

Measuring Trade in Services by Mode of Supply

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Abstract This paper reviews the efforts of the Bureau of Economic Analysis (BEA) to measure international services categorized by mode of supply. BEA has adopted a survey form that uses an innovative approach to collect information on mode of supply by simply having companies report the percentage of its services supplied through one mode as opposed to all modes, with the idea that the other modes can be estimated as a residual or using other data sources. Of the few previous efforts by countries to measure trade by mode of supply, most are based on assumptions about industry practices or on surveys that simply asked for the predominant mode of supply rather than a more precise percentage supplied by mode. BEA also uses a pioneering method to measure services supplied through affiliates across service types by mapping its comprehensive industry-based foreign affiliate statistics to its product-based trade statistics. The estimates also include a breakdown of the mode where consumers obtain the service outside their home territory, such as services received when traveling abroad, that more closely corresponds with guidelines set out in the General Agreement on Trade in Services than most previous efforts.

Keywords Mode of Supply, Modes of supply, Mode, Modes, FATS, BE-120 Benchmark Survey, Trade in services. Trade in services by mode, GATS

JEL Codes E, F1, F10, F13, F130

Introduction

This paper reviews the efforts of the U.S. Bureau of Economic Analysis (BEA) to measure international services categorized by mode of supply (MoS). Governments are especially interested in international services by mode because trade negotiators structure agreements around the four modes of supply (defined below), which represent the paths businesses take to access foreign markets.

Under the General Agreement on Trade in Services (GATS), countries take on commitments with respect to market access for different service sectors. Countries can limit their commitments with respect to the different modes. The commitments are structured in line with the services sectoral classification list (W/120), which is a comprehensive list of services sectors and subsectors covered under the GATS. The World Trade Organization (WTO) compiled this list in 1991 to facilitate the Uruguay Round negotiations, ensuring cross-country comparability and consistency of the commitments undertaken.¹

BEA has adopted a survey form that uses an innovative approach to collect information on MoS by simply having companies report one mode as opposed to all modes, with the idea that the other modes can be estimated as a residual or using other data sources. Of the few previous efforts by countries to measure trade by mode of supply, most are based on assumptions about industry practices or on surveys that simply asked for the predominant mode of supply rather than a more precise percentage supplied by mode. BEA also uses a pioneering method to measure services supplied through affiliates across service types by mapping its comprehensive industry-based foreign affiliate statistics to its trade statistics. The estimates also include a breakdown of the mode where consumers obtain the service outside their home territory, such as services received when traveling abroad, that more closely corresponds with guidelines set out in the GATS than most previous efforts.

The paper begins with an explanation of the four modes, followed by a discussion of BEA's collaboration with other countries on the Modes of Supply Task Force at Eurostat—the statistical office of the European Union—and how this collaboration led to the development of BEA's survey instrument. Section 3 provides details on the development of the survey instrument. Section 4 presents the survey data collection results. Section 5 describes how the survey results are used to update the exploratory estimates to derive more accurate measures of services supplied by mode. The section also describes how Mode 3 is measured by developing a bridge from BEA's statistics on services supplied through affiliates classified by primary industry of the reporter to services classified by type. Other steps taken to expand and advance the estimates are also covered. The paper concludes with a section that discusses BEA's plans to enhance the estimates.

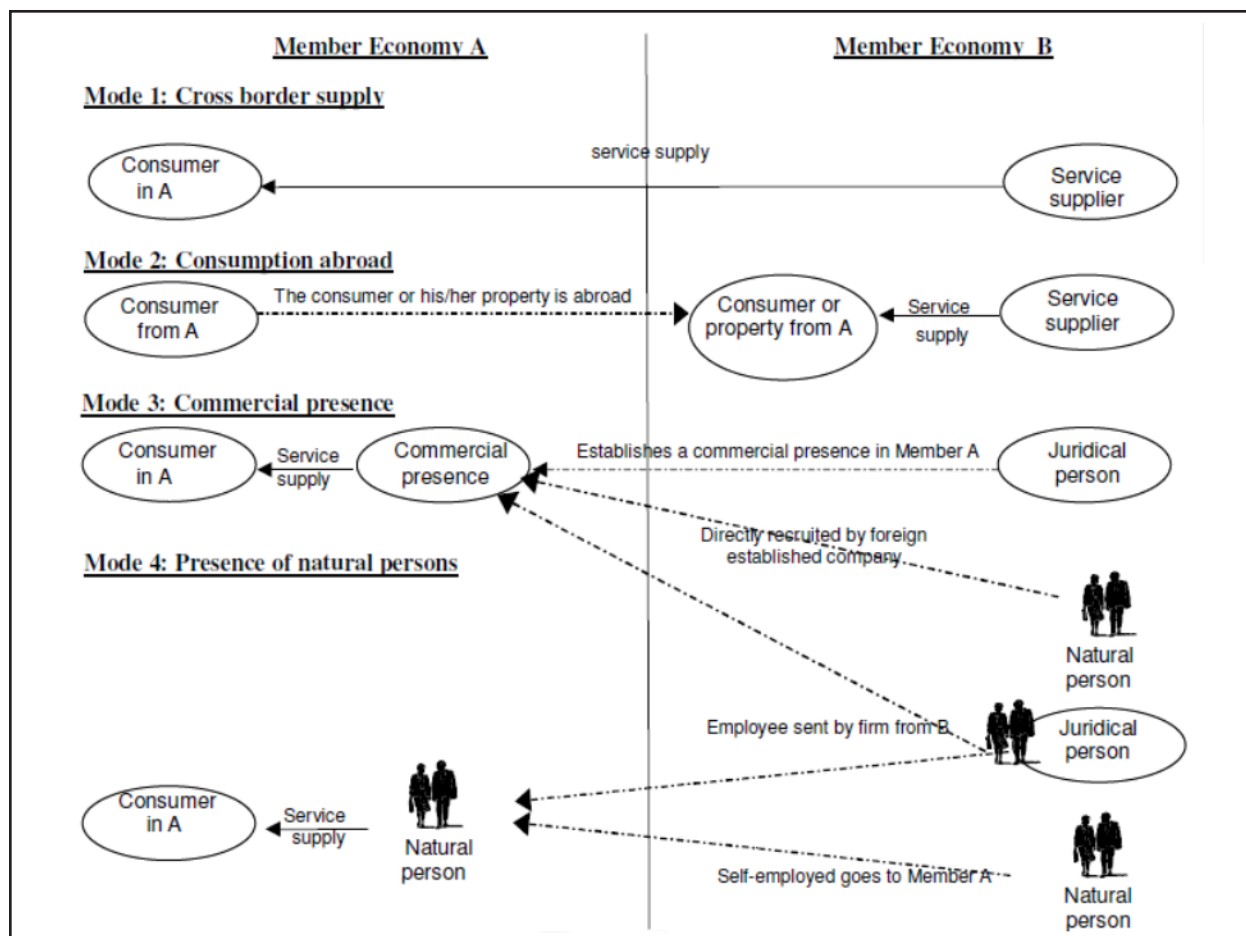
1. <https://unstats.un.org/unsd/tradekb/Knowledgebase/Sectoral-Classification-List-W120>

1. The Four GATS Modes of Supply Defined

As explained in the *Manual on Statistics of International Trade in Services 2010* (MSITS 2010), the GATS modes of supply are defined based on the location of the service supplier and the consumer, taking into account their respective nationalities. This structure differs from that of the balance of payments (BOP) accounting system, which focuses on transactions between residents and nonresidents regardless of location or mode of delivery.² Mode 3 transactions are generally not covered in the balance of payments system of accounts, as, strictly speaking, they are resident-to-resident transactions, usually with an affiliate of a multinational enterprise the immediate supplier. Consequently, FATS are recognized in the international statistical community as a useful first approximation for measuring for Mode 3. However, service transactions between residents and non-residents, as captured in the balance of payments accounts, broadly cover modes 1, 2 and 4. Figure 1 below from MSITS 2010 provides a synopsis of the four modes:

- *Cross-border supply* (Mode 1), where both the supplier and the consumer remain in their respective territories (which would correspond to the traditional notion of trade),
- *Consumption abroad* (Mode 2), where the consumer consumes the service outside his or her home territory (as is the case for tourists consuming travel services),
- *Commercial presence* (Mode 3), where service suppliers establish (or acquire) an affiliate, branch, or representative office in another territory through which the supplier provides their services (for example, when a foreign IT firm creates a subsidiary in the United States in order to supply IT services to the United States), and
- *Presence of natural persons* (Mode 4), where individuals (either employees or self-employed service suppliers) are present abroad in order to supply a service (for example, when an independent software designer travels abroad to oversee a six-month-long software development project).

2. The mode of supply classification system and the BOP system were designed to serve two different purposes: the former as a basis for trade negotiations and the latter for BOP and national income accounting.

Figure 1. View of Modes of Supply³

Source: Figure II.1 from BPM6

3. Note: (1) A natural person of a member economy is defined in paragraph (k) of article XXVIII of the GATS as a national of that Member economy or a natural person who has a right to permanent residence in that Member economy. (2) In article XXVIII (l), the GATS defines a juridical person as any legal entity duly constituted or otherwise organized under applicable law, whether for profit or otherwise, and whether privately owned or governmentally owned, including any corporation, trust, partnership, joint venture, sole proprietorship, or association. (3) A more detailed description of the GATS modes of supply is discussed in chapter V of MSITS.

2. Collaboration on Eurostat's Modes of Supply Task Force

Eurostat's MoS Task Force convened in 2017 with the endorsement of Eurostat's International Trade in Services Statistics Working Group. The Task Force includes representatives from the EU Member States along with several international organizations, including the Organisation for Economic Co-operation and Development (OECD) and the WTO. Representatives from outside the European Union, including the BEA and the Chinese Mission to the European Union representing the Ministry of Commerce of China, have also participated. The main objectives of the Task Force are:

- To improve Eurostat's model to estimate the four modes of supply. This model employs factors to allocate services trade across modes. The factors are derived from knowledge of industry practices as compiled in part from a questionnaire that Eurostat distributed to the participants on the Task Force⁴
- To promote the use of the model in the Member States,
- To examine the possibility of direct data collection on MoS in the Member States to measure Modes 1, 2, and 4,
- To derive Mode 3 from foreign affiliate statistics (FATS) data collection,
- To develop recommendations for collecting data on MoS for the international statistical community and to promote international cooperation on MoS methodology to improve international comparability.

One of the topics discussed at the initial meeting was how to design a survey to collect information on services trade by mode of supply. The general view of the Task Force participants was that a survey that asked companies to report their transactions by mode would be overly burdensome. Moreover, members of the Task Force thought that many companies may not maintain accounting records that break out their transactions by mode; therefore, companies would not be able to provide accurate data on a survey form.

Recognizing these concerns, the Task Force arrived at a possible way forward during a brainstorming session. Specifically, they recognized that a survey could simply ask for transactions supplied through Mode 1. Mode 4 would then be derived as the residual for most service types. For the few services types where Mode 2 could occur, a portion of the residual would be allocated to Mode 2 accordingly. Mode 3 would be measured independently based on FATS data.

As an additional step to reduce the burden and to recognize that although some companies may not have precise information on the amounts supplied by mode, they may have a general sense of their firm's business practices, the Task Force arrived at a way forward whereby a survey instrument would have companies check a box to indicate the range for which their services were supplied through Mode 1. For example, less than 25 percent, 25 to 49 percent, 50 to 74 percent, or 75 to 100 percent.

BEA adopted this approach. Some countries on the Task Force have indicated that they may collect MoS using the BEA's survey forms as their model. The U.K. has adopted a survey form that is similar to

4. Eurostat based the factors in part on a questionnaire sent to countries participating as members of the Task Force. The questionnaire, found at https://ec.europa.eu/eusurvey/runner/Modes_of_Supply_questionnaire, was launched and distributed to the participants.

BEA's form and has recently released statistics based on its survey.⁵ Spain has also collected data on MoS; their survey asks for the predominant mode. Outside of Europe, New Zealand has collected data on how commercial services are supplied overseas across Modes 1, 2, and 4, and the Reserve Bank of India has collected data on computer software and information technology enabled services by mode. Other countries within and outside of Europe have published MoS data including France, Finland, Columbia, and Brazil (whether exploratory or official statistics) although these estimates are generally not survey based. Costa Rica, India, and Thailand have worked with the United Nations Conference on Trade and Development (UNCTAD) to implement pilot studies of Information and Communications Technology (ICT)-enabled trade, which, as explained later in this paper, is largely the same as Mode 1.⁶

3. Development of BEA's Survey Instrument

Prior to launching its 2017 BE-120 Benchmark Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons, BEA undertook a cognitive review of the new questions on MoS, which included site visits with respondent companies, to ensure that the data could be reported accurately. This survey covers most business services other than insurance and financial services. Most companies told BEA that their systems do not track or compile information by MoS. Moreover, companies reported that it would be a significant burden to adjust systems to report this information. BEA pressed forward by testing several versions of the survey. One version asked companies to report the percentage supplied by each mode. The respondents said that this was too burdensome. A second version asked respondents to simply check a box to indicate the predominant mode used for each service type. Although companies were receptive to this approach, BEA concluded that this information would not enable it to fine-tune the percentage supplied by mode to use it in its exploratory estimates in a meaningful way. For example, BEA expected that companies would report that Mode 1 was predominant for most service types. Relying only on the knowledge that Mode 1 is the predominant mode, and given that what was not supplied through Mode 1 could be supplied by Mode 2, Mode 4, or both, BEA would be left with a wide range of possible values for the percentage of that service that was supplied through Mode 1 (between 33 and 100 percent). This general information could not be used to fine-tune the exploratory allocation across modes.

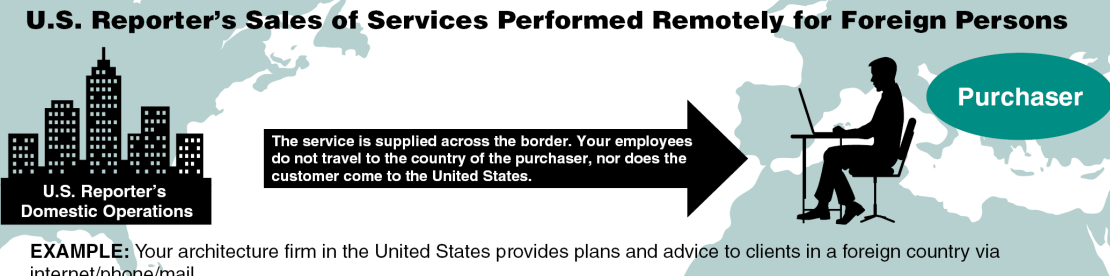
Following the collaboration with the Task Force described above, BEA tested a version of the form that followed the approach discussed during the brainstorming session, to only collect information on services supplied through Mode 1. This version was well-received by respondents, who indicated it was not too burdensome and that they could reliably report data using this form. As an additional step to simplify reporting, the form asks respondents to report the percentage of its services supplied through Mode 1 by checking a box representing a range of values within which the percentage falls rather than requiring companies to report a precise amount which might be difficult to calculate. The final version of BEA's survey form is shown below. BEA uses "Schedule D" to collect U.S. sales of services and "Schedule E" to collect U.S. purchases of services:

5. <https://www.ons.gov.uk/releases/modesofsupplyexploratoryestimatesfortheuk>
6. https://unctad.org/en/PublicationsLibrary/tn_unctad_ict4d11_en.pdf

SCHEDULE D – Percentage of Sales of Services to Foreign Persons Performed Remotely

If you reported sales of any of the services listed in the table below on **Schedule A**, please provide an estimate of the percentage of those services that were performed remotely from the U.S. Reporter's domestic offices via computer, email, telephone, etc. for the purchaser located abroad. The information provided in this section may be estimated based on recall or a general understanding of the U.S. Reporter's business operations. A video tutorial on reporting services performed remotely can be found at www.bea.gov/be120.

U.S. Reporter's Sales of Services Performed Remotely for Foreign Persons



EXAMPLE: Your architecture firm in the United States provides plans and advice to clients in a foreign country via internet/phone/mail.

Percentage of Services Performed Remotely by the U.S. Reporter's Domestic Offices for Foreign Persons via Internet, Email, Text, Telephone, or Other Means

Exclude the portion of the sales of each service type charged for services performed on-site in the country of the purchaser, or services performed for a foreign customer temporarily located in the United States.

Transaction code	Transaction type	Did you report this service on Schedule A? (Check yes or no)	For each "Yes" response, check the appropriate percentage range. (Check one)						The information provided is based on (Check one)	
			Less than 25%	25-49%	50-74%	75-89%	90-99%	100%	Accounting records	Recall/general knowledge of operations
9	Accounting, auditing, and bookkeeping services	51001 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
10	Advertising services	51002 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
12.3	Other computer services	51003 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
15	Education services	51004 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
16.1	Architectural services	51005 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
16.2	Engineering services	51006 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
16.3	Surveying, cartography, certification, and technical inspection services	51007 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
20	Legal services	51008 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
21.1	Market research services	51009 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
21.2	Public opinion and polling services	51010 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
21.3	Other management, consulting, and public relations services	51011 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
29.1	Provision of customized and non-customized research and development services	51012 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
29.2	Other research and development services	51013 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>

SCHEDULE E – Percentage of Purchases of Services from Foreign Persons Performed Remotely

If you reported purchases of any of the services listed in the table below on **Schedule B**, please provide an estimate of the percentage of those services that were performed remotely from the seller's foreign offices via computer, email, telephone, etc. for your U.S. domestic operations. The information provided in this section may be estimated based on recall or a general understanding of the U.S. Reporter's business operations. A video tutorial on reporting services performed remotely can be found at www.bea.gov/be120.

U.S. Reporter's Purchases of Services Performed Remotely by Foreign Persons

U.S. Reporter's Domestic Operations



The service is performed across the border. You do not travel to the country of the supplier, nor does the supplier come to the United States.



EXAMPLE: An accounting firm in a foreign country performs bookkeeping services for your offices in the United States via internet/phone/mail.

Percentage of Services Performed Remotely by the Foreign Seller via Internet, Email, Text, Telephone, or Other Means

Exclude the portion of the purchases of each service type performed on-site in the country of the seller, or services performed by a foreign seller temporarily located in the United States.

Transaction code	Transaction type	Did you report this service on Schedule B? (Check yes or no)	For each "Yes" response, check the appropriate percentage range. (Check one)						The information provided is based on (Check one)	
			Less than 25%	25-49%	50-74%	75-89%	90-99%	100%	Accounting Records	Recall/general knowledge of operations
9	Accounting, auditing, and bookkeeping services	61001 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
10	Advertising services	61002 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
12.3	Other computer services	61003 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
15	Education services	61004 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
16.1	Architectural services	61005 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
16.2	Engineering services	61006 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
16.3	Surveying, cartography, certification, and technical inspection services	61007 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
20	Legal services	61008 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
21.1	Market research services	61009 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
21.2	Public opinion and polling services	61010 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
21.3	Other management, consulting, and public relations services	61011 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
29.1	Provision of customized and non-customized research and development services	61012 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>
29.2	Other research and development services	61013 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 1 <input type="checkbox"/>	2 2 <input type="checkbox"/>	2 3 <input type="checkbox"/>	2 4 <input type="checkbox"/>	2 5 <input type="checkbox"/>	2 6 <input type="checkbox"/>	3 1 <input type="checkbox"/>	3 2 <input type="checkbox"/>

4. BEA's New Survey-Based Estimates

BEA released a working paper in 2017 that described its efforts to prepare exploratory estimates of services supplied by mode.⁷ The estimates were based on an allocation of (1) BEA's most detailed trade-in-services statistics, which are published annually as an extension of the U.S. Balance of Payments (BOP) accounts, (2) an estimate of distribution services, and (3) BEA's FATS covering services supplied to host countries through the channel of direct investment by affiliates of multinational enterprises (MNEs). The exploratory estimates take advantage of BEA's comprehensive FATS to identify services supplied to the host country's local market through Mode 3.

In 2017 BEA did not have any survey-based information on trade in services by mode. Therefore, the allocation method followed the approach outlined in chapter V of the MSITS and the associated MSITS 2010 Compilers Guide. These references advise compilers to conduct a simplified allocation of existing statistics as given in table V.2 in MSITS. This method consists of attributing service categories to either one dominant mode or to the most significant mode of supply where there is no single dominant mode. The 2017 paper enhanced this approach by allocating the services to multiple modes based on assumptions of how services are most likely supplied by exporters (or to importers) of the U.S. economy. The paper outlined the assumptions used to allocate the value of services to each of the four modes, followed by the results.

In this paper, BEA has updated its exploratory estimates by reallocating the trade-in-services statistics by mode using factors from the newly collected survey data for the thirteen services types collected.⁸ The factors, which measure the percentage supplied through Mode 1, are derived by weighting the midpoint value for each percentage range on the survey form by the reported amount of services supplied within that range using the following formula:

$$F_t = \frac{\sum_{i=1}^I S_{it} \times P_{it}}{\sum_{i=1}^I S_{it}}$$

Where F_t is the weighted average percent of service type t supplied via Mode 1, S_{it} is the value reporter i exported or imported of services type t , and P_{it} is the midpoint of the percentage range reporter i indicated was supplied through Mode 1 for services type t .

The percentage supplied through Mode 4 is equal to the residual of the percentage supplied through Mode 1 for most service types. One exception is legal services, where the residual is split between Modes 2 and 4. A relatively large percentage of legal services are presumed to be supplied by a client in one country traveling to the legal service supplier in another, such as when the client travels to the offices of the supplier for consultation.

7. Michael Mann, "Exploratory Estimates of U.S. International Services by Mode of Supply." BEA Working Paper, Washington, D.C., May 2017 <https://www.bea.gov/research/papers/2017/exploratory-estimates-us-international-services-mode-supply>

8. The newly collected data on mode percentages was collected on a survey of transactions for the year 2017. BEA applied these percentages to its trade values for 2016 because this was the most recent year for which these data were available for all modes at the time of the study. BEA's FATS are typically published with a 1 year lag compared to BEA's trade data.

As shown in Table 1, most of the factors BEA used in its exploratory estimates were reasonably close to those suggested by the survey data. One exception was exports of computer services supplied remotely, where the survey data indicated a much higher percentage of services supplied via Mode 1. Another case in which exploratory estimates and survey-based estimates diverged was exports of education services. The exploratory factor covering the percentage of services supplied remotely by teachers and instructors (Mode 1) was high relative to the percentage supplied by teachers and trainers who go to the host country (Mode 4). However, the survey indicated that most of these services are supplied directly in host countries through Mode 4.⁹

Table 1. Percentage of U.S. Services Supplied Through Mode 1: Simplified Approach vs. Survey Approach

	Exports		Imports	
	Simplified approach	Survey based	Simplified approach	Survey based
Accounting	75	51	75	66
Advertising, market research, public opinion	75	78	75	70
Computer	50	80	50	56
Architectural and engineering	50	61	50	53
Education	75	37	75	32
Legal	75	80	75	91
Management consulting	67	77	67	68
Research and development	75	59	75	81

Note. Percentage of trade supplied through Mode 1. Trade includes Mode 1, 2, and 4 and excludes Mode 3.

Source: Survey-based percentages are from the preliminary results of BEA's 2017 BE-120 Benchmark Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons. The simplified approach percentages are from the previous working paper referenced above.

The new survey-based estimates are more robust than the initial exploratory estimates because they are based on direct reporting from U.S. companies and because the survey collected detail at a more disaggregated level of service type. For example, the survey collected several categories of business services that were not broken out in the exploratory estimates. The exploratory estimates used a factor of .75 for all business services, whereas the updated estimates use survey-based factors for a more detailed type-of-service breakdown.

As shown in table 2 below, a higher percentage of companies reported that they were able to obtain information from accounting records about MoS (about a third for both exports and imports) than had been indicated to BEA by a test group of companies that BEA checked with when developing the form.

9. Education-related travel is classified as Mode 2 under GATS. The BE-120 survey excludes these transactions.

**Table 2. Reports Based on Accounting Records
Versus Knowledge of Operations
[Percent]**

	Exports		Imports	
	Accounting records	Knowledge of operations	Accounting records	Knowledge of operations
Accounting	35	65	34	66
Advertising, market research, public opinion	42	58	38	62
Computer	34	66	32	68
Architectural	48	52	52	48
Education	44	56	37	63
Engineering	36	64	31	69
Legal	32	68	30	70
Management consulting	26	74	27	73
Research and development	34	66	34	66

Source: BEA's 2017 BE-120 Benchmark Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons

5. Presentation of the Estimates of International Supply of Services by Mode

In addition to incorporating new MoS survey data as described above, this paper includes expanded and enhanced estimates of services supplied through Mode 3, updated estimates of distribution services, and adjusted estimates of Mode 2 that provide additional detail called for by GATS.

Development of estimates of Mode 3 by service type

The estimates for services supplied through Mode 3 by type of service rely on a bridge table (table 3) between BEA FATS, which are classified by industry of the largest sales of the reporter, and BEA's services trade categories used in its statistics covering Modes 1, 2, and 4.¹⁰ BEA's Mode 3 totals are based on its FATS; FATS are recognized in the international statistical community as a useful proxy for Mode 3. The bridge, which BEA expects to enhance over time, approximates service types for the FATS reported on BEA surveys of the activities of MNEs to enable a comparison of how U.S. firms supply different types of services across all four modes. These BEA FATS cover statistics on services supplied to the host country by U.S. MNEs through their majority-owned foreign affiliates (MOFAs) and services supplied to U.S. persons by foreign MNEs through their majority-owned U.S. affiliates (MOUSAs). To best understand the behavior of MNEs, these statistics are compiled for enterprises in which the direct investor directly or indirectly holds or controls a majority of the voting power.

10. Table 3 is based partly on a broader project by BEA to map sales reported by industry in its FATS to the appropriate service type. Table 3 is also based on work by the WTO to develop a correspondence table between International Standard Industrial Classification (ISIC) codes and the Extended Balance of Payments System (EBOPS). See "A Global Trade in Services Dataset by Sector and by Mode of Supply" by Steen Wettstein, Antonella Liberatore, Joscelyn Magdeleine, Andreas Maurer, 2019.

It is important to note that these estimates of Mode 3 services supplied by the affiliates of MNEs are approximations due to conceptual differences and measurement challenges that affect the precision of the services supplied through affiliates data as presented here. These by type of service estimates are based on published BEA FATS statistics covering sales of services through affiliates in the host country (Mode 3), which are classified by primary industry of the affiliate based on its largest industry of annual sales or gross operating revenues. As such, the published sales of services through affiliates statistics on which these estimates have been based may include secondary industry activities of the reporting firm that are not associated with the type of traded service to which the primary industry has been mapped, leading to an overestimate of the amount of that type of service supplied. Imprecision may also arise because sales of a particular type of traded service may exclude some services that are carried out as part of an affiliate's secondary activities and not attributed to that industry. For example, consider an affiliate with a primary classification in a finance industry with secondary activities in an insurance industry. An approximation of services by type based on the affiliate's primary industry would overestimate the amount of financial services supplied through affiliates while underestimating the amount of insurance services. In addition, this bridge table used to map industries to service types does not include certain goods-producing industries, such as manufacturing. As such, the estimates of Mode 3 services by type do not currently capture the substantial amounts of services supplied through manufacturing affiliates.

Table 3. Bridging Selected Traded Services and Foreign Affiliate Statistics

Services supplied by enterprises to foreign markets through Modes 1, 2, and 4	Services supplied by multinational enterprises through their majority-owned affiliates to the host country (Mode 3)
Service description ¹	Industry description ²
Transport	Transportation and warehousing less Other transportation and warehousing
Port component of Transport	Other transportation and warehousing
Insurance services	Insurance carriers and related activities
Financial services	Finance
Charges for the use of intellectual property n.i.e.	Newspaper, periodical, book, and database publishers plus Software publishers plus Motion picture and sound recording industries plus Other information services plus Broadcasting
Telecommunications services	Telecommunications
Computer services	Data processing, hosting, and related services plus Software publishers plus Computer systems design and related services
Information services	Newspaper, periodical, book, and database publishers plus Other information services plus Travel arrangement and reservation services
Other business services:	
Research and development services	Other information services plus Scientific research and development services
Professional and management consulting services:	
Legal services	Legal services
Accounting, auditing, and bookkeeping services	Accounting, tax preparation, bookkeeping, and payroll services
Business and management consulting services	Management, scientific, and technical consulting plus Management of nonbank companies and enterprises
Advertising	Advertising and related services plus Newspaper, periodical, book, and database publishers plus Other information services
Technical, trade-related, and other business services:	
Architectural and engineering services	Architectural, engineering and related services
Construction	Construction ³
Training and Education services	Educational services
Sports and performing arts	Arts, entertainment, and recreation
Distribution services	Wholesale trade

n.i.e. Not included elsewhere

NOTE. When an industry is mapped against more than one type of traded service, the services supplied by that industry are apportioned equally to the service types to avoid double counting.

1. From Bureau of Economic Analysis (BEA) Table 2.1. U.S. Trade in Services, by Type of Service.
2. From BEA Table 4.3 Services Supplied to Foreign Persons by U.S. MNEs Through Their MOFAs, by Industry of Affiliate and by Destination and Table 5.3. Services Supplied to U.S. Persons by Foreign MNEs Through Their MOUSAs, by Industry of Affiliate.
3. Because BEA records most sales by entities classified in the construction industry as sales of goods, this study uses goods supplied by affiliates in construction as a proxy measure of services supplied by affiliates in construction. The goods supplied statistics are from BEA's table, "Data on Activities of Multinational Enterprises, U.S. Direct Investment Abroad, All Majority-Owned Foreign Affiliates (data for 2009 and forward), Goods Supplied by Industry of Affiliate and Destination." The comparable data for foreign direct investment in the United States are suppressed.

In several cases an industry is mapped to more than one type of traded service. When this occurs, the services supplied by that industry is apportioned equally to the service types to avoid double counting. For example, services supplied by the software publishing industry are mapped to three service types: computer services, charges for the use of intellectual property not included elsewhere, and research and development services. Consequently, a third of the services supplied by this industry is apportioned to each of the three.

BEA FATS include separate statistics on sales within the host country's local market and sales to third countries. Only sales in the host country are of interest under GATS for measuring the mode of supply because trade negotiators are focused on lowering barriers to trade within their country. Therefore, this paper uses services supplied to the host country in the analysis. BEA FATS also conform with GATS in that BEA's published statistics include production-based measures for two service types—insurance and financial services—where sales data would provide a misleading picture of services supplied.¹¹

For the banking industry, services supplied include not only the explicit fees and commissions reported as sales, but also an estimate of the value of implicit services supplied by banks, often referred to as financial intermediation services indirectly measured (FISIM).¹²

For the insurance industry, services supplied consist of reported premiums less an estimate of expected or “normal” losses plus premium supplements. Normal losses are a proxy measure for the claims that insurers expect to pay in a given period. A measure of claims is subtracted in the calculation of insurance services supplied because claims represent resources that are allocated to policyholders and thus are not available to an insurance company to cover costs and provide an operating surplus. Normal losses are used as an alternative to the actual claims paid in a single period, which are subject to high volatility and which, if used, would lead to an inadequate measure of long-term insurance output. Premium supplements represent income earned on funds that insurers hold, and invest, on policyholders' behalf.

Another special case involves construction services. There are two distinctive aspects of construction: The first is associated with the GATS notion of commercial presence, which does not precisely conform to the BOP definition of residency. The BOP considers a foreign affiliate to be a resident of the economy in which it is established. In contrast, services supplied by an entity with a commercial presence that does not meet the criteria of an affiliate would be covered under GATS but not FATS. The construction industry provides one of the more common examples where a firm establishes a commercial presence that does not qualify as an affiliate. It is not unusual for a construction company to set up an unincorporated site office in a foreign country to carry out a short-term construction project, establishing a foreign commercial presence but not an affiliate. Construction services are supplied in some cases through affiliates or other forms of a commercial presence (Mode 3) and in other cases, through employees sent temporarily abroad by a firm where the operations are coordinated and conducted from the home territory because the firm does not have a commercial presence in the foreign country (Mode 4). Consequently, the amounts reported for construction services in the trade statistics are allocated between Modes 3 and 4. Lacking any information to determine the relative allocation between Modes 3 and 4, the amounts are allocated equally. Services

11. See Maria Borgia, “Improved Measures of U.S. International Services: The Cases of Insurance, Wholesale and Retail Trade, and Financial Services,” *International Trade in Services and Intangibles in the Era of Globalization*, NBER, May 2009 www.nber.org/chapters/c11606.pdf

12. FISIM measures the value of implicit services supplied by banks. Banks are compensated for such services by paying lower interest rates on deposits than they charge on loans. BEA estimates these services as the difference between reported net interest earned in banking and BEA's estimate of the cost of providing funds calculated as reported net assets multiplied by a reference rate.

supplied through affiliates in the construction industry (proxied by goods supplied through affiliates in the construction industry as described above) are added to the amounts from the trade statistics in this paper to fully measure Mode 3.

Second, in the FATS statistics, BEA records most sales by entities classified in the construction industry as sales of goods. This paper uses these goods supplied as a better proxy measure of construction-related services supplied than BEA's sales of services under construction.¹³ BEA's sales of services through MOFAs and MOUSAs for construction represent sales in secondary, non-construction industries, which would present a misleading picture of construction services supplied by the construction sector.¹⁴

The bridge table excludes a few service categories found in its trade statistics such as “other business services n.i.e.”¹⁵ and “maintenance and repair services n.i.e.” because BEA does not publish local host country sales statistics that directly map to these categories; therefore, these categories are not listed under Mode 3 in this paper. The table also does not map the accommodation industry to travel because “travel” is inherently transactor-based so it does not lend itself to being mapped to an industry.

Limitations in the data BEA can publish because of U.S. regulations that prohibit the potential disclosure of survey data reported by individual companies inhibit a more complete comparison of the Mode 3 estimates with the other modes. Reporting on BEA's surveys of trade in services and direct investment is mandatory under the International Investment and Trade in Services Survey Act.¹⁶ The act protects the confidentiality of the reporting companies' data. The assurance of confidentiality is essential to securing the cooperation of reporters. Therefore, BEA aggregates the survey data to the country and area level detail used for publication and performs a rigorous nondisclosure analysis to identify data that require suppression to ensure the confidentiality of individual reporters' data. This requirement inhibits this comparison of amounts supplied by mode because the nondisclosure analysis reveals that BEA must suppress values of some of its published FATS data, even at the global level.

Updated estimates of distribution services

MSITS notes that distribution services, wholesaling and retailing services, would “present a particularly useful complement to the services statistics covered in the balance of payments accounts” for measuring services by mode of supply as estimating distribution services would provide “a more complete analysis of the international supply of services.”¹⁷ Distribution services are not separately measured in the BOP accounts; rather, the value of international distribution services are included indistinguishably in the value of the traded goods. However, it is possible to estimate distribution services, as BEA demonstrated several years ago.¹⁸ The paper updates those estimates using more recent source data and classifies distribution services under Mode 1 per international guidelines.

13. The sales of goods data are from BEA's table, “Data on activities of multinational enterprises, U.S. Direct Investment Abroad, All Majority-owned Foreign Affiliates (data for 2009 and forward), Goods Supplied by Industry of Affiliate and Destination.” <https://apps.bea.gov/iTable/iTable.cfm?ReqID=2&step=1>. The comparable data for foreign direct investment in the United States are suppressed.

14. BEA is considering the possibility of revisiting its current treatment of construction in the FATS statistics.

15. n.i.e. Not included elsewhere

16. International Investment and Trade in Services Survey Act (P.L. 94-472, 90 Stat. 2059, 22 U.S.C. 3101-3108)

17. MSITS, Paragraph 5.40 and 5.41 https://unstats.un.org/unsd/publication/Seriesm/seriesM_86Rev1e.pdf

18. See Borga, “Improved Measures of U.S. International Services: The Cases of Insurance, Wholesale and Retail Trade, and Financial Services,” Chapter 2 of the NBER's publication “International Trade in Services and Intangibles in the Era of Globalization,” May 2009 at www.nber.org/chapters/c11606.pdf

Following the approach BEA employed several years ago, distribution services are measured by multiplying the percentage of goods exports arranged by wholesalers by an estimate of the portion of wholesale trade that represents distribution services. The most recent information available from the U.S. Census Bureau indicates that wholesalers accounted for 22.9 percent of the export value of goods.¹⁹ The 22.9 percent share is applied to the value of goods exports in 2016—\$1.46 trillion—resulting in an estimate that U.S. wholesalers arranged about \$334 billion of these goods exports. The approach assumed that distribution services accounted for 22 cents of every \$1 of sales for these wholesalers. Therefore, using the same rate, the value of distribution services supplied by wholesalers for these goods exports was about \$73 billion.

No data are available for the percentage of imports arranged by foreign wholesalers. However, under the assumption that the same percentage of goods was imported through foreign wholesalers as was exported through U.S. wholesalers, foreign wholesalers arranged about \$500 billion of imports of goods in 2016. Assuming the same rate of 22 cents of distributive services for every \$1 of sales for foreign wholesalers implies distribution services of about \$111 billion.

Adjustments to Mode 2 to more closely conform to GATS

Most services transactions recorded in the BOP as travel are deemed to fall under consumption abroad, or GATS Mode 2. However, the travel component also includes the purchase of goods.²⁰ In order to properly measure these services for GATS purposes, these goods, such as gifts and souvenirs, should be removed because GATS is focused on the supply of services.²¹ This paper removes an estimate of the goods commingled in travel using information from the Survey of International Air Travelers (SIAT) administered by the U.S. Department of Commerce, International Trade Administration, National Travel and Tourism Office (NTTO). BEA's estimates for travel rely on estimates of average expenditure per traveler derived from the SIAT. Data collected on the survey reveals that 23 percent of the average expenditure by foreign visitors to the United States is for goods.²² This paper reduces the amount of exports of travel by that percentage. The SIAT does not collect detailed information on expenditures for imports; therefore, the same percentage is assumed and applied to travel imports to obtain a measure that does not include goods.²³

19. U.S. Census Bureau "A Profile of U.S. Importing and Exporting Companies, 2015–2016" released April 7 2015 at <http://www.census.gov/foreign-trade/> Press Release table 1a 2016 Imports by Company Type and Employment Size.

20. MISTS paragraph 5.44

21. An objective for the GATS tourism sector is to facilitate cross-border movement of consumers who are engaged in travel. There are more tourism commitments under GATS by more WTO members than in any other services sector. See the sector description for Tourism and travel-related services from the WTO at https://www.wto.org/english/tratop_e/serv_e/tourism_e/tourism_e.htm. Efforts to reduce barriers to goods trade are covered in the counterpart to GATS for merchandise trade, the General Agreement on Tariffs and Trade.

22. From the 2017 annual national report found at <https://travel.trade.gov/research/programs/satellite/index.asp>, where \$1,581 is the mean expenditure in the United States by foreign visitors (based on question 19d), and \$362 is their mean expenditure on shopping, gifts, and other purchases (question 19e6).

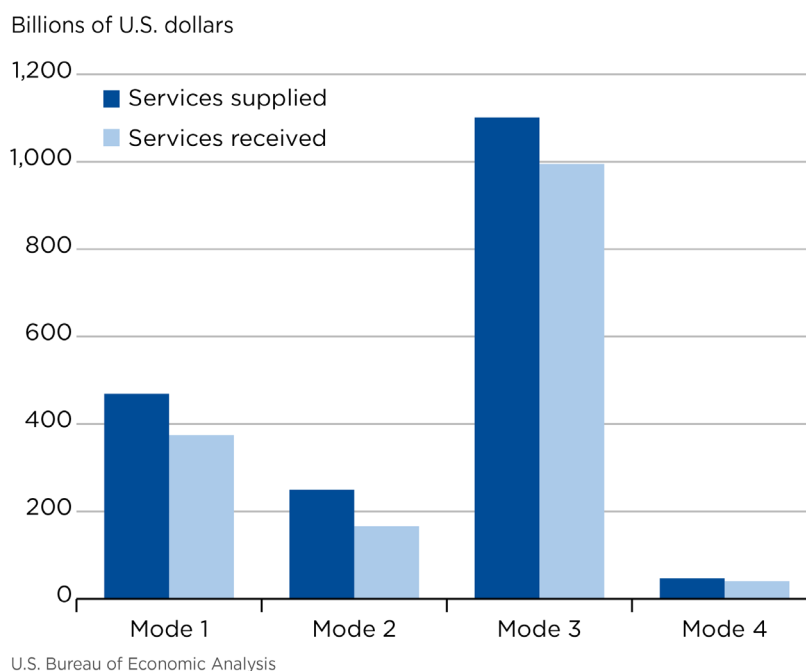
23. In addition to the SIAT, BEA explored numerous other sources in the hope of finding information on the share of goods included in travel imports including the U.S. Bureau of Labor Statistics "Consumer Expenditure Survey," the U.S. Customs and Border Protection customs declarations, and selected partner country data covering expenditures of U.S. travelers abroad. Other than Poland, which collects information that suggests that one-third of U.S. travelers' expenditures are on goods, none offered usable information. Poland was too small a share of total U.S. travel to justify using the information from Poland to adjust BEA's estimate for trade with all countries.

This paper makes other adjustments to better measure Mode 2 by type of service. As explained in MSITS, the collection of separate data on expenditures on health and education services is particularly useful for analyzing the supply of these services via Mode 2.²⁴ This paper breaks out expenditures on health and education services using data published in the U.S. BOP accounts. Similarly, this paper removes the expenditures of seasonal, border, and other short-term workers from the measure of travel to conform with GATS.

New exploratory estimates

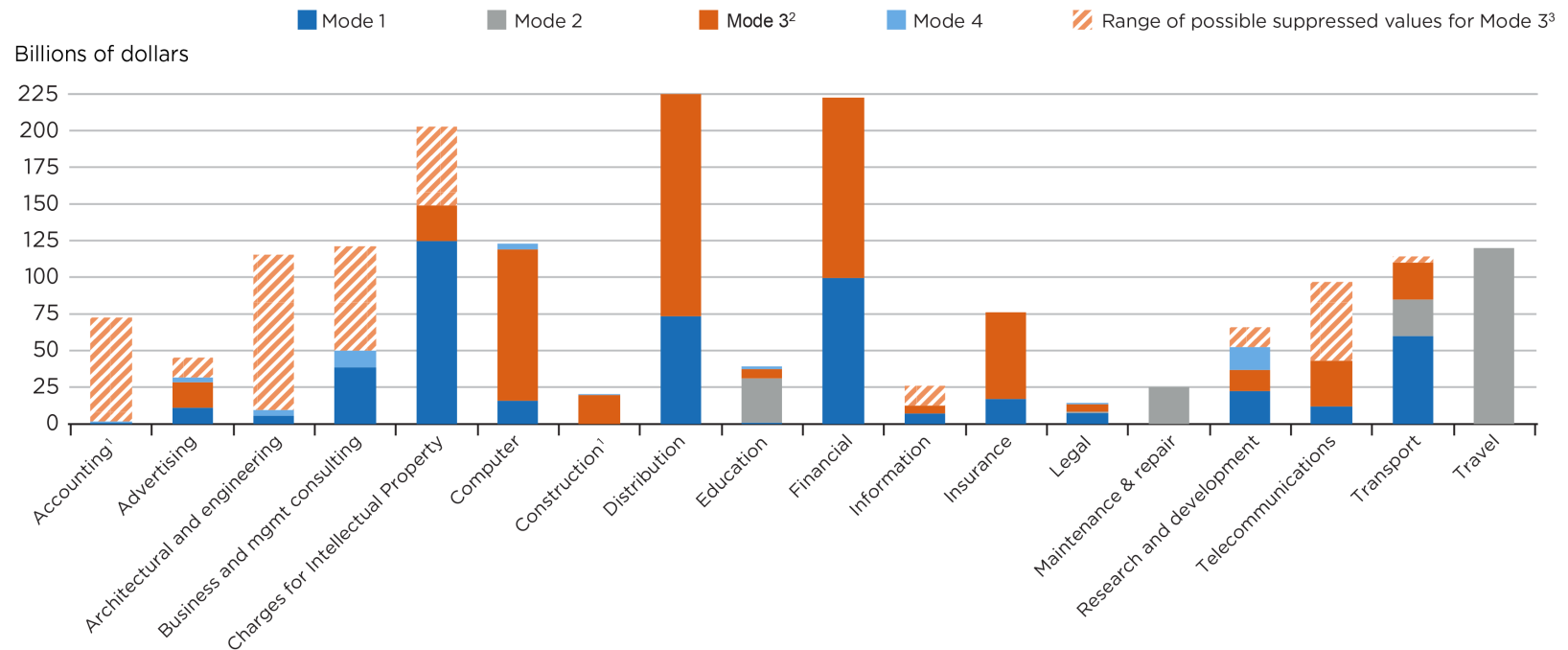
The new exploratory estimates of trade in services by mode of supply, which incorporate all the advances described above, are significantly more robust and detailed than the exploratory estimates released in 2017. The new estimates are presented below. Figure 2 shows total services supplied and received by mode. Figures 3 and 4 provide additional detail by type of service. Several of the values representing services supplied through Mode 3 are suppressed in BEA's tables in accordance with U.S. regulations that prohibit the potential disclosure of survey data reported by individual companies. Where values in BEA's statistics on services supplied through affiliates to the host country are suppressed, Figures 3 and 4 provide a range of possible values for the suppressed amount to provide a rough idea for the percentage supplied through Mode 3 for the service type. The upper bound is equal to the first unsuppressed value at a higher level of aggregation in BEA's tables less the sum of any unsuppressed values at the same level as the suppressed value. The lower bound is the sum of any unsuppressed values at the level under the suppressed value. Table 4 presents the estimates in a tabular form.

Figure 2. U.S. Trade in Services by Mode



24. MSITS paragraph 3.126

Figure 3. U.S. Supply of Services by Mode, 2016

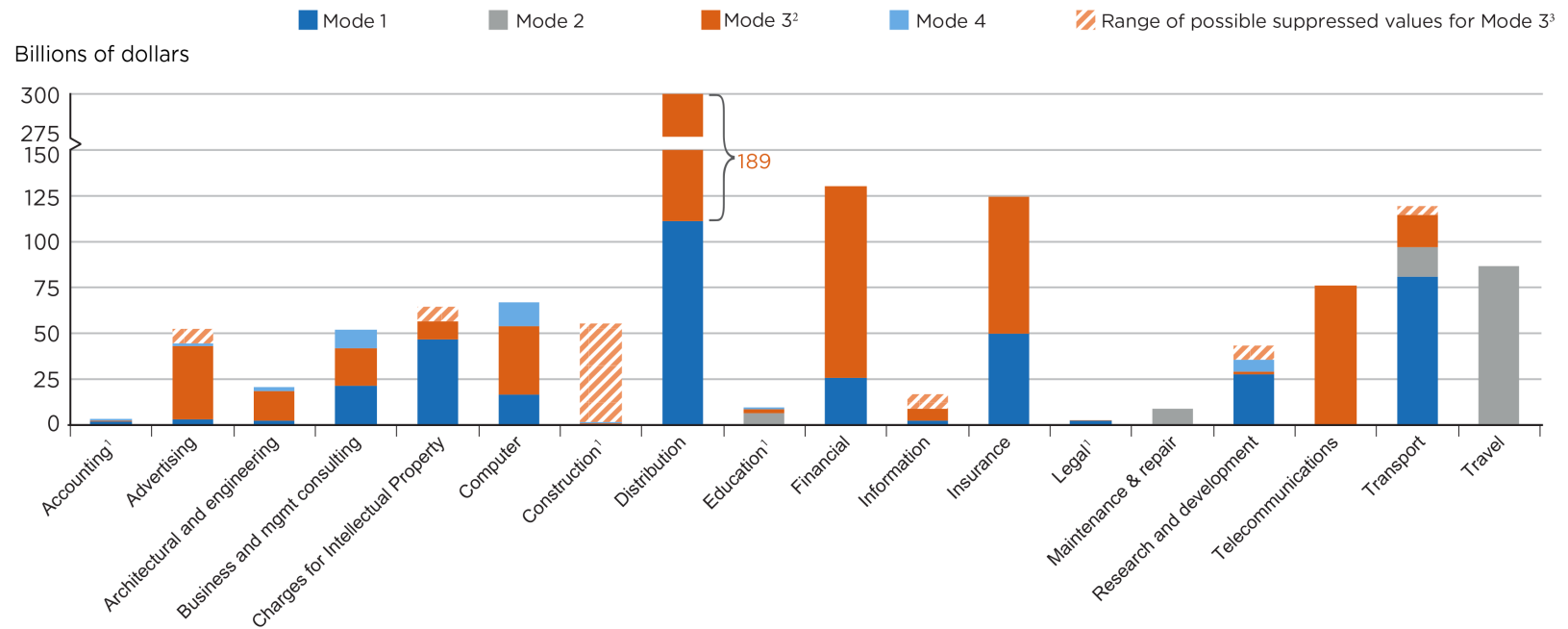


1. There are transactions in Mode 1 for accounting services and Mode 4 for construction that are relatively small and may not be clearly visible.

2. The total for Mode 3 exceeds the sum of the components because some services are supplied by industries that do not directly correspond to any services type category BEA uses to classify trade in services. These services are not included in any of the components in this chart.

3. Several of the values representing services supplied through Mode 3 are suppressed in BEA's published statistics to avoid the disclosure of survey data reported by individual companies. The upper bound is equal to the first unsuppressed value at a higher level of aggregation in BEA's statistics less the sum of any unsuppressed values at the same level as the suppressed value. The lower bound is the sum of any unsuppressed values at the level under the suppressed value.

Figure 4. U.S. Services Received by Mode, 2016



1. There are transactions in all four modes for education and legal services, in all but Mode 2 for accounting services, and in Mode 4 for construction. The amounts for these transactions are relatively small and may not be clearly visible.
 2. The total for Mode 3 exceeds the sum of the components because some services are supplied by industries that do not directly correspond to any services type category BEA uses to classify trade in services. These services are not included in any of the components in this chart.
 3. Several of the values representing services supplied through Mode 3 are suppressed in BEA's published statistics to avoid the disclosure of survey data reported by individual companies. The upper bound is equal to the first unsuppressed value at a higher level of aggregation in BEA's statistics less the sum of any unsuppressed values at the same level as the suppressed value. The lower bound is the sum of any unsuppressed values at the level under the suppressed value.

Table 4. U.S. Trade in Services by Mode of Supply for 2016
[Millions of dollars]

	Services supplied				Services received			
	Mode 1	Mode 2	Mode 3	Mode 4	Mode 1	Mode 2	Mode 3	Mode 4
Maintenance and repair services n.i.e.	na	25,004	na	na	na	8,731	na	na
Transport	59,988	na	29,367	na	80,827	na	22,459	na
Port component of transport	na	24,691	na	na	na	16,112	na	na
Expenditures by border, seasonal, and other short-term workers	na	6,557	na	na	na	1,059	na	na
Health	na	2,892	na	na	na	1,586	na	na
Education	917	30,100	6,476	1,561	406	5,890	2,386	864
Travel	na	119,972	na	na	na	86,738	na	na
Insurance services	17,067	na	59,018	na	49,900	na	74,676	na
Financial services	99,384	na	123,230	na	25,752	na	104,538	na
Charges for the use of intellectual property n.i.e.	124,734	na	(D)	na	46,577	na	(D)	na
Telecommunications services	11,736	na	(D)	na	5,490	na	76,100	na
Computer services	15,701	na	103,272	3,925	16,537	na	37,410	12,994
Information services	7,186	na	(D)	na	2,370	na	(D)	na
Research and development services	22,514	na	(D)	15,645	27,648	na	(D)	6,485
Legal services	7,411	926	5,161	926	2,242	111	112	111
Accounting, auditing, and bookkeeping services	817	na	(D)	784	1,934	na	346	996
Business and management consulting and public relations services	38,488	na	(D)	11,496	21,373	na	21,482	10,058
Advertising	11,063	na	(D)	3,120	3,095	na	(D)	1,327
Architectural and engineering services	5,730	na	(D)	3,664	2,308	na	16,147	2,131
Construction	na	na	19,709	708	na	na	(D)	813
Sports and performing arts	na	na	19,772	788	na	na	5,557	1,297
Other business services n.i.e.	12,377	na	na	3,932	14,438	na	na	4,374
Purchases abroad by government personnel and their dependents	na	na	na	na	na	8,334	na	na
Distribution services	73,423	na	151,835	na	111,230	na	188,994	na
Total	508,534	210,143	1,101,444	46,550	412,128	128,560	995,073	41,448

(D) Suppressed to avoid the disclosure of data of individual companies

n.i.e. Not included elsewhere

na Not applicable

Note. The totals for Mode 3 do not equal the sum of the components because BEA is only measuring key components at this time in part because certain services types are classified in industries that do not directly correspond to the services type categories we use for classifying trade in services. The total for services supplied through Mode 3 equals BEA's published value for services supplied to foreign persons in the host country through U.S. MOFAs modified by the adjustment for construction described in footnote 3 to table 3. The total for services received through Mode 3 equals BEA's published value for services supplied to U.S. persons by foreign MNEs through their MOUSAs. The adjustment for construction is not made for services received through Mode 3 because this would cause the value to be suppressed. The absence of this adjustment makes a difference of less than one percent in the amount.

6. Possible Directions for Future Research

BEA is considering the following steps to enhance its estimates further:

1. ***Further modifications to BEA surveys.*** BEA is considering further changes to its survey programs to enhance its estimates of mode of supply such as:
 - a. Adding a geographic dimension to enable analysis of differing mode of supply patterns across partner countries,
 - b. Adding mode of supply schedules to BEA's financial services and insurance surveys,
 - c. Adding mode of supply schedules to the quarterly survey of selected services rather than just the 5-year benchmark survey,²⁵ and
 - d. Adding questions to BEA's direct investment surveys about business practices with respect to certain aspects of mode of supply. For example, U.S. parent companies with foreign affiliates may be able to provide information on the employees that they temporarily send abroad, which could help BEA refine its measure of Mode 4.
2. ***Development of estimates to supplement the information from BEA's business surveys.*** BEA may be able to use administrative data sources to measure services supplied by self-employed nonresidents working in the United States (part of Mode 4 imports). For services supplied by employees of foreign firms sent to the United States (the other part of Mode 4 imports), BEA may consider how to estimate the value of these services if businesses cannot readily provide the information on BEA's surveys.
3. ***Compare trade statistics by mode with other countries.*** After adding a geographic dimension to BEA's survey forms, BEA could compare its statistics with countries that are sufficiently advanced in their work to estimate services by mode. In theory, services supplied by one country should equal services received by the other. By comparing the statistics, the two countries may be able to identify ways to enhance their respective measures.
4. ***Evaluate the coverage of computer services received under Mode 1 by exploring alternative source data that could capture potential respondents that fall below survey reporting thresholds on BEA surveys.*** Imports of computer services may be understated because a percentage of the transactions are undertaken by individuals and small businesses who may acquire the service by means such as downloading software and are generally not covered by the survey frame. In principle, the survey covers the entire universe of transactions in each covered service on the survey because it is mandatory for respondents to report their transactions regardless of whether or not they have been contacted by BEA; however, in practice, the survey misses individuals and small businesses that are unaware of this reporting requirement. Germany is one country that has recently advanced efforts to address this data gap encompassing digital services consumed

25. BEA's benchmark surveys cover the universe of companies engaged in trade in the covered types of services. BEA makes estimates for the companies with smaller transactions in between benchmark periods. BEA generally conducts benchmark surveys every 5 years. Between benchmarks BEA uses quarterly surveys that typically cover 80 to 90 percent of the value of services trade.

by households.²⁶ Another reason why the survey-based percentages for both computer services exports and imports may be understated is that the percentages are based on data collected for just one sub-category of computer services. BEA did not collect survey data for other sub-categories such as cloud computing because it assumed that these other sub-categories are delivered nearly entirely through remote means. The percentage for the full category would be higher if this assumption is correct. However, BEA is holding off on arbitrarily adjusting the computer services percentage pending more study of these other sub-categories. . The other sub-categories including cloud computing make up about 75 percent of total computer services supplied and about 50 percent of computer services received.

5. ***Enhance BEA's estimates of Information and Communications Technology (ICT)-enabled services trade by incorporating the mode of supply survey results.*** To promote a better understanding of how U.S. companies engaged in services trade are reaching global markets, BEA developed statistics on trade in ICT and potentially ICT-enabled services in 2016.²⁷ These statistics complement the standard presentation of trade-in-services statistics by examining the extent to which ICT may be used to facilitate trade in services. ICT services are services such as telecommunications services that are used to facilitate information processing and communication.²⁸ ICT-enabled services are services such as human resource management, accounting, architectural design, and education with outputs that are supplied remotely over ICT networks. Potentially ICT-enabled services are services with outputs that can be predominantly supplied remotely over ICT networks. Currently BEA's statistics are based on assumptions regarding which service types are potentially-ICT-enabled. If data users assume that potentially ICT-enabled services are all, in fact, ICT-enabled, the result will be an inflated notion of the importance of delivery of services through ICT technology. This could create the impression that these types are supplied exclusively through Mode 1. However, survey results on modes of supply used suggest that this is not the case. A clearer picture of which potentially ICT-enabled services are actually ICT-enabled might be provided by incorporating survey information on services supplied through Mode 1.²⁹
6. ***Add an estimate of expenditures in the United States by foreign government personnel and their dependents to services supplied under Mode 2.*** This would be the counterpart to the measure of purchases of U.S. government personnel and their dependents abroad that are included in these mode of supply estimates under services received through Mode 2. BEA includes a measure of these expenditures in the U.S. BOP accounts but they are not separately identified. Included are expenditures by foreign diplomats and non-diplomatic personnel who work at embassies, consulates, and international organizations in the United States, along with their dependents.

26. Annette Meusch and Benny Hessel, "Measuring Digital Trade: A supplementary estimate of digital trade," Deutsche Bundesbank, presented to the OECD's Working Party on International Trade in Goods and Services, March 2019

27. Alexis Grimm, "Trends in U.S. Trade in Information and Communications Technology (ICT) Services and in ICT-Enabled Services," Survey of Current Business (May 2016) at https://apps.bea.gov/scb/pdf/2016/05%20May/0516_trends_%20in_us_trade_in_ict_serivces2.pdf

28. ICT services in BEA's BOP accounts encompass telecommunications services, computer services, and charges for the use of intellectual property associated with computer software.

29. Mode 1 per GATS does not precisely equate to ICT-enabled in two respects: First, the former includes delivery by phone, fax, manually typed email, or through the postal service whereas the latter would not. Second, the former focuses on the percentage of those services supplied remotely by the foreign seller in terms of value, time, and resources, whereas the latter has a broader focus. For example, consider the case of a foreign person who worked in the United States for six months writing code, and then went home, refined the software in one day, then sent it to the United States via an electronic network. Very little would be Mode 1 per GATS, but it might all be ICT-enabled per the UNCTAD definition. An UNCTAD report provides guidance on how statistical agencies should produce internationally comparable statistics on ICT and ICT-enabled services (see http://unctad.org/en/PublicationsLibrary/tn_unctad_ict4d03_en.pdf).

BEA could consider the conceptual basis for including these expenditures in the mode of supply estimates and explore whether the coverage of this measure can be expanded before separately publishing this measure.

7. ***Examine whether there are behavioral differences in trade by mode between related parties as opposed to trade between unrelated parties.*** BEA collects information on trade in services by the relationship with the foreign counterparty (e.g., whether or not the U.S. respondent is related to the foreign counterparty through a direct investment relationship). Using this information together with the information on MoS collected on the BE-120 survey, BEA could examine whether there are significant differences in services supplied through Modes 1 and 4 between related and unrelated parties.
8. ***Refine the Mode 3 estimates by type of service.*** Incorporate more of the underlying detail collected on BEA's surveys of MNEs to better discern the appropriate service types associated with the full range of affiliate's activities, including in their secondary service industries.

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