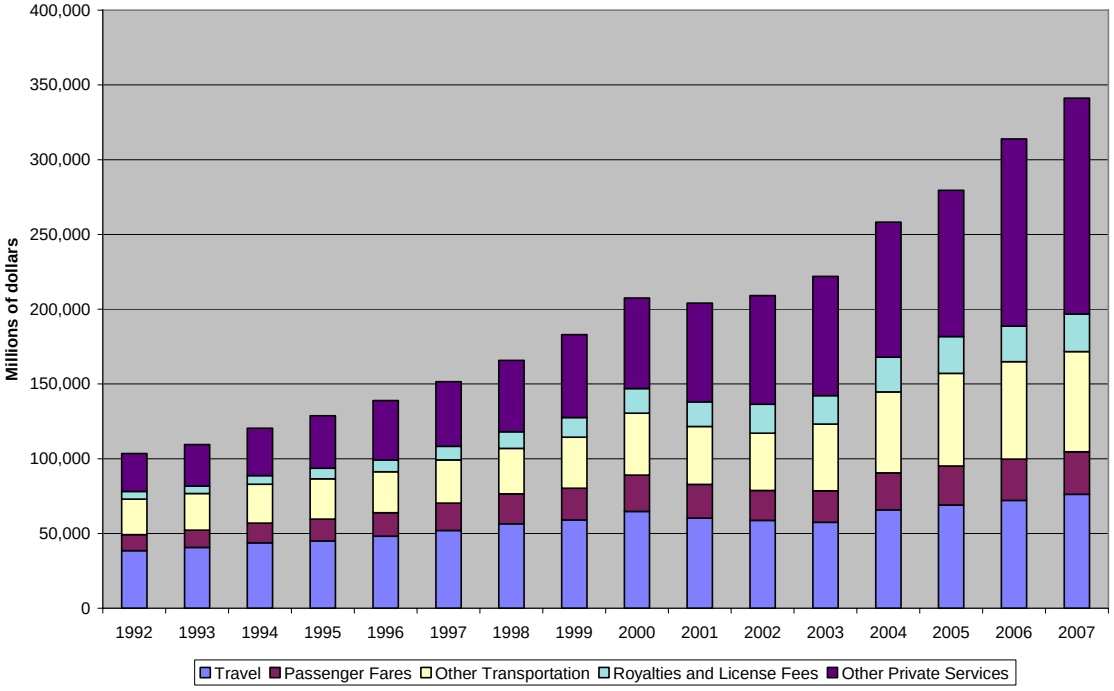


Figure 3

Composition of US Service Imports



Business, professional, and technical services, financial services, and insurance services account for a significant share of service sector growth over the past 15 years. We would like to understand better how trade in these types of services is affecting the US. As discussed in this section, the availability of detailed data going back in time poses a significant impediment to researchers. And while the level of detail for trade in services data is improving, the level of detail is still far more aggregated than in the manufacturing sector. The lack of historical data and the on-going lack of detailed industry level data are two examples of the challenges in measuring and analyzing trade in services. In the next section, I describe an alternative methodology for assessing the potential scope of trade in services.

2.3 Tradable Services: A Different Perspective

Another, less conventional (but more detailed), perspective on the potential for service trade to affect the US labor market is from work that Lori Kletzer and I (Jensen and Kletzer (2006)) did examining the tradability of service activities. We use the geographic concentration of service employment across metropolitan areas within the U.S. to identify service activities that are tradable. The intuition is that if services production is geographically concentrated (more than demand for the service), it is probably being traded. As an example of this intuition, think of personal services like haircuts or divorce lawyers. These service activities tend to be distributed in proportion to the population in a region (and thus we don't see big concentrations of these types of service activities in one place). But increasingly, there are services that don't seem to require face-to-face interaction and thus might be tradable – think software development or securities and commodities trading. We used this feature to distinguish between service activities that are tradable and those that require face-to-face interaction (and thus are far less likely to be traded).

We find that many service activities – movie and music recording production, securities and commodities trading, software, and engineering services as examples – appear to be traded within the United States and thus are at least potentially tradable internationally. Approximately 14 percent of the workforce is in service industries classified as tradable. By comparison, about 12 percent of the workforce is in manufacturing industries classified as tradable. When workers in tradable occupations (such as computer programmers in the banking industry or medical transcriptionists in the health care industry) in non-tradable industries are included, the share of the workforce in tradable service activities is even higher.

While many service activities appear tradable, in related work (Jensen and Kletzer (2008)), we argue that only about one-third of the jobs in these activities will face meaningful competition from low-wage countries (or risk being offshored) in the medium term. Tradable service jobs, such as those at engineering or research and development firms, are good jobs. Workers in tradable service activities have higher than average earnings. Part of this premium is due to workers in these activities having higher educational attainment than other workers, but even controlling for educational and other personal characteristics differences, workers in tradable service activities have 10 percent

higher earnings. Within the set of professional service industries, a worker in a tradable industry and a tradable occupation has almost 20 percent higher earnings than a similar professional service worker in a non-tradable industry and occupation.

High earnings in tradable service activities do not mean that these jobs will be "lost" to low-wage countries. High wage, high skill activities are consistent with U.S. comparative advantage. In the manufacturing sector, it is low-wage, labor-intensive industries like apparel that are most vulnerable to low-wage import competition. The U.S. continues to have strong export performance in high-wage, skill-intensive manufacturing industries.

The U.S. currently exports high-wage, high-skill services like computer software and satellite telecommunications services. Most commentators on the offshoring issue focus on the jobs that will be "lost" to offshoring but neglect that the U.S. has comparative advantage in many service activities. Increased exports of services (and "inshoring") are likely to benefit many U.S. firms and workers.

About two-thirds of tradable business service jobs are skilled enough to be consistent with U.S. comparative advantage. U.S. service workers and firms are likely to be beneficiaries of increased trade in services through increased export opportunities.

The relationship between skills, wages, and trade highlights the need to have detailed data covering the service sector. In the next section, I describe in more detail how researchers might analyze the impact of trade in services on the U.S. economy.

3. Measuring the Impact of Trade in Services

How would researchers analyze the impact of trade in services on the U.S. economy? The literature, both classical trade theory and more recent empirical and theoretical work, give us a good idea of where to start. Traditional trade theory and more recent theoretical and empirical advances suggest several important considerations: factor intensities and factor abundance, productivity differences across countries, industries and within industries, and producer heterogeneity within and across industries.

3.1 Lessons from Trade Theory

International trade theory emphasizes a number of features that help explain the sources and implications of international trade. Traditional trade theory emphasizes that countries will trade goods in which they have a comparative advantage -- either through relative productivity differences or through differences in relative factor endowments. Countries will tend to export goods that they are relatively efficient at producing, either because they have a technological advantage or because they are relatively abundant in the factor important to a good's production. Thus, capital-intensive countries like the U.S. tend to export capital-intensive products and import labor-intensive products from countries where labor is abundant and wages are relatively low.

These traditional trade theories also described the mechanism through which trade can affect relative factor returns (i.e. wages and the returns to capital) – when countries specialize across industries that differ in their use of different inputs, the relative returns to the inputs may change. When industries that make relatively intensive use of unskilled labor (e.g. apparel production) shrink, employment prospects and wages for unskilled workers are likely to suffer.

This traditional trade theory emphasized how differences across countries will influence the patterns of trade. Yet, a large share of international trade takes place between relatively similar trading partners, apparently within industries.[3] Germany and the United States, for example, exchange automobiles. This fact and others led to the creation of "new" trade models that emphasize economies of scale in production and consumer preferences for different varieties. In these models, otherwise similar firms (operating in countries with similar factor endowments) specialize in different varieties, spurring two-way or "intra-industry" trade between countries.[4]

3.2 Recent Lessons from Empirical Research in Manufacturing

One feature of both old and new trade theory is that the theories typically assume a representative firm – that is they assume all firms within an industry are the same. There is a growing body of empirical research using plant- and firm-level microdata for the manufacturing sector that demonstrates that the traditional assumption of a "representative" firm in an industry is not appropriate for many research questions – including understanding the impact of globalization.[5] Plants, even within narrowly defined industries, exhibit considerable heterogeneity both in their cross-sectional characteristics and in their behavior over time. The heterogeneity of plants and firms and the variation in their responses to globalization have clear implications for the impacts of trade in services.

3.2.1 Within Industry Heterogeneity in Manufacturing

Bernard and Jensen (1995) provide some of the first plant-level results on U.S. exporters and find that exporters are relatively rare. Even in industries in which the U.S. has a comparative advantage the majority of plants do not export, while even in import competing sectors like textiles and apparel some firms export. In addition to being relatively rare, exporters are strikingly different from plants in the same industry. Exporters are significantly larger than non-exporters in the same industry. Exporters are also more capital intensive, more skilled worker intensive, and pay higher wages than

[3] See Grubel and Lloyd (1975).

[4] See Krugman (1980), Helpman (1981), and Ethier (1982).

[5] This section is not meant to be exhaustive or representative, for more comprehensive reviews see Bernard, Jensen, Redding, and Schott (2007), Helpman (2006), Roberts and Tybout (1996) which focuses on developing market contexts. Here, I draw mostly on work I have been involved in to demonstrate how one might go about this type of research.

plants of similar size, in the same industry, in the same state. Exporters are also more productive than non-exporters in the same industry and region.

Bernard and Jensen (1999, 2006) also show that exporters are more likely to survive and have higher employment growth than non-exporters of similar size, in the same industry, in the same region. Because exporters have different characteristics than non-exporters and because they have differential growth and survival rates, the potential exists for the behavior of exporters is associated with a reallocation of economic activity that affects aggregate measures like industry and aggregate productivity and the demand for and returns to different factors of production (e.g. skilled workers).[6]

Economists are now incorporating these empirical regularities into models of international trade and investment.[7] While differing in their details, these models have several shared implications:

1. as trade costs fall, low productivity non-exporters are more likely to fail
2. as trade costs fall, high productivity non-exporters are more likely to start exporting
3. as trade costs fall, existing exporters should increase their exports

These models have direct implications for how increased trade will affect firms and workers. If trade costs are reduced differentially across industries (either because of policy or technology), industries with larger reductions in trade costs are likely to see more churning within the industry. Because low productivity plants tend to use low-skill and low-wage workers more intensively, the increased likelihood of plant failure has implications for the demand for low-skill workers. To the extent that particular industries or low-productivity producers are concentrated in particular geographic areas, this will also affect distributional outcomes. In this section we review results that examine the impact of international trade on U.S. manufacturers explicitly.

3.2.2 Competition from Low-Wage Countries

Bernard, Jensen, and Schott (2006a) examine the role of import-competition from low-wage countries on the reallocation of U.S. manufacturing within and across industries from 1977 to 1997. They focus on where imports originate (rather than their overall level), motivated by the factor proportions framework and the significant increases in import shares from low-wage countries like China. Their use of plant-level data provides a richer examination of U.S. producer responses to international trade, including plant exit and product switching, than is possible with more aggregate data. Specifically, their

[6] These relationships are not restricted to export participation. Researchers have also examined the characteristics and behavior of multinational corporations using plant and firm level microdata. Doms and Jensen (1998) find that US manufacturing plants owned by MNCs – either foreign MNCs or US based MNCs – have superior operating characteristics relative to domestic-owned plants. Bernard and Jensen (2007) explore the behavior of MNCs over time and show that plants owned by US MNCs are unconditionally more likely to survive, though controlling for the superior operating characteristics of MNCs, MNC-owned plants are actually more likely to close. Firm participation in international markets is significantly correlated with both plant characteristics and behavior over time.

[7] For example, see Bernard et al (2003), Melitz (2003), and Bernard, Redding, and Schott (2006).

analysis identifies whether reallocation within industries is consistent with U.S. comparative advantage.

They show that low-wage country import shares and overall penetration vary substantially across both industries and time. Both components tend to be higher and to increase more rapidly among labor-intensive industries such as Apparel and Leather. Other industries such as Textiles see only modest rises in both series. Finally, more capital- and skill-intensive sectors such as Transportation and Industrial Machinery experience rapid growth of import penetration but little or no increase in the share of imports from low-wage countries. They find that plant survival and employment growth are negatively associated with industry exposure to low-wage country imports. Within industries, they show that manufacturing activity is disproportionately reallocated towards capital-intensive plants. Because there is an observed empirical regularity that capital-intensive plants also tend to be more skill (non-production worker) intensive, the reallocation to more capital-intensive plants will likely have implications for the relative demand for skilled and unskilled workers.[8]

3.2.3 Falling Trade Costs

In separate but related work, Bernard, Jensen, and Schott (2006b) examine the impact of falling trade costs (both tariffs and transportation costs) on U.S. manufacturers. They find when trade costs in an industry fall, plants are more likely to close. This is one channel by which international trade can affect the distribution of economic activity, aggregate productivity growth, and the demand or labor. Falling trade costs tend to reduce the amount of economic activity at the low end of the productivity distribution. This tends to raise aggregate productivity (even without any technological change at the plant level) by truncating the low end of the productivity distribution. Because low productivity plants also tend to be production worker intensive, this change is likely to affect the relative demand for unskilled workers.

They find that relatively high productivity non-exporters in industries with falling trade costs are more likely to start exporting. They also find that existing exporters increase their shipments abroad as trade costs fall. Exporters are relatively high productivity plants and the expansion of the high end of the productivity distribution will tend to raise aggregate productivity (even if no plant changes its productivity). Because exporters are skill and capital intensive, this will also tend to increase relative demand for these factor inputs. Bernard, Jensen, and Schott also find that decreases in trade costs, and the increased competitive pressure associated with it, are associated with increased productivity at the plant level. Not surprisingly, given the number of channels by which falling trade costs shift the distribution of economic activity towards more productive plants, they find that industries experiencing relatively large declines in trade costs exhibit relatively strong productivity growth.

[8] Bernard and Jensen (1997) examine the impact of reallocation to exporters on the relative demand for and wages paid to skilled workers in the U.S. manufacturing sector.

3.2.4 U.S. Multinationals and Outsourcing

Hanson, Mataloni, and Slaughter (2005) examine multinational behavior with regards to the choice of the location of production using confidential data from surveys conducted of all U.S. multinationals. They use a direct measure of input flows associated with vertical production networks: foreign affiliates' imports from U.S. parent firms (and other U.S. entities) of intermediate inputs for further processing. They estimate the sensitivity of demand for imported intermediates for additional processing to host-country and industry trade costs, factor prices, taxes, and other variables suggested by theory.

Manson, Mataloni, and Slaughter find that imports of intermediate inputs are strongly negatively correlated with trade costs facing affiliates. They find that vertical production networks are sensitive to labor costs – imported-input demand is decreasing in host-country wages for less-skilled workers and increasing in host-country wages for more-skilled workers. They find that foreign affiliates do more processing of imports in countries with relatively cheap less-skilled labor. A third finding is that vertical production networks also depend on other host-country policies and characteristics. Imported-input demand is higher in host countries with export-processing zones, and is decreasing in host-country market size and corporate tax rates.

The examples of research described in this section demonstrate the usefulness of detailed, comprehensive microdata in analyzing the impact of globalization. I the next section I describe data needs to produce similar analyses for the service sector.

4. Data Needs to Analyze Globalization in the Service Sector

We know a considerable amount about the reaction of firms to changes in the global trading environment in the manufacturing sector. If a researcher were interested in conducting similar research on the service sector, what are the prospects?

To understand how increased trade in services might affect the U.S. economy, both theory and previous empirical work stress some key considerations for understanding the impact:

1. The prevalence (how many activities?), scale (how much is being traded?), and direction (who is trading with whom?)of trade in services
2. How trade in services has evolved over time
3. The factor intensities used in services provision
4. The factor intensities across locations
5. Firm-level heterogeneity (in size, factor intensities, productivity, trade activity) within and across industries and countries[9]

[9] While not exactly a data need, if researchers are to use information on producer heterogeneity, they need access to producer level information, i.e. microdata, which is often collected under a pledge of confidentiality. Thus, access to producer level microdata is an additional dimension of data needs.

4.1 Measuring Trade in Services

The Bureau of Economic Analysis (BEA) collects information on trade in services and presents aggregate data on international services transactions through three publication programs: (1) cross-border trade in services data in the international transactions accounts; (2) sales of services through affiliates of multinationals, some portion of which represent cross-border trade; and (3) benchmark input-output tables.

The cross-border trade in services publication program provides the basis for all of BEA's services trade data. As a result, this publication program provides the best sense of what trade data BEA collects:

> The estimates of cross-border transactions cover both affiliated and unaffiliated transactions between U.S. residents and foreign residents. Affiliated transactions consist of intra-firm trade within multinational companies—specifically, the trade between U.S. parent companies and their foreign affiliates and between U.S. affiliates and their foreign parent groups. Unaffiliated transactions are with foreigners that neither own, nor are owned by, the U.S. party to the transaction.
>
> Cross-border trade in private services is classified into the same five, broad categories that are used in the U.S. international transactions accounts—travel, passenger fares, "other transportation," royalties and license fees, and "other private services." (*Survey of Current Business*, November 2001)

Affiliated transactions are collected through BEA's U.S. Direct Investment Abroad and Foreign Direct Investment in the U.S. programs. Comprehensive benchmark surveys are collected every 5 years and less comprehensive collections are conducted annually.

BEA collects data on U.S. international transactions in private services with unaffiliated foreigners through 11 surveys. These surveys fall into three broad categories: (1) The surveys of "selected" services, which cover mainly business, professional, and technical services; (2) the specialized surveys of services, which cover construction, engineering, architectural, and mining services, insurance services, financial services, and royalties and license fees; and (3) the surveys of transportation services. These collection programs are the principal source of BEA's estimates of trade in services but the estimates of some services are based on data from a variety of other sources, including U.S. Customs and Border Protection and surveys conducted by other Federal Government agencies, private sources, and partner countries.

4.1.1 Need: Increased Detail – Industry and Country

Detailed data on international services transactions are currently available from 1986 through 2006, for cross border trade. Service imports and exports are reported for approximately 30 (1986-1991) to 35 (1992-2006) service types (with additional detail on whether the transactions are between affiliated or unaffiliated parties available for some

categories). These data are available by country for approximately 35 countries and country groupings for 1986-2006.

Figure 1 exhibits the detail on trade in services (both affiliated and unaffiliated) published by BEA over time. Figure 1 shows the significant increase in detail over the past decade. The figure also shows how large the gap is between the detail available for the manufacturing sector (where information for over 8,000 export categories and over 10,000 import categories are available) and the service sector. The published aggregates are moving in the right direction, but we clearly have some ways to go.

> "What is most troubling for us is that the seventeen industry categories listed in the first column of Table 4 exhaust the detail on services trade collected by United States government statistical agencies. What is going on in the other service product categories that have been mentioned as moving offshore, such as the wide variety of back-office functions like accounting, customer support, and software programming? What about the interpretation of radiology images, market and legal research, and research to support financial services? Are customized software services staying onshore while only basic software coding is moving offshore, or is higher-skilled work and work related to innovation and new product creation also being imported? Because very few questions are asked, very little detail is collected, leaving us with extremely thin data on services trade, even if steps are taken to improve data quality. Contrast the seventeen descriptive categories for traded services products in Table 4 with the more than 16,000 detailed product codes for goods collected by the United States Department of Commerce and the magnitude of the data gap becomes clear. It is clearly infeasible to collect as much product detail on services trade as is generated by the customs forms filled out when goods are shipped across borders. But much more detail could and should be collected."
> (MIT OWG Report)

Progress is being made. BEA has resolved the inconsistency between the survey formats for affiliated and unaffiliated trade. This now permits greater detail in reporting the types of services traded. While this represents progress, it does not resolve the issue of the need for greater detail.

4.1.2 Need: Lower Reporting Thresholds

> "While the BEA surveys that ask firms to quantify their trade in services are mandatory, firms are exempted from reporting categories of services in which they have import transactions of less than $6M per year and export transactions of less than $8M per year. In the case of services, in particular, because firms tend to be smaller than firms engaged in goods trade, the current thresholds very likely exclude many transactions. Because of this, we believe that the thresholds for mandatory reporting of international services transactions should be lowered."
> (MIT OWG Report)

4.1.3 Need: Increased Sample/Improved Sampling Frame

Related to the issue of lowering reporting thresholds, the BEA needs to improve its capacity to develop survey frames.

> "Another explanation for the apparent undercounting of services trade is that the BEA is not collecting data from the right companies, or is sending inappropriate surveys to the companies on its mailing lists. To test for potential undercounting of U.S. services imports, the Government Accountability Office (GAO) provided the BEA with a list of 104 firms identified from press and company reports as likely to be importing services from India. The BEA was asked to compare this list with the survey responses it had received from firms on its mailing lists. The BEA had 87 (84%) of the firms identified by the GAO on its mailing lists. The BEA stated that it had dropped some of the missing companies from its mailing lists because they had not previously met the reporting thresholds for services trade."
>
> "Furthermore, only 54 (52%) of the firms identified by the GAO had received appropriate surveys from the BEA (e.g., firms with offshore affiliates were not sent the survey on affiliated trade). Finally, only 15 (14%) of the 104 firms identified by the GAO as likely to be importing services from India reported such imports (GAO, 2005b; 19). One explanation for the low level of reporting of services trade with India is that firms that had transactions valued beneath the thresholds mentioned above, while not required to do so, nevertheless filled out the BEA surveys but did not provide detail on the source or destination countries associated with their international transactions because they were not required to do so."
>
> "Still, the BEA believes that its data on services trade is of good quality. When the BEA contacted the companies on the GAO list that were missing from its mailing lists, it did not identify any company with substantial imports of services that were not already being reported. Nevertheless, the BEA recognizes that more resources need to be allocated toward maintaining lists of survey respondents since the identity of transactors may change from year to year. The BEA has a variety of initiatives underway to improve its mailing lists and improve survey compliance (see GAO, 2005b, p. 20). The BEA also plans to merge the collection of its data on affiliated international services transactions with its data on unaffiliated international services transactions, so that a given type of service is covered in exactly the same detail, whether it is imported or exported, and whether it is with an affiliated or an unaffiliated foreign party. We believe that these efforts are significant and very helpful, especially if combined with lower thresholds for mandatory survey compliance."
> (MIT OWG Report)

BEA is now collecting information from on unaffiliated and affiliated international service transactions using the same collection form. This resolves the issue of the information being collected at different levels of detail.

BEA has undertaken efforts to improve its sampling frame. BEA commissioned the Census Bureau to add a question to the 2006 Company Organization Survey to ask whether firms imported services. The purpose of this additional question is to improve the sampling frame for BEA's data collection programs.

4.2 Measuring the Impact of Services Trade on the U.S. Economy

To understand how increased trade in services is likely to affect the U.S. economy, requires the detailed information on trade flows described above and the ability to link it to detailed information on domestic producers. Specifically, I would want detailed information on the inputs service firms use (labor, capital, land, buildings, accounting services, intellectual property, etc) and the outputs they produce (computer programs, lawsuits, ad campaigns, medical operations, etc). These data would help me understand the relationship between growth in demand for particular services and the demand for inputs to those services. These data would also help me understand whether productivity within the service sector is increasing over time (and whether this growth is in response to particular changes in the environment). To understand how the service sector affects employment outcomes across regions within the U.S., I would want these data on a (hopefully detailed) geographic basis. I would also need to be able to link these data to detailed information on international trade in services (the type of information discussed above).[10]

4.2.1 Need: More Detailed Industry Classification

The data covering the service sector within the U.S. are not as robust as the data for the manufacturing sector in a number of dimensions. The information collected from the service sector – for both inputs and outputs – is less detailed. A simplistic example of how output in the service sector is not collected at as detailed a level as the manufacturing sector is looking at NAICS codes per worker across sectors in the economy.[11] NAICS contains about 470 industrial codes for the manufacturing sector (NAICS 31-33). For the service sector (NAICS 51-81), NAICS contains about 325 industry codes. The manufacturing sector employed about 13 million people and the service sector employed about 68 million workers in 2007. In terms of workers per

[10] As described above, this type of data is available for the manufacturing sector. The Census Bureau and made available publicly in aggregated form and made available in disaggregated form to approved researchers at the Center for Economic Studies. The research community has learned a great deal about the manufacturing sector across a wide range of topics – productivity dynamics, job creation and destruction, impact of environmental regulation, impact of trade, just to name a few – through access to producer level information at the Census Bureau.

[11] While this is not necessarily the only (or best) way to think about classification, if one is interested in labor market impacts it is instructive to note the significant difference in the industry detail available across sectors.

industry code, there were about 28,000 workers per NAICS code in manufacturing in 2007 and about 208,000 workers per NAICS code in the service sector. By this crude metric, the service sector is substantially under-classified (almost ten times so).

While the number of industries in the service sector relative to the manufacturing sector is low, the implementation of NAPCS is improving the level of detail for the output of establishments in the service sector. The 2007 Economic Census forms for the service sector have considerable detail for output product categories within service industries.[12]

4.2.2 Need: More Detailed Information on Inputs to the Production Process

Another way in which the service sector data are less robust than the manufacturing sector is with regards to the collection of data on inputs into the production process.

> "The Census Bureau has developed detailed classification schemes for material inputs and manufactured products that it uses to collect information on what individual manufacturing establishments buy and sell. These product categories have been developed with a great deal of care, and government surveys have been tuned to specific sectors. For example, establishments in the plastics industry are required to provide detailed information about the consumption of chemical feedstock and the production of various kinds of plastics while establishments producing furniture are required to provide detail about the consumption of wood, metal, hardware, glue, and fabric and the production of various kinds of furniture. This pattern holds true across the manufacturing sector. The U.S. Census Bureau's Numerical List of Manufactured and Mineral Products contains hierarchically organized descriptions of the principal products and services of the manufacturing and mining industries in the United States. These codes are used to collect data for the Economic Census and are used by the Bureau of Economic Analysis for the input-output matrix that underlies the national accounts. But as in international trade in services, far less detail is collected on the services products that are consumed and produced domestically. Again, there are more than 6,000 codes for physical products but fewer than 100 for services.
>
> The lack of detail on domestic trade in services means that the Bureau of Economic Analysis largely estimates the contribution of services to the national accounts. While resulting estimation cannot claim precision, BEA analysts believe that their techniques capture the magnitude and direction of change in services accurately enough to support policy. While this may be true today, we think the view of the U.S. Census Bureau, quoted in full in the previous section, bears repeating, "If [the information gap between manufacturing and services goes] unaddressed, economic policymakers will be increasingly misinformed and misdirected about changes in the real economy, related to rates and sources of growth in output, prices, productivity, and trade." Clearly, an accelerated and

[12] While this is helpful, an issue with classifying establishments into broad industries and collecting detailed product information is that it is difficult to allocate inputs across outputs. Additional refinement of the service sector industry codes would improve the ability to measure things like productivity.

> sustained effort to collect more detail on domestic trade in services is required. Our second recommendation, therefore, is for the U.S. Census Bureau to accelerate the completion the North American Product Classification System (NAPCS), and fully and rapidly deploy it in the Economic Census, at the establishment level, for both inputs and outputs."
> (MIT OWG Report)

The recommendation above is with regards to purchased inputs used to produce services. I think this is an important improvement that would be beneficial to helping to understand how the service sector functions.

In addition to increased information on purchased services, I would like to suggest two other improvements. We learned from the literature on the impact of trade on the manufacturing sector that factor intensities (both capital intensity and skill intensity) are important determinants of how establishments behave in response to international competition. It would be useful if the Census Bureau would collect information on the skill intensity of the workers that are employed in the service sector. Currently, the Economic Censuses do not consistently collect information on labor inputs other than total employment and salaries and wages.[13] It would be beneficial if the Census Bureau collected more information than just total employment and wages. I recognize that detailed information on skills or educational attainment would be costly to collect and burdensome to provide. However, I think that the research in the manufacturing sector demonstrates that it is possible to collect very crude classifications (in the case of manufacturing production and non-production workers) that still provide important information regarding the skill intensity of firms' production processes.

For services, the production/non-production worker classification might not make sense, but an analogous classification might be exempt and nonexempt employees.[14] While not an ideal measure of skill, this classification is likely to capture meaningful variation in skill intensity across producers and industries. It would be relatively easy to collect and probably relatively straight-forward for firms to report.

Another input that has been determined to be an important determinant in plant survival in the manufacturing sector is capital intensity. Currently, the Economic Censuses do not consistently collect capital information. While it might not be particularly meaningful for some service industries, for others it is not difficult to imagine that capital intensity would have something to do with firm performance. (One can imagine that capital intensity of hospitals would be systematically related to outcomes and, perhaps, likelihood of participating in international trade.)

[13] For some industries, the Censuses collect information on the type of worker (by training or activity, give examples from engineering, lawyers, doctors' offices).

[14] Employees whose jobs are governed by the Fair Labor Standards Act (FLSA) are either "exempt" or "nonexempt." Nonexempt employees are entitled to overtime pay.

4.2.3 Need: Information on a Geographic Basis

The Census Bureau does collect information on capital expenditures in the Annual Capital Expenditure Survey (ACES), however, ACES is an enterprise (firm) level survey. Because many large firms by employment and output operate in multiple industries and multiple geographic markets, enterprise level information on capital expenditures makes allocating capital service inputs to locations and industries difficult. This highlights another desirable feature of information on the service sector – geographical information.

To understand how international trade is affecting regions within the U.S., it is important to be able to examine how producers in different regions may differ in factor intensity and productivity. This need highlights the importance of collecting as much information as possible at the establishment level.

Collecting information at the establishment level enables researchers to place the economic phenomena in a region and also enables a much tighter alignment of inputs used and outputs (industries/products). Collecting information at the enterprise level seriously reduces the level of product and geographical specificity of the data. For some purchased inputs (e.g. advertising) it may be difficult to collect the information at the establishment level. Yet, for inputs like physical capital, it seems feasible to collect capital stock and flow data at the establishment level. (Capital stock information is collected in the Census of Manufactures.)

4.2.4 Need: Researcher Ability to Access ad Link Microdata

As I described above, research using microdata provides a better understanding of how globalization affects the U.S. economy. Researchers need access to microdata to conduct this type of research.

> "Steps should be taken to extract as much information as possible from the data that is currently collected by government programs. An inventory of current and potential microdata resources should be made, and as many "micro-data" sets as possible should be archived, maintained, and made available to both government and academic researchers.
>
> Micro-data are the data that supports government administrative programs and underlies published statistics. In general, quantitative research based on micro-data can provide a better and more detailed view of services offshoring and its effects than research based on published statistics."
> (MIT OWG Report)

A minor note related to microdata access is the desirability of permitting researchers to combine data that has already been collected in different agencies to answer important questions. This is a cost effective way of increasing the usefulness of data that has already been purchased.

> "Finally, it is important to encourage research that links various sets of micro-data. While there can be legislative and institutional barriers to sharing micro-data across agencies, reducing these barriers could enable some extremely powerful research. For example if the outbound foreign affiliate investment collected by the Bureau of Economic Analysis in its surveys of multinational firms were to be combined with the firm, establishment, and trade data collected by the U.S. Census Bureau, it would help researchers create a more comprehensive picture of the operations of U.S. firms -- both at home and abroad. The combined data could reveal domestic activity at the establishment level (with product level information, geographic information, and export information), the relationship between the establishments within the firm, the amount of trading the firm does (using the matched transaction and firm data), and the nature of the firm's foreign affiliate operations (employment, wage bill, location, local sales, trade with parent, etc). This would allow researchers to examine the relationship between domestic activity, trade, and foreign direct investment."
> (MIT OWG Report)

I understand the need to protect the confidentiality (and the perception of confidentiality) of respondent level information. My strong sense is that the protocols and infrastructure necessary to protect the confidentiality and perception of confidentiality are in place to restrict access to approved uses within the Census Bureau, BEA, and BLS. It is my sense, however, that bureaucratic impediments continue to impede researchers' ability to combine and link datasets from different statistical agencies.

5. Impediments to Improvement

In this section I describe what I perceive as impediments to improving the quality of data needed to evaluate the impact of trade in services on the U.S. economy.

5.1 Resource Issues

As described in the first section of the paper, services are a large, important, and growing sector of the U.S. economy. Yet, the infrastructure for collecting information on the service sector is not as robust as that for other sectors like manufacturing. A primary reason for this disparity is that Congress does not allocate the same level of resources (proportional to the size of the service sector) as it does to the manufacturing sector or other sectors. Given this, it should not come as a surprise that one impediment to improving statistics on trade in services and domestic service activity is the need for additional resources.

As a simple metric of the disparity in resources devoted to the various sectors, the table below shows the FY 2009 budget for the Economic Census by sector. I also show the number of employees and the number of establishments in each sector. I then calculate the budget dollars per employee and per establishment across sectors. The table shows that the resources devoted to the service sector on a per employee basis or per

establishment basis are significantly lower than those devoted to manufacturing or mining.

On a per establishment basis, Congress allocates more than 6 times more money for data collection in the manufacturing sector than in the service sector. On a per employee basis, the disparity is smaller, but still more than twice is much is spent per employee in manufacturing than in the service sector. If one compares mining, the disparities are even greater.

Economic Census Program Components (dollars in millions) FY 2009:[15, 16]

U.S. Census Bureau Data Collection Sector	FY 2009 Budget (millions)	2007 Employment	2007 Establishments	Budget per Employee	Budget per Establishment
Services	$39.9	68,026,666	4,382,720	0.59	9.10
Retail Trade	$23.7	15,610,710	1,122,703	1.52	21.11
Manufactures	$17.8	13,333,390	293,919	1.33	60.56
Wholesale Trade	$12.6	6,295,109	432,094	2.00	29.16
Construction	$6.8	7,399,047	725,101	0.92	9.38
Transportation, Communication, and Utilities	$3.1	5,068,192	234,805	0.61	13.20
Minerals	$1.7	703,129	21,169	2.42	80.31

This is a simple (maybe simplistic) metric, but makes the point that service sector data collection is relatively resource poor. To bring the data available for the (domestic) service sector to a similar level as the data available for the manufacturing sector will require a commensurate investment of resources.

To provide information on trade in services comparable to the information on trade in goods does not seem feasible because goods pass through ports and are required to file Customs forms or Shippers Export Declarations. These administrative systems provide a relatively inexpensive means for collecting very detailed information on trade in goods. Because traded services do not necessarily pass through ports, there is no obvious low cost data collection system. It seems likely that collecting information on trade in services will require survey responses from firms. This is obviously more expensive than piggy-backing off administrative systems. To collect better information on services trade will, at a minimum, require a significant investment of more resources. (In the next sections, I describe what I perceive as additional prerequisites for collecting better trade in services data.)

[15] Source: U.S. Census Bureau, Periodic Censuses and Programs Budget Amendment FY 2009, as presented to Congress June 2008, Exhibit 12

[16] These numbers represent the budget for FY 2009. Not all periodic census activity associated with the Economic Census occurs in FY 2009. However, because the timing of the processing for the various sectors within the Economic Census is similar, I am assuming that the relative size of the budgets is representative of the total costs associated with each sector.

5.2 Sampling Frame

An issue identified in the MIT Offshoring Working Group report is that BEA does not have access to an adequate sampling frame for conducting its surveys of international service transactions. BEA recognizes the need to improve its sampling frame and is, as described above, taking steps to do so. Yet, I think it remains an open question of whether these modest steps to improve the sampling frame are sufficient. What BEA needs is access to a sampling frame similar to that maintained by the Census Bureau.

Data sharing legislation provides authorization for the statistical agencies to share confidential data, but the situation is complicated by the fact that the Census Bureau's business sampling frame contains federal tax information provided by the Internal Revenue Service. For the Census Bureau to share its sampling frame with BEA or BLS would require passage of companion legislation that would amend section 6103(j) of Title 26 (governing the use of federal tax information). This companion "j-bill" has not passed. If the Census Bureau could provide sampling frame information to BEA, this would be a significant improvement in BEA's capacity to conduct surveys. I do not know what the current thinking is on the prospects for passage of the companion "j-bill," but evidence to date leaves one less than optimistic about passage.

As a result of the lack of an adequate sampling frame, resource constraints, and the fact that the principal mission of BEA is to produce aggregate economic accounts, BEA focuses their data collection efforts on large organization that they deem to be likely to trade services. My impression is that the international transaction surveys are not statistically representative samples across service sector industries, firm size classes, or geography. To improve the level of detail available for trade in services statistics, the BEA will need to increase the number of organizations it surveys and, presumably, increase the statistical representativeness of the sample. These will require access to an adequate sampling frame.

5.3 Organization Structure

The conference organizers asked that I give some thought to organizational changes that might facilitate improvements in service sector data. This is a potentially provocative topic, so I approach it with some trepidation. Yet, if one takes a step back and looks at the organizational structure for the collection of trade in services data, the choice of organization across agencies is striking. The BEA is a recipient of large amounts of data collected by other statistical agencies (including BLS and the Census Bureau). BEA is also a data collection agency. In contemplating this, I was left with the question: Why does BEA collect information on multi-national enterprises and international service transactions?

While not based on much historical research, it is my impression that trade in services statistics have historically been collected largely to fulfill the needs of national income and product account (NIPA) construction. Other types of production and international trade data are collected for a broad range of uses (including and importantly for the

NIPAs). Historically, there has not been large demand for detailed trade in service statistics beyond the need to complete the NIPAs. I imagine that as a result of this feature of the data need, it made sense for BEA to collect the trade in services data.

Yet, I think this is beginning to change. As services share of the U.S. economy increases and trade in services grows, there will be increasing need to analyze the impact of a broader range of phenomena associated with increased trade in services (e.g. what are the regional implications within the U.S., what impact do the service components of trade agreements have).

As I argued in this paper, the need to understand the impact of trade in services – from a variety of perspectives, e.g. impact of trade agreements, exchange rate impact, impact on local and regional economies – require much more detailed data regarding trade in services. Researchers and policy-makers need comprehensive data across detailed industry classifications and geographical regions within the U.S. – ideally not only which firms participate in global services trade, but also which firms don't. The data should be consistent with other production related data and easily linked to other production data.

Collecting the kind of detailed, statistically representative information on trade in services across detailed industries, countries, and regions within the U.S. that I have argued is required is a major data-collection undertaking. An open question is whether BEA is the most appropriate agency to conduct the data collection.

There may be reasons why it makes sense to have a dedicated statistical agency within BEA for collecting this type of information. However, I see some significant drawbacks for this type of fragmented collection system.

The first drawback is that data collection has fairly significant fixed costs – especially with regards to developing and maintaining a sampling frame. As described above, BEA's inability to access an adequate sampling frame is a significant impediment to improved trade in services data collection. While I would not present myself as an expert in data collection methods, I can imagine other examples of fixed costs in data collection (e.g. forms design expertise, survey processing and follow-up capacity).

So, I think the big institutional question is why does BEA collect these data? As identified above, the lack of a proper sampling frame poses a significant impediment to BEA's ability to carry out a statistically representative sampling of trade in service activity.

Another drawback is data consistency and potential problems with data integration. As an example, when BEA and Census were directed to produce statistics at the establishment level on foreign direct investment in the U.S., the data comparability and matching issues were not insignificant. If the foreign direct investment surveys and international service transactions surveys were collected by the Census Bureau using the Census Bureau's sampling frame and industrial and geographic coding systems, it would significantly

increase the ease with which the data could be used in conjunction with other production data.

There may be advantages to having BEA conduct the survey that I am not aware of. BEA and the Census Bureau work closely on other aspects of data collection for the NIPAs. The Census Bureau has the infrastructure to collect detailed, statistically representative statistics on trade in services. For example, the Census Bureau has arguably the best sampling frame for this type of application within the statistical system. The Census Bureau already surveys all the relevant firms and establishments. It appears to me that the efficiencies in data collection and improvements in comparability from having these data collection activities within the Census Bureau are potentially significant. The costs and benefits of moving the foreign direct investment and international service transactions data collection programs to the Census Bureau should be investigated.

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Appendix: Sloan Offshoring Working Group Recommendations

Our working group had two purposes: 1) to evaluate the data available for characterizing and measuring services offshoring and its effects on the United States economy, and 2) to make recommendations for improvements in data collection, dissemination, and analysis.

We see three broad solutions to this problem, each of which should be aggressively pursued:
1) more and better data on services trade should be collected; 2) more information should be extracted and published from existing data resources; and 3) quantitative research methods should be combined with qualitative methods to provide a better view of the context and character of services offshoring.

Our five recommendations are as follows:
1) Collect more detail on international trade in services.
The Bureau of Economic Analysis (BEA) should collect more detail on services products that are traded internationally (affiliated and unaffiliated services imports and exports). The BEA currently collects data on only 17 categories of traded services products. In contrast, import and export statistics for the United States are currently available for more than 16,000 categories of goods. Without a more detailed view of which services are traded internationally, it will remain impossible to determine which sectors experience pressure from import competition. As a result, we cannot know where in the economy to look for the effects of services offshoring with any precision. This in turn renders other data on services less useful.

2) Collect more detail on domestic trade in services.
The U.S. Census Bureau should accelerate its efforts to collect more detailed statistics on services traded within the United States (services inputs and outputs). These more detailed statistics will help to provide a better view of the role that services play in the economy of the United States. Services account for more than 85% of U.S. private sector GDP, but we have very little information on the services that are bought and sold by companies.

3) Collect more detail and publish time series data on employment by occupation.
Because service work plays a role in all industries, adequate data on employment by occupation is necessary to determine the employment and wage effects of services offshoring. Data should be collected at the establishment level to enable links to data on domestic and international trade. We recommend two concrete steps in this regard:
3A) The Bureau of Labor Statistics should publish consistent time series on employment by occupation from the Occupational Employment Statistics (OES) program. If possible these data should be published, by industry, at the national, state, and metropolitan levels. Time series data will allow policy-makers to track employment trends in the occupations most vulnerable to job loss from services offshoring.
3B) The Bureau of Economic Analysis should collect data on more occupational categories in its surveys on the activities of U.S.-based multinational firms. More detail

on the occupations created by multinational firms, at home and abroad, will provide a clearer picture of the employment effects of services offshoring.

4) Archive and provide access to more micro-data resources.
Steps should be taken to extract as much information as possible from the data that is currently collected by government programs. An inventory of current and potential microdata resources should be made, and as many “micro-data” sets as possible should be archived, maintained, and made available to both government and academic researchers. Micro-data are the data that supports government administrative programs and underlies published statistics. In general, quantitative research based on micro-data can provide a better and more detailed view of services offshoring and its effects than research based on published statistics.

5) Accelerate research that combines quantitative and qualitative research methods.
No single approach or data set can hope to bring the complex and dynamic phenomena of services offshoring into complete focus. An interdisciplinary, collaborative approach is needed to combine insights from data collected by government programs with insights from researcher-generated surveys and field interviews. Quantitative methods allow researchers to estimate the magnitude and speed of economic change and to implement causality tests, while qualitative methods can provide

Figure 1 – Categories reported in BEA Table 1b 1992-2006

1992	1997	2001	2006
Travel [2]	Travel [2]	Travel [2]	Travel [2]
Passenger fares [3]	Passenger fares [3]	Passenger fares [3]	Passenger fares [3]
Other transportation	Other transportation	Other transportation	Other transportation
Royalties and license fees	Royalties and license fees	Royalties and license fees	Royalties and license fees
Other private services [4] [15]	Other private services [4] [15]	Other private services [4] [15]	Other private services [4] [15]
Education [5]	Education [5]	Education [5]	Education [5]
	Financial services [16]	Financial services [16]	Financial services [16]
Insurance services [6]	Insurance services [6]	Insurance services [6]	Insurance services [6]
Telecommunications [7]	Telecommunications [7]	Telecommunications [7]	Telecommunications [7]
	Business, professional, and technical services [16]	Business, professional, and technical services [16]	Business, professional, and technical services [16]
	Computer and information services [8] [16]	Computer and information services [8] [16]	Computer and information services [8] [16]
		Management and consulting services [9]	Management and consulting services [9]
		Research and development and testing services [9]	Research and development and testing services [9]
	Operational leasing [16]	Operational leasing [16]	Operational leasing [16]
	Other business, professional, and technical services [10] [16]	Other business, professional, and technical services [10] [16]	Other business, professional, and technical services [10] [16]
			Accounting, auditing, and bookkeeping services
			Advertising
			Architectural, engineering, and other technical services
			Construction
			Industrial engineering
			Installation, maintenance, and repair of equipment
			Legal services
Medical services [11]	Medical services [11]	Medical services [11]	Medical services [11]
			Mining [12]
			Sports and performing arts
			Trade-related services [13]
			Training services
			Other [14]
Other services	Other services	Other services	Other services
Film and television tape rentals	Film and television tape rentals	Film and television tape rentals	Film and television tape rentals
Other	Other	Other	Other