

# Measuring trade in services by Modes of Supply

MICHAEL MANN, DANIEL P.H. CHEUNG

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# **Measuring trade in services by Modes of Supply**

**A report on the parallel efforts  
by the U.S Bureau of Economic Analysis  
and the UK Office for National statistics**

**MICHAEL MANN, DANIEL P.H CHEUNG**

**2019 edition**

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# Abstract

This paper reviews the similar paths followed by the UK Office for National Statistics (ONS) and the U.S. Bureau of Economic Analysis (BEA) to measure international services categorized by mode of supply. Most notably, these agencies have adopted a similar 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. Prior to these efforts by ONS and BEA, few countries had attempted to measure trade in services by mode of supply, and in these few cases, most measures had been based on assumptions about industry practices or on surveys that only asked for the predominant mode of supply rather than a more precise percentage supplied by mode.

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# 1

## Introduction

### 1.1. Aims and purpose

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

Information on Modes of Supply (MoS) is an important and natural extension to UK econometric measurements that has not been previously explored by the ONS. Importantly, following the results of the European Union (EU) referendum in the UK (i.e. Brexit), demand for more accurate International Trade in Services Statistics (ITIS) by mode of supply has grown at a rapid pace. Similarly, information on MoS would provide an important addition to BEA's international economic accounts.

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.<sup>(3)</sup>

This paper will focus on the similar paths followed by BEA and ONS to measure trade in services by mode. Most notably, both agencies have adopted a similar survey form that uses an innovative approach to collect information on mode of supply by simply having companies report the percentage of their 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. Their efforts mark two of the first attempts to collect data from companies on the amount of services supplied by mode. Prior to these efforts by BEA and ONS, most measures of modes of supply were based on assumptions about industry practices or on country surveys that asked for the predominant mode only for a given service.

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<sup>(3)</sup> <https://unstats.un.org/unsd/tradekb/Knowledgebase/Sectoral-Classification-List-W120>

The paper begins with an explanation of the four modes, followed by a discussion of the collaboration of the United States and the United Kingdom 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 the BEA and ONS survey instruments. The next section provides details on the development of the survey instruments. The paper then discusses the newly collected survey data. A highlight of the paper is found in the next section, which presents and compares the estimates developed by each institution. The paper concludes with a section that discusses each institution’s plans to enhance their estimates.



## 1.2. 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 supplier and the consumer, taking into account their respective nationalities.<sup>(4)</sup> This structure differs from that of the balance of payments (BOP) accounting system, which focuses on transactions between residents and non-residents regardless of location or mode of delivery.<sup>(5)</sup> However, service transactions between residents and non-residents, as captured in the BOP accounts, broadly cover modes 1, 2 and 4. Mode 3 transactions are generally not covered in the balance of payments system of accounts, as, strictly speaking, they are resident-to-resident transactions, supplied by an affiliate of a multinational enterprise. Consequently, foreign affiliates statistics (FATS) are recognized in the international statistical community as a useful first approximation for measuring for Mode 3. Figure 1 below from MSITS 2010 provides a synopsis of the four modes:

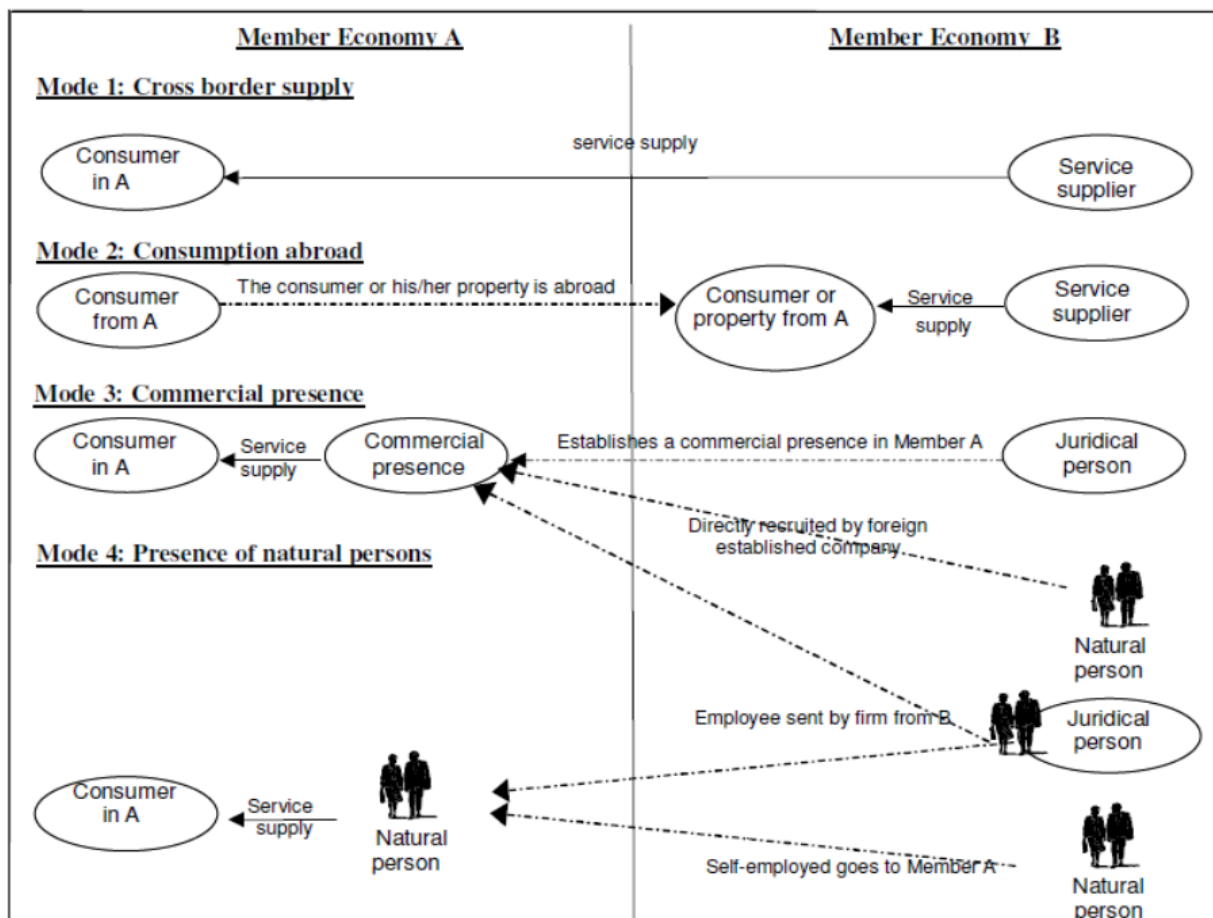
- **Cross-border supply** (Mode 1), where both the supplier and the consumer remain in their respective territories (which would correspond to the traditional notion of trade).
- **Consumption abroad** (Mode 2), where the consumer consumes the service outside his or her home territory (as is the case 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).
- **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).

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<sup>(4)</sup> United Nations (2012), *Manual on Statistics of International Trade in Services 2010*, New York (cited as MSITS) [https://unstats.un.org/unsd/publication/Seriesm/seriesM\\_86Rev1e.pdf](https://unstats.un.org/unsd/publication/Seriesm/seriesM_86Rev1e.pdf)

<sup>(5)</sup> 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: A view of Modes of Supply <sup>(6)</sup>



Source: Figure II.1 from BPM6

## 1.3. 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

<sup>(6)</sup> 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.

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 as follows:

- 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 Force<sup>(7)</sup>
- 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 FATS data collection
- To develop recommendations for collecting data on MoS for the international statistical community, and to promote international cooperation on MoS methodology, aiming at improved international comparability

One of the topics discussed at the initial meeting was how to design a survey to collect information on services trade by modes 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 for 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%, 25–49%, 50–74%, or 75–100%.

BEA and ONS both decided to move forward with this approach. Spain has already collected data on MoS, using a question that asks whether Mode 1, 2, or 4 is 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 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.<sup>(8)</sup>

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<sup>(7)</sup> Eurostat based the factors in part on a questionnaire sent to countries participating as members of the Task Force. The questionnaire can be found at: [https://ec.europa.eu/eusurvey/runner/Modes\\_of\\_Supply\\_questionnaire](https://ec.europa.eu/eusurvey/runner/Modes_of_Supply_questionnaire), and was launched and distributed to the participants

<sup>(8)</sup> [https://unctad.org/en/PublicationsLibrary/tn\\_unctad\\_ict4d11\\_en.pdf](https://unctad.org/en/PublicationsLibrary/tn_unctad_ict4d11_en.pdf)

# 2

## Survey instrument development

### 2.1. BEA

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 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. BEA assumed that those companies that did not report on the survey would have checked the ranges in the same proportion as those companies that did report.

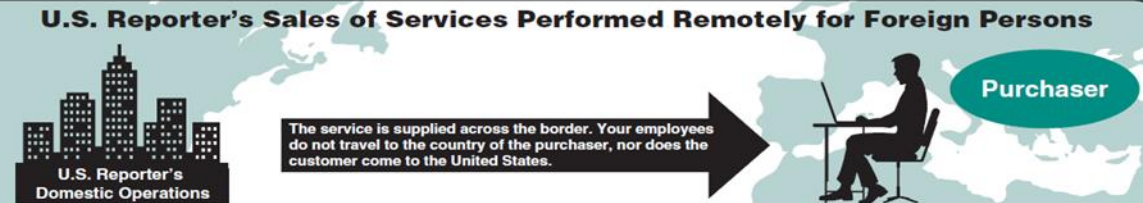
The final version of BEA's survey form is shown below. BEA uses "Schedule D" to collect U.S. sales of services and "Schedule E" to collect U.S. purchases of services:

Figure 2: Schedule D of BEA's survey instrument

**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](http://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	51001 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	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	3 <input type="checkbox"/> 1 <input type="checkbox"/>	3 <input type="checkbox"/> 2 <input type="checkbox"/>
10	Advertising services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 <input type="checkbox"/> 1 <input type="checkbox"/>	2 <input type="checkbox"/> 2 <input type="checkbox"/>	2 <input type="checkbox"/> 3 <input type="checkbox"/>	2 <input type="checkbox"/> 4 <input type="checkbox"/>	2 <input type="checkbox"/> 5 <input type="checkbox"/>	2 <input type="checkbox"/> 6 <input type="checkbox"/>	3 <input type="checkbox"/> 1 <input type="checkbox"/>	3 <input type="checkbox"/> 2 <input type="checkbox"/>
12.3	Other computer services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 <input type="checkbox"/> 1 <input type="checkbox"/>	2 <input type="checkbox"/> 2 <input type="checkbox"/>	2 <input type="checkbox"/> 3 <input type="checkbox"/>	2 <input type="checkbox"/> 4 <input type="checkbox"/>	2 <input type="checkbox"/> 5 <input type="checkbox"/>	2 <input type="checkbox"/> 6 <input type="checkbox"/>	3 <input type="checkbox"/> 1 <input type="checkbox"/>	3 <input type="checkbox"/> 2 <input type="checkbox"/>
15	Education services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 <input type="checkbox"/> 1 <input type="checkbox"/>	2 <input type="checkbox"/> 2 <input type="checkbox"/>	2 <input type="checkbox"/> 3 <input type="checkbox"/>	2 <input type="checkbox"/> 4 <input type="checkbox"/>	2 <input type="checkbox"/> 5 <input type="checkbox"/>	2 <input type="checkbox"/> 6 <input type="checkbox"/>	3 <input type="checkbox"/> 1 <input type="checkbox"/>	3 <input type="checkbox"/> 2 <input type="checkbox"/>
16.1	Architectural services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 <input type="checkbox"/> 1 <input type="checkbox"/>	2 <input type="checkbox"/> 2 <input type="checkbox"/>	2 <input type="checkbox"/> 3 <input type="checkbox"/>	2 <input type="checkbox"/> 4 <input type="checkbox"/>	2 <input type="checkbox"/> 5 <input type="checkbox"/>	2 <input type="checkbox"/> 6 <input type="checkbox"/>	3 <input type="checkbox"/> 1 <input type="checkbox"/>	3 <input type="checkbox"/> 2 <input type="checkbox"/>
16.2	Engineering services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 <input type="checkbox"/> 1 <input type="checkbox"/>	2 <input type="checkbox"/> 2 <input type="checkbox"/>	2 <input type="checkbox"/> 3 <input type="checkbox"/>	2 <input type="checkbox"/> 4 <input type="checkbox"/>	2 <input type="checkbox"/> 5 <input type="checkbox"/>	2 <input type="checkbox"/> 6 <input type="checkbox"/>	3 <input type="checkbox"/> 1 <input type="checkbox"/>	3 <input type="checkbox"/> 2 <input type="checkbox"/>
16.3	Surveying, cartography, certification, and technical inspection services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>
20	Legal services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 <input type="checkbox"/> 1 <input type="checkbox"/>	2 <input type="checkbox"/> 2 <input type="checkbox"/>	2 <input type="checkbox"/> 3 <input type="checkbox"/>	2 <input type="checkbox"/> 4 <input type="checkbox"/>	2 <input type="checkbox"/> 5 <input type="checkbox"/>	2 <input type="checkbox"/> 6 <input type="checkbox"/>	3 <input type="checkbox"/> 1 <input type="checkbox"/>	3 <input type="checkbox"/> 2 <input type="checkbox"/>
21.1	Market research services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 <input type="checkbox"/> 1 <input type="checkbox"/>	2 <input type="checkbox"/> 2 <input type="checkbox"/>	2 <input type="checkbox"/> 3 <input type="checkbox"/>	2 <input type="checkbox"/> 4 <input type="checkbox"/>	2 <input type="checkbox"/> 5 <input type="checkbox"/>	2 <input type="checkbox"/> 6 <input type="checkbox"/>	3 <input type="checkbox"/> 1 <input type="checkbox"/>	3 <input type="checkbox"/> 2 <input type="checkbox"/>
21.2	Public opinion and polling services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 <input type="checkbox"/> 1 <input type="checkbox"/>	2 <input type="checkbox"/> 2 <input type="checkbox"/>	2 <input type="checkbox"/> 3 <input type="checkbox"/>	2 <input type="checkbox"/> 4 <input type="checkbox"/>	2 <input type="checkbox"/> 5 <input type="checkbox"/>	2 <input type="checkbox"/> 6 <input type="checkbox"/>	3 <input type="checkbox"/> 1 <input type="checkbox"/>	3 <input type="checkbox"/> 2 <input type="checkbox"/>
21.3	Other management, consulting, and public relations services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>
29.1	Provision of customized and non-customized research and development services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>
29.2	Other research and development services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	2 <input type="checkbox"/> 1 <input type="checkbox"/>	2 <input type="checkbox"/> 2 <input type="checkbox"/>	2 <input type="checkbox"/> 3 <input type="checkbox"/>	2 <input type="checkbox"/> 4 <input type="checkbox"/>	2 <input type="checkbox"/> 5 <input type="checkbox"/>	2 <input type="checkbox"/> 6 <input type="checkbox"/>	3 <input type="checkbox"/> 1 <input type="checkbox"/>	3 <input type="checkbox"/> 2 <input type="checkbox"/>

Figure 3: Schedule E of BEA's survey instrument

**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](http://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.

Supplier

**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 <b>Schedule B</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 <small>61001</small>	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>
10	Advertising services <small>61002</small>	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>
12.3	Other computer services <small>61003</small>	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>
15	Education services <small>61004</small>	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>
16.1	Architectural services <small>61005</small>	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>
16.2	Engineering services <small>61006</small>	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>
16.3	Surveying, cartography, certification, and technical inspection services <small>61007</small>	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>
20	Legal services <small>61008</small>	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>
21.1	Market research services <small>61009</small>	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>
21.2	Public opinion and polling services <small>61010</small>	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>
21.3	Other management, consulting, and public relations services <small>61011</small>	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>
29.1	Provision of customized and non-customized research and development services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>
29.2	Other research and development services	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	<sup>2</sup> 1 <input type="checkbox"/>	<sup>2</sup> 2 <input type="checkbox"/>	<sup>2</sup> 3 <input type="checkbox"/>	<sup>2</sup> 4 <input type="checkbox"/>	<sup>2</sup> 5 <input type="checkbox"/>	<sup>2</sup> 6 <input type="checkbox"/>	<sup>3</sup> 1 <input type="checkbox"/>	<sup>3</sup> 2 <input type="checkbox"/>

## 2.2. ONS

Work on assessing the feasibility of collecting the supply of services on the ITIS survey began in early 2018. First, the ONS aimed to gauge whether UK businesses were able to provide breakdowns of international services that they conduct through MoS. As part of this, a cognitive testing exercise was performed, in which businesses from the largest industry groupings in terms of trade in services were interviewed via telephone or face to face. It was found that:

- Businesses do not have a need to record whether trade is conducted remotely.
- Some businesses did had systems that were indicative of MoS-related information, e.g.:
  - Projects recorded in accounts that could only be conducted remotely, accounts recording contractors and consultants working remotely, contracts which stipulate the amount of time work was undertaken remotely, and different rates of pay for remote workers.
- Those with no data on MoS said they could provide estimates.
- Businesses understood what was meant by remote export/import of services.
- Some businesses were concerned that the addition of an example would confuse businesses engaged in unrelated activities.

As such, a voluntary questionnaire was dispatched to several businesses to acquire qualitative feedback. The responses of this questionnaire were mixed, with some businesses indicating that they were able to provide this information whereas other businesses could not. See Figure 4 for the questionnaire included.

*Figure 4: Questionnaire included to determine whether businesses have the capacity to collect information on MoS, part of preliminary feasibility testing*

ONS Questions for International Trade in Services Survey

Question	We do hold this information (Yes/No)	We do not hold this information but could provide estimates (Yes/No)
<b>1. Do you export services overseas (including overseas affiliated companies)?</b>		
<b>1a.</b> Are you able to provide the percentage of these services that are delivered without the need for your personnel or the customer to physically cross the UK border? E.g. Services provided via email, telephone, post, online platforms, etc.		
<b>1b.</b> Are you able to provide the percentage of these services that are delivered through your personnel travelling to the customer's country?		
<b>1c.</b> Are you able to provide the percentage of these services that are delivered to overseas customers through their personnel visiting the UK?		
<b>2. Do you import services from overseas (including overseas affiliated companies)?</b>		
<b>2a.</b> Are you able to provide the percentage of these services that are delivered to you by the provider remotely, with neither your personnel nor the provider's travelling to each other's countries?		
<b>2b.</b> Are you able to provide the percentage of these services that are delivered to you through the provider's personnel travelling to the UK?		
<b>2c.</b> Are you able to provide the percentage of these services that are delivered to you through your personnel visiting the provider's country?		

It was postulated that the inclusion of the new MoS sections on the ONS's survey could negatively impact the timeliness of normal survey returns due to increased administrative burden, and that the sections may not be filled in correctly as intended. Thus, there was a requirement for the ONS to examine survey returns and response consistencies, which would provide better indicators in not

only determining feasibility, but also on any detrimental impact on the original survey.

The results of ONS's feasibility testing suggested two things. First, there was little if any detrimental impact on the survey returns of the ITIS survey forms by including the MoS section. Second, comparing similar timeframes for previous quarters, the ONS found that response rates were only marginally lower.

Following the findings of the feasibility testing and initial pilot, which overall showed negligible impact on the original survey, the ONS proceeded to rollout the MoS sections in a second pilot, with a larger selection of 5,000 businesses, as part of its annual survey for 2018. Given the larger sample size of this survey, it allowed the ONS to provide its first exploratory estimates on MoS for each service activity.

The ONS used a hybrid approach that combined data collected from the ITIS survey with Eurostat's pilot model.<sup>(9)</sup> The ONS considered collecting information on Mode 1 only, given that it represents the dominant mode when excluding Mode 3.<sup>(10)</sup> Thus, the new mode of supply data collected via the annual survey provides Mode 1 estimates for the industries covered by the ONS's ITIS survey. These breakdowns were collected by 14 product groups.

Several options were proposed for the structure and layout of the new MoS section of the ITIS survey. This included asking respondents to provide estimated percentages of remote trade (Mode 1) for each service category, or to tick boxes with percentage ranges of remote trade for each service category (as was discussed with the Eurostat Task Force). It was ultimately decided that the latter would be a better choice given that it may reduce respondent pressure and burden in estimating a precise percentage for each service. See Figures 5 and 6 for the survey instrument that was used by the ONS.

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<sup>(9)</sup> Eurostat's method is based on a "simplified approach" as described in section C.1. of the Manual on Statistics of International Trade in Services 2010 (United Nations: New York, 2012) at [https://unstats.un.org/unsd/publication/Seriesm/seriesM\\_86Rev1e.pdf](https://unstats.un.org/unsd/publication/Seriesm/seriesM_86Rev1e.pdf)

<sup>(10)</sup> Trade in Services by FATS Modes of Supply: Statistical Concepts and First EU estimates (2016) at [https://trade.ec.europa.eu/doclib/docs/2016/december/tradoc\\_155119.pdf](https://trade.ec.europa.eu/doclib/docs/2016/december/tradoc_155119.pdf)



Figure 5: ONS's new MoS survey instrument

### Section B - Remote Export and Import of Services

This section asks you about the percentage of services your business imports and/or exports where the services are provided and/or obtained remotely, via means such as post, telephone, internet or email. Activities that involved staff travelling across borders should be excluded from this section but only because they are not conducted remotely.

**6 During the reporting period, did your business export any services outside the UK?**

Yes  → Go to question 7

No  → Go to question 8

**7 Of the export of services reported in previous questions, what percentage did your business supply to overseas customers remotely, for example by using computers, telephone or post?**

Include:

- Services provided to purchasers located outside the UK
- Remote supply such as by post, email, telephone, video conferencing
- Information provided may be estimated based on recall or general understanding of how the UK business operates

Exclude:

- The services provided by your personnel travelling abroad to your customers
- The services provided by your overseas customer's personnel travelling to you in the UK

For each service activity,  one box only

Service Codes	Service Activity	0%	1-24%	25-49%	50-74%	75-99%	100%	Unknown	
1	Agriculture, forestry and fishing services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9030 MZC
2	Mining and oil and gas extraction services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9031 MZC
3 to 5	Manufacturing, maintenance and on-site processing services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9032 MZC
6 to 15	Business and professional services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9033 MZC
16 to 17	Research and development (R&D) services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9034 MZC
18 to 20	Intellectual property . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9035 MZC
21 to 26	Telecommunications, computer and information services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9036 MZC
27 to 28	Construction services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9037 MZC
29	Financial services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9038 MZC
30 to 40	Insurance and pension services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9039 MZC
41 to 42	Merchanting and other trade-related services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9040 MZC
43 to 47	Personal, cultural and recreational services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9041 MZC
48 to 50	Technical and scientific services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9042 MZC
51 to 52	Other Services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9043 MZC

MRK

Figure 6: ONS's new MoS survey instrument

**8 During the reporting period, did your business import any services from outside the UK?**

Yes  → Go to question 9

No  → Go to section C 9049

MRK

**9 Of the import of services reported in previous questions, what percentage did your business receive from overseas suppliers remotely, for example by using computers, telephone or post?**

Include:

- Services provided to you remotely by suppliers located outside the UK
- Remote supply, such as by post, email, telephone, video conferencing
- Information provided may be estimated based on recall or general understanding of how the UK business operates

Exclude:

- The services provided by your supplier's personnel travelling to the UK
- The services provided by your personnel travelling to the supplier

For each service activity reported in section A,  one box only

Service Codes	Service Activity	0%	1-24%	25-49%	50-74%	75-99%	100%	Unknown		
1	Agriculture, forestry and fishing services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9050	MZC
2	Mining and oil and gas extraction services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9051	MZC
3 to 5	Manufacturing, maintenance and on-site processing services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9052	MZC
6 to 15	Business and professional services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9053	MZC
16 to 17	Research and development (R&D) services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9054	MZC
18 to 20	Intellectual property . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9055	MZC
21 to 26	Telecommunications, computer and information services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9056	MZC
27 to 28	Construction services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9057	MZC
29	Financial services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9058	MZC
30 to 40	Insurance and pension services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9059	MZC
41 to 42	Merchanting and other trade-related services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9060	MZC
43 to 47	Personal, cultural and recreational services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9061	MZC
48 to 50	Technical and scientific services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9062	MZC
51 to 52	Other Services . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9063	MZC

# 3

## Newly collected survey data

### 3.1. BEA

BEA released a working paper in 2017 that described its efforts to prepare exploratory estimates of services supplied by mode of supply.<sup>(11)</sup> 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. 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 of supply. Therefore, the allocation method followed the approach outlined in chapter V of the MSITS and the associated MSITS 2010 Compilers Guide (the "simplified approach").<sup>(12)</sup> 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 MoS 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.

BEA released a paper in August of 2019 that updated its exploratory estimates by reallocating the trade-in-services statistics by mode of supply using factors from the newly collected survey data for the thirteen service types collected.<sup>(13)(14)</sup> 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. In addition to incorporating new MoS survey data as described above, this paper included 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. The estimates for services supplied through Mode 3 by type of service rely on a bridge table between BEA FATS,

<sup>(11)</sup> 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>

<sup>(12)</sup> [https://unstats.un.org/unsd/trade/publications/MSITS2010\\_Compilers%20Guide%20-%20Unedited%20White%20Cover%20Version%20-%202019%20December%202014.pdf](https://unstats.un.org/unsd/trade/publications/MSITS2010_Compilers%20Guide%20-%20Unedited%20White%20Cover%20Version%20-%202019%20December%202014.pdf)

<sup>(13)</sup> Michael Mann, "Measuring Trade in Services by Mode of Supply." BEA Working Paper, Washington D.C., August 2019 <https://www.bea.gov/research/papers/2019/measuring-trade-services-mode-supply>

<sup>(14)</sup> 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 one year after BEA's trade data for a given reference year.

which are classified by industry, and BEA's services trade categories used in its statistics covering Modes 1, 2, and 4. The bridge 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. The estimates of Mode 2 break out expenditures on health and education services and remove expenditures of seasonal, border, and other short-term workers and an estimate of the goods commingled in the travel statistics to more closely conform with the GATS measure of Mode 2. These updates and enhancements to modes 1 through 4 are described in detail in the paper (Mann 2019).

## 3.2. ONS

2019 marks the first time that ONS released information on MoS. Prior to this, preliminary estimates had been explored, but these estimates were not based on survey data and relied completely on Eurostat-based assumptions.

ONS thus developed a hybridised approach in estimating the UK's trade in services MoS, incorporating survey results data with Eurostat's allocations (Eurostat's estimated allocations shown in Figure 6). In a sense, this approach is therefore an extension to Eurostat's method in that it builds upon the generalised estimations of mode allocations by combining survey-collected information. Ultimately, ONS's hybridised approach has the advantage of providing much needed country-specific information on MoS. A publication on the experimental work, a condensed methodology article, and two sets of metadata (imports and exports) were officially published by the ONS in July 2019.<sup>(15)</sup>

Mode of supply microdata consisted of respondent's estimates for the percentage of Mode 1 trade for 14 service activities. The residual percentages were placed into Modes 2 or 4 (and sometimes both depending on Eurostat's allocations following Mode 1 allocation – see Figure 7), resulting in percentages of trade conducted via Modes 1, 2 and 4 for each service activity. Following mapping of microdata to EBOPS, trade in services values are apportioned across these modes. This combined data was then aggregated to country, region and to world level.

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<sup>(15)</sup> Office for National Statistics (July 2019) "Modes of supply, UK experimental estimates: 2018." <https://www.ons.gov.uk/businessindustryandtrade/internationaltrade/articles/modesofsupplyukexperimentalalestimates/2018>

Figure 7: Enhanced simplified approach allocations, as estimated by Eurostat

level	BOP Item	BOP subitem	Bop item name	Mode	Mode 1 %	Mode 2 %	Mode 4 %
1	S	S	Services:				
2	SA	SA	Manufacturing services on physical in	2		100	
2	SB	SB	Maintenance and repair services n.i.e	2; 4;	0	90	10
2	SC	SC	Transport	NA NA		NA	NA
3	SC	SC1	Sea transport				
4	SC	SC11	Sea transport; Passenger	1	100		
4	SC	SC12	Sea transport; Freight	1	100		
4	SC	SC13	Sea transport; Other than passenger	2		100	
3	SC	SC2	Air transport				
4	SC	SC21	Air transport; Passenger	1	100		
4	SC	SC22	Air transport; Freight	1	100		
4	SC	SC23	Air transport; Other than passenger a	2		100	
3	SC	SC3	Other modes of transport				
4	SC	SC31	Other modes of transport; Passenge	1	100		
4	SC	SC32	Other modes of transport; Freight	1	100		
4	SC	SC33	Other modes of transport; Other than	2		100	
4	SC	SC3E	Pipeline transport	1	100		
4	SC	SC3F	Electricity transmission	1	100		
4	SC	SC3G	Other supporting and auxiliary transp	2		100	
3	SC	SC4	Postal and courier services	1	100		
2	SD	SD	Travel	2		100	
2	SE	SE	Construction	4			100
2	SF	SF	Insurance and pension services	1	100		
2	SG	SG	Financial services	1	100		
2	SH	SH	Charges for the use of intellectual pro	1	100		
2	SI	SI	Telecommunications, computer, and information services				
3	SI	SI1	Telecommunications services	1	100		
3	SI	SI2	Computer services	1; 4;	50		50
3	SI	SI3	Information services	1	100		
2	SJ	SJ	Other business services				
3	SJ	SJ1	Research and development services	1; 4;	75		25
3	SJ	SJ2	Professional and management cons	1; 4;	75		25
3	SJ	SJ3	Technical, trade-related, and other business services				
5	SJ	SJ311	Architectural services	1; 4;	75		25
5	SJ	SJ312	Engineering services	1; 4;	75		25
5	SJ	SJ313	Scientific and other technical services	1; 4;	75		25
4	SJ	SJ32	Waste treatment and de-pollution, agricultural and mining services				
5	SJ	SJ321	Waste treatment and de-pollution	2; 4;		75	25
5	SJ	SJ322	Services incidental to agriculture, fore	4			100
5	SJ	SJ323	Services incidental to mining, and oil	4			100
4	SJ	SJ33	Operating leasing services	1	100		
4	SJ	SJ34	Trade-related services	1	100		
4	SJ	SJ35	Other business services n.i.e.	1; 4;	75		25
5	SJ	SJ35Z	Other business services n.i.e.; Of wh	1; 4;	75		25
2	SK	SK	Personal, cultural, and recreational s	1; 4;	75		25
2	SL	SL	Government goods and services n.i.e	1; 4;	75		25

## 3.3. Comparison of ONS and BEA surveys

### 3.3.1. Data collection on service activities

The microdata collected on MoS by ONS and BEA differ in that the two survey instruments acquired information on a different range and depth of service types. Of the 13 items that BEA collected on its survey instrument, 3 three top-level EBOPS services are partly covered. By contrast, of the 14 items collected on the ONS's survey instrument, a broader 9 top-level EBOPS services are covered. A side-by-side comparison is shown in Supplementary Table .

Advantages and drawbacks exist for both approaches. While ONS's survey covers more services and is thus broader in its scope, it is more generalised given that respondents are expected to estimate the overall percentage of Mode 1 for an entire service category, even if they only trade a single service subitem within a larger category. BEA took a more granular approach. Of the roughly six dozen categories of services collected on its *Benchmark Survey Transactions in Selected Services and Intellectual Property with Foreign Persons*, BEA asked for Mode 1 information only on those service types collected that it assumed would not be supplied exclusively through Mode 1. This approach has the advantage of reducing reporting burden, but then must rely on assumptions for the percentage supplied through Mode 1 for other service categories.

The similarities between the ONS and BEA's approach is that both institutions' instruments have included numerous survey items that feed into *other business services*, which is perhaps expected due to the large number of subitems falling under this top-level EBOPS service.

Neither institution collected MoS information on transportation, travel, and government services. These three top-level EBOPS service types fall outside the remit of both the ONS's ITIS survey as previously described, and also BEA's survey instrument. BEA and ONS will continue to assume that travel is supplied exclusively through Mode 2 as suggested by MSITS.

### 3.3.2. Response categories

BEA's survey instrument includes six options for respondents to indicate the amount of remote trade conducted, while ONS's survey instrument includes seven options.

#### BEA's Mode 1 response categories

- 1) Less than 25%
- 2) 25-49%
- 3) 50-74%
- 4) 75-89%
- 5) 90-99%
- 6) 100%

## ONS's Mode1 response categories

- 1) 0%
- 2) 1-24%
- 3) 25-49%
- 4) 50-74%
- 5) 75-99%
- 6) 100%
- 7) Unknown

While similar, the main differences between the BEA and ONS's response categories are:

- ONS includes an option for 0% remote trade.
- ONS includes an option for an Unknown amount of remote trade.
- Both survey instruments have different percentage ranges for remote trade that's over 75%. BEA chose to provide successive percentage ranges that are progressively narrower (75-99%, 90-99%), whereas ONS chose to maintain a consistent range (75-99% only).
- In addition, BEA chose to include a question to ascertain how businesses estimated their remote trade: either from (a) accounting records or (b) recall/general knowledge of operations.

The ONS's rationale for including the 0% category was that it would mitigate overestimation of services that are traded through Mode 1 when quantifying categorical data, while inclusion of the Unknown category serves to reduce response burden.

By contrast, the BEA rationale for excluding 0% and Unknown was to simplify the form and limiting the number of columns. Largely, BEA felt that remote communication through the internet, mail, phone, and other means is so common that it would be unusual for firms not to supply any portion of the types of services covered on the survey through Mode 1.

BEA thought that companies would have general knowledge of their operations with respect to the modes even if they did not track this information in their accounting records. Therefore, BEA thought that some companies might check such a box to avoid the effort to provide a thoughtful response. Instead, the BEA survey had companies indicate whether the information they provided was based on accounting records or general knowledge of their operations.

# 4

## Estimates of international supply of services by mode

### 4.1. BEA

The new exploratory estimates of U.S. 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 8 shows total services supplied and received by mode. Figures 8 and 9 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. Despite suppression of values in BEA's foreign affiliate statistics, the hashed bars in Figures 9 and 10 provide an illustrative range of possible values of Mode 3 services trade. 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 1 presents the estimates in tabular form.



Figure 8: U.S. Trade in services by mode of supply, 2016

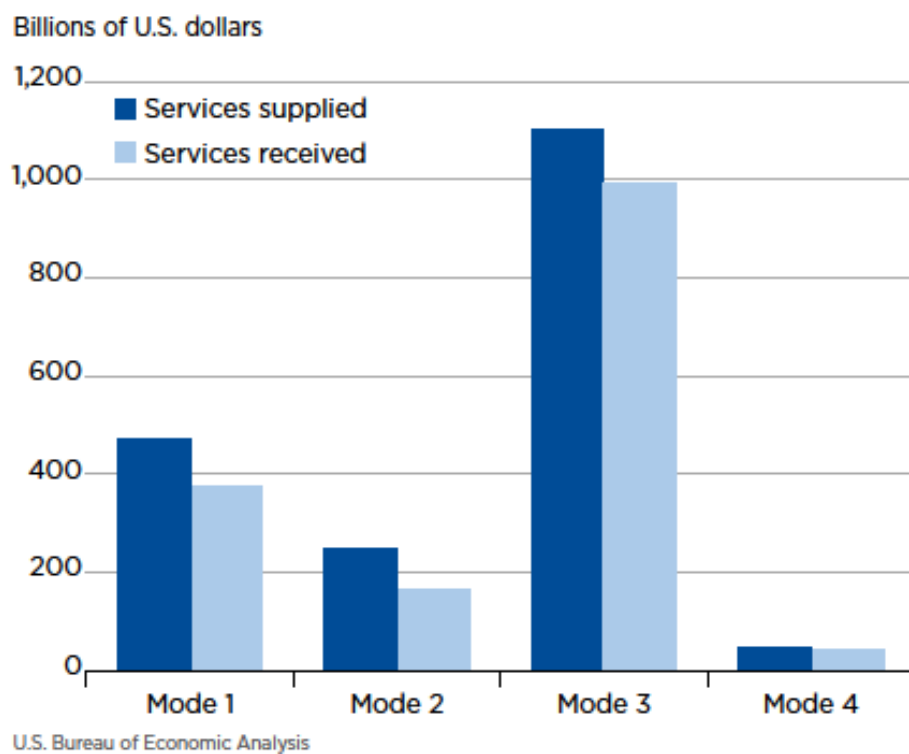
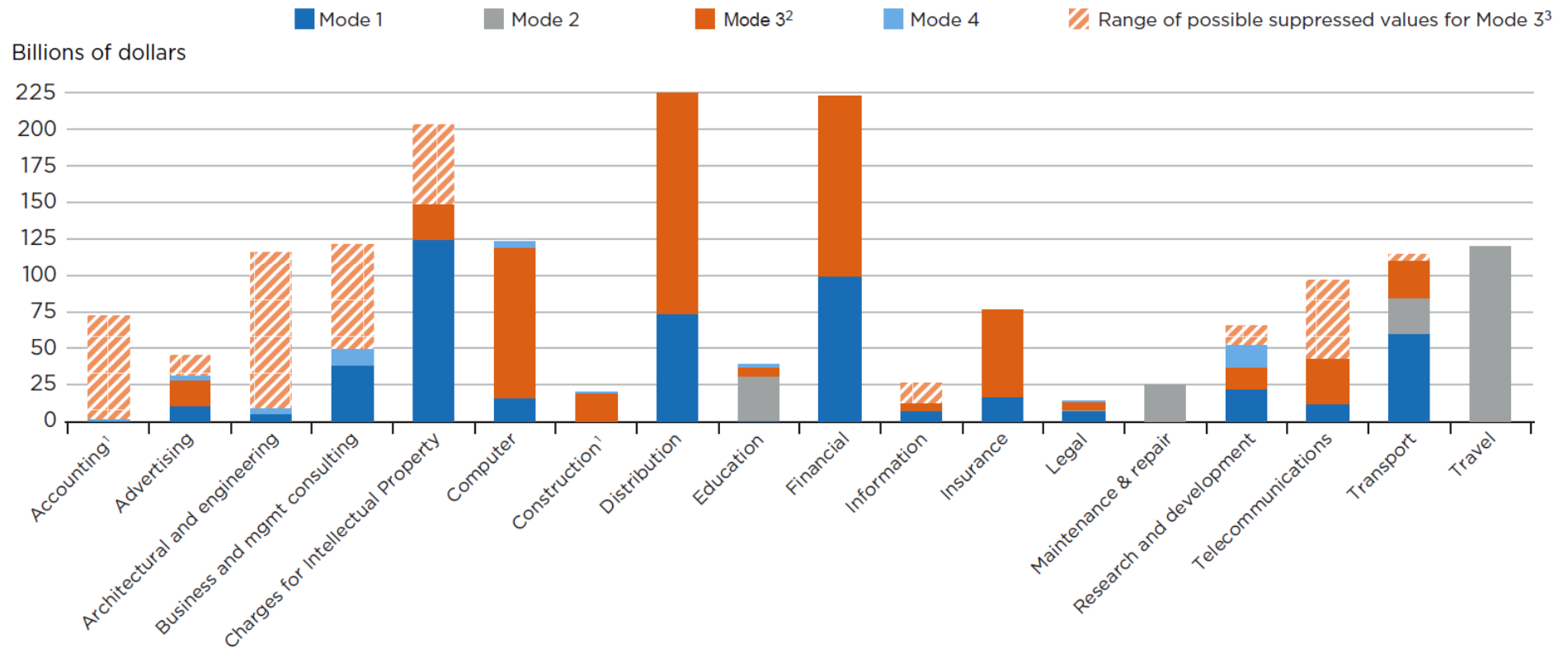


Figure 9: U.S. supply of services by mode of supply, 2016



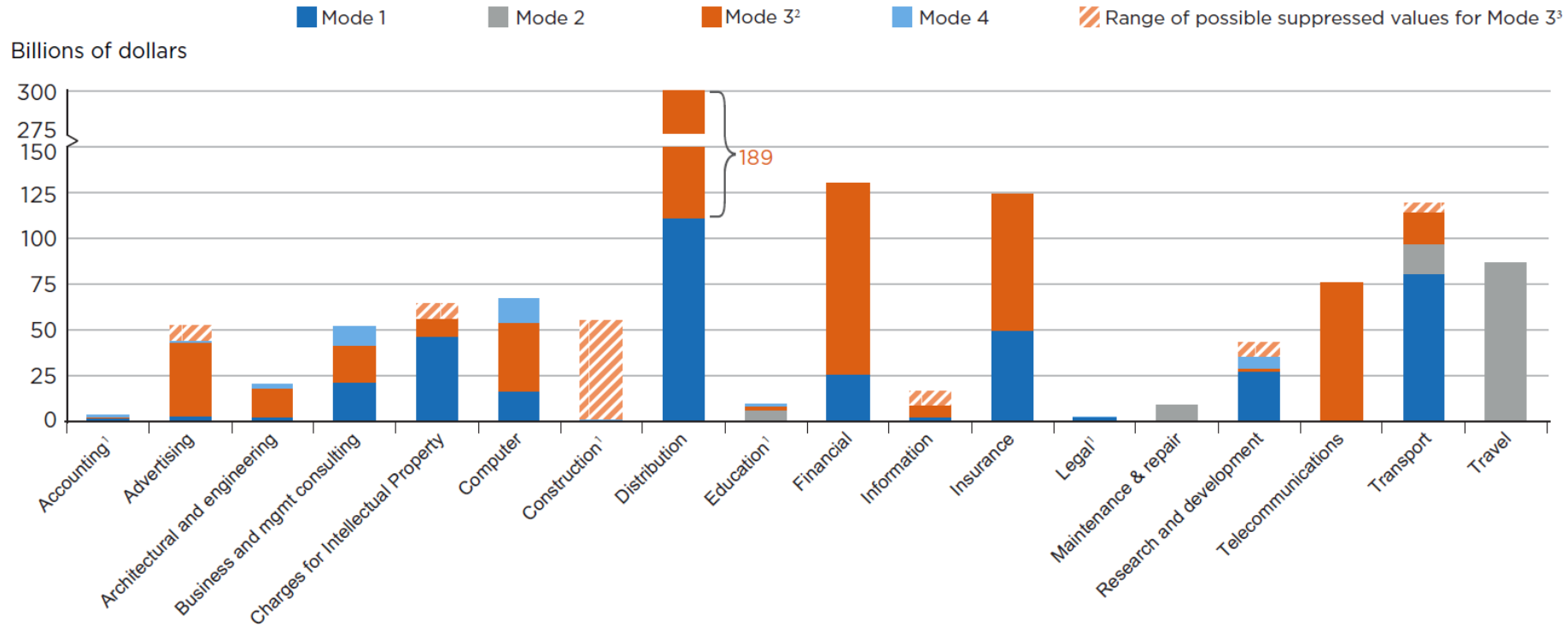
1. There are transactions in Mode 1 for accounting services and Mode 4 for construction that are relatively small and may not be clearly visible.

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.

U.S. Bureau of Economic Analysis

Figure 10: U.S. services received by mode of supply, 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 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.

U.S. Bureau of Economic Analysis

Table 1: U.S. Trade in services by mode of supply, 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
<b>Total</b>	<b>508,534</b>	<b>210,143</b>	<b>1,101,444</b>	<b>46,550</b>	<b>412,128</b>	<b>128,560</b>	<b>995,073</b>	<b>41,448</b>

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

n.i.e. Not included elsewhere

na Not applicable

Note. 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.

Bureau of Economic Analysis

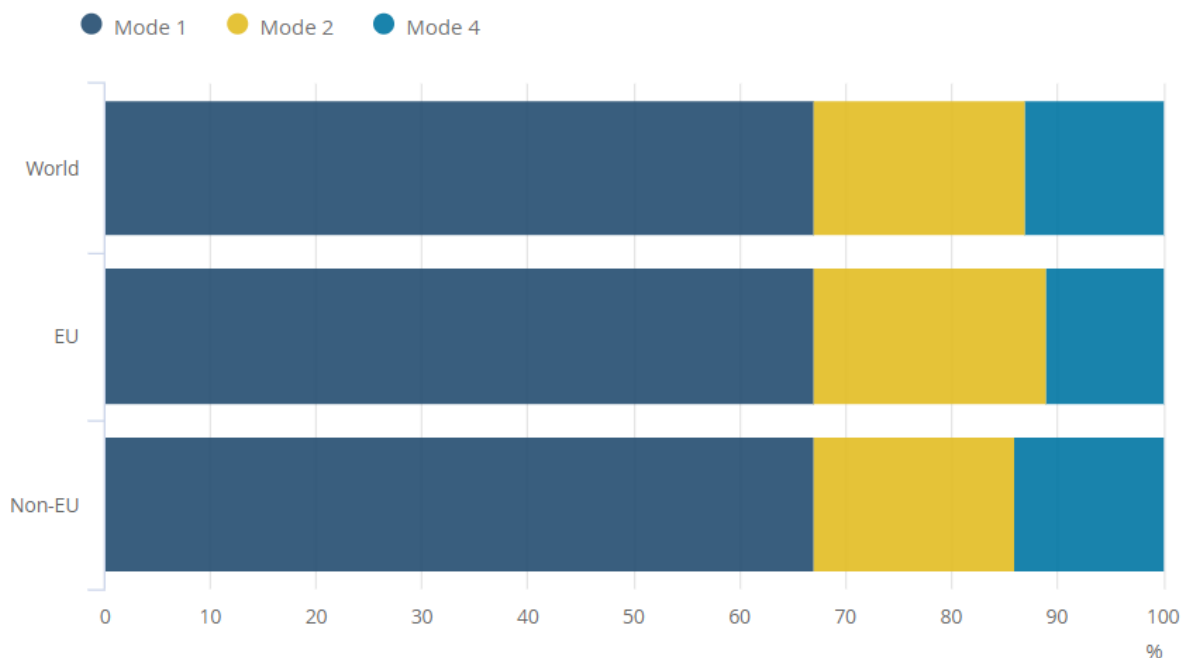
## 4.2. ONS

The results of ONS's exploratory estimates are shown below. The ONS analysis covers only the modes that are covered by BoP, and therefore excludes Mode 3. Figures 11 – 13 show UK exports of services by region breakdown (EU-28, Non-EU, World), product breakdown, and finally country breakdown by mode of supply. The same breakdowns for imports are shown in Figures 14 – 16.

The ONS acknowledges the limitations of the country (and subsequent region) breakdown, in that these estimations indirectly convey the proportion of EBOPS items traded with each country rather than being an empirical measurement of services traded by mode of supply for each country.<sup>(16)</sup>

*Figure 11: UK exports of services by mode of supply, partner World, 2018*

Mode 1 made up 67% of total UK services exports to the whole world in 2018



<sup>(16)</sup> Mode of supply microdata was not collected on a per country basis; subsequent mode proportions were calculated and then applied uniformly across each trading economy. This therefore conveys the proportion of EBOPS items traded for each country. For example, suppose that reporting economy A's exports to reporting economy B is predominated by financial services. This breakdown will thus show a predominance for Mode 1. If economy A exports a large proportion of travel services to reporting economy C, then this will show a predominance for Mode 2. Prudence should therefore be taken upon interpretation of the current experimental country breakdowns.

Figure 12: Total UK exports of service type by mode of supply, (excluding Mode 3), 2018

Financial services had the largest proportion of Mode 1 exports at 89%.

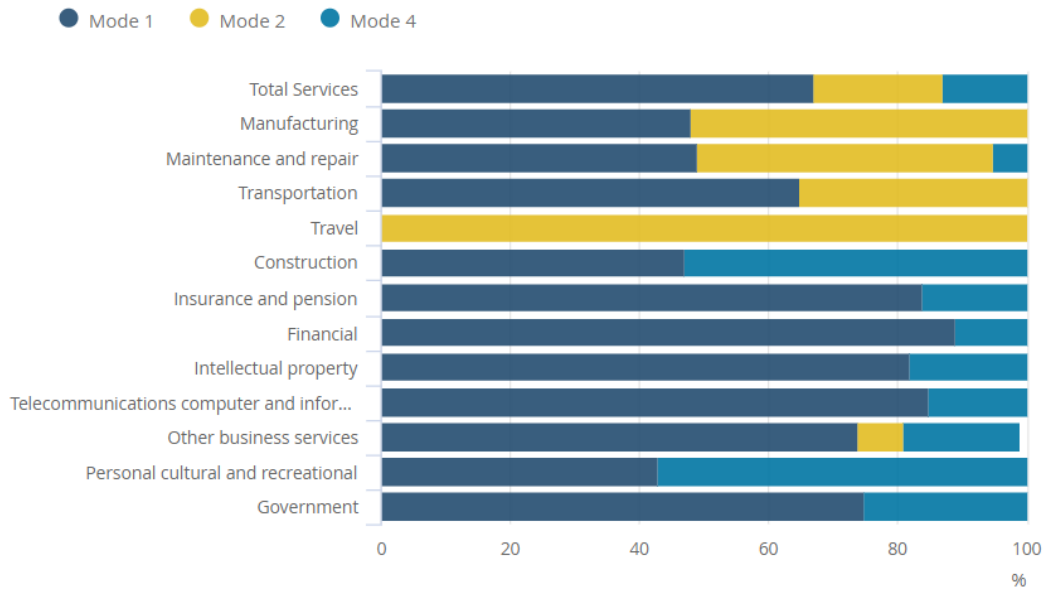
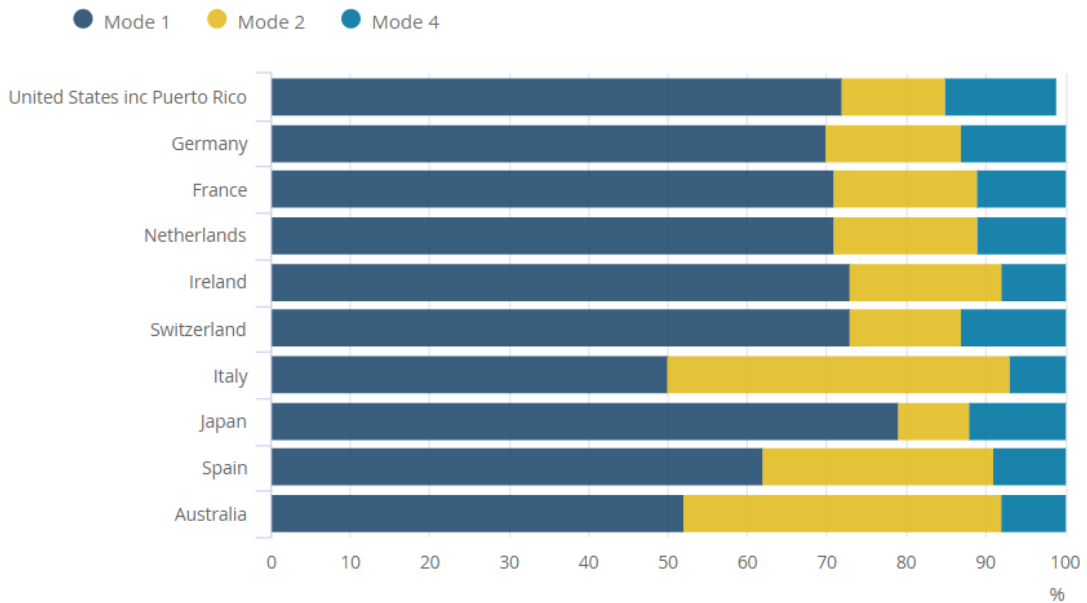


Figure 13: UK's top 10 services exporting countries by mode of supply (excluding Mode 3), 2018

Mode 1 made up 72% of UK exports to the U.S. in 2018.



Note: Due to rounding, bars may not sum to 100%

Figure 14: UK's services imports by mode of supply (excluding Mode 3), 2018

Mode 1 made up 52% of total services imports in 2018.

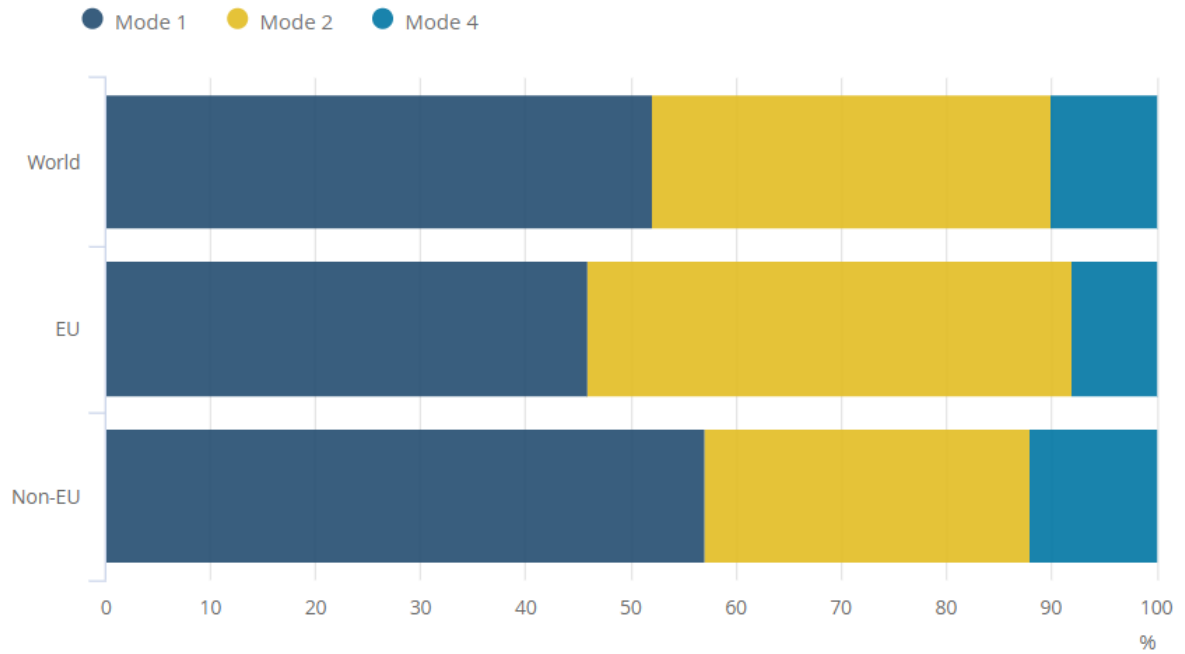


Figure 15: Total UK exports of service type by mode of supply (excluding Mode 3), 2018

Intellectual property had the largest proportion of Mode 1 imports at 87%.

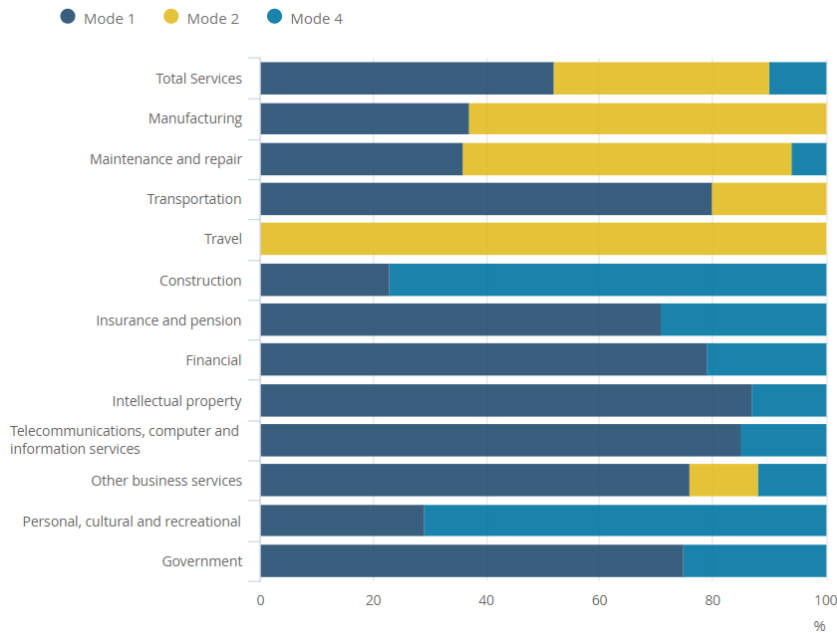
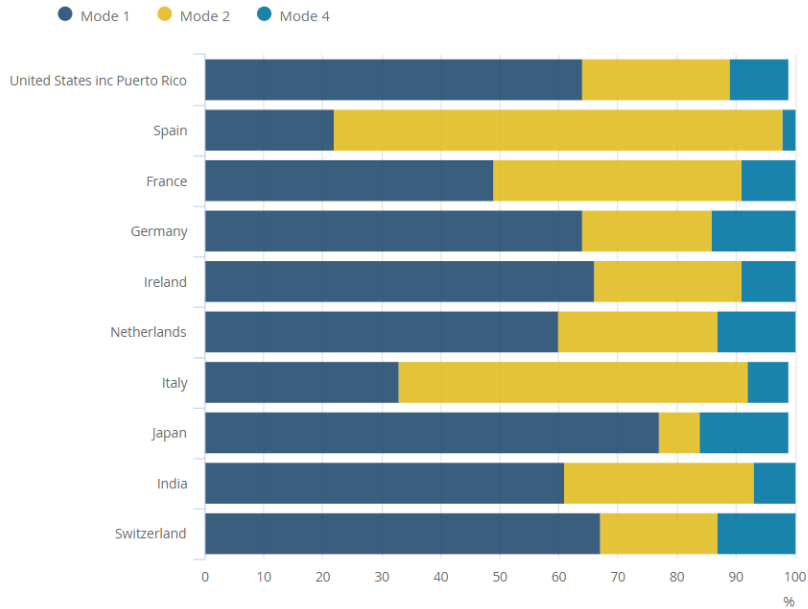


Figure 16: UK's top 10 services importing countries by mode of supply (excluding Mode 3), 2018

Mode 1 made up 64% of UK imports from the United States in 2018.



Note: Due to rounding, bars may not sum to 100%



## 4.3. Comparison of UK and U.S. trade in services by modes of supply

An ideal comparison of UK and U.S. trade in services by mode of supply would extend to the two country's bilateral transactions. BEA and ONS agreed that such an exercise would provide the most accuracy when both institutions have either begun collecting information on MoS by country, or when a more robust derivation has been developed from microdata linkages. For this reason, BEA and ONS have held off from such a comparison in this paper. Instead, the comparison below provides a limited look at how each country supplies and receives services from the rest of the world by mode.

### 4.3.1. Challenges

Different methodological practices in compiling MoS present a challenge when evaluating comparisons. This includes survey design, different imputation and estimation approaches, and estimation methods.

As noted in section 3.1, BEA has incorporated FATS information to develop estimates of services supplied through Mode 3. By contrast, ONS's initial project scope excluded Mode 3, the rationale being that while Mode 3 is recognised as trade in services by GATS, it is not included as part of trade in services in balance of payments due to the latter's focus on residency rather than nationality of ownership. The comparison in this section is therefore limited to Modes 1, 2, and 4.

Although both institutions collected percentage supplied by Mode 1 (and subsequently derived Modes 2 and 4 percentages through allocating residuals), the ONS collected this information for 2018 whereas BEA collected it for 2017. The ONS applied these percentages to their corresponding 2018 trade in service values whereas BEA applied these percentages to their 2017 and 2016 trade in services values because BEA had not released its 2018 values at the time this study was carried out.

The BEA has used the enhanced simplified approach for six types of services, whereas the ONS has used this approach for nine types of services. A comparison showing which approach was used is shown in Table 2. In this table, the enhanced simplified approach refers to allocating the services to multiple modes based partly on the survey data and partly on assumptions of how services are most likely supplied whereas the simplified approach refers to simply allocating a service to one assumed predominant mode.

In the following comparison, BEA and ONS excluded its MoS estimates for government services since they are largely not covered by GATS Mode of Supply. Services supplied internationally by government agencies and units are very often based in diplomatic enclaves in the host economy and are, therefore, not of interest in the context of GATS<sup>(17)</sup>. BEA also does not currently measure manufacturing services due to a lack of source data. Therefore, MoS estimates have also been excluded for comparison of this service.

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<sup>(17)</sup> MSITS 5.35

**Table 2:** The approach used by each institution in estimating MoS by service

Top EBOPS service	BEA	ONS
Manufacturing *	-	Enhanced simplified approach
Maintenance and repair	Simplified approach	Enhanced simplified approach
Transportation	Enhanced simplified approach	Simplified approach
Travel	Simplified approach	Simplified approach
Construction	Enhanced simplified approach	Enhanced simplified approach
Insurance and pension	Simplified approach	Enhanced simplified approach
Financial	Simplified approach	Enhanced simplified approach
Intellectual property	Simplified approach	Enhanced simplified approach
Telecommunications, computer and information services	Enhanced simplified approach	Enhanced simplified approach
Other business services	Enhanced simplified approach	Enhanced simplified approach
Personal, cultural and recreational	Enhanced simplified approach	Enhanced simplified approach
Government *	Enhanced simplified approach	Simplified approach

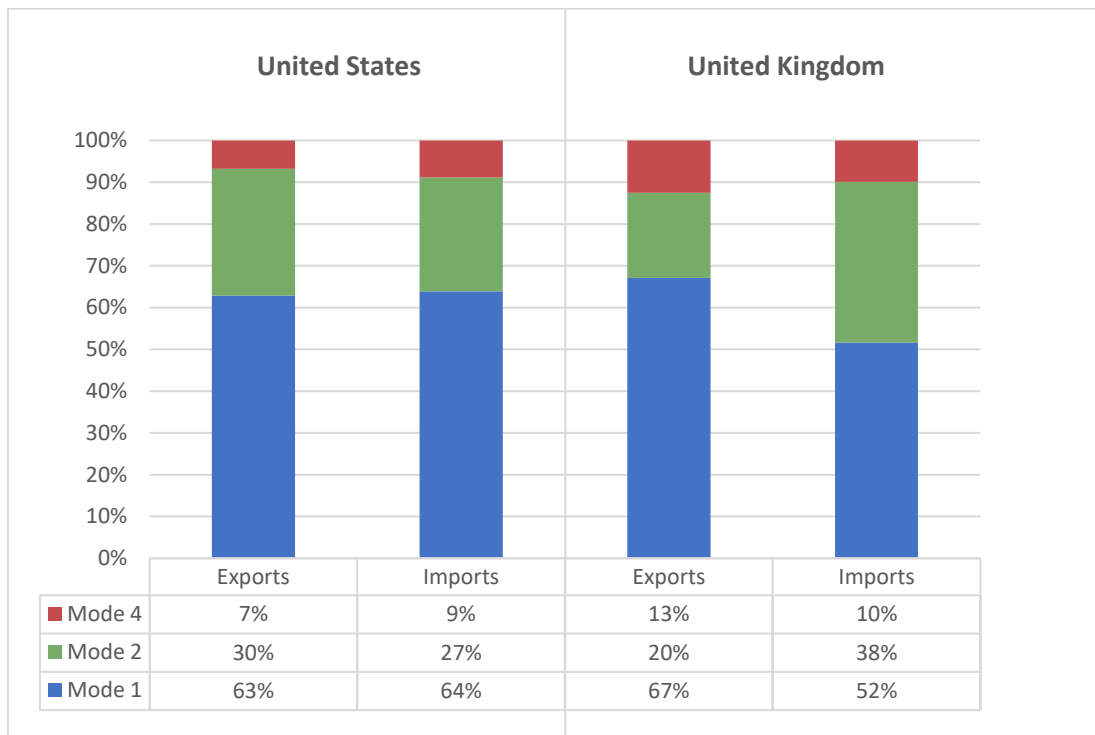
NOTE: \*Service excluded from following illustrative comparisons

### 4.3.2. Illustrative comparisons

Despite the limitations and caveats associated with this comparison, a generalised picture of the contrast in modes of supply for the two countries has been made available, which is illustrative in nature. Figure 17 shows that services trade supplied through Mode 1 is, unsurprisingly, the predominant way in which both the UK and U.S. trades its services to the rest of the world, when excluding Mode 3.<sup>(18)</sup> Both countries supply a similar percentage of services through Mode 1, but the United States receives a notably higher percentage of services through this mode. The offsetting difference largely appears in Mode 2, where the United Kingdom receives a notably higher percentage of services than the United States.

<sup>(18)</sup> Mode 3 is the predominant mode for the United States when all four modes are considered.

Figure 17: Exports and imports of services to the rest of the world by mode of supply (excluding Mode 3), U.S. (2017) and UK (2018)



Figures 18 and 19 illustrate a comparison of services supplied to the rest of the world by service type. As described in this study, the statistics are partly based on survey-based data and partly based on assumptions on the modes.

For most service types the percentage supplied and received by mode is similar. Both BEA and ONS show that travel is supplied exclusively through Mode 2,<sup>19</sup> which is in line with the BOP definition of travel, because the traveler must venture abroad in order to consume the service. For several service types, such as insurance and pension, financial, and charges for the use of intellectual property, BEA assumes that these services are delivered exclusively by remote means through Mode 1, whereas the ONS survey-derived results suggest that a small portion is supplied through Mode 4, perhaps representing an initial consultation and contracting phase at the site of the person acquiring the service, before the service is actually delivered remotely.

For other business services, the ONS attributes a larger share to Mode 2 than BEA. In this case, Mode 2 could represent the situation where a client travels to the offices of the service provider for activities such as consultation and negotiation.

Maintenance and repair services n.i.e. and construction may have the most striking difference in the mode of supply measured by the BEA and the ONS. International guidelines define maintenance and repair services as "...maintenance and repair work by residents on goods that are owned by nonresidents (and vice versa). The repairs may be performed at the site of the repairer or elsewhere."<sup>20</sup> BEA's estimates assume that these services are entirely supplied through Mode 2,

<sup>(19)</sup> Both the BEA and ONS used the 'simplified approach' in estimating Travel – and deemed all travel services to fall entirely under Mode 2. i.e. transactions recorded in the balance of payments as travel services are deemed to fall entirely under consumption abroad, or GATS Mode 2, in accordance with recommendations found in international balance of payments accounting guidelines such as paragraph 5.44 and table V.2 of MSITS.

<sup>(20)</sup> See paragraph 10.72 of BPM6

whereby goods owned by one country's residents are repaired at the nonresidents' repair facility abroad. Due to using Eurostat's pilot-based apportionments, ONS's data suggest that a small percentage of the repairs are made through Mode 4, whereby the repairer travels abroad to perform the repairs in the owning resident's country. Perhaps more surprisingly, the survey-collected data suggest that a large share of repairs are performed remotely. The mode transactions might represent remote consultation associated with the project, as opposed to the supply of the service. Another possibility is that companies may carry out repair and maintenance through software delivered through online means, such as through software updates and bug fixes. A third possibility is that the large share performed remotely may, in part, result because the ONS collected mode percentages for the maintenance and repairs and manufacturing services in a single category as shown on the ONS survey form above. Therefore, the Mode 1 percentage for maintenance and repair may partly reflect the behaviour of manufacturing services that receive digitised inputs or facilitation.

Figure 18: Exports by Type of Service and by mode of supply (excluding Mode 3) – United States and United Kingdom

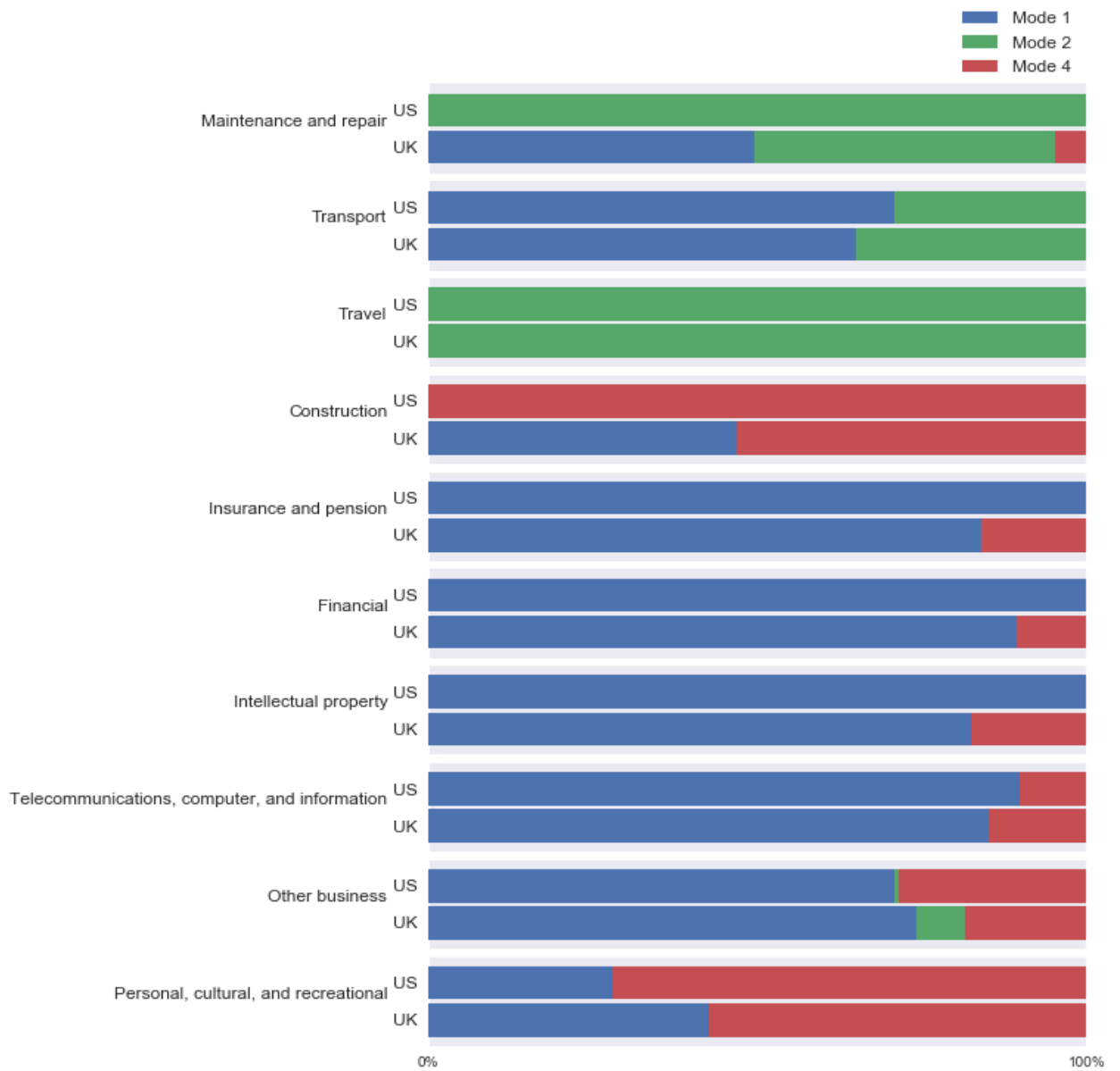
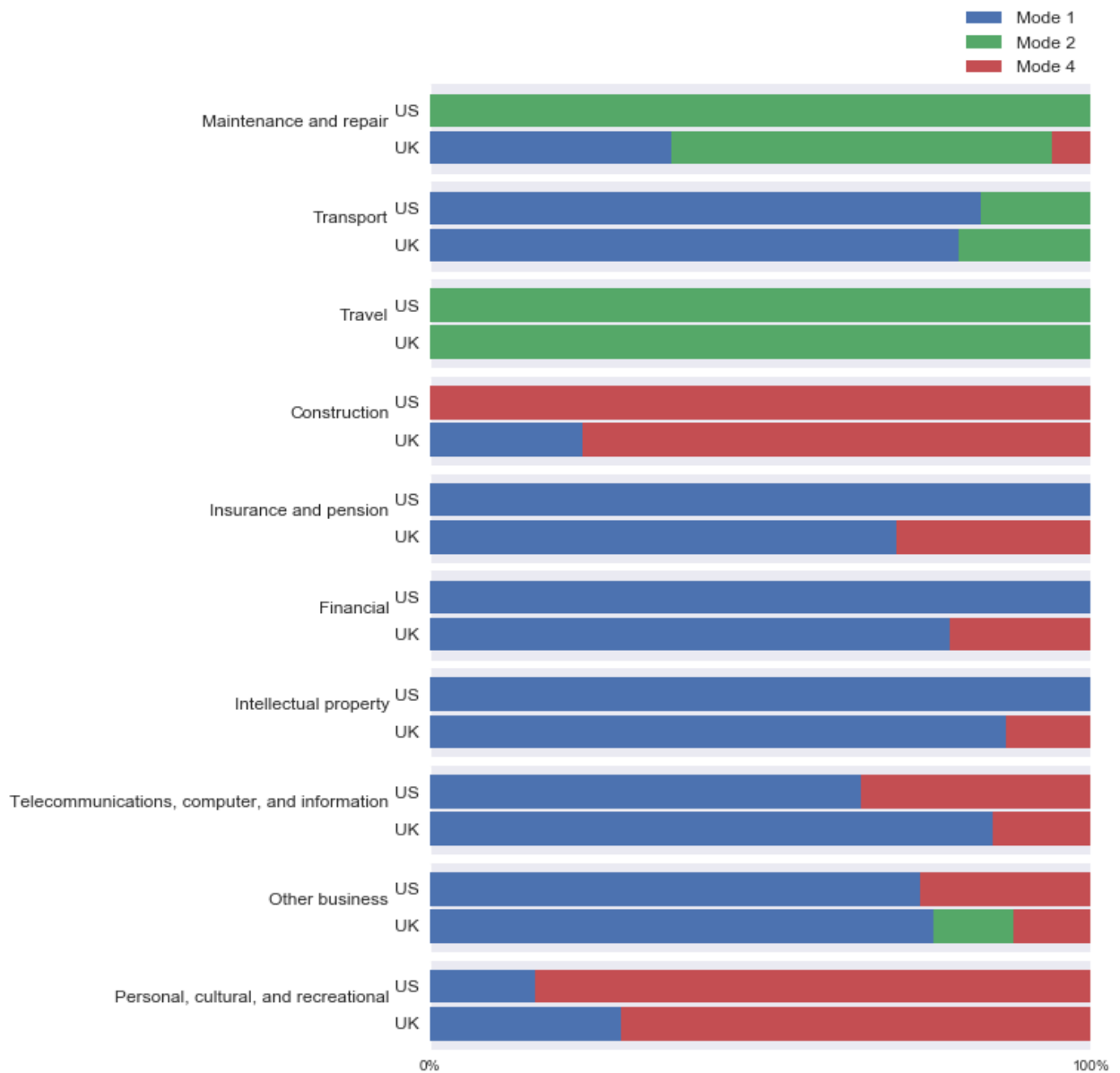


Figure 19: Imports by Type of Service and by mode of supply (excluding Mode 3) – United States and United Kingdom



Note: There are transactions in Mode 2 for “Other business services” for the U.S. that are small and may not be clearly visible

MoS will differ for a variety of reasons, including proximity to trading partners, technological and cultural factors, industry mix, and the extent to which tariff and non-tariff barriers exist across modes. Therefore, it is not surprising that the modes – both services supplied and received – differ somewhat between the two countries.

# 5

## Possible directions for future research

### 5.1. BEA

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 MoS such as:
  - a. Adding a geographic dimension to enable analysis of differing MoS patterns across partner countries,
  - b. Adding MoS schedules to financial services and insurance surveys,
  - c. Adding MoS schedules to the quarterly survey of selected services rather than just the 5-year benchmark survey<sup>21</sup>, and
  - d. Adding questions to direct investment surveys about business practices with respect to certain aspects of MoS. 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

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<sup>21</sup> 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.

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 by households.<sup>(22)</sup> 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.<sup>(23)</sup> 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.<sup>(24)</sup> 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 mistakenly 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, the survey results 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.<sup>(25)</sup>
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 MoS 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. BEA could consider the conceptual basis for including these expenditures in the MoS estimates and explore whether the coverage of this measure can be expanded before separately publishing

<sup>(22)</sup> Annette Meinus 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

<sup>(23)</sup> 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

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<sup>(24)</sup> ICT services in BEA's BOP accounts encompass telecommunications services, computer services, and charges for the use of intellectual property associated with computer software.

<sup>(25)</sup> 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](http://unctad.org/en/PublicationsLibrary/tn_unctad_ict4d03_en.pdf)).



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.

## 5.2. ONS

Several areas have been considered by the ONS to enrich information on MoS. These potential measures include:

1. *Continuation of the new MoS section as part of the annual ITIS survey.* This would allow the ONS to form a time series of how patterns in UK international trade in services by mode of supply might change over time
2. *Incorporating FATS for Mode 3.* Mode 3 is considered to constitute the largest proportion of trade in services. Inclusion of this mode is in many ways the next most important step for the ONS and will allow for the provision of the most comprehensive picture of how UK trades its services. It is envisioned that much of this work will be conducted in collaboration with a Eurostat working group and will be focused on four key areas:
  - a. Review the current 'Eurostat pilot approach' as regards Mode 3 and suggest improvements;
  - b. Develop solutions to provide better estimates for Mode 3 based on FATS data by developing an estimated split of FATS turnover by residency of clients, removing goods value from FATS turnover, and exploring how manufacturing services could be included in Mode 3 estimates;
  - c. Producing experimental statistics based on the developed methods.
3. *Exploring alternative data sources to supplement the data on MoS, for example, incorporating International Migration statistics and Overseas travel and tourism statistics.* This would help address the assumptions around Modes 2 and 4. The ONS does not currently collect particularly detailed information on short-term migrants, such as spending by the type of service. Therefore, development in this area could prove to be a worthwhile task for the ONS.
4. *Provide more granular detail on other business services.* Other business services covers a broad range of services, so estimating MoS at a lower level breakdown will provide valuable information for the different services subtypes that feed into this large service category.

## 5.3. Continued partnering with the international statistical community

In addition to these steps, the ONS and the BEA intend to continue to participate with international organisations such as Eurostat, WTO and OECD, as well as national statistical institutions around the world to work on further improvements to MoS data, and to ensure estimates continue to fall within the guidelines and recommendations agreed upon internationally. Towards this end, the ONS and BEA intend to continue their special relationship at the forefront of partnering to enhance economic statistics.

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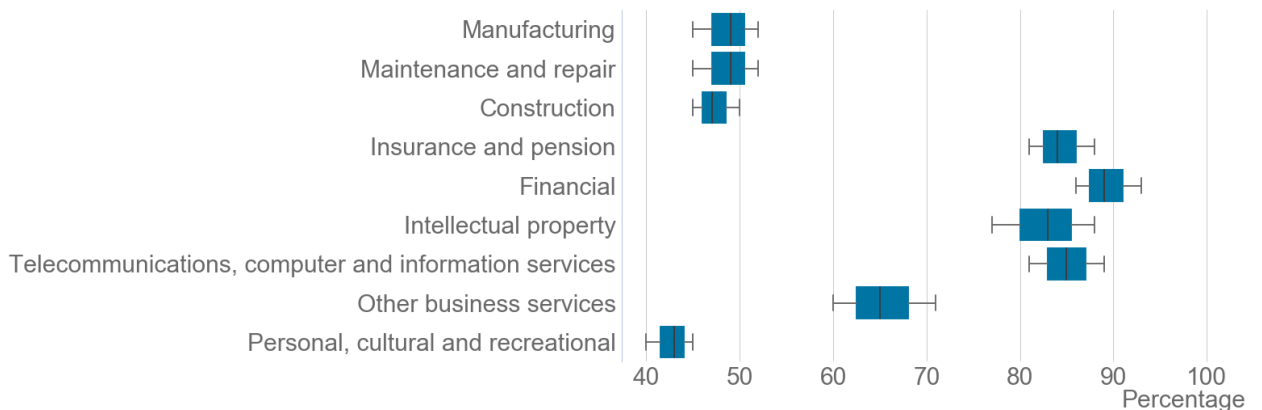
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# Appendix

## ONS

*Supplementary Figure 1: Lower and upper extremes of Mode 1 exports, 2018*

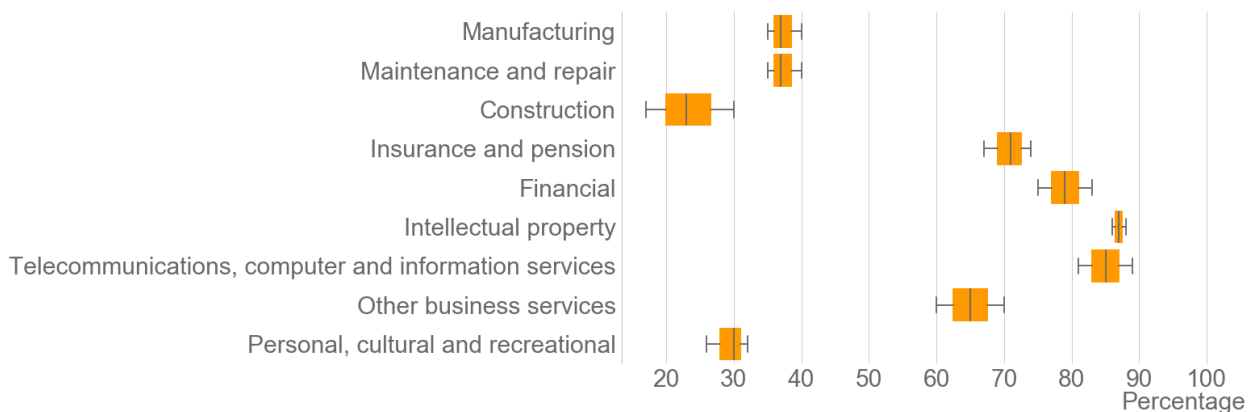
Midpoints for each response category were used to quantify Mode 1 microdata. This figure illustrates the lowest and highest extents in which Mode 1 allocations might fall under for each service type. The two service exports with the narrowest range were construction, and personal, cultural and recreational services, with a range of 5% between their lower and upper estimates. Exports of other business services had the widest range, between 61% to 71%, with the mid-point of 65% used to estimate exports of that service for the population.



Source: ONS

*Supplementary Figure 2: Lower and upper extremes of Mode 1 imports, 2018*

The service import with the narrowest range was intellectual property, with 2% between the lower and upper bounds. Imports of construction services had the widest range, from 17% to 30%, with a mid-point of 23% used to estimate imports for the population.



Source: ONS

*Supplementary Table 1: UK exports of EBOPS services by mode of supply (excluding Mode 3), 2018*

Service description	Mode 1 % Trade	Mode 2 % Trade	Mode 4 % Trade
<i>Total</i>	0.67	0.20	0.13
<i>Manufacturing services on physical inputs owned by others</i>	0.48	0.52	-
<i>Maintenance and repair services</i>	0.49	0.46	0.05
<i>Transport</i>	0.65	0.35	-
<i>Travel</i>	-	1.00	-
<i>Construction</i>	0.47	-	0.53
<i>Insurance and pension services</i>	0.84	-	0.16
<i>Financial services</i>	0.89	-	0.11
<i>Charges for the use of intellectual property</i>	0.82	-	0.18
<i>Telecommunications, computer, and information services</i>	0.85	-	0.15
<i>Other business services</i>	0.74	0.07	0.18
<i>Personal, cultural, and recreational services</i>	0.43	-	0.57
<i>Government goods and services n.i.e.</i>	0.75	-	0.25

*Supplementary Table 2: UK imports of EBOPS services by mode of supply (excluding Mode 3), 2018*

<b>Service description</b>	<b>Mode 1 % Trade</b>	<b>Mode 2 % Trade</b>	<b>Mode 4 % Trade</b>
<i>Total</i>	51.7	38.4	9.9
<i>Manufacturing services on physical inputs owned by others</i>	36.8	63.2	-
<i>Maintenance and repair services</i>	36.4	57.6	6.0
<i>Transport</i>	80.0	20.0	-
<i>Travel</i>	0.0	100.0	-
<i>Construction</i>	23.1	-	76.9
<i>Insurance and pension services</i>	70.6	-	29.4
<i>Financial services</i>	78.7	-	21.3
<i>Charges for the use of intellectual property</i>	87.1	-	12.9
<i>Telecommunications, computer, and information services</i>	85.2	-	14.8
<i>Other business services</i>	76.1	12.2	11.7
<i>Personal, cultural, and recreational services</i>	28.9	-	71.1
<i>Government goods and services n.i.e.</i>	0.75	-	0.25

Supplementary Table 3: Survey items that cover the top level EBOPS

Top EBOPS service	BEA's survey instrument	ONS's survey instrument
<b>Manufacturing</b>	–	"Manufacturing, maintenance and on-site processing services"
<b>Maintenance and repair</b>	–	"Manufacturing, maintenance and on-site processing services"
<b>Transportation</b>	–	–
<b>Travel</b>	–	–
<b>Construction</b>	–	"Construction services"
<b>Insurance and pension</b>	–	"Insurance and pension services"
<b>Financial</b>	–	"Financial services"
<b>Intellectual property</b>	–	"Intellectual property"
<b>Telecommunications, computer and information services</b>	"Other computer services"	"Telecommunications, computer and information services"
<b>Other business services</b>	"Accounting, auditing and bookkeeping services" "Advertising services" "Architectural services" "Engineering services" "Surveying, cartography, certification, and technical inspection services" "Legal services" "Market research services" "Public opinion and polling services; "Other management, consulting, and public relations services" "Provision of customized and non-customized research and development services" "Other research and development services"	"Agricultural, forestry and fishing" "Mining and oil and gas extraction services" "Technical and scientific services" "Business and professional services" "Research and development services" "Technical and scientific services"
<b>Personal, cultural and recreational</b>	"Education services"	"Personal cultural and recreational services"
<b>Government</b>	–	–



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# Measuring trade in services by Modes of Supply

This paper reviews the similar paths followed by the UK Office for National Statistics (ONS) and the U.S. Bureau of Economic Analysis (BEA) to measure international services categorized by mode of supply. Most notably, these agencies have adopted a similar 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. Prior to these efforts by ONS and BEA, few countries had attempted to measure trade in services by mode of supply, and in these few cases, most measures had been based on assumptions about industry practices or on surveys that only asked for the predominant mode of supply rather than a more precise percentage supplied by mode.

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