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Abbreviations and acronyms

BaTIS	Balanced Trade in Services dataset
BEA	Bureau of Economic Analysis
BOP	balance of payments
BPM6	Sixth edition of the Balance of Payments and International Investment Position Manual
BPM7	Seventh edition of the Balance of Payments and International Investment Position Manual
C-TiSMoS	China Trade in Services by Mode of Supply
CPC	Central Product Classification
DIP	Digital Intermediation Platforms
EBOPS	extended balance of payments services classification
FATS	foreign affiliates statistics
FDI	foreign direct investment
GATS	General Agreement on Trade in Services
ICTs	information and communications technologies
IMF	International Monetary Fund
ISIC	International Standard Industrial Classification of All Economic Activities
ITC	International Trade Centre
ITPD-E	International Trade and Production Database for Estimation
LDCs	least developed countries
MNE	multinational enterprise
MOFA	majority-owned foreign affiliate
MSITS	Manual on Statistics of International Trade in Services
NACE	Nomenclature statistique des actiivités économiques
NAICS	North American Industry Classification System
n.i.e.	not included elsewhere
NSO	national statistical office
OECD	Organisation for Economic Co-operation and Development
SNA	System of National Accounts
STPD	Services Trade Policy Database
STRI	services trade restrictions index
TiS	trade in services
TISMOS	Trade in Services by Mode of Supply dataset
TiVA	trade in value added
UNSD	United Nations Statistics Division
USITC	United States International Trade Commission
WBES	World Bank Enterprise Surveys
WTO	World Trade Organisation

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Objective and rationale

Despite the growing salience of services and services trade for development and economic prosperity, knowledge about international trade in services remains limited. This may in part be due to the difficulty of capturing "invisible" services and the complexity of producing statistics on services trade. In countries, services trade statistics are produced by national authorities such as central banks and national statistical offices based on surveys or other data sources.

Trade in services statistics are compiled according to international statistical guidelines, following the Manual on Statistics of International Trade in Services (MSITS), which provide guidance on globally comparable methodologies and sources for statistical production. Depending on the country's capacity, trade in services statistics may lack information that would be critical for trade policy. This is also because enterprise surveys offering these details are costly to develop and carry out, or assigned a lower priority, and they add response burden when collected directly from enterprises since services cannot be observed similar to goods when they cross the border.

A variety of sources for services trade data exist but these sources differ substantially in design and coverage. Such data are scattered across different providers in countries, and knowledge about these data sources is not widespread, especially in economies with limited institutional and staff capacity. Access to these data sources is typically limited to mandated statistical authorities. Yet the lack of knowledge about trade in services constitutes a key impediment to evidence-based policy making for development.

The Primer, therefore, aims at increasing **awareness** of both the **existence** and the **features** of services trade datasets. The Primer is designed to be both a map and a compass to navigate the complex ecosystem of services trade data, as it enables a better understanding of the required data and its use, cognizant of its characteristics and potential limitations.

At the same time, the review and synopsis of existing services trade data, as collated and discussed in this Primer, will also shed light on what information is missing. Gaps arise primarily because existing datasets can only reflect what national authorities are collecting and reporting in the first instance, which is often constrained by limited capacity in regard to data infrastructure, staff, skills, and regulations. Gaps also arise when little or no reported data exists on matters of public policy interest such as digitally delivered services, the gender dimension of services trade, or environmental services. This problem is particularly acute in developing countries: not more than 15 developing economies regularly report bilateral trade in services with their trade partner. Two-thirds of developing economies report data beyond the 12 main services categories, significantly less than the 95 per cent of developed economies providing this reporting (UNCTAD, 2025).

Covering the entirety of services trade data across all providers – national and international, state and non-state – and across all instruments and statistical frameworks is neither feasible nor practical. This means that the 2025 Primer focuses on comprehensive datasets that offer breadth across multiple dimensions (geography, sectors, or time) that can thereby inform a variety of analytical or policy uses. Coverage is also restricted to freely accessible datasets that are readily available to analysts and policy makers, as opposed to proprietary datasets, which may offer granular information but may be beyond reach for civil servants.[1]

The Primer on data for trade in services and development policies discusses differences in scope and coverage of data sources so that

[1] For examples of how data on multinational firms and their foreign affiliates sourced from private data providers are used, see academic studies such Alfaro and Chen (2014), Carballo et al. (2021), and Kalemli-Özcan et al. (2024).

a holistic picture emerges of currently existing datasets. That data landscape, however, is constantly evolving as existing datasets are improved, new datasets are introduced, and core statistical measurement frameworks are adapted. This also reflects the challenge of statistical authorities as they aim to use all available data sources to reduce enterprises' response burden and ensure the high quality of statistics.

The 2025 Primer is structured as follows. Chapter I provides the conceptual foundation for understanding international trade in services. It is essential for policymakers, technical experts and businesses to understand what constitutes a service in international trade statistics, how services cross borders, and how they are classified. These distinctions directly influence how trade agreements are negotiated, how regulations are applied, and how market access is assessed. For instance, understanding the modes of supply is crucial for evaluating the potential impact of trade and investment agreements. The emphasis on digital trade in services is particularly timely, given the ongoing digital transformation of global trade. Without a clear grasp of these concepts, stakeholders risk misinterpreting data or overlooking key trends in the services sector and international trade, especially in developing economies, where digital services are expanding rapidly but significant data gaps persist. The Primer refrains from going into too much detail as all statistical concepts are fully developed in international statistical standards.

Building on the conceptual foundations, chapter II forms the core of the Primer, offering a comprehensive overview of the main publicly available datasets for analysing trade in services. It covers both official trade statistics on a balance of payments, foreign affiliates statistics and other enterprise survey basis, as well as other services trade datasets such as services trade by mode of supply or services embodied in goods trade. This chapter is key for users, as it maps the fragmented landscape of services trade data, identifying what is available, where it comes from, and how it can be accessed. Each section presents information about the opportunities associated with accessing and using specific services trade datasets. The inclusion of annotations should help users understanding the strengths and limitations of each dataset. Without awareness of which data exist and how to use them, policy decisions risk being based on incomplete information. This chapter enables policymakers and technical experts to locate and interpret the various datasets for evidence-based decision-making and to advocate for improved data collection where gaps persist, especially in developing countries.

Chapter III expands the discussion by introducing complementary datasets that go beyond traditional trade statistics on services exports and imports. These include firm-level surveys and services trade policy databases. This chapter links trade flows to the broader economic context, such as firm behaviour, regulatory environments, and domestic market conditions. For example, combining trade data with the World Bank Enterprise Surveys, although not without its own challenges, can reveal how service-exporting firms differ in size, productivity, or access to finance. Data on services trade policy restrictions can also inform strategic decisions on how to identify and navigate regulatory barriers. Services trade does not occur in isolation; it is shaped by domestic capabilities, policy frameworks, and firm-level dynamics. This chapter helps users connect the dots and consider more holistic analyses for structural transformation and development.

Chapter IV synthesizes the Primer's findings and underscores the urgent need to improve services trade data, particularly in developing economies. For policymakers, the conclusion is a clear call to action: better data is a prerequisite for analysis and effective policy design, monitoring, and evaluation. The Primer highlights persistent gaps in bilateral, sectoral, and mode-of-supply data, especially in developing economies, which hinder efforts to better understand and promote structural transformation. For businesses, improved data translates into better market analysis and risk assessment, and potentially more targeted policy support. Without robust, accessible, and disaggregated data, both public and private actors are operating without a full picture. The Primer advocates for capacity-building, knowledge-sharing, and more effective use of administrative data sources to close these gaps and unlock the full potential of services trade for development.

Chapter I

Measuring international trade in services

Services are central to sustainable growth, economic diversification, and job creation, and expanding trade and investment in services can unlock substantial development gains for low- and middle-income countries.[2] Services are also increasingly important in international trade: Between 2014 and 2024, global services exports grew by 5 per cent annually – outpacing goods exports at 3 per cent – raising services' share in total exports from 22 to 27 per cent during the same period. Growth was even stronger in developing economies, at 6 per cent annually, mainly driven by Asia. Digitally deliverable services grew faster still, at 6 per cent globally and 9 per cent in developing countries.[3] By 2020, services accounted for a significant share of export value-added: 52 per cent in developed economies and 34 per cent in developing economies.[4]

However, services trade is often invisible both in statistics and trade policy in many developing countries. The ability to shed more light on services trade and its potential for development policies can benefit every economy in the world, from those that already export far more services than goods to those that look to broaden or diversify their services trade.

The first chapter will lay the foundations for understanding services trade by introducing concepts related to measurement, value-added trade, and digitally deliverable services, as defined in international statistical guidelines, and will also discuss principal challenges that are specific to working with services trade data.

A. Conceptual underpinnings

1. What are services: Definitions

Relative to readily available and detailed information on goods trade, the collection and production of services trade data have been afflicted by challenges that set services apart from goods, among which we have identified two: Firstly, services do not cross borders through regular customs procedures, which means that authorities do not necessarily know about international transactions. One way of identifying these cross-border transactions is through surveys conducted among businesses or individuals involved in services trade, or through payments associated with services transactions. Secondly, the discharge of a service typically requires direct, simultaneous interaction between the supplier and the consumer as most services cannot be stored. For instance, one cannot own a haircut or store legal consultation for future use, these services are delivered and consumed in real time, and their value lies in the activity itself rather than in any tangible output. As there are multiple ways for suppliers and consumers to connect, this opens up multiple ways of exchanging services, each presenting unique challenges in terms of data collection.

These principal and unique features of services are reflected in the statistical definition of services, used as the foundation for collecting international trade in services data. However, this definition is further complicated by the broad and diverse nature of intangible products and activities classified as services.

[2] See WTO and World Bank (2023), Trade in services for development: Fostering sustainable growth and economic diversification; and World Bank (2023), At Your Service? The Promise of Services-Led Development.
[3] UNCTADstat database of the United Nations Conference on Trade and Development. Accessed June 2025.
[4] TiVA database of the OECD. Accessed June 2025.

Many services are highly differentiated and are delivered through the activities of producers in response to customer demand, making them difficult to capture within a single, unified definition.

The currently applied (sixth) edition of the IMF's Balance of Payments Manual (BPM6) provides a comprehensive statistical definition of services, distinguishing them from goods: "Services are the result of a production activity that changes the conditions of the consuming units, or facilitates the exchange of products or financial assets. Services are not generally separate items over which ownership rights can be established and cannot generally be separated from their production. However, […] some knowledge-capturing products, such as computer software and other intellectual property products, may be traded separately from their production, like goods. In the balance of payments goods and services account, the valuation of goods includes transport within the exporting economy as well as wholesale and retail services indistinguishably in the price of the goods. Furthermore, the value of some service items includes the values of some goods, in the cases of travel, construction, and government goods and services n.i.e. Some services, particularly manufacturing services, repairs, and freight transport, also relate to goods."[5]

Despite the definition's clarity about what constitutes a service, the boundary between goods and services is not always clear-cut. Digital products such as downloadable software, streaming media, or e-books may resemble goods in form but may be statistically classified as services, unless they are delivered via a physical format (e.g. USB drive). The Handbook on Measuring Digital Trade (IMF et al., 2023) and the forthcoming seventh edition of the BPM clarify that such digital products are generally treated as services due to their mode of delivery.

Another layer of complexity arises with payments related to intellectual property rights (IPRs) such as royalties and licensing fees. According to BPM6, these transactions are classified as services because they involve access to, or use of, intangible assets. However, under the legal framework of the World Trade Organization (WTO), such transactions fall under a distinct category: trade in intellectual property, which is treated separately from trade in goods or services under the General Agreement on Trade in Services (GATS).

2. How services are traded internationally: Modes of supply

International trade in services is conventionally seen as trade in services between residents and non-residents of an economy. Since services are intangible, often non-storable, and thus in many cases non-transportable, the suppliers and consumers of services need to come together, a feature referred to as the "proximity burden" (Francois and Hoekman, 2010). Since there are various ways in which producers and consumers can meet, there are accordingly multiple ways of exchanging services internationally.

The WTO's General Agreement on Trade in Services (GATS), which came into effect on 1 January 1995, defines trade in services as the supply of services through four modes of supply (Article I:2 GATS), based upon the location of the supplier and the consumer when a service is supplied, taking into account their nationality or origin (see MSITS 2010 (United Nations et al., 2010), paragraph 2.25). These four modes are:

- **Mode 1: Cross-border supply** – Takes place when a service is supplied "from the territory of one (WTO) Member into the territory of any other Member".

[5] International trade in goods generally refers to the exchange of all tangible products between countries, including merchandise goods and certain non-merchandise goods such as electricity, water, and some intangible goods classified under trade statistics. Thus, trade in merchandise goods only covers physical, tangible products excluding services and other non-merchandise items.

- **Mode 2: Consumption abroad** – Takes place when the service is supplied "in the territory of one Member to the service consumer of any other Member".
- **Mode 3: Commercial presence** – Takes place through supply of a service "by a service supplier of one Member, through commercial presence in the territory of any other Member".
- **Mode 4: Presence of natural persons** – Takes place when a service is supplied "by a service supplier of one Member, through temporary presence of natural persons in the territory of any other Member".

3. How services are classified in trade statistics

Countries rely on internationally agreed statistical classifications to measure international trade in services consistently. The Extended Balance of Payments Services Classification (EBOPS 2010) categorizes services trade into 12 broad categories, with further subitems that allow for more detailed reporting. An additional "unallocated" category is used for services not classified elsewhere by a reporting country. Table 1 below shows the first-level services categories in EBOPS 2010, using the codes listed in the Statistical Data and Metadata eXchange Data Structure Definitions for Balance of Payments (SDMX-BOP).[6]

EBOPS 2010 is closely linked to the product classification of the balance of payments (BPM6).[7] The services account of an economy's balance of payments can be used to derive estimates covering trade in commercial services[8] for Modes 1, 2 and 4. However, the balance of payments does not include most of the information on services supplied through foreign affiliates that is required to estimate the size of Mode 3.

Table 1.
List of service categories, main items, EBOPS 2010

Services code	Product description
SA	Manufacturing services on physical inputs owned by others
SB	Maintenance and repair services n.i.e.
SC	Transport
SD	Travel
SE	Construction
SF	Insurance and pension services
SG	Financial services
SH	Charges for the use of intellectual property n.i.e.
SI	Telecommunications, computer, and information services
SJ	Other business services
SK	Personal, cultural, and recreational services
SL	Government goods and services n.i.e.
SN	Services not allocated

Source: Statistical Data and Metadata eXchange Data Structure Definitions for Balance of Payments (SDMX-BOP).

6 SDMX Data Structure Definitions for Balance of Payments (SDMX-BOP) and Foreign Direct Investments (SDMX-FDI).

7 EBOPS 2010 uses more detail when categorizing services than BPM6, and a number of additional items and complementary groupings are included to further specify and detail the BPM6 classification of services. A large majority of economies have moved from BPM5 to BPM6. By 2028, the 7th version of the manual (BPM7) should start to be implemented.

8 Trade in commercial services refers to all services except for those provided in the exercise of governmental authority which are excluded from the WTO General Agreement on Trade in Services.

For users of services trade statistics, the importance of keeping this distinction in mind cannot be overstated, because Mode 3 is the predominant mode for trading services in value terms, accounting for about 60 per cent of the total value of services trade as between the four GATS modes of supply.[9] In other words, official statistics on a balance of payments basis – albeit ordinarily the natural starting point for studying services trade – reflect only a fraction of an economy's imports and exports of services as such statistics do not include Mode 3.[10] This is because Mode 3, as defined in the GATS, involves the exchange of services between residents.

A framework for compiling these data, the "Manual on Statistics of International Trade in Services" was adopted by the United Nations Statistical Commission for the first time in 2002 and then further developed in the Manual on Statistics of International Trade in Services (MSITS) 2010. The revision of MSITS 2026 is currently underway.

Eurostat developed the Foreign Affiliates Statistics (FATS) Manual in 2007, and its fourth edition (2024) provides a statistical framework for compiling European statistics on foreign companies and their affiliates.[11] The framework covers both goods and services-producing enterprises. It analyses the universe of affiliates for which foreign investors hold more than 50 per cent of the chain of control, voting power or equity interest. It is customary to distinguish inward FATS, i.e. activities of foreign-controlled affiliates in the compiling economy, and outward FATS, i.e. foreign affiliates under the control of resident enterprises of the compiling economy active abroad. Initially, the statistics focused on Foreign Affiliates Trade in Services (FATS). Today, however, variables such as sales/turnovers, value added, and number of employees are used to describe the foreign affiliates' activities. These variables are further disaggregated by country of origin or destination of the investment and by type of primary activity of the affiliates.

From a GATS perspective, the size of Mode 3 in a given economy can be estimated through the value of the output (or supply) of services by foreign-controlled affiliates. In practice, the availability of FATS is currently confined mainly to OECD and a small number of non-OECD economies. Coverage of data by individual economy may not always be complete. Availability of disaggregated information and/or long-time series varies considerably across reporting economies.

4. Digitally deliverable services: Concept and measurement

Digital trade transactions are a subset of existing trade transactions, as measured in international merchandise trade statistics and in international trade in services statistics. According to the 2nd edition of the "Handbook on Measuring Digital Trade" (IMF et al., 2023), "digital trade is all international trade that is digitally ordered and/or digitally delivered." Hence, figure 1 digital trade encompasses two parts that partly overlap.

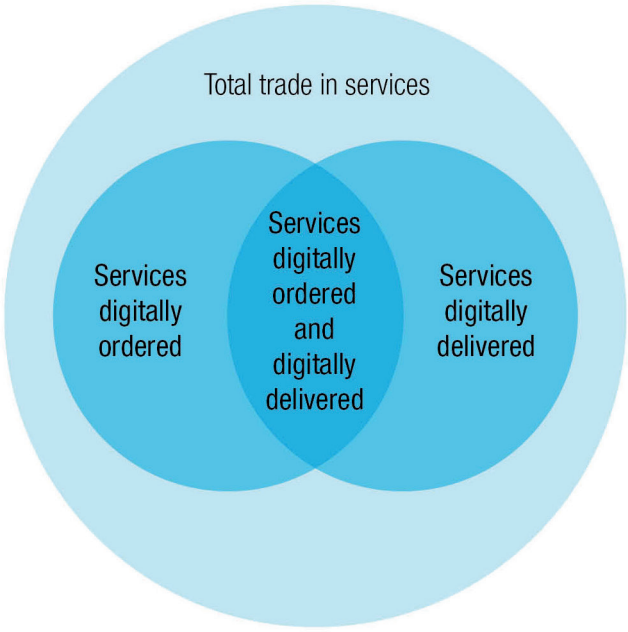
On the one hand, there is digitally **ordered** trade, which is defined as "the international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders." Digitally ordered trade is synonymous with international e-commerce and covers service transactions

[9] According to the WTO TiSMoS dataset (chapter II.D.3), the share of Mode 3 exports in global services trade across all four modes in 2022 is 56 per cent, whereas the share of Mode 3 imports is 58 per cent. See also WTO (2024), Chart 24. For European Union services exports in 2021, 62 per cent of European Union services exports to non-member countries were supplied via commercial presence in the territory of the non-member countries (data extracted in May 2024, estimates using Eurostat-WTO model). The modal shares vary considerably across economies and especially across the different types of services.

[10] The discrepancy between what is considered trade in the balance of payments and in trade policy is a problem that needs to be tackled consistently. Affiliate sales dwarf trade also for goods and should preferably be treated consistently. As the digital transformation of the economy blurs the distinction between goods and services this becomes even more important.

[11] Although FATS have not been formally adopted as an international standard, they are endorsed and encouraged in MSITS and related manuals as a valuable complement to balance of payments statistics.

Figure 1.
Relationship between trade in services and digital trade in services



Source: UNCTAD.

(as well as goods transactions) insofar as they have been digitally ordered.

On the other hand, digitally **delivered** trade is defined as "all international trade transactions that are delivered remotely over computer networks". Crucial to the definition of digital delivery is that the interaction occurs remotely through computer networks, even if it takes place over a longer period; as such, it is generally assumed that only (ICT-enabled) services can be digitally delivered.

Yet the two parts of the digital trade definition can overlap, particularly in cases where services are both digitally ordered and digitally delivered. Due to this conceptual overlap, it is helpful to further clarify the distinction between trade in services and digital trade.[12]

First, the definition of digital trade hinges on the nature of the transaction, rather than the economic activity of the trading entity. The means of payment does not determine whether a transaction should be considered digital trade; For instance, the use of a mobile money app to pay for the cross-border provision of a good or service does not automatically imply that the respective product is either digitally ordered or digitally delivered.

Second, non-fungible tokens (NFTs) – digital records hosted on a blockchain that are associated with a digital or physical asset – are excluded from the scope of digital trade. Third, many consumer-facing digital services are offered for free, as they are not associated with a direct payment flow. By their very nature, such digital services are difficult to capture in trade statistics focused on recording monetary transactions. Nevertheless, these non-monetary flows may still be policy relevant due to their impact on consumer welfare, on consumer trust and safety, or the environmental impacts they may have. Fourth, against the backdrop of the four GATS "modes of supply", digitally delivered trade would predominantly consist of Mode 1 services trade, i.e. cross-border supply.[13] However, this is not universally applicable. Some services, such as transport

[12] A comprehensive discussion can be found in the Handbook on Measuring Digital Trade, in particular Section 2.
[13] Some digitally delivered services may require a local commercial presence due to legal, technical, or market considerations, thus involving Mode 3.

and postal delivery, can be supplied via Mode 1 but are not digitally deliverable as they cannot be delivered remotely over computer networks.[14]

It is important to note that whether a service was in fact digitally delivered,[15] is typically not observed, and therefore not incorporated into official statistics, even though many services can only be exchanged internationally via digital delivery. In the absence of primary data, a useful indicator can be derived by aggregating service categories within the EBOPS classification that are currently deliverable through computer networks (most often the Internet). These are referred to as "digitally deliverable services" and represent an upper-bound estimate of potential trade in digitally delivered services. Two datasets on digitally deliverable services that have adopted different names but are essentially based on the same approach are described in chapter II.D.4 (UNCTAD dataset) and chapter II.D.5 (WTO dataset).

Some thirteen high-level entries from the EBOPS classification, shown in table 2, are considered as digitally deliverable services. In practice, all these service categories are delivered via a mix of digital and non-digital channels. For instance, financial services entail a vast array of activities, some of which will plausibly be digitally delivered, whereas

Table 2.
List of digitally deliverable services

Digitally deliverable services supplied cross-border (Mode 1)		
Insurance and pension services	SF	6
Financial services	SG	7
Charges for the use of intellectual property n.i.e.	SH	8
Telecommunications, computer and information services	SI	9
Research and development services	SJ1	10.1
Professional and management consulting services	SJ2	10.2
Architectural, engineering, scientific and other technical services	SJ31	10.3.1
Trade-related services	SJ34	10.3.4
Other business services n.i.e.	SJ35	10.3.5
Audio-visual and related services	SK1	11.1
Health services	SK21	11.2.1
Education services	SK22	11.2.2
Heritage and recreational services	SK23	11.2.3
Digitally delieverable services consumed abroad (Mode 2)	Recorded within item SD (Travel)	Recorded within item 4 (Travel)

Source: IMF et al. (2023), Table 4.1.
Notes: A considerably more detailed breakdown is available in Annex C of the Handbook. This list incorporates, builds upon, and extends the 2015 list of "potentially ICT-enabled services" identified by the UNCTAD-led Task Group on Measuring Trade in ICT Services and ICT-enabled Services (TGServ). The important category of "Digital intermediation services provided by Digital Intermediation Platforms (DIPs) n.i.e." is included within "Trade-related services." "n.i.e." denotes not included elsewhere.

[14] As transport is easily identifiable, remaining Mode 1 estimates can be considered digitally delivered trade, as postal delivery is unlikely to make a material difference. Conceptually there is also a very small fraction of Mode 2 services that could be digitally delivered but their value is also considered negligible. See chapter 2.2.2. of the Handbook on Measuring Digital Trade.

[15] Individual economies such as India or Costa Rica do conduct surveys designed for businesses to report on their digitally delivered services, based on a model survey developed by UNCTAD; However, usage of such tools is not sufficiently widespread.

others – especially those requiring face-to-face interactions – may not be.

In regard of the relative quantitative importance of the service categories listed in table 2, estimates suggest that, on a global basis, computer services (part of EBOPS "SI"), financial and insurance services (EBOPS "SG" and "SF") as well as constituent elements of "other business services" (EBOPS "SJ") are quantitatively important categories of digitally deliverable services (WTO 2024). One of the considerations that is guiding the disaggregation of service categories in the forthcoming EBOPS 2026 classification is to better delineate digitally deliverable services.

B. Indirect services trade

Whereas the previous sections have sought to set out the concept of services trade and approaches to their statistical measurement, the use of services in real-world business transactions is somewhat more complex. Two aspects are particularly worth highlighting. On the one hand, businesses, including manufacturing companies, rely on service inputs that are embodied in their products at the point of sale or throughout the value chain, some or all of which may subsequently be exported. As a result, a non-negligible share of the recorded value of goods exports in fact reflects embodied trade in services. Indeed, in value-added terms services represent a much larger share of world trade than would be apparent from official trade statistics.

On the other hand, manufacturing companies increasingly produce and export services either as complements or substitutes to the goods they sell. Services trade carried out by manufacturing enterprises is captured by traditional trade in services statistics, while the services' value embedded in goods trade is not separately identified. This shift to services could be underpinned, inter alia, by economies of scope in the production of goods and services, or consumption externalities such that the bundle of goods and services is perceived to be adding more value, which in turn may help create a longer-term customer relationship.[16] The role of services on the input side and on the sales side of a production process is depicted in figure 2 as conceived by Miroudot and Cadestin (2017) in the

Figure 2.
Role of services in production

Source: Miroudot and Cadestin (2017), figure 1.

[16] Aircraft engines are an example of bundling services with a manufacturing product: as early as 1962, Rolls-Royce invented the "power-by-the-hour" approach to engine maintenance management whereby a complete jet engine and accessory replacement service is offered on a fixed-cost-per-flying-hour basis, with the aircraft operator paying only for engines that perform well. Effectively, the former sale of a manufacturing product (jet turbine) has turned into a mobility service. Nowadays, the cloud computing concepts of "Software as a service (SaaS)" or "Infrastructure as a service (IaaS)" likewise turn physical products into services on demand.

context of what the authors had then termed the "servicification of manufacturing."[17]

Both aspects of services – as intermediate input and as bundled output – are salient for (trade) policy making but it is especially the former that is relevant in the context of discussing services trade data. Recognizing that services could be exchanged internationally by being embodied in (manufacturing) products, it is evident that this kind of service trade, which might thus be called "indirect" service trade, is not captured by any official source of trade statistics. As such, it often eludes the attention of policy makers, analysts, and other interested stakeholders.

The measurement of such indirect services trade requires an alternative approach on a value-added basis, as opposed to gross value terms. Recently, new data collection initiatives have been launched aiming at capturing the constituent value added of final products, i.e. where and what kind of value added is being picked up across economies in the production of a final product (e.g. the WIOD World Input-Output Database or the Trade in Value Added (TiVA) Database discussed in Section II.E). These data sources can yield information about the configuration and international shape of value chains, and the role of services in those value chains. The introduction of the concept of "indirect" services trade underscores the discussion of a set of databases on a value-added basis, which rely on input-output tables (and an array of assumptions applied to data) to construct international linkages of inputs in traded products (chapter II.E).

One important ramification of considering "indirect" services trade in addition to conventional services trade statistics is that the share of services in world trade tends to increase. By juxtaposing the value of exports in gross versus value-added terms, figure 3 highlights the fact that in 2018–2019, using TiVA data, services account for a larger share of world trade (42 per cent vs 39 per cent) than would be suggested by traditional statistics, with the caveat that the value of gross exports in TiVA is not necessarily the same as in official balance of payments statistics. Other data from the World Input-Output Database (WIOD) suggested a much larger gap for services trade between a gross basis (20 per cent) and a value-added basis (41 per cent) in 2008, see Johnson (2014, figure 1). In any case, the average gaps for both services and manufacturing depicted in figure 3 likely hide considerable cross-country heterogeneity, as embodied services are more important for some economies and some products/services than others. As a corollary, economies' patterns of specialization or revealed comparative advantage could change depending on whether trade data in gross or value-added terms are used.

C. Data challenges associated with services trade

Discrepancies in terms of coverage and classifications used, and associated limitations in cross-country services trade statistics.

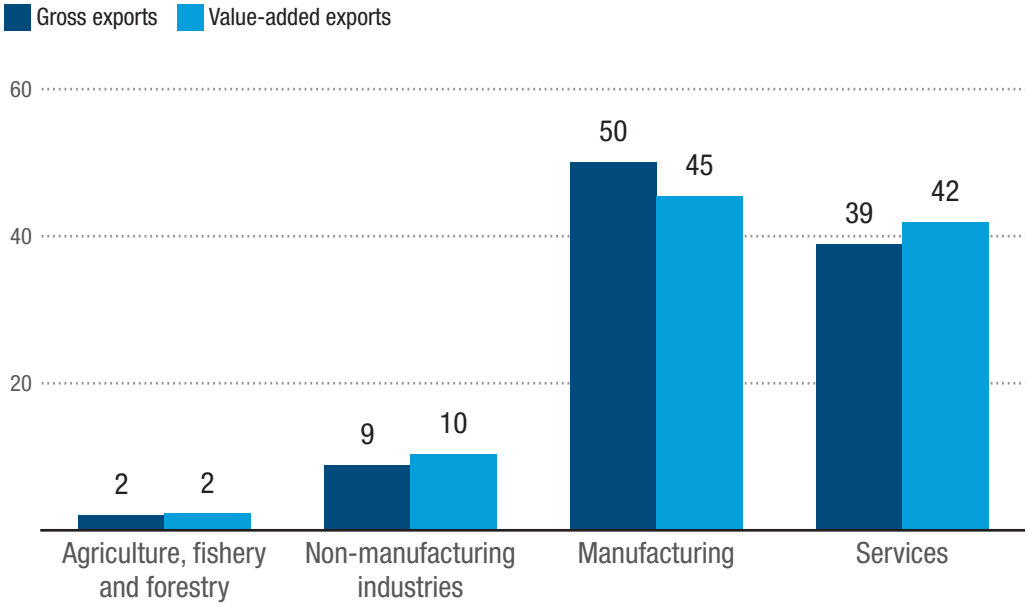
At the time of writing, many if not most economies worldwide have fully implemented the BPM6 for the recording of their balance of payments services transactions, whereas some economies are still compiling their statistics according to the previous, fifth edition of the Manual (BPM5). At the same time, it is expected that some economies start switching to the next generation methodology, the seventh edition (BPM7) as from 2026/27.

[17] Unlike in official services trade statistics with its clearly defined terms, there is no universally agreed terminology to denote the various ways by which services are redefining the way manufacturing businesses create value and integrate into value chain trade. Whereas "servicification" is often defined very broadly in academic papers as encompassing any aspect of the increasing importance of services in manufacturing activities, it would be helpful for the sake of conceptual clarity to at least use separate terms for the role of services on the input side of production (e.g. servicification) as opposed to the output side (e.g. servitization), respectively.

Figure 3.

World trade by main sector: Gross exports versus value added exports, 2018-2019

(Percentage share)



Source: OECD-TiVA Database.
Notes: Figures were rounded and calculated based on gross exports (EXGR) and domestic value-added in gross exports (EXGR_DVA) of 76 countries and the rest-of-the-world aggregate in the TiVA database. Non-Manufacturing Industrial Production includes Mining and Quarrying, Electricity/Gas/Water Supply, and Construction. Manufacturing is the remainder of Industrial Production.

Consequently, coverage of reported services trade data may not always be complete. World and regional estimates of trade in new service items such as manufacturing services on physical inputs owned by others and maintenance and repair services n.i.e., respectively, may be underestimated as some economies do not yet report these items.

Overall, the coverage and comparability of trade in services statistics have significantly improved over recent years, thanks to capacity building. That said, services trade data remain subject to recognized limitations, such as (a) some countries do not collect figures for all items or by trading partner, (b) statistically capturing some services items remains difficult, notably on the import side, (c) data can be reported on a net rather than gross basis, (d) certain transactions may prove complex to classify appropriately, (e) compilation remains challenging due to diversity of different sources, costs of data collection and complex calculation methods. Generally, these distortions tend to manifest more starkly at detailed items levels and may lead to considerable asymmetries among countries' reported trade flows by origin and destination at these more disaggregated levels. The discussion of bilateral trade asymmetries below is closely related to these limitations.

Information may exhibit discrepancies across data providers or direction of flows or may be estimated in the first place.

In addition to measurement differences between export and import flows, but relatedly, users of trade in services statistics also need to know that the value of the same bilateral services trade flow might differ between reporting countries (this is also true for trade in goods). Services trade transactions are reported on both ends of a bilateral trade relationship and, in theory, credits (exports) and debits (imports) of that transaction as recorded by both partners should be identical. However, this is rarely the case in practice and

the difference in the two statistics is known as an "asymmetry". Bilateral asymmetries in trade statistics are a global phenomenon, especially in the realm of services trade, in which measurement of flows is complex and therefore conceptual; classification and measurement differences across countries can (and do) arise even when reporting countries follow internationally agreed guidance and methodological standards for preparing trade statistics.[18]

Officially published statistics on services are known to be prone to ex post revisions, the extent of which naturally varies greatly across national statistical agencies. However, to provide some context for relative magnitude of revisions in services trade, the balance of payments services trade statistics of one advanced economy that were analysed between January 2022 to December 2024 exhibited relative mean absolute revisions (RMAR) of nearly 12 per cent one year after initial publication and 17.5 per cent two years after for services exports, whereas for services imports it was 18.7 per cent one year after and 25.8 per cent two years after.

The salience of "intra-national" trade flows for empirical work

Many questions that arise in the context of policymaking or analytical research can be addressed using international trade flow data, but sometimes international trade flows need to be juxtaposed against a different benchmark. For instance, it is difficult to assess the impact of services trade policies that are applied equally to all trading partners – i.e. on a most-favored-nation basis – with international trade flows alone; similarly, digitalization may affect the tradability of services across borders in specific ways as compared to domestic consumption of such services.[19] In these cases, an economy's domestic sales – or synonymously intra-national trade – are an appropriate benchmark for estimating effects that impact upon that economy's international trade flows (Yotov 2024). Indeed, a foundational question for trade in relation to development policy is how easily services might be exchanged internationally, and what policy measures might help services flow more easily across borders. One way of addressing such questions is to compare border-crossing (international) trade flows with domestic (intra-national) trade flows and to see whether the former evolve differently from the latter.[20]

Doing so requires a dataset that entailed both international and domestic trade flows.[21] Data on domestic trade flows are hard to come by, in part because they are not included in official trade statistics as they lack internationally agreed conceptual underpinnings. One possibility of constructing domestic trade flows is to start from National Accounts statistics on "gross output" for individual services sectors and deduct from that quantity the value of corresponding services exports, i.e. that part of domestic production of services that is sold abroad (see Baier et al., 2019, p.211). The remainder is left for domestic consumption, or put differently, what an economy trades

[18] Reasons that have been long acknowledged for potentially giving rise to trade asymmetries include: diversity of compilation methods (business surveys, bank-reporting system, administrative sources) including differences in survey design as regards sampling frames, coverage, or reporting thresholds; differential capture of multinational enterprises that are known to account for large trade values; differences in the classification of items especially for novel kinds of digitally delivered services; different assumptions used in model-based estimates; differences in territorial definitions especially overseas territories; usage of different exchange rates; triangular transactions such that invoicing concerns one country but services are delivered in another country; or ex post revisions to data.

[19] A full-fledged discussion of the various issues that arise in estimating gravity models of trade is beyond the scope of this brief introductory section on data challenges. The sole aim of this paragraph is to discuss the role of intra-national trade flows and the associated estimation issues in the context of services trade data.

[20] By comparing international trade flows with domestic sales, research was able to estimate significant declining effects of international borders on world trade, on average by 25.3 per cent between 1990–2002 (Bergstrand et al., 2015), or to estimated unbiased and detailed effects of individual free trade agreements (Baier et al., 2019). These results pertain to goods trade data but conceptually it would be no different for services trade if the requisite data were available.

[21] Conceptually, this discussion applies in the same way to goods and services trade flows, but the focus will be on services only when it comes to data on domestic trade flows.

with itself as the points of production and consumption coincide.

The International Trade and Production Database for Estimation (ITPD-E, chapter II.C.1) is one of the few data sources that offer domestic trade flows alongside international ones across all industries, including services (Borchert et al., 2020). The availability of gross output statistics, and their concordance with trade statistics, is discussed in chapter III.[22]

In conclusion, the use of domestic sales as intra-national trade in empirical analyses is still in its infancy, especially in services trade. This is in part because production and output data are even less granular than international services trade flow data, and the construction of domestic sales is afflicted by multiple measurement and concordance challenges. Yet, domestic sales provide a useful benchmark for many policy questions around the international exchange of services.

[22] System of National Accounts statistics use an industry classification, which needs to be concorded to a product classification (EBOPS for services) in order to back out intra-national trade flows; for more details see chapter III.1.

Chapter II

Data on trade in services

A. Official services trade statistics shared by international agencies

This section discusses international databases that contain official statistics on services trade flows across the four GATS modes of supply. These rely on statistics compiled by national statistical authorities.

For a complete measurement of international trade in services across the four modes, two separate but complementary statistical domains are required: Balance of Payments statistics and Foreign Affiliates Statistics. BOP covers international services transactions between residents and non-residents of an economy, while FATS cover services delivered through enterprises that are locally established but foreign-controlled.

1. UNCTAD-WTO trade in services dataset

The trade in services annual dataset is produced and published jointly by UNCTAD and the WTO, henceforth referred to as UNCTAD-WTO TiS dataset. It draws in part on information released by other multilateral agencies such as the IMF, OECD and Eurostat, which are mandated to collect official TiS statistics from countries. The UNCTAD-WTO TiS dataset is arguably the most comprehensive source of data on trade in services compiled in accordance with definitions and classifications of the BPM6 and EBOPS 2010. It covers all EBOPS-2010 services statistics as far as these are available or can be estimated from related relevant information from countries.

The UNCTAD-WTO TiS comes in two principal parts. On the one hand, it includes a longer time-series of services trade flows divided by EBOPS 2002, but only to and from the world as a partner. This dataset starts in 1980 and ends in 2013[23] when BPM5 reporting was superseded by BPM6. On the other hand, commencing in 2005, it includes services trade flows broken out by EBOPS 2010, i.e. information is considerably more granular (introducing for example, the category of Manufacturing services on physical inputs owned by others), and by partner economy when available. This latter dataset, based on BPM6, is updated twice a year. The first update, in April, aims to provide early provisional figures for the most recent year. As the dataset ultimately relies on the reporting of national agencies, varying according to their statistical capacity, users should be aware that the latest available year in this dataset is typically incomplete.[24] The July update is more comprehensive, containing significantly more official statistics for the latest period covered, as well as additional estimates for granular levels.

At a glance

Annual trade in commercial services

	BPM5	BPM6
Geographic scope	Global	Global
Service classification	EBOPS 2002	EBOPS 2010
Sectoral detail	13 items plus memo/misc.	165 items plus memo/misc.
Time series	1980–2012	2005–2024
Partner detail	World	Bilateral (mainly developed economies)
Update frequency	No longer	Annual
Release date	July 2025	
Access	UNCTADstat Data centre WTO STATS portal Global Services Trade Data Hub	

[23] For practical purposes, the last year with complete data, judging in terms of observation counts, is 2012. The BPM5 dataset from 1980-2012 is available for bulk download from the WTO website merged with the BPM6 dataset: WTO | Trade Statistics - Bulk download of trade datasets.

[24] For instance, in the April 2025 version of the dataset, the total number of observations exceeds 430,000 every year after 2017 until and including 2022, but is only 75,735 in the latest available year 2023, i.e. only 17.4 per cent of the previous year. This suggests the presence of reporting lags that filters through to the published dataset.

UNCTAD and WTO also jointly compile the TiS quarterly data set. It covers all available national figures, sourced either from Eurostat, IMF, or directly from national sources (the latter option assuring better timeliness). The figures are published four times a year, usually with a "quarter plus 4 months" delay. This data set starts with Q1 2005, goes to the latest quarter available, covering some 40 EBOPS-2010 items, for partner World (i.e. without any partner breakdown).

For the datasets they compile jointly, UNCTAD and WTO publish them simultaneously. The global totals and the individual economies' statistics are the same, but the presentation of data, the composition of country-groups, and the indicators derived from the joint baseline data set can be different.

Annotations. The UNCTAD-WTO TiS consists of official statistics on trade in services as reported by national and international statistical agencies with only limited adjustments such as correcting negative values. Hence, this dataset is not globally balanced, and its five main dimensions (exporter, importer, product, time period, and type of flow) are not always filled, reflecting incomplete data collection and/or reporting by the national statistical authorities.

At the same time, the absence of constructed trade flows renders this dataset suitable for empirical analyses and estimations (using constructed trade flows for empirical analysis and estimations requires caution, as discussed in chapter II.D).

Although more aggregated level EBOPS codes would generally exhibit better coverage, values at different levels of the EBOPS classification are not always consistent in two respects. Firstly, there are instances in which the upper-level category is missing at the bilateral level, but constituent subitems may be filled, which could lead to the erroneous conclusion that no bilateral information was available for this particular country-sector case.[25] Secondly, even if different levels of EBOPS items within the same category are all filled, trade values in subitems sometimes do not add up to their aggregates and are smaller than the main category, which is evidence of sectorally and/or geographically unallocated trade flows.[26] Another issue is confidentiality. The more detailed the data on sector and partner country, the more easily the exporting companies can be identified. The extent and nature of such issues inherently varies across economies and perhaps over time. In any case, users should be aware of potential trade-offs in using aggregated versus disaggregated categories regarding data completeness and accuracy.

The 2025 version of this dataset accessed in July 2025 encompasses almost 7 million observations (out of which around 380,000 are non-publishable because of confidentiality) across both exports and imports, both EBOPS classification codes, and all years from 2005–2024.

Whereas the UNCTAD-WTO TiS dataset in its BPM6 version records bilateral trade between 216 unique economies (when flows for total services are excluded), the more granular bilateral trade flow part of the database is in fact largely built on the reporting of only 54 mostly high-income and higher middle-income reporters (including the European Union as a group). Not more than 15 developing economies regularly report bilateral trade in services with their trade partners.

Only 54 economies provide a breakdown of their services trade by trading partner (representing the bulk of global trade in services), whereas by contrast many other economies only report World totals for exports and imports. This implies that transactions of large services exporters and importers such as, for instance, India or Brazil are not fully represented in the database (for systematically different reporting across income groups, see UNCTAD 2025, Chapter III). Moreover, the number of reporters varies over the years.

[25] For example, the Netherlands does not report its total export of transport services to Austria in 2019, yet the Netherlands does report exports in three transport subcategories, which add up to US$228 million.

[26] For example, the Netherlands reported a total export of US$43 million in transport services to Thailand in 2019 even though the level 2 subitems add up to only US$35.6 million.

There were only 27 reporters in 2005, which gradually grew to 40 by 2013. Time series patterns suggest that non-reporting is not due to an absence of trade but rather an absence of reporting.[27]

Boxes 1 and 2 illustrate efforts by international organizations, such as UNCTAD, to fill gaps and enhance the quality of trade in services statistics.

Box 1.

E-learning on the statistics of international trade in services

The UNCTAD E-learning course responds to the demand of developing economies to enhance their capacity to compile relevant statistics for their economy. It further enables better understanding of trade and related statistical frameworks. The six-weeks course is offered every year in September–-October, in English and French. Beneficiaries are mainly statisticians from national statistical offices and central banks, but also people working in other government agencies, ministries, or academia. The course is offered free of charge to government employees. Students who finish all six modules and are successful in the final test receive a course certificate.

The E-learning course on Statistics of International Trade in Services is hosted on UNCTAD's Train-For-Trade platform and was developed jointly by UNCTAD, UNSD, and WTO. It is a self-paced online learning experience, facilitated by the forum discussions. The curriculum follows agreed international standards, based on latest definitions, statistical classifications and trade-statistics good practices. The relevant statistical framework is the IMF Balance of Payments, 6th edition (BPM6). The course material -adapted to e-learning format - is closely related to the Manual on Statistics of International Trade in Services (MSITS 2010).

7136 people from over 160 countries have taken part in the training program since 2016. In 2024, 981 persons from 141 United Nations Member States took the course in English. The top five countries represented were Philippines, Indonesia, India, Kenya and the United States of America.

Box 2.

Enhancing services trade data coverage through the Trade-in-Services Statistics Information System

The Trade-in-Services Statistics Information System (TiSSTAT), developed by UNCTAD, assists developing economies to fill data gaps in trade in services, and facilitates and increases the robustness of the compilation of trade in services statistics. The application is a modular, enterprise-based statistical system designed to help countries collect, compile, and disseminate high-quality trade in services data. TiSSTAT addresses persistent data gaps, especially in partner country breakdowns and modes of supply, by offering a comprehensive and customizable enterprise survey-based approach. It is part of a full information system implemented with UNCTAD's support, including installation on local servers, and training in the use of all its functionalities.

TiSSTAT is currently being implemented in several regional contexts, including the West African Economic and Monetary Union (UEMOA), the Caribbean Community (CARICOM) and the Cooperation Council for the Arab Countries of the Gulf. In total, over 40 countries have asked UNCTAD to support them in using TiSSTAT to enhance their trade in services statistics, including countries like Benin, Cote d'Ivoire and Mexico.

[27] Contributing reasons could be that national statistical agencies do not publish all data that they collect in the first instance, and of those data that are published domestically not all may be fully reported or collected internationally.

There are some differences in terms of what WTO and UNCTAD offer in their extensions to the joint dataset. Notably:

WTO extensions to the joint dataset

On the WTO STATS portal and Global Services Trade Data Hub, additional exports and imports statistics for trade in commercial services are available at higher frequencies. These include **quarterly statistics**, produced jointly with UNCTAD, and **monthly statistics** collected by WTO. Both series commence as from 2005 and are updated continuously on a rolling basis, albeit with considerable time lags in reporting trade flows of more detailed EBOPS subitems (if at all available). The data are not bilateral but are reported to World as partner for both imports and exports.

Availability is constrained by what national agencies would report; for example, quarterly or monthly trade in financial services (EBOPS code: SG) is available for some economies but not for others since it represents a higher level of disaggregation ("financial services" are a subitem of "other commercial services" in the UNCTAD-WTO presentation, whereas "transport" is one of the four constituent parts of "commercial services" and as such is reported by a wider set of economies compared to more detailed EBOPS entries).

The same applies in terms of the availability of statistics on a monthly basis, for which there are more economies that report imports (47) than those that report exports (29), even though the additional import reporters only furnish total services imports without EBOPS subitem details. It is worth noting that the set of reporting economies in the monthly series does not necessarily overlap with those economies that appear in the annual UNCTAD-WTO TiS dataset.

UNCTAD extensions to the joint dataset

Through its Data Centre, UNCTAD offers access to balance of payments-based services trade statistics in three principal variants (but presented in four distinct series), each of which offers granularity in a particular dimension, so that users can select the appropriate series depending on what kind of disaggregation is desired. The data sets listed below are compiled jointly with WTO.

One trade-off is between product and partner detail. The most granular product detail (up to 100 EBOPS items) for most individual economies in the world is available when trade flows to and from the World are considered. This approach is presented in the series "Exports and imports by service category, trading partner world, annual", which further contains aggregated figures for various groups of economies for selected principal service categories. Derived calculations, such as market shares, annual growth, and shares of sub-categories in total services are also included. By contrast, bilateral services flows are presented in the series "Exports and imports by service-category and by trade-partner, annual." However, this series includes only those economies for which bilateral partner data are available, and services trade flows broken out by trading partner are published with as much product detail as available in the source data.[28] Similarly, the latest year for which bilateral flows are available varies across reporting economies. These series are updated annually at the end of July.

Another trade-off is between timeliness of trade data and product or partner detail. For the early April update – compiled jointly with WTO – UNCTAD publishes a separate preliminary dataset for 12 main EBOPS items to and from the World. Specifically, this series contains preliminary annual estimates based on the most recent quarterly figures, with the main goal of providing an early estimate for the evolution of services trade flows during

[28] In some instances, the original data source may not report the detail by individual partner economy but by a group of partners. In such cases, flows are also presented for groups of partners in UNCTAD statistics.

the past year. However, to arrive at such timely estimates, the underlying sources and methodology are different to those used in the two series of annual data discussed above. Consequently, the two different datasets (annual series vs quarterly levels or growth rates) should not be merged or used interchangeably. Once the July update is produced, the preliminary estimates are removed from the website.

Only the trade flows for the main service categories (total services, goods-related services, transport, travel, and other services, commercial services, and other commercial services) are produced jointly and harmonised between UNCTAD and WTO in the April production. More disaggregated service categories within "Other services"[29] contain UNCTAD estimates that may differ from estimates for the same items available from the WTO.

Similarly, when it comes to quarterly trade-in-services statistics, the current US$ values are compiled jointly and are the same as published by WTO. In addition, UNCTAD compiles the seasonally adjusted estimates for the five main items (total services, transport, travel, other services, and commercial services), both at the level of country groupings and for individual economies. The quarterly data are updated four times a year, with a four-month delay for the past quarter. The quarterly data set includes some 150 economies and covers over 85 per cent of global services trade value.

Across all four series presented, figures originally reported according to BPM5 are adjusted to BPM6 definitions provided that such adjustment was possible. When possible, the values missing in major international sources are estimated by using growth rates derived from the data available in national or other international sources. The data presented in the UNCTAD Data Centre are the result of joint work between UNCTAD and WTO, and as such are also reflected in the joint UNCTAD-WTO TiS dataset.

At a glance

UNCTAD trade in services (BPM6)

	Annual World	Annual Partner	Quarterly World
Geographic scope	Global	Global selected	Global
Service classification	EBOPS 2010	EBOPS 2010	EBOPS 2010
Sectoral detail	~100 items	~100 items	12 items plus total
Time series	2005–2024	2005–2024	2005 Q1– 2025 Q1
Partner detail	World	Bilateral	World
Update frequency	Annual	Annual	Quarterly incl. SA
Release date	25 July 2025	25 July 2025	25 July 2025
Access	UNCTADstat Data centre		

Users of services trade figures can explore and easily download data and metadata in differing formats on the UNCTADStat data centre, filtering as necessary the desired economies or regions, time periods, types of service or other dimensions. For advanced users, bulk download options and API access allow automatic and command-line functionality, allowing integration into reproducible data pipelines. In addition to the granular and filterable datasets appropriate for comfortable data users, UNCTAD produces Data Insights, which gives textual summaries and data visualisations of the key messages for the benefit of busy policy makers.

2. International Monetary Fund balance of payments statistics

The International Monetary Fund's (IMF) Statistics Department publishes official balance of payments statistics, which include trade in services flows at annual and quarterly frequency. The published data are sourced from national authorities, the European Central Bank, and IMF Staff estimates.

The dataset is available for bulk download; however, depending on the number of selected items, the file can be very large

[29] These are: Construction, insurance and pension services; Financial services; Charges for the use of intellectual property; Telecommunications; Computer and information services; Other business services; Personal, cultural and recreational services; and Government goods and services.

At a glance

IMF balance of payments official statistics	
Geographic scope	Global
Service classification	BOP services components and subcomponents
Sectoral detail	Over 60 components and subcomponents
Time series	1948 – Up to present or most recent quarter (start dates vary)
Partner detail	World
Update frequency	Monthly (Version: 21.0.0)
Release date	13 June 2025
Access	IMF Data Portal (BOP)

(hundreds of megabytes or even gigabytes). An alternative way of accessing the data is via the interactive IMF Data Explorer, in which subsets of information can be defined and retrieved e.g. for individual economies, services categories, or years. The unit of measurement for trade flows can be either local currency units or US$.[30]

Annotations. The IMF dataset offers official BOP statistics as reported by national agencies.[31] The periodicity is quarterly, but the data are updated on a monthly basis. The country coverage is global and, depending on the individual economies' reporting pattern, the disaggregation in terms of BOP components and subcomponents is comparatively detailed. Hence, the main advantages of this data source are twofold. Firstly, comparability across economies is good and, in conjunction with the comprehensive geographic coverage, renders this dataset highly suitable for cross-country work. The second main advantage lies in its time-series, with the annual series going back decades and, in some instances, more than half a century. That said, the starting point varies across reporting countries. The quarterly data is also a distinguishing feature, so that both high-frequency analysis as well as long time-series analysis can be performed.

Unlike the IMF goods trade statistics, however, the IMF services trade data do not have a partner dimension, i.e. trade flows are not bilateral.

3. OECD international trade in services by partner country statistics

With this dataset, the OECD provides balance of payments data on international trade in services broken down by type of service according to the EBOPS 2010 classification and then by available partner category.

The dataset entails 44 reporting economies, consisting of 37 OECD economies and 7 non-OECD economies (Argentina, Bulgaria, Croatia, Hong Kong (China), Romania, Russian Federation (no longer updated), and Singapore, respectively). In addition, data are available for the European Union with 27 members as of February 2020 as an aggregate entity. For each reporting economy, the partner dimension is global, i.e. potentially every economy in the world plus selected aggregate entities such as world regions, the "G7", OECD, or the Asia-Pacific Economic

At a glance

OECD trade in services by partner	
Geographic scope	Regional (47 economies)
Service classification	EBOPS 2010
Sectoral detail	40 items at different levels
Time series	1949–2024 (start dates vary)
Partner detail	Bilateral
Update frequency	Updated on a rolling basis (following national calendars) (current version: 21.0.0)
Release date	25 June 2025
Access	OECD Data Explorer

[30] The option of retrieving flows in local currency units can be helpful to eliminate exchange rate fluctuations if interest lies primarily in the annual or quarterly series of one economy, or several economies that share the same currency.

[31] The IMF has dissemination standards for economic statistics including for trade statistics; however, specificity on services trade is lacking.

Cooperation (APEC). The unit of measurement for trade flows can be either local currency units or, via embodied exchange rate conversion, US$ or Euros. The June 2025 version of the dataset contains 13.7 million data points in total.

B. Foreign affiliates statistics

Under the GATS, Mode 3 refers to the supply of a service through commercial presence in another jurisdiction. Since the foreign service provider physically establishes a legal presence abroad, e.g. through a wholly owned subsidiary, a joint venture, or a branch, the exchange of the service as between supplier and consumer takes place within the same jurisdiction. This feature distinguishes Mode 3 supply from the other GATS Modes (1, 2, and 4), which are based upon resident-to-non-resident transactions.[32] Consequently, Mode 3 is not included in balance of payments statistics of services trade but instead in a separate class of statistics that describe the overall operations of foreign-controlled affiliates, called foreign affiliates statistics (FATS).[33]

Because of the central role of foreign affiliates, this mode of services trade is very closely linked to international investment flows.[34] Insofar, as most forms of commercial presence abroad require investment flows, Mode 3 services trade is intertwined with important policy questions around market access for foreign entities and, post-entry, their conditions of operation under host regulatory frameworks.

In terms of measurement, as Mode 3 is transacted through foreign affiliates, FATS statistics consist of indicators that reflect the activities of multinational enterprises. The FATS variable "output" is deemed to be the most pertinent measure of the international supply of services by Mode 3, which for many services (but not all) would be equivalent to sales.[35] These sales are distinguished by their inward or outward direction. Specifically, inward FATS represents output of foreign firms operating in a host economy whereas outward FATS pertain to output of domestically owned affiliates operating abroad.[36]

1. WTO foreign affiliates statistics

The WTO used to publish FATS data for a medium-sized sample of economies. However, that database is currently undergoing re-design for future integration with the TISMOS dataset (chapter II.D.3) and is therefore currently not publicly available. At the time of writing, it is anticipated that the revised FATS dataset will become available again towards the end of 2025.

Prior to being taken offline, the WTO FATS data offered information for some 44 economies from 1999 to 2022, in both directions, i.e.,

[32] This is a general description of the principal difference between Mode 3 and the other three modes. Full details of what constitutes commercial presence, what is a "foreign affiliate" in the context of FATS, and cases in which commercial presence may give rise to balance of payments transactions, can be found in the MSITS, BPM6, and the OECD Benchmark Definition of Foreign Direct Investment, 5th edition.

[33] One of the fundamental changes to be reflected in the next generation of statistical frameworks – BPM7 and MSITS 2026 – is a more encompassing view of measuring services trade that goes beyond the concept of residency. The new conceptual framework for measuring international trade in services aims at better integrating "international trade in services on a balance of payments basis", covered by BPM7 statistical framework, with the "international supply of services" with FATS as its associated statistical framework

[34] In terms of measurement, this means that FATS statistics are closely aligned with the measurement of foreign direct investment, as set out currently in BPM6 and soon in BPM7, as well as the OECD Benchmark Definition of Foreign Direct Investment (5th edition).

[35] In the past, predominantly for want of data specifically on foreign affiliates' activities, the use of statistics on foreign direct investment (FDI) stocks or flows has been prevalent as a proxy measure for GATS Mode 3. However, this is not accurate and therefore FATS should be used for work relating to Mode 3 rather than FDI statistics.

[36] A distinction needs to be made between output of affiliates sold locally and exported. Only the former should be considered as Mode 3 supply of services in the host economy in which commercial presence was established, whereas any exports of foreign affiliates are considered as Mode 1 supply of the host economy to third economies (Wettstein et al., 2019, p.19).

inward and outward FATS with the World as partner. The number of reporters varied over the years, though, with Canada as the only continuous reporter from 1999 to 2001. It was not until 2011 that the number of reporters stabilized at 44. The sector and subsector distinctions follow the ISIC Rev.4 industry classification. Again, though, the extent of sectoral detail is not uniform but depends on the reporting economy; for instance, Germany provides 164 subsector distinctions whereas the United States provides information on 66. It is important to note that WTO FATS data are not bilateral but with respect to the World as destination/origin.

2. Eurostat foreign affiliates statistics

The Eurostat FATS database contains several datasets providing information on the activities of foreign affiliates operating within (inward FATS) and controlled by (outward FATS). The most recent datasets (from 2021 onwards) comprise of 30 reporting economies in Europe (27 European Union Member States, Norway, Bosnia and Herzegovina, and Serbia) for inward FATS and 28 (27 European Union Member States and Norway) for outward FATS.

At a glance

Eurostat FATS

	Inward FATS	Outward FATS
Service classification	NACE rev. 2 (21 level-1 items), from 2008	
Sectoral detail	9 (2003–2007) 13 (2008–2020) 16 (2021-2022)	16 (2010–2020) 17 (2021–2022)
Time series	2003–2022	2004–2022
Partner detail	Bilateral (23 non-EU countries)	Bilateral (38 non-EU countries)
Update frequency	Annual	
Last update date	9 April 2025	25 February 2025

FATS statistics are collected based on European business statistics (EBS) regulations, with the most recent being Regulation (EU) 2019/2152 and Implementing Regulation (EU) 2020/1197. The Eurostat FATS data is, in principle, available from as early as 2003 (inward FATS) and 2004 (outward FATS); however, there are structural differences in presentation of the activity items in particular from 2021 onwards and other time series (European Commission 2023a; 2023b). More comprehensive information is available for inward FATS compare to outward FATS, although key variables such as number of enterprises, net turnover, and number of employees and self-employed persons are available for both. For inward FATS, additional variables such as output, value added, or the value of purchases of goods and services for resale are available, amongst others (full list of variables is given in the metadata for inward FATS and outward FATS).[37]

Based on information from 2021 and 2022, the thirty reporting countries in Europe were destinations of inward foreign affiliates in the services sector (NACE sectors G to R) from at least 42 different economies, which can include reporting economies such as Germany or France as these are large global investors including in Europe. Against that backdrop, the European Union as a group unsurprisingly accounts for the largest share inward FATS overall, followed by the United States, whose foreign-controlled enterprises within reporting economies exhibits the largest sales share of any individual economy, followed by Germany. Wholesale and Retail distribution is the sector with the largest sales.

With respect to outward FATS, 28 of the 30 reporting economies[38] had multinational enterprises (MNEs) with affiliates operating in at least 60 countries around the world in 2021–2022. Amongst destinations, the sales of European affiliates in the United States emerge as the largest: European Union-based

[37] The sources of FATS could vary at the country level as EBS regulations leave the choice of sources for FATS data collection to the European Union Member States according to the principle of subsidiarity. Among potential sources are surveys, business registers, administrative records, and any other relevant sources, although the regulations provide an extensive set of guidelines to ensure coherence of the statistical framework and comparability across economies (European Commission 2024).

[38] Bosnia and Herzegovina and Serbia did not report to Eurostat on sales of its services sector MNEs abroad.

parent companies in the services sector collectively made an estimated 800 billion euros in net turnover in 2011 and 1.1 trillion euro from their United States-based affiliates in 2022, followed by the United Kingdom of Great Britain and Northern Ireland (about a third of the sales in the United States).

A significant share of the observations in Eurostat FATS is suppressed to protect confidentiality in cases in which the reporting by host-origin-sector dimensions could lead to the identification of an individual affiliate. For instance, while available for several individual European Union countries, net turnover figures for foreign affiliates of the European Union enterprises at European Union aggregate level are confidential for several countries including Australia, Canada, India, New Zealand and Singapore. Sales figures of FATS in 2021 and 2022 were suppressed in about 30 per cent (inward) and 26 per cent (outward) of cases, respectively. Viewed through a sector lens, the preponderance of suppressions for inward FATS is largest in the construction sector (41 per cent); for outward FATS, wholesale and retail see 37 per cent of observations suppressed. Against that backdrop, the patterns of Mode 3 described above should be construed as broad conclusions.

Data coverage for induvial developing countries appears relatively limited, with data from 2021 onwards available for 23 non-European Union countries (inward FATS) or 38 non-European Union countries (outward FATS). In order to extend the geographic coverage of the data to include the sixteen non-European Union OECD members such as Japan, Türkiye, and the United States, the Eurostat FATS data could potentially be combined with similar datasets produced by the OECD such as the Activity of Multinational Enterprises (AMNE) database or the Multinational enterprises and global value chains dataset. However, outside of Eurostat countries, the data are compiled on the basis of the reporting country's survey frameworks; as such, information may not necessarily be comparable.

3. A country case study: United States Bureau of Economic Analysis services supplied through affiliates

The United States Bureau of Economic Analysis (BEA) maintains a Database on International Services, which contains inter alia information on services supplied through affiliates.[39] Although this dataset is not maintained by an international organization as most other datasets included in this Primer, but instead by one national statistical authority, the centrality of the United States in global investment flows – being one of the largest investors abroad and simultaneously one of the largest recipients of investment – means that the BEA dataset de facto covers a substantial part of global investment and, by extension, also Mode 3 services trade.[40]

BEA's services supplied through affiliates statistics are organized into two sets: Services supplied to foreign persons by United States

At a glance

United States BEA services supplied through affiliates	
Geographic scope	Global
Service classification	NAICS
Sectoral detail	16 items and sub-items
Time series	1986–2022, with series breaks
Partner detail	Bilateral
Update frequency	Annual (October)
Release date	8 October 2024
Access	BEA International Data

[39] The information on United States trade flows via Modes 1, 2, and 4 that is also available from this database are incorporated into the UNCTAD-WTO TIS dataset (Chapter II.A.1).

[40] BEA's statistics on services supplied to foreign persons by United States MNEs through their majority-owned foreign affiliates have a primary focus on services supplied to all foreign markets, which is broader than mode 3 trade. However, certain tables published by BEA do include a breakdown that focuses only on services supplied to the local market.

MNEs through their majority-owned foreign affiliates (MOFAS), which covers outward foreign direct investment (FDI), and services supplied to persons from the United States by foreign MNEs through their majority-owned United States affiliates (MOUSAs), which covers inward FDI. Coverage of BEA's services supplied through affiliates statistics begins in 1986. Bilateral detail is available beginning in 2004 for 43 host economies (32 individual economies and 11 aggregates) and 44 economies of ultimate beneficial owner (UBO) (33 individual economies and 11 aggregates), expanding by 2014 to 102 host economies (81 individual economies and 21 aggregates) and 103 economies of UBO (82 individual economies and 21 aggregates). Bilateral data are cross-classified by nine main sectors, with the manufacturing sector being further broken out into seven subcategories (BEA Metadata).

The largest sector for foreign affiliates of United States MNEs supplying services abroad is the information sector, which in the United States classification includes audiovisual, telecommunications, and ICT, with average global services supplied of US$518 billion in 2022. The largest sector for foreign-owned United States affiliates supplying services to the local market is "other industries," which includes the subsectors transportation and warehousing and administration, support, and waste management, totalling US$351 billion in 2022. The largest market for services supplied to foreign markets through foreign affiliates is the United Kingdom; the top country of UBO from which foreign MNEs supplied services to persons from the United States through their United States affiliates in 2022 was Germany.

Insofar as the largest destination markets and countries of UBO for United States multinationals tend to be advanced economies, the corresponding bilateral FATS information could potentially also have been retrieved from Eurostat FATS or OECD AMNE. Yet the comprehensive geographical coverage of the BEA dataset allows for analyses of services supplied in certain developing or emerging economies that are not reporters in any multi-country FATS dataset.

Annotations. By virtue of being a major origin and destination of multinational enterprise activity throughout the world, the United States BEA dataset is uniquely positioned as a source of information on global trends in Mode 3 services trade flows, including for economies that do not themselves directly report inward FATS. Some of this information may be captured in TISMOS (Wettstein et al. 2019), although that dataset does not have a trading partner dimension and Mode 3 flows are mostly estimated. By contrast, the BEA dataset represents official statistics with a bilateral dimension, thereby offering more granular information with the quality assurance that comes with official statistics. It is, however, naturally limited in coverage to the activities of United States multinational enterprises.

An interesting and unique feature of the BEA data on services supplied to foreign persons by United States MNEs through their MOFAs is that from 2009 onwards the data not only distinguish services supplied by United States multinationals by country and sector but further classify whether the services are supplied to the host country or to other foreign countries. BEA FATS are thus sufficiently granular so as to measure only services supplied via Mode 3, which are limited to services supplied within the host country's local market (Mann, 2019). In a separate database, BEA also publishes statistics on services supplied by foreign affiliates to the United States market. Sales of services are collected for affiliates in all sectors, including those classified as belonging to non-service sectors. For example, over 3 per cent of the total services supplied by United States MNEs to foreigners through their MOFAs were supplied by affiliates in the mining and manufacturing sectors in 2022. BEA's statistics on services supplied also do not include non-services (chiefly, goods) supplied by enterprises classified as belonging to a service sector.

C. Services trade datasets from other sources

There are additional data compilation efforts from agencies and institutions such as academia or think tanks that offer valuable information on trade in services.

1. International Trade and Production Database

Most trade datasets are confined to specific parts of economic activity, e.g. services, and moreover do not usually include intra-national trade flows. To facilitate analyses that potentially relate services trade flows alongside trade from other broad sectors, including structural gravity model applications, The International Trade and Production Database for Estimation (ITPD-E) aims at (i) offering a database with consistently constructed international and domestic trade flows based on official statistics and some raw data; (ii) offering detailed industry level information; (iii) offering global country coverage and long-time-series; and (iv) including trade flows comprehensively across all broad sectors, i.e. full economy coverage.

Accordingly, the inaugural release covered 243 economies, 170 industries, and 17 years (2000–2016). The current, third release as of June 2025 is again substantially improved in terms of years and economies, so that ITPD-E R03 now offers bilateral trade flow data for the period 2000–2022 for 264 economies and 170 sectors (in ITPD-E called "industries") across Agriculture, Mining and Energy, Manufacturing, and Services.[41] The total of 83.5 million observations in the current release represents a substantial body of granular information.[42] Although ITPD-E is not itself an official services trade statistics source, even though it is built from official data, it is arguably the most comprehensive dataset that is currently freely available. The ITPD-E data and documentation can be downloaded from the United States International Trade Commission's (USITC) Gravity Portal.

In constructing international services trade flows for ITPD-E-R03, information from the UNCTAD-WTO TiS database (chapter II.A.1) is used, augmented with services trade statistics as incorporated into Comtrade for pre-BPM6 data, using export flows in each case. To take full advantage of all reported international trade data, a mirroring procedure is applied whereby reported services import flows are used to potentially fill in missing export values. Trade flows derived from mirroring are marked with a flag variable so that they could be discarded if users so wished.

Domestic (intra-national) trade flows are calculated as the difference between the gross value of production and total exports, whereby total exports are the sum of all bilateral trade for each exporting economy. Any negative domestic trade values thus derived are not included in the published dataset. Information on gross output at basic prices is taken from the United Nations System of National Accounts (SNA) dataset, namely "Table 2.6. Output, gross value added and fixed assets by industries at current prices (ISIC Rev.4)."

At a glance

ITPD-E	
Geographic scope	Global
Service classification	ITPD-E Industries (ISIC)
Sectoral detail	170 industries
Time series	2000–2022 (Services trade part)
Partner detail	Bilateral
Update frequency	Irregular (Release R03)
Release date	June 2025
Access	USITC Gravity Portal

[41] For Agriculture, Manufacturing, and Mining/Energy the time series are extended backwards to 1986 and 1988, respectively. However, the extension to earlier years prior to 2000 is not applicable to services, which in all releases of ITPD-E commence as from the year 2000.

[42] The overwhelming majority of the 83.5 million observations pertains to sectors outside services such as Agriculture and Manufacturing; that said, the ITPD-E dataset is particularly suited, inter alia, for empirical work that jointly involves goods and services trade flows.

The ITPD-E is balanced across the exporter, importer, industry and time dimension by filling all remaining missing observations with zeros. Services trade flows that are reported to be zero in the contributing official statistics are again identifiable through a flag variable, to distinguish such "true" zeroes from the ones derived from balancing the dataset. Services trade flows in ITPD-E, originally reported in EBOPS 2010, are concorded to an industry classification so that an economy's trade performances in services can be juxtaposed to trade in other broad sectors such as manufacturing or agriculture. The EBOPS–ISIC–ITPD Concordance for the 17 services "industries" contained in ITPD-E is provided in Borchert et al. (2022, table 8), and reproduced in Annex table 5.

Annotations. Some aspects of the analysis or quantification of trade policies require consistent information on both international and domestic trade flows. Whereas a few databases exist that contain such joint information, they have significant gaps in dimensions such as sectoral coverage, e.g. limited to manufacturing, limited country coverage, absence of recent updates, or use of estimated data in place of reported official data. A key feature of the ITPD-E is that it is constructed using reported official data and intentionally does not include information estimated by statistical techniques. Therefore, it is well suited to be used for theory-consistent disaggregated gravity estimations with international and domestic trade flows.

At the same time, ITPD-E is not suitable for certain other policy work such as ex ante simulations of trade policy interventions using such tools as computable general equilibrium (CGE) models or so-called new quantitative trade models. The data needs of such quantitative trade policy analysis are demanding as they require, inter alia, a complete and balanced trade matrix. ITPD-E cannot be employed as it is highly unbalanced due to missing observations, but a companion dataset that fits the specifications has been developed.

The International Trade and Production Database for Simulation (ITPD-S) addresses the needs of simulation analyses. Its data has the same level of detail as the ITPD-E, but with missing domestic trade observations filled in. This is done in steps relying on theory and ensuring internal consistency. Hence, in combination, ITPD-E and ITPD-S represent two mutually consistent databases for estimation and simulation, respectively.[43] ITPD-S is also available for download from the USITC's Gravity Portal.

D. Services trade data for analytical purposes

1. Usage and interpretability

Datasets are produced for specific reasons, typically to fill data gaps that are not reported by official statistics. For instance, the OECD-WTO Balanced Trade in Services (BaTIS) dataset (chapter II.D.2) aspires to present a complete balanced services trade matrix when official trade in services data offer only an incomplete picture, at least against the backdrop of every combination of possible exporting and importing economies and products. Yet there is legitimate interest in a balanced trade dataset, e.g. for modelling or policy formulating reasons. A similar situation prevails for services trade broken out by modes of supply, which is of great interest to policy makers and analysts alike, but which official statistics often do not provide; hence, the WTO Trade in Services by Mode of Supply (TISMOS) dataset (chapter II.D.3) sets out to construct such a dataset with global coverage.

The construction of data that goes beyond official statistics is valuable but invariably requires making assumptions. For example, assumptions of proportionality are widely applied in inter-country-input-output (ICIO) tables that underpin trade in value added

[43] The current ITPD-S Release 1.1 contains 292.4 million observations, most of which are from official data sources while others are estimated using a variety of methods described in its technical documentation, which is available from the USITC Gravity Portal.

data (chapter II.E), e.g. national import tables matrices may be filled by assuming the same import penetration ratio across using industries and final demand sectors (Yamano et al., 2023). The construction of trade flows by mode of supply in TISMOS uses assumptions regarding the shares by which services trade in each product is allocated to modes of supply, and specifically that such shares do not vary over time or across countries.

Against that backdrop, a key limitation on the interpretability of constructed data is that one cannot use such data to answer questions that are related to the assumptions that went into constructing the data in the first place. The result of any such analysis would predictably merely "re-discover" the assumption(s) employed to create the data. For example, for economies with no FATS data, TISMOS uses a gravity model for foreign affiliates' local sales to econometrically estimate the relationship between FATS to observable variables such as distance, contiguity, or language to explain the variation of foreign affiliate sales across economies (Wettstein et al., 2019, p.23).[44] This is a standard modelling approach that few analysts would take issue with; however, caution is needed when such constructed data is to be employed in analyses of how sensitive Mode 3 trade is with respect to geographic distance, or by how much a common language facilitates Mode 3 trade. The result of doing so would reflect, for the most part, merely the coefficients on distance and common language that were used in the gravity model to construct the data.

In conclusion, constructed datasets serve legitimate purposes and as global public goods they offer enormous potential for delivering insights in relation to services trade and economic development. It is incumbent on users to be cognizant of the main assumptions that were an integral part of constructing datasets, and to ensure appropriate usage of the data that avoids circular results. These pros and cons of constructed datasets are the reason why they are discussed separately from official statistics in this Primer.

2. OECD-WTO Balanced Trade in Services

The OECD-WTO Balanced Trade in Services (BaTIS) dataset, experimental in nature, is an effort to respond to the demand for more detailed and complete services trade flow information. By design, datasets that present official trade flow statistics with minimal or no augmentations are necessarily incomplete, which reflects gaps in data collection and/or reporting across several dimensions (chapter II.A). Such unbalanced, reported data are suitable for some purposes but not for others; for instance, analyses with computable general equilibrium models ordinarily require complete, balanced data.

BaTIS consists of a complete and consistent matrix of bilateral trade in services flows that is constructed from available reported data, which are then supplemented with adjustments and model-based estimations. The dataset encompasses the 12 main EBOPS 2010 items and 14 of its subcategories, covering about 200 unique economies for the period 2005–2023.[45] There are no regular scheduled updates although

At a glance

OECD-WTO BaTIS	
Geographic scope	Global
Service classification	EBOPS 2010
Sectoral detail	26 items across levels 1–4
Time series	2005–2023
Partner detail	Bilateral
Update frequency	Irregular
Release date	17 February 2025
Access	OECD Data Explorer

[44] The estimated values of FATS derived from predictions based upon this model are flagged in the TiSMoS data with a certain code so that they are identifiable.

[45] The number of unique economies varies over time but has surpassed 200 since 2011. The current release (February 2025) contains 95.8 million unfiltered data points.

the BaTIS release of February 2025 is its fourth edition.[46] Bulk download is available from both the OECD website (BaTIS) and the WTO website (BaTIS).

The construction of the complete trade matrix in BaTIS follows three principal steps. Firstly, BaTIS draws on reported statistics for trade in services (the UNCTAD-WTO TiS dataset, chapter II.A.1), both bilateral flows and reported World totals, and applies minor cleaning procedures, including a resolution of hierarchically inconsistent values as discussed in chapter II.A.1. Secondly, gaps are filled by estimating missing trade values with a variety of methods, in a sequence that applies the most straightforward and uncontroversial approaches such as derivations using parent-child relationships first and, for missing values that cannot thus be filled, proceeds to alternative approaches that require stronger assumptions such as estimation and projection.[47] Thirdly, adjustments are made to ensure the dataset's internal consistency. The final steps include benchmarking with BOP totals and finally, balancing of import and export flows, respectively.

The four different classes of data in BaTIS, and the associated percentage shares of observations, are shown in table 3. Overall, at the top-tier level of EBOPS only 4 per cent of observations are reported in the current version of BaTIS (February 2025) whereas 96 per cent are estimated in one form or another. Underneath the four principal approaches, there are 23 different methods used for the data filling exercise, which are documented in OECD (2025). In particular, more than two-thirds of the observations across the 12 main EBOPS categories are obtained from estimates of gravity models, of which there are nine different specifications depending on available reported data. These gravity-derived estimates account for 31 per cent of the value of trade in BaTIS.

In value terms, the 3 per cent of observations containing reported data account for 49 per cent of the value of trade. If one plotted the share of gravity-imputed observations against the share of the value from these gravity-imputed observations at the level of main EBOPS categories (figure 4), most dots lie below the 45-degree line, indicating that value shares are smaller than count shares. This pattern may attenuate concerns about the high share of estimated data points in BaTIS.

That said, the share of gravity-derived data points varies considerably across service sector, ranging from 36 per cent in Manufacturing services on physical inputs owned by others to nearly 90 per cent in Transport and Travel services, respectively (figure 5). Nonetheless, these shares are not proportionate to the "missing" value shares

Table 3.

Distribution of BaTIS data sources by method, 12 main service categories

(Percentage)

Approach code	Description	Share in BaTIS
R	Reported by national/regional statistics authorities	3.9
E	Estimation and simple derivations	6.4
W	Derivations from reported trade with partner world being zero	21.1
M	Estimates from gravity model	68.7

Source: OECD-WTO BaTIS and own calculations.

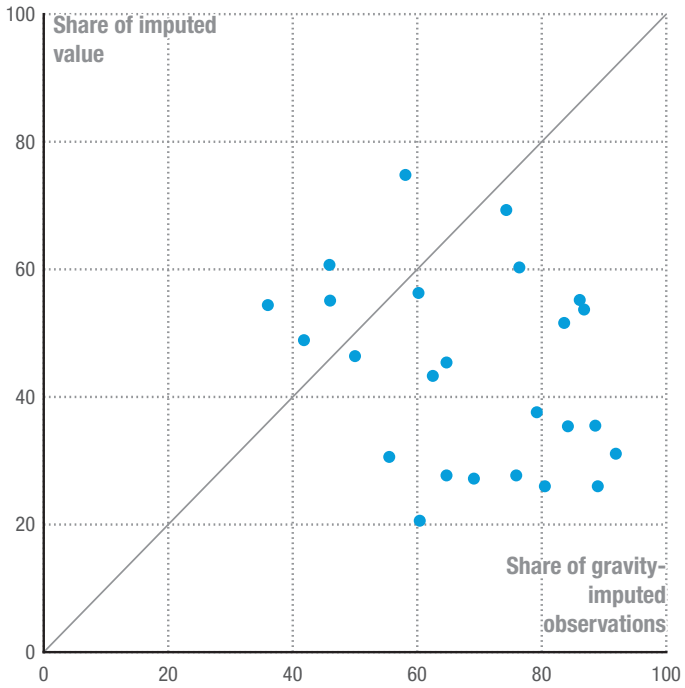
[46] The first edition of BaTIS followed BPM5 and included annual data from 1995 to 2012, covering 191 economies and the 11 main service categories, in line with EBOPS 2002. The second edition of BaTIS, now based on BPM6, provided annual data from 2005 to 2019, covering 202 economies and the 12 main EBOPS 2010 service categories, whereas the third edition of BaTIS was an update of the second edition, covering the 2005–2021 period.

[47] Index weighted averages were used to reconcile asymmetries between reported and mirrored flows, following the approach for bilateral merchandise trade statistics (OECD 2025).

Figure 4.

Share of gravity-imputed observations against the share of gravity-imputed values, 2005 to 2023

(Average)



Source: OECD-WTO BaTIS dataset, own calculations. Each dot represents an EBOPS category at the first or second level, and trade for these items is averaged across economies and years 2005–2023.

in trade flows. In Travel, for instance, nearly 90 per cent of the observations come from gravity estimations but the share of estimated trade values is only 40 per cent, since 60 per cent of trade values in this sector come from reported data (figure 6).

Annotations. A comparison of global services trade figures in BaTIS and the UNCTAD-WTO TiS dataset, which encompasses reported data only, suggests that about 70 per cent of trade values in BaTIS correspond to values found in official statistics.[48] Whereas this may appear as a relatively high share at first glance, recall that reporting in UNCTAD-WTO TiS is "biased" towards high-income economies (chapter II.A.1). This implies that the additional information gain offered by BaTIS benefits disproportionately some world regions, namely those with predominantly lower income economies. Using trade in financial services in 2019 as an example, comparing import records across BaTIS and UNCTAD-WTO TiS shows blind spots in reported data – mainly in Africa and Central Asia but also in Latin America – that BaTIS would supplement.

Moreover, while the difference between reported and balanced values in BaTIS is minimal at world level, it can be quite substantial for individual economies. It appears that some countries systematically under- or over-report their trade in services compared with what their partners declare, resulting in significant differences between the sum of the balanced trade figures and the original reported totals.

As is evident from table 3, more than 68 per cent of observations are supplemented using some variant of gravity model estimation. This implies that BaTIS is not a suitable data basis for inference with gravity-based analyses, as

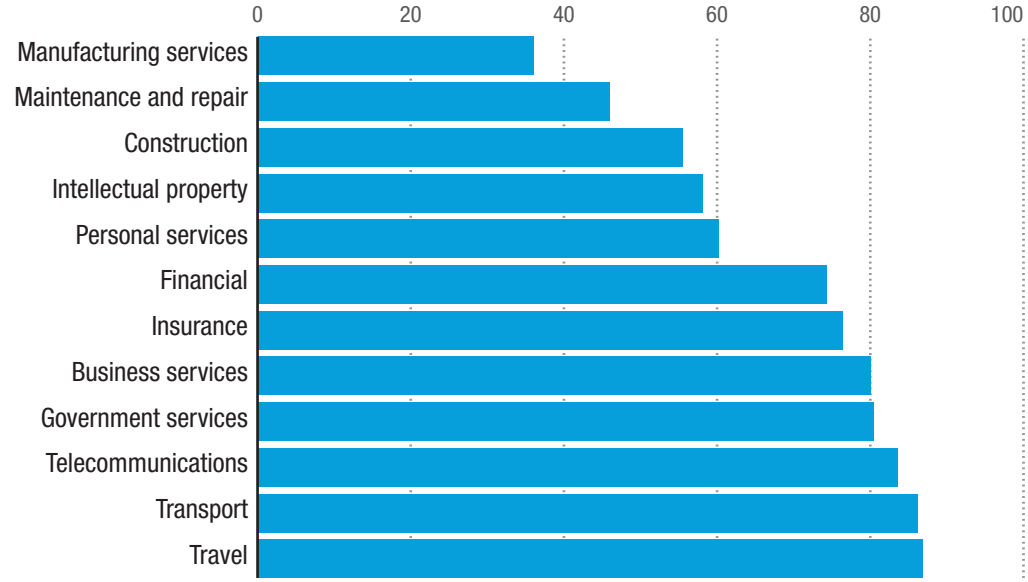
[48] The difference in country coverage of BaTIS (about 200 economies) and UNCTAD-WTO TiS (about 234 economies) is mainly accounted for by crown dependencies and external territories that are not included in BaTIS, which also does not cover some micro economies such as Andorra and Liechtenstein.

this would run the potential risk of spurious results that are not actually insights revealed by the data but merely represent the parameters that went into the construction of BaTIS in the first instance.[49]

Figure 5.

Share of gravity-imputed observations in BaTIS, by main service categories, 2005–2023

(Percentage of observations)

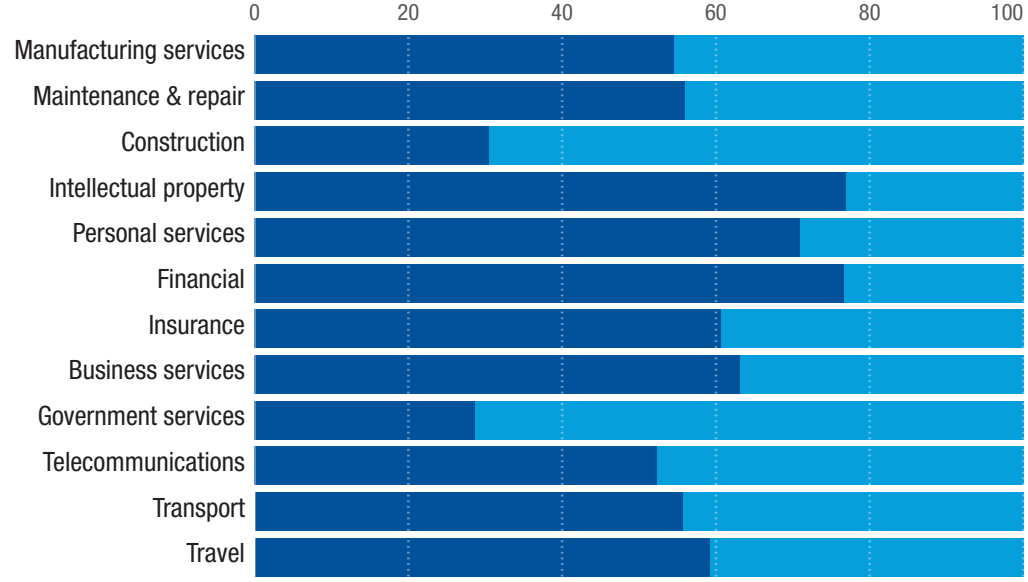


Source: OECD-WTO BaTIS dataset, own calculations.

Figure 6.

Share of reported export value to BaTIS final value estimates, 2022

(Percentage of export value)



Source: OECD-WTO BaTIS dataset, own calculations.

[49] However, the following nuances should be noted. The models are very parsimonious (no policy variables). Model predictions are benchmarked to BOP totals (the estimates are partner shares not values). Validity of gravity-based analysis can be checked for robustness using flags in the data (e.g. compare results with and without model-based estimates).

3. WTO trade in services by mode of supply

Official trade in services statistics on a balance of payments (BOP) basis are compiled on the precept of the GATS Modes of Supply 1, 2, and 4 but the data itself is not broken down by these modes. Instead, trade statistics are presented by partner, by EBOPS category, and time period. The Trade in Services by Mode of Supply (TISMOS) dataset, developed by the World Trade Organization (WTO), is the first attempt to construct bilateral and disaggregated services trade flows separately by mode of supply, with global coverage and including Mode 3, which is not part of balance of payments statistics. The joint presentation of trade flows across all four modes is a significant step forward for users of such data; at the same time, it also presents challenges of its own kind (discussed in more detail below). TISMOS data are available from the interactive WTO's TISMOS website, including bulk download.

The flows contained in TISMOS are constructed by a set of methodologies. The first principal step[50] is to take existing statistics on a balance of payments basis and FATS as a starting point and allocate the values therein to modes of supply, using the default shares recommended in the MSITS 2010 simplified allocation table for estimating 4 modes. TISMOS uses the UNCTAD-WTO TiS dataset (chapter II.A.1) as a starting point for the measurement of transactions between residents and non-residents. According to the MSITS allocation table, each type of service is allocated to one dominant mode or, where there is no single dominant mode, allocation shares are applied. For instance, three quarters of the value of reported bilateral computer services (i.e. 75 per cent) are allocated to Mode 1 and the remaining 25 per cent to Mode 4.[51] These modal shares are assumed to be characteristics of individual service activities.

At a glance

WTO TISMOS	
Geographic scope	Global
Service classification	EBOPS 2010
Sectoral detail	55 items across levels 1–4
Time series	2005–2022
Partner detail	World
Update frequency	Not known
Release date	April 2024
Access	WTO TISMOS website

The second step is the replenishment of missing data points through a variety of methods, including imputation or the prediction of trade flows using gravity models for economies that do not report official trade statistics at the required level of disaggregation.

Mode 3 is approximated by FATS which captures the activities of foreign-controlled entities in host (inward FATS) or home (outward FATS) economies in terms of output, sales, and sometimes employment. FATS classifies these businesses and their output by primary activity, not service products. Hence, the value of services trade via commercial presence, as inferred, is not directly comparable to EBOPS and needs to be concorded.[52] The paucity of reported data is even more pronounced for FATS compared to the BOP part of TISMOS.

[50] Apart from the allocation of trade values to modes, this complex exercise involves many additional adjustments and correction to ensure cross-country comparability and/or to take into account sector-specific circumstances in sectors such as travel, construction, or distribution services.

[51] Another significant modification consists of replacing the default shares from MSITS used to allocate trade values with country-specific shares as and when such information has been provided by national statistical authorities ("enhanced simplified approach"). For instance, for trade of the United States in computer services 80 per cent are allocated to Mode 1 and 20 per cent to Mode 4, whereas the modal shares are 95 per cent (Mode 1) and 5 per cent (Mode 4) in the case of Finland.

[52] Several other adjustments are made to FATS within TISMOS, including to the wholesale/retail and financial intermediation sectors because of the nature of their services, and to separate output of foreign affiliates sold locally from their exports. Only the former is relevant for FATS whereas exports of foreign affiliates are considered as mode 1 supply of the host economy to third economies.

The estimates of Mode 3 trade are attributed to only selected (higher-level) EBOPS items and not exhaustively to all EBOPS codes in TISMOS.

Although the data in TISMOS are presented mostly along standard EBOPS 2010 items, across all four modes, there are slight variations in EBOPS items (non-standard codes) that are important to keep in mind when using these data, and when comparing trade values in TISMOS to other datasets. The two principal differences are the introduction of some new groupings – for example, "SDA business travel" and "SDB3 other personal travel" are combined and labelled "Tourism and business travel" under new code SDASDB3 – and the separate listing of "Trade margins of wholesalers and retailers" (i.e. distribution) under code SW. The value of trade margins by distributors under Mode 1 are worth US$905 billion of total exports and 962 billion of imports in 2022, according to TISMOS. Total services exports and imports are presented under code SOXSW.[53]

Annotations. The TISMOS dataset represents an ambitious project aimed at filling a critical gap in international statistics, which is to provide services trade data along the very dimensions – the four GATS modes of supply – that have been used in negotiations and trade policy making in services for decades. When using TISMOS, certain considerations need to be kept in mind:

- For a given EBOPS item across countries, trade values could potentially arise from a mix of default modal shares and country-specific shares, which implies that modal flows may arise from differences in allocation shares or from higher trade flows or a combination thereof.
- A large share of observations in TISMOS is estimated, through imputation or analytical methods, especially for Mode 3.[54]
- Balance of payments data are organized according to a product classification (EBOPS) whereas FATS are organized according to an industry classification (ISIC). Hence, the different classifications need to be bridged using an EBOPS-ISIC concordance table that is used to join the two constituent datasets.

Relatedly, commercial presence in TISMOS is measured for enterprises classified in services based on their primary activity, although services are not only supplied by services firms but also by manufacturing firms (and vice versa). As such the dataset may underestimate services trade via Mode 3 to the extent that local sales of services by businesses with an industry code in manufacturing are not captured.

The following further sources exist on trade in services by mode of supply:

- Around 2021, the OECD launched a project that aims at extending their Trade in Value Added (TiVA) dataset to flows being broken out by mode of supply. This project is nearing completion but at the time of writing, the data – intended to be freely and publicly available – had not yet been published.
- Alongside such initiatives by international organizations, statistical authorities in individual economies have undertaken to compile national trade in services by mode of supply. For instance, a dataset "China Trade in Services by Mode of Supply" (C-TiSMoS) was developed by Zhang et al. (2024), which explored the solutions to the problem of aggregating data on the four modes of trade in services from a single country. The dataset re-evaluated

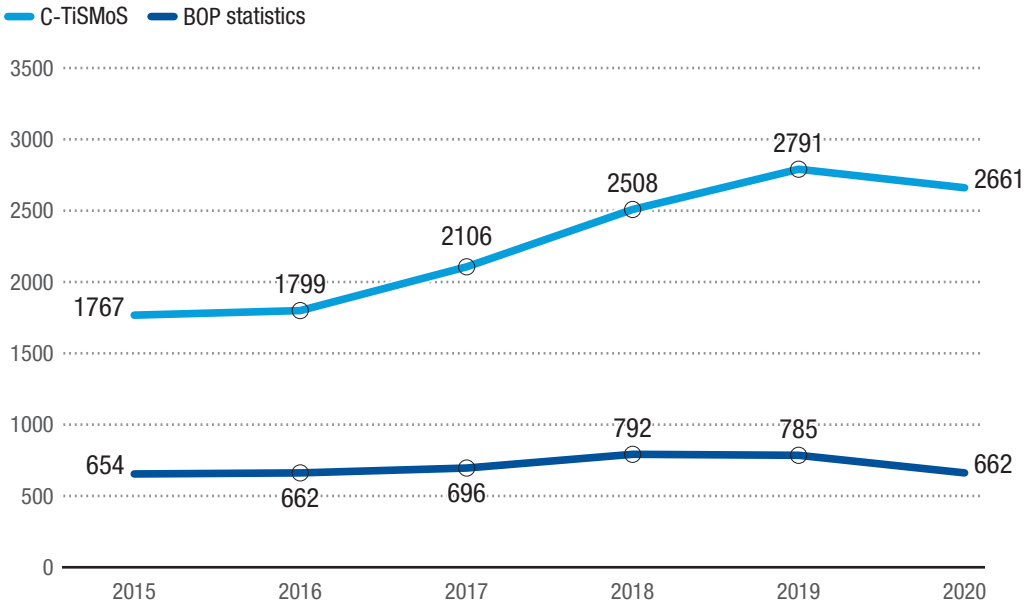
[53] Non-standard EBOPS codes used in TISMOS, and their description, are: Tourism and business travel under SDASDB3; Health services under SDB1SK21; Education services under SDB2SK22; Insurance and financial services under SFSG; Telecommunications, computer, information and audiovisual services under SISK1; Other business services (excluding trade-related) under SJXSJ34; Trade-related services (Distribution) under SWSJ34; Trade margins of wholesalers and retailers under SW; and Total Services under SOXSW.

[54] A confounding factor for Mode 3 is the fact that bilateral investment flows are less frequent that bilateral trade flows. Indeed, within the original FATS data, the share of reported zeros is about 68 per cent.

Figure 7.

China's total imports and exports of services calculated under the C-TiSMoS and balance of payments

(Billion US$)



Source: Zhang et al. (2024).

China's trade in services that could complement its balance of payments (BOP) statistics. Under the C-TiSMoS statistics, the scale of China's trade in services has significantly increased, and with a larger trade deficit (UNCTAD 2025, p.35) as shown in figure 7. The United Kingdom has also produced experimental estimates of bilateral trade in services data, separately for Modes 1, 2, and 4 (Office for National Statistics 2024). The latest release, as of 1 November 2024, contains data for years 2021 and 2022, excluding information on Mode 3 though.

4. UNCTAD dataset on trade in digitally deliverable services

As set out in chapter I.A, digitally deliverable services comprise those that can be delivered remotely over computer networks. One approach to measuring such flows is to designate relevant EBOPS items as digitally deliverable, while noting that this does not mean that such services are always digitally delivered when traded internationally.

The UNCTAD dataset on digitally deliverable trade consists of a specified subset of EBOPS items, which are sourced from the UNCTAD-WTO TiS dataset (chapter II.A.1).[55] The dataset has global coverage in terms of individual economies, plus a large number of aggregate entities including continental groupings such as "Africa" or "Central Asia", thematic groupings such as "BRICS", "OECD" or "G-77 (Group of 77)", income-related groupings such as "Low-income developing economies", and "World" as a reporter. Sectoral trade flows are not bilateral, though, i.e. they reflect the reporting entities' exports or imports to/from the World.

When information on a specific combination of reporter-sector-year-flow is missing from the UNCTAD-WTO TiS dataset, missing values are filled in a second step through a

[55] The following EBOPS items are included: Insurance and pension services; Financial services; Charges for the use of intellectual property n.i.e.; Telecommunications, computer and information services; Research and development services; Professional and management consulting services; Architectural, engineering, scientific and other technical services; Trade-related services; Other business services n.i.e.; Audio-visual and related services; Health services and education services; and Heritage and recreational services.

At a glance

UNCTAD trade in digitally deliverable services	
Geographic scope	Global
Service classification	EBOPS 2010
Sectoral detail	15 items
Time series	2010–2023
Partner detail	World
Update frequency	Annual (last updated 30 September 2024)
Release date	30 September 2024
Access	UNCTADstat Data Center

variety of statistical methods. Missing values are estimated either using interpolation or extrapolation from values for other years within the same economy or, when this approach cannot be applied, are imputed from cross-country inference by grouping economies into eight clusters and, for each cluster, applying growth rates of each digitally deliverable service product category to estimate missing values for individual economies in the cluster. The estimates resulting from this process are published but should be viewed as analytical.

In this dataset, the following EBOPS services items are well covered in the underpinning UNCTAD-WTO TiS dataset: Insurance and pension services; financial services; charges for the use of intellectual property n.i.e.; telecommunications, computer and information services; audiovisual and related services; research and development services; other business services; and personal cultural and recreational services. In contrast, the following services categories have limited coverage in the base dataset: professional and management consulting services; architectural, engineering, scientific and other technical services; trade-related services; other business services n.i.e.; health services and education services; and heritage and recreational services. The estimates for the items with limited coverage are also computed and included in regional and global aggregates but are not published separately.

Annotations. The consolidation of existing balance of payments statistics from the viewpoint of digital delivery greatly facilitates evidence-based analyses in this important area, in a comparative manner across economies as well as over time. It is readily acknowledged that some digitally deliverable EBOPS categories are more reliably reported than others, which is in part due to relevant items being found at different levels of disaggregation and reporting is generally better for top-tier items compared to subitems or memo items.

That said, there are two additional measurement challenges that are specific to digitally deliverable services trade: the first concerns digital intermediation services provided by digital intermediation platforms (DIPs). Under the current BPM6 approach, these are conceptually to be reported as part of EBOPS subitem "SJ34" (trade-related services, cf. Table 4.1 in "Handbook on Measuring Digital Trade"). However, in practice, digital intermediation services may not be accurately accounted for in most countries. Second, digitally deliverable services consumed abroad (Mode 2 services supply) should also be included in principle; however, and in accordance with the international standards for services trade statistics, these services are in practice recorded within the EBOPS category "travel" and are not separated out in the (extended) EBOPS classification.

5. WTO dataset on digitally delivered services

Dedicated surveys that would inquire about digitally delivered services, as opposed to digitally deliverable services, are still not widely deployed (although Box 3 provides an example). Hence, there is a dearth of data on digitally delivered services trade that would complement digitally deliverable services figures which conceptually act as an upper bound. Yet, the rising salience of digital trade and its services component underscores the importance of being able to gauge the extent of digitally delivered services trade. Thus, the WTO offers a dataset of "digitally delivered

services trade" that contains estimates of the value of exports and imports, disaggregated by country and subsector, that are traded through computer networks such as the Internet, apps, emails, voice and video calls, and digital intermediation platforms.

This dataset covers 201 economies, seven geographical aggregates, and the World as a reporting unit. The value of digitally delivered trade flows pertains to "Mode 1" supply, i.e. "cross-border services trade" of services products that are digitally deliverable (as set out above). The partner entity is always World, i.e. trade flows are not bilateral. Sectoral coverage extends to eight EBOPS 2010 categories.[56]

The starting point for estimating digitally delivered exports and imports of services in this WTO dataset is the expanded list of digitally deliverable services set out in the IMF-OECD-UNCTAD-WTO Handbook on Measuring Digital Trade. Using these EBOPS categories, the dataset draws primarily on two sets of information. The first are the various surveys on international trade in services conducted at the national level.[57] Second, in the absence of data from official and survey sources, gaps are filled through expert judgments on digitalization levels across industries that are amenable to cross border delivery (Mode 1).[58] Circumstances arguably differ widely across economies; for example, collaborations between UNCTAD and some Member States reveal that in Costa Rica and Thailand a high share of exports of digitally deliverable services was actually delivered through digital means, whereas in India, 20 per cent of digitally deliverable services were delivered non-digitally (UNCTAD 2017). In cases in which updated country-level information is unavailable, estimates rely either on information from countries with similar characteristics (with a similar level of digitalization) or on the recommended default allocation of trade flow values of digitally deliverable services categories (in EBOPS 2010) to modes of supply, as per the Eurostat-WTO model. Only the Mode 1 share is then retained, and only for services products that are digitally deliverable, as the value of digitally delivered services, cf. Handbook on Measuring Digital Trade, table D.1, p.153.

Annotations. Compared to the UNCTAD digitally deliverable services dataset (chapter II.D.4), the breakdown in this database is more aggregated: 8 subsectors as opposed to 13 subsectors in the UNCTAD case. Sectoral coverage between the two datasets exactly overlaps for only three subsectors: Insurance; Finance; and Intellectual property, respectively. The two

At a glance

WTO digitally delivered services	
Geographic scope	Global
Service classification	EBOPS 2010
Sectoral detail	8 items (plus Total)
Time series	2005–2024
Partner detail	World
Update frequency	Annual (Release April 2025)
Release date	April 2025 (updated in July 2025)
Access	WTO DDS website

[56] The eight EBOPS categories covered are: Insurance and pension services (SF), Financial services (SG), Charges for the use of intellectual property n.i.e. (SH), Telecommunications services (SI1), Computer services (SI2), Information services (SI3), Other business services (SJ), Personal, cultural, and recreational services (SK), and Total digitally delivered services (DDS).

[57] The information therein can be augmented in various ways; for instance, (i) by supplementary survey questions about export and import of services through digital means (e.g. in Canada, United Kingdom, or the United States); (ii) through the International Transaction Reporting System as an additional source of information for large enterprises predominantly delivering services through digital means (e.g. the Central Bank of Brazil); (iii) by administrative data from the imposition of VAT on non-resident digital services providers (e.g. Argentina); or (iv) household surveys that report expenditure on digitally purchased and consumed services and travel surveys, see World Trade Organization (2023). Clearly, the availability of any such supplementary sources of information differs across countries, as does the survey designs and implementation methods.

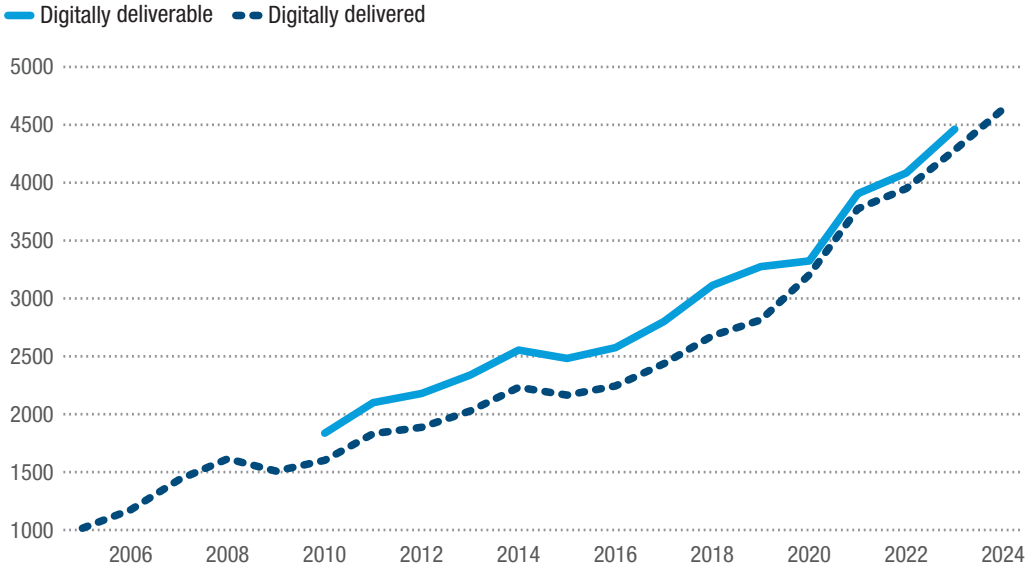
[58] It is important to note that, in the WTO estimates set, these "expert judgements" form a one size fits all model. i.e. in the absence of better information (with absence being the most common case across countries) the same shares (based on the Eurostat-WTO model) are applied to all countries.

datasets nonetheless follow an internally consistent EBOPS 2010-based definition of digitally deliverable services and are therefore amenable to comparison. Figures 8 and 9 compares the total value of digitally deliverable services (UNCTAD) with that of estimated digitally delivered services (WTO). Not only are the total values for exports and imports across both datasets very similar but the gap appears to have further narrowed appreciably after the COVID-19 pandemic.

Figure 8.

Comparison of total exports of digitally deliverable versus digitally delivered services in UNCTAD and WTO databases, 2005–2024

(Billion US$)

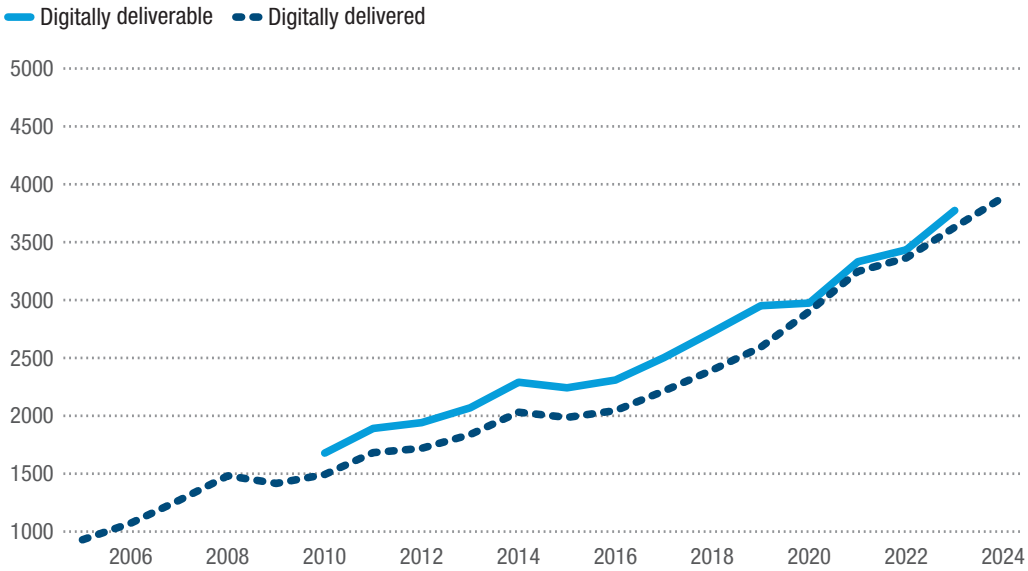


Source: UNCTAD Trade in Digitally-deliverable services (2024); WTO Digitally Delivered Services Trade Dataset (World Trade Organization 2025).

Figure 9.

Comparison of total imports of digitally deliverable versus digitally delivered services in UNCTAD and WTO databases, 2005–2024

(Billion US$)



Source: Idem.

Box 3.

Measuring digitally delivered services in Costa Rica

Costa Rica was among the first countries to leverage the assistance offered by UNCTAD to set up a data collection and compile statistics on services that were actually delivered remotely over ICT networks (i.e., ICT enabled). In 2021, Costa Rica carried out the sixth annual measurement of these remotely channelled service transactions.The survey targeted 220 enterprises exporting services included on the list of "potentially ICT enabled services" developed by the UNCTAD led Task Group on Measuring Trade in ICT Services and ICT enabled Services (TGServ) (UNCTAD, 2015). The survey received 171 responses, of which 119 reported exporting services that were delivered digitally.

The results were "grossed up" to represent the entire population of firms exporting these services (digitally or not) – a total of 1,391 firms – using selected economic variables of the Central Bank of Costa Rica and other administrative records, including enterprise size, different trading regimes (i.e., special regime or free trade zone and final regime) and industry.

The results show that 90 per cent of those firms digitally delivered services internationally in 2021. Of all exports of the targeted services, 94 per cent were digitally delivered in 2021. This amounted to 51 per cent of total services exports and 20 per cent of total exports. As such, digitally delivered exports contributed 7.2 per cent to the gross domestic product (GDP) of Costa Rica in 2021. Over three quarters of firms exporting ICT enabled services were foreign owned, with parent companies being predominantly from the European Union or United States.

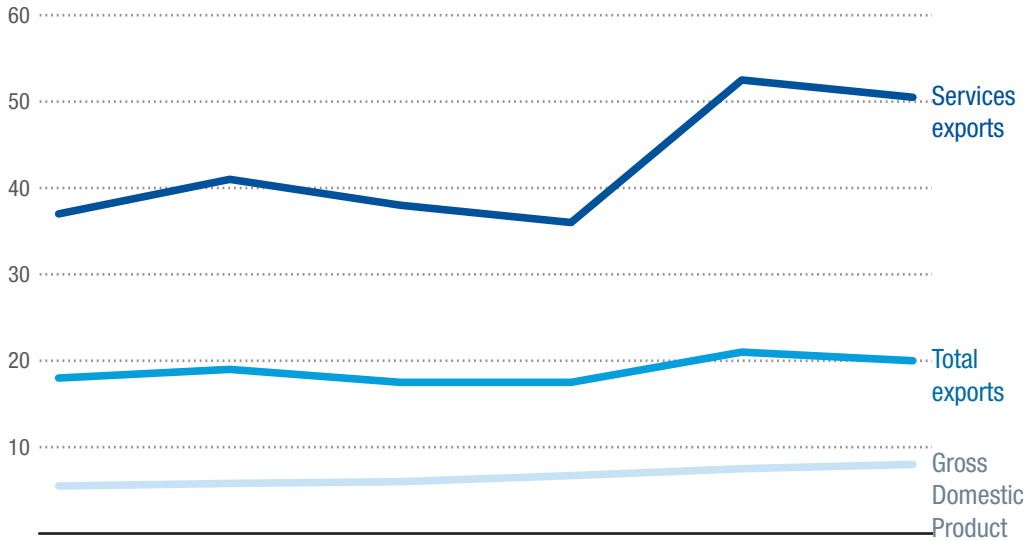
Figure 10 plots the evolution of these exports over time and illustrates the contribution of digital delivery to export resilience during the COVID 19 disruption of 2020–2021.

Source: Citation of Box 4.10 of the IMF-OECD-UNCTAD-WTO (2023) Handbook on Measuring Digital Trade.

Figure 10.

Digitally delivered services exports in Costa Rica

(Percentage)



Source: Reproduced from Box 4.10 of the IMF-OECD-UNCTAD-WTO (2023) Handbook on Measuring Digital Trade.

E. Indirect services trade and value-added data

1. OECD Trade in Value Added database

As an alternative to the valuation of trade flows in gross terms, the Trade in Value-Added (TiVA) database presents trade flows differently by considering the value-added contribution by each country and industry that goes into in the production of services (and goods) until they reach their final point of consumption (which could be intermediate consumption in value chain trade). This alternative approach cancan convey information about value chain activities and the geographical spread of inputs of services (and goods) along stages of production in a way that is not apparent from conventional trade statistics.

The TiVA database consists of a set of principal indicators, 46 altogether, that reveal in different variants the (domestic and foreign) origin of value-added content in gross imports and gross exports.[59] Additional indicators reflect more specialized information, e.g. the "origin and final destination of value added in gross exports of intermediate products." To make the link between inputs used in production and trade across multiple economies, which is required to construct such indicators, TiVA data are derived from OECD Inter-Country Input-Output (ICIO) tables.[60] Thus, TiVA indictors are cast in an industry list[61], which means that TiVA captures flows between industries rather than flows of services products (as trade statistics based on EBOPS would do). The latest indicators were generated using the 2023 release of OECD annual ICIO tables that cover the period from 1995 to 2020 in the latest data as of May 2024.

The indicators are provided for 76 economies, including all of OECD, European Union, Association of Southeast Asian Nations (ASEAN) and G20 economies, respectively, and a selection of non-OECD economies. There is a notable trend to broaden TiVA coverage towards the inclusion of lower income economies.[62] In addition to individual economies, TiVA indicators are also constructed for selected aggregates such as APEC, the "Euro Area", or G20.

The sectoral coverage of TiVA spans the entire economy, i.e. Agriculture, Mining, Manufacturing, and Services, broken out by 45 unique industries and related aggregates (such as total manufactures and total services). This means that not only services trade flows to and from service sectors are included but importantly also the cross-links of services inputs into non-services sectors and *vice versa*. Amongst many other uses, the full spectrum of such linkages enables analyses of what has been termed "backward or forward

At a glance

OECD TiVA	
Geographic scope	International (OECD, G20, ASEAN)
Service classification	ISIC Rev.4
Sectoral detail	45 Industries
Time series	1995–2020
Partner detail	World or bilateral (indicator-specific)
Update frequency	Irregular
Release date	7 May 2024
Access	OECD Data Explorer

[59] In the case of monetary values, such as "gross exports" or "re-exported intermediate imports", TiVA indicators are expressed in US$ millions at current prices, or as percentages for indicators that represent ratios or shares.

[60] As statistical infrastructure, ICIO tables constitute a dataset in its own right, publicly available at http://oe.cd/icio. Thee tables are constructed by transforming (or harmonizing) national Supply and Use tables (SUTs) and Input-Output tables (IOTs) as well as other regional and international sources according to the 2008 System of National Accounts. They map flows of production, consumption, and investment within countries and flows of international trade in goods and services between countries, broken down by economic activity and by country.

[61] "TiVA sectors" follow the International Standard Industrial Classification Revision 4 (ISIC Rev.4).

[62] The 2023 edition of TiVA includes the following 10 new economies: Bangladesh, Belarus, Cameroon, Côte d'Ivoire, Egypt, Jordan, Nigeria, Pakistan, Senegal and Ukraine.

participation in global value chains (GVCs)." Indicators showing the "foreign value-added content of gross exports" reflect so-called backward participation in GVCs whereas other indicators that estimate "domestic value-added content of foreign gross exports" can inform about forward participation in GVCs. For example, one might be able to track the value added from the Chinese basic metals industry embodied in Japanese exports of ICT components, which are imported by the Mexican machinery industry and ultimately consumed in the United States as part of motor vehicles (OECD 2023, p.14).

However, despite the full range of linkages across sectors and economies being a particular strength of TiVA, it does not include intra-national trade flows (the discussion of ITPD-E in chapter II.C.1). Gross total bilateral trade flows in TiVA are obtained as the sum of gross intermediate trade flows and gross final trade flows, whereby the former is the matrix of flows between country-industry pairs based on intermediate consumption and the latter is the matrix of flows between country-industry pairs based on final demand. In each matrix, intra-country flows are set to zero, so that TiVA does not contain "domestic trade."[63]

Annotations. TiVA indicators are a collection of measures that provide insights into global production networks and supply chains beyond conventional trade statistics, by tracking the origins of value added in exports, imports and final demand. Indeed, trade policy analysts' demand for indicators of trade in value added, as a complement to traditional bilateral trade statistics, continues to drive the production of ICIO tables that underpin TiVA. Thus, trade flows from TiVA have the potential to help address crucial questions for trade policy making in the context of development; in particular, around the extent and nature of individual economies' integration into value chain trade.

Trade flows on a value-added basis avoid the double counting that conventional trade statistics are liable to when inputs, as part of production fragmentation, cross international borders multiple times before the final product reaches its place of final consumption (Figure 2). Often national policies for trade and development are affecting only the locally added value and the factors of production – labour, capital, and knowledge – used to produce it. But in a world of complex and geographically dispersed value chains, gross trade flows that include foreign value added may not accurately reflect the domestic contribution to trade and, therefore, may be an inaccurate basis for policy making.

When exploiting trade flows from TiVA for analytical purposes, users should be aware that these flows represent constructed data, even though the underlying ICIO tables incorporate official national and international bilateral trade statistics. Yet this bilateral trade information is subject to an array of modifications, starting with various estimation techniques used to fill data gaps prior to balancing, and subsequently the estimation of balanced trade flows[64] that involves three key procedures: (i) balancing total exports and imports by country such that total exports must equal total imports at the global level, separately so for goods, cross-border services trade, and direct purchases of non-residents, (ii) balancing exports and imports by industry and product group, and (iii) balancing bilateral trade flows (Yamano et al. 2023). Moreover, some of these balancing steps rely in part on proportionality assumptions.[65] Therefore, users should reflect on possible confounding influences of any of these data modifications for the answers they obtain from using TiVA information.

[63] It should be noted that the ICIO from which the TiVA indicators are calculated does include the intra-national flows and allows for the calculation of a variety of intra-national results.

[64] The ICIO methodology entails additional steps for balancing both cross-border trade and direct purchases by non-residents abroad within the 2008 System of National Accounts framework. This is because reported bilateral trade in goods and services statistics is not balanced at a global level, and reported national SUTs and IOTs are not necessarily harmonized with a country's latest National Accounts framework.

[65] The row proportionality assumption is a methodology to fill the import matrix by assuming the same import penetration ratio across using industries and final demand sectors (Yamano et al. 2023).

A second caveat concerns the usage of TiVA for over-time comparisons because the ability of TiVA indicators to reflect any structural changes in an economy hinge of the frequency and accuracy with which the underpinning national Supply and Use Tables (SUTs) and Input-Output Tables (IOTs) are being updated. The 2020 Covid pandemic as a sudden and severe economic shock makes this limitation evident, and as a result, caution is advised when interpreting TiVA estimates for the most recent available years. Harmonised national SUTs and IOTs are key inputs in the construction of ICIO tables from which TiVA indicators are calculated. While some large economies (such as China, Japan and the United States) have already published SUTs for 2020, many countries publish SUTs with a time lag of 3 to 5 years. Therefore, to produce ICIO tables for more recent years, the latest available harmonised SUTs are extrapolated under constraints coming from the National Accounts time series up to 2020 and further adjusted using Balance of Payments statistics and bilateral trade in goods and services, also up to 2020. The release of an updated TiVA dataset running until 2022 is expected at the writing of this report.

An important implicit assumption is that countries' industry input and output structures in extrapolated SUTs are like the structures of the latest available SUTs. Whereas this may be a reasonable assumption in the absence of global or regional economic shocks, the pandemic and related lockdowns in 2020 hit certain activities disproportionally (such as transport; accommodation and food services; arts, entertainment and sporting events) and the timing and the pace of recovery varied across countries and sectors (OECD 2023, Annex A). It is only as economies update and revise their annual national accounts statistics from 2020 onwards, and publish more recent SUTs and benchmark IOTs, that ICIO tables and TiVA indicators may gradually reflect new realities.

2. Other sources for trade data on a value-added basis

This section offers a summary of some alternative datasets that provide trade in value added information. These datasets differ in geographical coverage, sectoral detail, time span, and construction methods as detailed below.

The discussion of principal pros and cons of value-added trade flows offered in chapter II.E.1. in the context of OECD TiVA, applies mutatis mutandis to these datasets as well.

At a glance

Eora MRIO

Eora global supply chain database: multi-region input-output table (MRIO) model providing time series of input-output (IO) tables with matching environmental and social satellite accounts

Geographic scope	Global: 190 economies
Sectoral detail	
Time series	1990–2022
Access	Eora Global Supply Chain Database

At a glance

WIOD 2016 Release

World Input-Output Database (WIOD) Nov 2016 Release

Geographic scope	International: 28 European Union and 15 other major economies
Sectoral detail	
Time series	2000–2014
Update frequency	Not updated
Access	World Input-Output Database

At a glance

GTAP Network

Global Trade Analysis Project (GTAP)'s Data Base: publicly available global database containing complete bilateral trade information, transport and protection linkages.

Geographic scope	Global (>100 economies)
Sectoral detail	
Time series	Various years post-2000
Update frequency	Irregular, currently GTAP 11
Access	Global Trade Analysis Project

At a glance

IDE-JETRO

Regional Asian Input-Output Tables

Geographic scope	Regional: 8 East Asian economies
Sectoral detail	
Time series	5-year intervals 1985–2000
Access	International Input-Output Tables

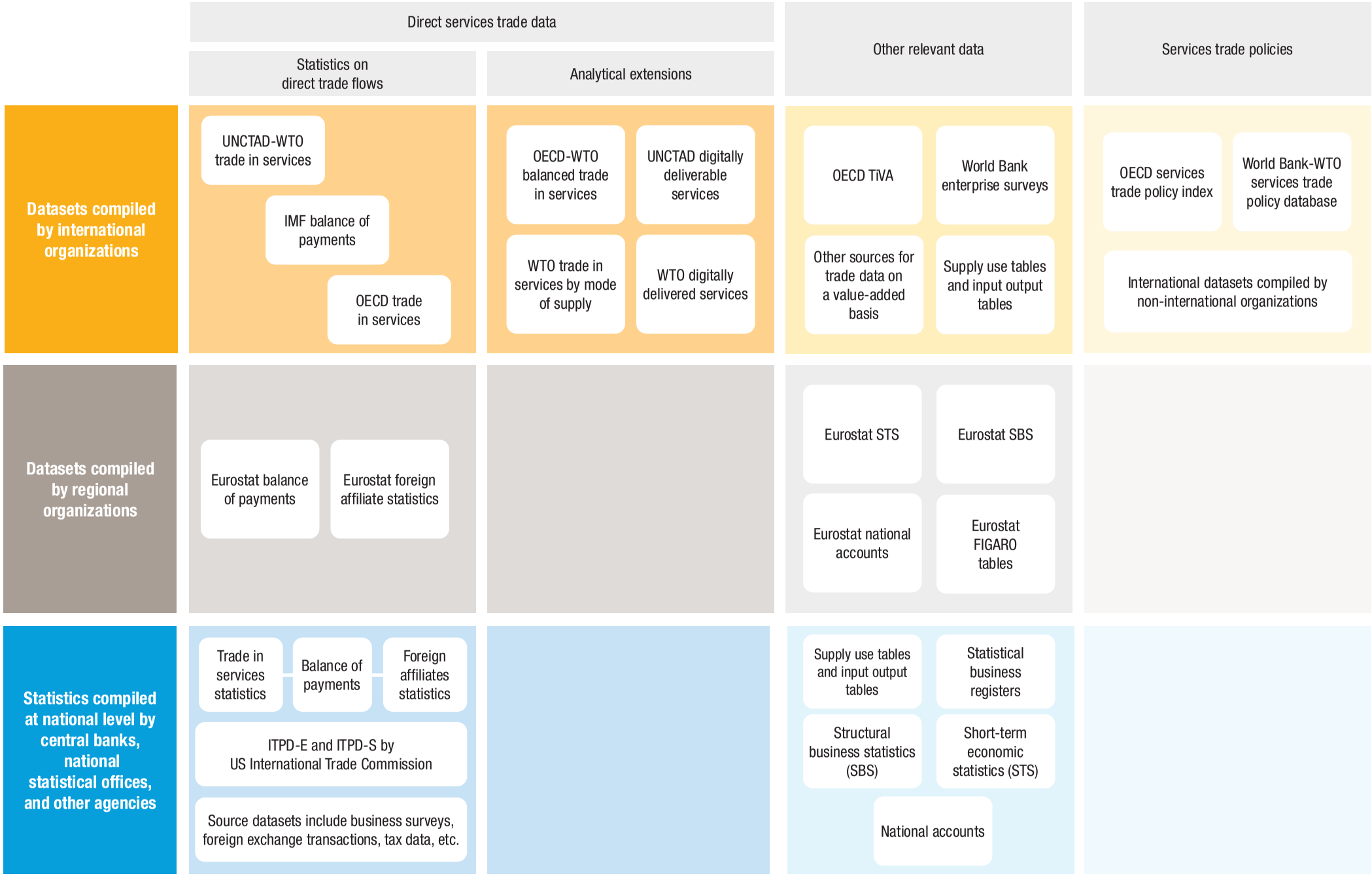
F. Cross-linkages between sources of services trade data

As some of the datasets discussed in this chapter build on each other, there are cross-linkages between sources of services trade data.

The purpose of this section is to develop a figure that reveals the flow of information between different datasets. The figure is organized in layers that correspond to different degrees of data process at the national, regional and international level and analytical extensions. That is, the first layer consists of primary datasets, compiled at the national level, that contain purely administrative or other source data, used for official statistics production. Datasets that draw upon others and potentially modify or augment the data in certain ways, are grouped in different layers.

Figure 11 offers an initial attempt to illustrate the cross-linkages within services trade data. This representation is preliminary and could be refined and expanded through future research.

Figure 11.
Major datasets on services trade



Source: UNCTAD.

Chapter III

Linking services trade data to other data sources

A. Conceptual issues

Trade in services (Mode 1, 2 and 4) is measured using EBOPS, a product-based classification. However, EBOPS does not align directly with FATS and industry-based classifications such as ISIC (International Standard Industrial Classification), NACE (*Nomenclature statistique des activités économiques*, used in the European Union) or NAICS (North American Industry Classification System). The sub-sectors of services also vary by country. Some countries provide detailed services subsectors, but most countries only provide the first categories of the main services sectors.

These industry classifications are commonly used for sectoral analysis and compiling employment statistics. The lack of direct alignment presents challenges when integrating trade in services data with employment and industry data. This issue is particularly relevant for constructing intra-national trade flows and for value-added analyses, such as those in the OECD's Trade in Value Added (TiVA) database, which is structured around ISIC.

In addition, some EBOPS categories do not have direct equivalents in standard industry classifications. The main top-level EBOPS categories without an industry correspondence are Manufacturing services on physical inputs owned by others (SA), Maintenance and repair services n.i.e. (SB), Charges for the use of intellectual property n.i.e. (SH), Government goods and services n.i.e. (SL) and Services not allocated (SN). See Annex table 5 for more explanation on EBOPS-ISIC concordance. In addition, the Other business services n.i.e. category is a residual grouping that aggregates diverse services, many of which may span multiple industries or fall outside traditional sector boundaries. This lack of one-to-one correspondence arises because services can be produced by various industries, not limited to a single sector and because certain service transactions – such as those related to intellectual property or cross-border digital services – do not map neatly onto existing industry classifications.

There is no direct correspondence between EBOPS and ISIC or their regional equivalents (such as NACE or NAICS). However, the Central Product Classification (CPC) acts as an intermediary for linking EBOPS to ISIC and regional classifications. The United Nations Statistics Division provides resources related to classifications on economic statistics, including: ISIC–CPC correspondence tables, CPC–EBOPS correspondence tables, and ISIC–NACE and ISIC–NAICS correspondence tables (although these correspondence tables will need to be updated as new versions of EBOPS, ISIC and CPC classifications will be released).

Researchers and statistical agencies have also developed concordance tables to facilitate empirical analysis. These tables are often context-specific and may require manual adjustment due to the inherent limitations in mapping between product-based and industry-based classifications. Therefore, perfect alignment is not always possible.

B. Other relevant data sources

1. World Bank Enterprise Surveys

Enterprise-level surveys not originally designed to capture trade statistics – such as structural business statistics (SBS), employment surveys, or research and development surveys – can provide valuable complementary insights to understand and analyse services trade. These surveys offer firm-level information on characteristics such as production, employment, skills, international orientation, or technology use. When combined with trade-specific data sources, they can help better understand such aspects as mode-of-supply allocation, trade-in-value-added analyses, or assessments of services competitiveness. Among the many firm-level data sources, the World Bank Enterprise Surveys (WBES) stand out as a unique anonymized microdata

At a glance

World Bank Enterprise Surveys (WBES)	
Geographic scope	Global
Service classification	ISIC Rev.3 or Rev.4
Sectoral detail	Sections "F"–"U"
Time series	2005–2025
Update frequency	Each country is updated by rotation, in general once a decade.
Release date	Continuously on rolling basis
Access	World Bank Enterprise Surveys | Firm-level data access requires registration and log-in

resource that is publicly available and has global coverage.

The World Bank has been conducting firm-level surveys since the 1990s with the aim of creating a representation of the private sector in economies across the world. In 2005, these efforts were formalized as the World Bank Enterprise Surveys (WBES), which adopted a standardized methodology to enable both cross-country and over-time comparisons. Across more than 400 surveys, 250,000 firms are covered in 168 economies (World Bank 2023). The WBES are probably the only publicly available firm-level microdata set with global coverage that includes information on service sector firms and service trade alongside a variety of relevant firm characteristics. The surveys are repeated in a country after every 3 to 5 years, depending on demand and funding.

Until recently, the WBES focused mostly on developing economies, which have been surveyed roughly once every decade although the interval between survey rounds varies considerably,[66] but high-income economies have progressively been covered as well; for instance, economies such as Austria, Singapore, or Canada had their first enterprise surveys in 2021, 2023, and 2024, respectively. Hence, while rooted in a strong focus on Africa and developing economies generally, the WBES increasingly achieve genuine global coverage and correspondingly enable an ever larger set of (comparative) analyses.

Since the WBES collect firm-level information along several dimensions such as firm operations, innovation and investment, financing, and employment, they offer valuable information to investigate a wide array of development questions if matched with data on firms' international (services) trade activities. Firm-level imports or exports of services are not directly observable from the WBES as such, for there is only information about a firm's "main product or service", including exports as a percentage of total annual sales.

That limitation notwithstanding, several aspects of the WBESs are of particular interest in the context of services trade:

- **Export modes:** WBES variables reveal the split of firm-level sales as between domestic sales, direct exporting, and indirect exporting, respectively. This enables analyses of how firms participate in international markets, about indirect services trade in general (chapter I.B), and potentially about policies that affect these firm-level decisions.
- **Firm characteristics:** In conjunction with standard international trade statistics, the WBES can furnish relevant firm-level characteristics such as employment size, input usage, or productivity of businesses that underpin an economy's international trade activities.
- **Services input constraints:** The surveys capture perceived obstacles in accessing services such as finance, transportation or electricity. Whereas this information is not explicitly linked to importing such services at the firm-level, as opposed to domestic purchases, it could be related to an economy's services trade policy stance as demonstrated e.g. by Hoekman and Shepherd (2017), who found that restrictions towards foreign services and service suppliers significantly affects the performance of local firms that export merchandise goods (chapter III.C).

[66] For example, Egypt was surveyed in 2007, 2008, 2016 and 2020, whereas Indonesia was covered in 2009, 2015, and 2023.

Annotations. Even though the WBES represent a valuable source of firm-level information, several methodological considerations should be taken into account when using this data for services trade analysis.

First, sectoral coverage within the WBES may not be comprehensive across all services industries. While major services sectors such as retail trade, transport, and business services are generally included, others – such as education, health, and parts of the information and communication sector – are excluded or only partially represented. Another problem is sector data aggregation as even these sectors are "broad" services sectors rather than specific, for instance, there are many types of transport or business services. As a result, certain high-value or policy-relevant services activities may be underrepresented or entirely omitted, limiting the scope of some services-specific analysis.

Related questions of representativeness may arise, as sampling frames and stratification methods used in the WBES vary by country and may not fully account for the diversity of firm sizes and service sector subcategories. In some economies, this may result in data that are less reflective of the broader structure of the services economy, thereby limiting the comparability of results across economies or sectors.

Second, as mentioned above, services trade is not directly measured in the WBES since the surveys do not specify whether exports, if any, pertain to goods or services, nor whether the firm's main output is what is being exported. The main activity of an enterprise is assigned but they may all have both manufacturing and services activities, and manufacturing firms may be involved in services trade. The WBES can therefore only offer indirect insights into services trade, which must be interpreted with caution and ideally triangulated with other data sources.

Third, the WBES has not been designed with the aim of capturing the unique characteristics of certain highly regulated services sectors such as finance, insurance, and healthcare. These sectors often operate under distinct legal and institutional frameworks, and specialized survey methodologies would be required to collect reliable data on their international transactions. The general-purpose nature of the WBES questionnaire limits the extent of inquiries into the trading behaviour of specific services sectors.

Despite these limitations, the WBES remains a uniquely rich and accessible dataset for analysing firm behaviour, structure, and constraints, particularly in developing and transition economies. When carefully interpreted and complemented with trade-specific data, the WBES can contribute meaningfully to understanding the role of services firms in global trade and development.

Examples of practical uses. There are multiple ways in which national statistical offices (NSOs) in developing countries, particularly in contexts where official data on services trade and firm dynamics are limited, could harness the information from WBES, potentially in conjunction with existing national statistics on services trade. Examples may include, but are not limited to, the following applications: firstly, WBES firm-level information on size, employment, foreign ownership, and export participation could be used to profile the services sector and inform key metrics that support policy design and investment planning. Secondly, the data could serve a diagnostic role, helping NSOs identify gaps or inconsistencies in existing trade statistics by benchmarking the prevalence of service-exporting firms against balance of payments records. Thirdly, WBES variables on business constraints – such as access to finance, electricity, or transportation – could be analysed to understand the structural barriers that limit firms' participation in services trade. These applications require minimal technical adjustment and can offer high returns in strengthening evidence-based policymaking, especially in settings where statistical capacity is constrained.

2. National accounts data

Output statistics from the national accounts are a key ingredient to back out intra-national trade flows, as explained in chapter I.C. For a detailed reference of the use of such data in the International Trade and Production Database for Estimation (ITPD-E) see chapter II.C.1.

Statistics on output – gross value added and fixed assets – by broad industry according to the ISIC Rev. 4 classification, are available from the National Accounts Official Country Data database, maintained by the United Nations Statistics Division (UNSD). The database contains detailed official national accounts statistics in national currencies at current prices as provided by the National Statistical Offices. The data series that underpins the construction of intra-national services trade flows in ITPD-E is contained in table 2.6 of the National Accounts Official Country Data.

Annotations. The use of these SNA data in services trade flow analyses requires several modifications and assumptions, including (but not limited to) the conversion of output statistics in local currency units to the currency in which trade flows are denominated (typically US$), the bridging of SNA 1993 and SNA 2008 classifications depending on what time period is required, and concording of the industry classification in which output statistics are published (ISIC Rev.4) to a services trade flow classification (EBOPS 2010).

C. Services trade policies

Services trade flows across country pairs and service categories are shaped by a variety of factors, including geography, institutions, and policy. Many use cases for services trade flow statistics that have been discussed in chapter II of this Primer may therefore want to link services trade flows to measures of its determinants. The salience of applied services trade policies and regulations for the observable patterns of services trade flows is self-evident.

The Primer does not discuss all available resources on services trade policies, and it is important to note that relevant measures may extend beyond those included in this report. These may involve, for example, trade and investment promotion programs aimed at reducing information frictions. Agencies responsible for these programs often hold valuable data on assisted firms, which can be used to evaluate the effectiveness of such interventions.[67]

1. World Bank-WTO Services Trade Policy Database

Because of its global coverage, the Services Trade Policy Database (STPD), jointly developed and published by the World Bank and the WTO, is the most comprehensive source of information on services trade policies (Borchert et al. 2020a,b).

In its latest 2024 version, the STPD contains policies of 136 economies from all world regions and income groups, namely 21 low income, 39 lower-middle income, 32 upper-middle income, and 41 high income economies, respectively (World Bank's 2022 income per capita brackets).

Individual services are not distinguished by EBOPS, as most trade flow data, but by the W/120 sector classification as this is how

At a glance

WB-WTO Services Trade Policy Database	
Geographic scope	Global
Service classification	W/120
Sectoral detail	35 sub-sectors
Time series	2016–2022 (start dates vary)
Partner detail	MFN policies
Update frequency	Irregular, rolling basis
Release date	April 2024
Access	WTO I-TIP Services

[67] See, for example, Christian Volpe et al., (2021), "Making the Invisible Visible: Investment Promotion and Multinational Production in Latin America and the Caribbean".

commitments on services trade policies are scheduled under the GATS. Applied policies from across nine broad services sectors are included (professional, computer, communications, construction, distribution, finance, health, tourism, transport), within which policy information is available for 34 disaggregated subsectors.[68] For some subsectors such as tourism or health-related services, policy information has been collected for the very first time in part because these services are thought to be particularly salient for economic prosperity and social well-being in many developing economies. It is also noteworthy that, as of 2021, services trade policies of 54 African economies are included (Baiker et al. 2023), whose services trade policies had thus far never been comprehensively captured.

Services trade policies are typically formulated for a particular mode of supply; for instance, a limitation on foreign ownership is a Mode 3 policy and a re-qualification requirement for professional service suppliers is a Mode 4 policy. For each economy and each subsector, the STPD covers applied policies in those modes that are relevant for a particular service sector.

Policies and regulations that potentially affect services trade constitute qualitative information that is not directly amenable to quantitative analyses, or indeed the matching of policy information to trade flow statistics. Hence, the STPD offers a services trade restrictions index (STRI) at the country-subsector-mode level. The STRI quantifies the level of perceived policy restrictiveness embodied in the regulatory information on a scale from 0 (fully open) to 100 (completely closed to foreign participation). STRI scores can be linked to trade flows and employed in quantitative analyses such as gravity modelling. A comprehensive overview of the STRI methodology for quantifying services trade policies is provided in the World Bank-WTO STRI Methodology Note.

Annotations. When matching information on trade policies and trade flows, it is important to keep in mind that the role of modes of supply is quite different for services trade policies in comparison to services trade flows. The STPD captures the most relevant applied policies across all four modes of supply and, generally speaking, the richest and most granular information is often available for Mode 3. This is because the establishment of commercial presence by foreign providers is subject to both pre-entry policies (such as equity limitation or the entire process of licensing) and post-entry policies that govern operations. That is, Mode 3 entry is easily observable and potentially highly regulated. Cross-border services trade via Mode 1 is typically subject to fewer policy interventions, partly because such trade is less easily observable in the first place and less easily regulated. In summary, most policies are mode-specific and commercial presence is well covered.

Balance of payments-based trade flow statistics, by contrast, encompass only values from Modes 1, 2, and 4, excluding Mode 3 because such transactions are not between residents and non-residents. Within BOP statistics, most trade in value terms arises from Mode 1 trade. Analyses that seek to match trade flow statistics with STRI scores should be mindful of the different role that modes of supply play in both kinds of data, and there is scope to account for these differences as STRI scores are available by mode of supply. It should be noted that services trade flow data and STRI scores may be challenging to match. The STRI uses a classification that may not fit trade data. Furthermore, preferential treatment may be given through free trade agreements (a new Preferential STRI, or PSTRI, is expected to measure this).

Against the backdrop that services trade policies can be formulated at alternative levels, it is important to emphasise that the STRI reflects policies that apply on a Most

[68] For example, "Financial Services" consist of four subsectors (life insurance, non-life insurance, reinsurance and retrocession, and commercial banking, respectively). Similarly, seven subsectors such as legal or engineering are covered under "Professional Services". Further details and definitions of subsectors are available in the World Bank-WTO STRI Methodology Note.

Favoured Nation (MFN) basis; that is, the non-discriminatory regime applicable to all foreign services or service suppliers that do not qualify for any other preferential treatment.[69] Insofar as MFN policies are captured that do not vary by trade partner, the STRI is a country characteristic and is not bilateral (the new PSTRI is expected to show preferential treatment provided by FTAs). That raises the question which side of a bilateral trade flow the STRI should be merged with when policy data is to be combined with trade flow data. Considering that all policies apply towards services imports, it is recommended that STRI scores be merged with the importer side of trade flows, and that the analysis considers the various caveats mentioned above.

2. OECD Services Trade Restrictiveness Index

OECD offers a suite of tools to measure services trade policies which could be used to monitor regulatory trends, to facilitate benchmarking of services policies against global best practices, and to conduct analysis of the impact of reform options. These include its Services Trade Restrictiveness Index (STRI), the Bilateral STRI Heterogeneity Index derived from STRI and the Digital STRI. These datasets are accessible through the OECD Data Explorer, as well as through other online tools including for instance the OECD STRI policy simulator (available at: https://sim.oecd.org/) that can be used to simulate how specific policy changes alter the value of the STRI score.[70]

At a glance

OECD Services Trade Restrictiveness Index	
Geographic scope	51 countries
Service classification	ISIC Rev.4 and W120 classification used in the GATS
Sectoral detail	22 sectors
Time series	2014–2024
Partner detail	MFN policies
Update frequency	Annual
Release date	February 2025
Access	OECD Data Explorer

The OECD Services Trade Restrictiveness Index (STRI) provides a measure of restrictions on services trade across 22 sectors[71] for 51 countries. It has been updated annually from 2014. The STRI scores restrictiveness along five broad policy areas: barriers to foreign entry, restrictions to the movement of people, barriers to competition and regulatory transparency and "other discriminatory measures". STRI scores ranges from 0 (fully open) to 1 (completely closed), offering both disaggregated indicators and composite indexes. The underlying database also includes qualitative regulatory measures that underpin the scores.[72] Even though the same acronym is used, the OECD STRI scores should be distinguished from the STPD STRI mentioned earlier.

OECD STRI has a detailed coverage of transport and logistics services (6 of the 22 sectors). Travel, education and health are the major services not covered. Out of the 51 countries, 13 are developing countries: 5 from Latin American, 7 from Asia and South Africa. For some countries, the overall STRI scores have been stable over an extended period for some countries, for example, the United States (0.173–0.174) and Peru (approximately 0.18) between 2014 and 2024. This suggests that the index may not fully capture all types of regulatory changes, or that the changes in restrictiveness, whether positive or negative, balance each other out.

[69] The MFN-STRI does therefore neither include information from GATS commitments (multilateral level) nor from free trade agreements (preferential level).

[70] A list of available online tool as well as of updated country and sector notes and other relevant documentation around the OECD STRI suite is available at https://www.oecd.org/en/topics/sub-issues/services-trade-restrictiveness-index.html.

[71] In the OECD Data Explorer, the sector classification is based on ISIC (rev. 4), which is not as granular as what the STRI covers, and thus not all STRI sectors appear for selection in the Data Explorer. But data for all sectors are accessible through the bulk download link under the "Overview" tab.

[72] The underlying STRI regulatory database is available at https://data-explorer.oecd.org/s/2p1.

The Bilateral STRI Heterogeneity Index, based on the OECD Services Trade Restrictiveness Index (STRI), measures the differences in regulatory environments between two countries for specific services sectors. It quantifies the extent to which regulations diverge, impacting trade flows.

The OECD Digital Services Trade Restrictiveness Index (Digital STRI) complements the STRI by specifically capturing barriers to digital services trade, for 91 countries along the following five broad policy dimensions: electronic transactions, infrastructure and connectivity, intellectual property rights, payment systems and other barriers affecting trade in digitally enabled services.

Like the STRI, the Digital STRI produces composite scores ranging from 0 (completely open) to 1 (fully restricted). The components "infrastructure and connectivity" and "electronic transactions" together have contributed to around 60 per cent of the Digital STRI score across all countries in the dataset, suggesting that addressing restrictions in these policy domains may be most pertinent for digital services trade.

3. Other resources on services trade policies

Multiple other service trade policy datasets address elements of (digital) services trade policies. Examples include the European Centre for International Political Economy (ECIPE) Digital Trade Estimates (DTE), the European University Institute's Digital Trade Integration Project which includes policy measures relating to online services, Chapter 5 (Services) of the World Bank's Deep Trade Agreement 2.0 dataset, the Design of Trade Agreements (DESTA) Database covering services related provisions in trade agreements, and the ITU ICT Regulatory Tracker.

Chapter IV

Key take-aways

UNCTAD's recent work has brought renewed attention to the importance of trade in services data in shaping trade and development policies. The Informal Working Group on Data for Services, Trade and Development Policies provided a global overview of challenges and good practices, while the accompanying Primer has taken a closer look at the main data sources available. Together, they offer a clearer picture of what exists, what is missing, and what is needed. The next step is to focus on how to close persistent data gaps and how to make better use of existing data to inform policy.

The Informal Working Group identified several critical gaps in services trade data, particularly in developing economies.[73] These include the limited availability of detailed, sector-specific information, the lack of bilateral trade data, and the near absence of statistics disaggregated by modes of supply. Many countries still rely on outdated systems like the international transactions reporting system (ITRS), which cannot capture the complexity of modern services trade. While surveys offer more detailed insights, they are costly and require robust statistical infrastructure, which many developing countries lack. In addition, many developing countries have inadequate data collection infrastructure, lacking robust Statistical Business Registers (SBRs), which are essential for identifying and surveying relevant enterprises. National statistical offices often lack the technical, legal, and statistical capacity to integrate micro-data, administrative data, and big data sources effectively.

The Primer confirms these findings and emphasizes that while international datasets help fill some gaps, they ultimately depend on the quality and availability of national data. There are no quick fixes. Building national capacity to collect and process firm-level data remains the most sustainable path forward. Without stronger statistical systems and better access to raw data, international efforts to improve services trade statistics will remain constrained. A potential first step for national efforts could be the production of aggregate services trade data by trading partner.

Improved data is essential for more effective policymaking, whether to support structural transformation, export diversification, assess the impact of trade policy and domestic regulation, promote gender equality, or understand the role of services in digital and green transitions. Better data enables governments to design targeted policies, negotiate trade agreements with greater precision, and monitor the outcomes of reforms.

To address these challenges, the Informal Working Group proposed several forward-looking recommendations. These include placing a permanent agenda item on services trade data in future sessions of the Multi-Year Expert Meeting on Trade, Services and Development, to foster ongoing dialogue and focus on specific sectors or data challenges. The group also recommended the creation of a web-based knowledge hub to share best practices, tools, and policy-relevant data use cases. Crucially, they called for greater resource mobilization to support countries in strengthening their statistical systems, including the adoption of tools like TiSSTAT and the integration of administrative and privately held data into official statistics.

Beyond the statistics that the Primer discusses, there are complementary or alternative data sources that countries may explore. For example, existing but underutilized national administrative data offers a promising strategy to address the significant data gaps. Such data can be integrated with other sources, enabling more rigorous analysis of the micro-level drivers of firms' trade in services and the impact of such trade on firm performance. Evidence from Ecuador and Chile[74] shows how linking value added tax (VAT) declarations with firm-level datasets facilitates the identification of

[73] For details see Report of the informal working group on data for services, trade and development policies.

[74] Christian Volpe Martincus, 2024, "Service Exports: Data, Measurement, and Uses – The Cases of Ecuador and Chile", Inter-American Development Bank, Workshop on Services Trade: Data, Measurement, and Uses, Montevideo, May 28, 2024.

service exporters and the assessment of how exporting influences firm size, productivity, and employment. These datasets have also been instrumental in evaluating the effectiveness of public support programs in boosting firms' likelihood to export services, underscoring their value for informed policymaking.

Looking ahead, developing economies need continued support through capacity-building, technical assistance, and knowledge-sharing. Future work building on the Informal Working Group and this Primer could include practical guidance on using services trade data for policy, and the sharing of use cases. This could include guidance on services trade data analysis for policy making and more detail on the nature and measurement of restrictions on services trade. Strengthening national statistical capacities and collaboration between data producers and users (across ministries, statistical offices, and international partners) will be key to ensuring that services trade data becomes more accessible, policy-relevant, and widely used.

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Annex

Supplementary materials

A. Definitions of commercial services in the balance of payments

In the sixth edition of the Balance of Payments Manual, the current account is subdivided into goods, services (including government goods and services, n.i.e.), primary income, and secondary income. Commercial services comprise all services categories except government goods and services, n.i.e. Commercial services are sub-divided into goods-related services, transport, travel, and other commercial services.

The BPM6 contains the following 12 standard services components:

- Manufacturing services on physical inputs owned by others
- Maintenance and repair services, n.i.e.
- Transport
- Travel
- Construction
- Insurance and pension services
- Financial services
- Charges for the use of intellectual property, n.i.e.
- Telecommunications, computer and information services
- Other business services
- Personal, cultural and recreational services
- Government goods and services, n.i.e.

The main services categories according to EBOPS are defined as follows (UNCTAD 2004):

- Manufacturing services on physical inputs owned by others cover processing, assembly, labelling, packing, and similar activities undertaken by enterprises that do not own the goods concerned and are paid a fee by the owner. Only the fee charged by the processor, which may cover the cost of materials purchased, is included under this item. Examples include oil refining, liquefaction of natural gas, assembly of clothing and electronics, assembly, labelling, and packing.
- Maintenance and repair services n.i.e. cover maintenance and repair work – by residents – on goods that are owned by non-residents (and vice versa). The repairs may be performed at the site of the repairer or elsewhere. The value recorded for maintenance and repairs is the value of the work done – not the gross value of the goods before and after repairs.
- Travel credits cover goods and services – for own use or to give away – acquired by non-residents from an economy during visits to that economy. Travel debits cover goods and services – for own use or to give away – acquired from other economies by residents of the reporting economy during visits to these other economies. Transportation of passengers is excluded, as are goods purchased by travellers for resale in any economy.
- Construction covers the creation, renovation, repair, or extension of fixed assets in the form of buildings, land improvements of an engineering nature, and other similar engineering constructions such as roads, bridges, dams, and so forth. It also includes related installation and assembly work, site preparation, specialized services such as painting, plumbing, and demolition, and management of construction projects. Construction also covers the acquisition of goods and services by the enterprises undertaking construction work from the economy of location of the construction work.
- Insurance and pension services include services of providing life insurance and annuities, nonlife insurance, reinsurance, freight insurance, pensions, standardized guarantees, and auxiliary services to insurance, pension schemes, and standardized guarantee schemes.
- Financial services cover financial intermediary and auxiliary services, except insurance and pension fund services, provided by banks and other financial corporations. They include deposit taking and lending, letters of credit, credit card

services, commissions and charges related to financial leasing, factoring, underwriting, and clearing of payments. Also included are financial advisory services, custody of financial assets or bullion, financial asset management, monitoring services, liquidity provision services, risk assumption services other than insurance, merger and acquisition services, credit rating services, stock exchange services, and trust services. Financial services may be charged for by: (i) explicit charges; (ii) margins on buying and selling transactions; (iii) asset management costs deducted from property income receivable in the case of asset-holding entities; or (iv) margins between interest payable and the reference rate on loans and deposits (called financial intermediation service charges indirectly measured – FISIM).

- Charges for the use of intellectual property n.i.e. include: (i) Charges for the use of proprietary rights (such as patents, trademarks, copyrights, industrial processes and designs including trade secrets, franchises); these rights can arise from research and development, as well as from marketing; and (ii) Charges for licenses to reproduce or distribute (or both) intellectual property embodied in produced originals or prototypes (such as copyrights on books and manuscripts, computer software, cinematographic works, and sound recordings) and related rights (such as for live performances and television, cable, or satellite broadcast).
- Telecommunications, computer and information services cover (i) Telecommunications services, which encompass the broadcast or transmission of sound, images, data, or other information by telephone, telex, telegram, radio and television cable transmission, radio and television satellite, electronic mail, facsimile, and so forth, including business network services, teleconferencing, and support services; (ii) Computer services consisting of hardware- and software-related services and data processing services; (iii) Information services including news agency services, such as the provision of news, photographs, and feature articles to the media as well as database services.
- Other business services include (i) Research and development services, which consist of services that are associated with basic and applied research, and experimental development of new products and processes. (ii) Professional and management consulting services, which include (a) legal services, accounting, management consulting, managerial services, and public relations services; and (b) advertising, market research, and public opinion polling services. (iii) Technical, trade-related and other business services, which include: (a) architectural, engineering, and other technical services; (b) waste treatment and depollution, agricultural, and mining services; (c) operating leasing services; (d) trade-related services; and (e) other business services n.i.e.
- Personal, cultural, and recreational services consist of (i) Audio-visual and related services, which cover services and fees related to the production of motion pictures (on film, videotape, disk, or transmitted electronically, etc.), radio and television programs (live or on tape), and musical recordings. (ii) Other personal, cultural, and recreational services, which include (a) health services, (b) education services, (c) heritage and recreational services, and (d) other personal services. Health services as well as education services are provided remotely or on-site.

Table 4.
UNCTAD-WTO TiS dataset: Product coverage in terms of EBOPS 2010 items

	BaTIS (1: matched)	Level	Description
SA	1	1	Manufacturing services on physical inputs owned by others
SAY		2	Goods for processing in reporting economy, Goods returned, Goods received
SAZ		2	Goods for processing abroad - Goods sent , Goods returned
SB	1	1	Maintenance and repair services n.i.e.
SC	1	1	Transport
SC1	1	2	Sea transport
SC11		3	Passenger (Sea)
SC12		3	Freight (Sea)
SC13		3	Other (Sea)
SC2	1	2	Air transport
SC21		3	Passenger (Air)
SC22		3	Freight (Air)
SC23		3	Other (Air)
SC3	1	2	Other modes of transport
SC31		3	Passenger (Other)
SC32		3	Freight (Other)
SC33		3	Other (Other)
SC3A		2	Space transport
SC3B		2	Rail transport
SC3B1		3	Passenger (Rail)
SC3B2		3	Freight (Rail)
SC3B3		3	Other (Rail)
SC3C		2	Road transport
SC3C1		3	Passenger (Road)
SC3C2		3	Freight (Road)
SC3C3		3	Other (Road)
SC3D		2	Inland waterway transport
SC3D1		3	Passenger (Inland waterway)
SC3D2		3	Freight (Inland waterway)
SC3D3		3	Other (Inland waterway)
SC3E		2	Pipeline transport
SC3F		2	Electricity transmission
SC3G		2	Other supporting and auxiliary transport services
SC4	1	2	Postal and courier services
SCA		2	Passenger (All modes of transport)
SCAZ		3	Of which: payable by border, seasonal, and other short-term workers (All transport modes)
SCB		2	Freight (All modes of transport)
SCC		2	Other (All modes of transport)
SCC1		3	Other (All modes of transport- other than Postal and courier services)
SD	1	1	Travel

	BaTIS (1: matched)	Level	Description
SD1		2	Goods (travel)
SD2		2	Local transport services
SD3		2	Accommodation services
SD4		2	Food-serving services
SD5		2	Other services
SD5Y		3	of which: Education services
SD5Z		3	of which: Health services
SDA	1	2	Business
SDA1		3	Acquisition of goods and services by border, seasonal, and other short-term workers
SDA2		3	Other (Business)
SDB	1	2	Personal
SDB1		3	Health-related
SDB2		3	Education-related
SDB3		3	Other (Personal)
SDZ		2	Tourism-related services in travel and passenger transport
SE	1	1	Construction
SE1		2	Construction abroad
SE2		2	Construction in the reporting economy
SF	1	1	Insurance and pension services
SF1		2	Direct insurance
SF11		3	Life insurance
SF11Y		4	Gross life insurance premiums receivable (credits) and payable (debits)
SF11Z		4	Gross life insurance claims receivable (credits) and payable (debits)
SF12		3	Freight insurance
SF12Y		4	Gross freight insurance premiums receivable (credits) and payable (debits)
SF12Z		4	Gross freight insurance claims receivable (credits) and payable (debits)
SF13		3	Other direct insurance
SF13Y		4	Gross other direct insurance premiums receivable (credits) and payable (debits)
SF13Z		4	Gross other direct insurance claims receivable (credits) and payable (debits)
SF2		2	Reinsurance
SF3		2	Auxiliary insurance services
SF4		2	Pension and standardized guaranteed services
SF41		3	Pension services
SF42		3	Standardized guarantee services
SG	1	1	Financial services
SG1		2	Explicitly charged and other financial services
SG11		3	Brokerage and market-making services
SG12		3	Underwriting and private placement services
SG13		3	Credit card and other credit-related services
SG14		3	Financial management services
SG15		3	Financial advisory and custody services

	BaTIS (1: matched)	Level	Description
SG16		3	Securities lending, electronic funds transfer, and
SG2		2	Financial intermediation services indirectly measured (FISIM)
SH	1	1	Charges for the use of intellectual property n.i.e.
SH1		2	Franchises and trademarks licensing fees
SH11		3	Trademarks
SH12		3	Franchise fees
SH2		2	Licences for the use of outcomes of research and development
SH3		2	Licences to reproduce and/or distribute computer software
SH4		2	Licences to reproduce and/or distribute audio-visual and related products
SH41		3	Licences to reproduce and/or distribute audio-visual products
SH411		4	Movies and television programming
SH412		4	Books and sound recordings
SH413		4	Broadcasting and recording of live events
SH42		3	Licences to reproduce and/or distribute other products
SI	1	1	Telecommunications, computer, and information services
SI1	1	2	Telecommunications services
SI2	1	2	Computer services
SI21		3	Computer software
SI21Z		4	Of which: Software originals
SI22		3	Other computer services
SI221		4	Cloud computing and data storage services
SI222		4	Other computer services other than cloud computing
SI3	1	2	Information services
SI31		3	News agency services
SI32		3	Other information services
SJ	1	1	Other business services
SJ1	1	2	Research and development services
SJ11		3	Work undertaken on a systematic basis to increase the stock of knowledge
SJ111		4	Provision of customized and non-customized research and development services
SJ112		4	Sale of proprietary rights arising from research and development
SJ1121		5	Patents
SJ1122		5	Copyrights arising from research and development
SJ1123		5	Industrial processes and designs
SJ1124		5	Other sales of proprietary rights arising from research and development
SJ12		3	Other research and development services
SJ2	1	2	Professional and management consulting services
SJ21		3	Legal, accounting, management consulting, and public relations services
SJ211		4	Legal services
SJ212		4	Accounting, auditing, bookkeeping, and tax consulting services
SJ213		4	Business and management consulting and public relations services
SJ22		3	Advertising, market research, and public opinion polling services

	BaTIS (1: matched)	Level	Description
SJ221		4	Advertising services
SJ222		4	Market research and public opinion polling service
SJ22Z		4	Of which: Convention, trade-fair and exhibition organization services
SJ3	1	2	Technical, trade-related, and other business services
SJ31		3	Architectural, engineering, scientific, and other technical services
SJ311		4	Architectural services
SJ312		4	Engineering services
SJ313		4	Scientific and other technical services
SJ32		3	Waste treatment and de-pollution, agricultural and mining services
SJ321		4	Waste treatment and de-pollution
SJ322		4	Services incidental to agriculture, forestry and fishing
SJ323		4	Services incidental to mining, and oil and gas extraction
SJ33		3	Operating leasing services
SJ34		3	Trade-related services
SJ35		3	Other business services n.i.e.
SJ35Z		4	Of which: Employment services, i.e., search, placement and supply services of personnel
SK	1	1	Personal, cultural, and recreational services
SK1		2	Audiovisual and related services
SK11		3	Audio-visual services
SK111		4	Audiovisual production services
SK112		4	Rights to use audiovisual products
SK11Z		4	Of which: Audio-visual originals
SK12		3	Artistic related services
SK2		2	Other personal, cultural, and recreational services
SK21		3	Health services
SK22		3	Education services
SK23		3	Heritage and recreational services
SK24		3	Other personal services
SL	1	1	Memo item: Government goods and services n.i.e.
SL1		2	Memo item: Embassies and consulates
SL2		2	Memo item: Military units and agencies
SL3		2	Memo item: Other government goods and services n.i.e.
SN		1	Services not allocated
SOX	1	1	Commercial services
SOX1	1	2	Other commercial services
SPX1	1		Memo item: Other services
SPX4	1	2	Goods-related services

Source: UNCTAD and WTO.
Notes: The WTO-UNCTAD-ITC database has level 3 subclassification for courier service (SC4) for only 9 observations over the 18-year period.

Table 5.
Concordance of service categories in EBOPS, ISIC, and ITPD-E

ITPD-E Code	ITPD-E Description	EBOPS 2002	EBOPS 2010	ISIC Rev. 4
154	Manufacturing services on physical inputs owned by others	-	SA	-
155	Maintenance and repair services n.i.e.	-	SB	-
156	Transport	205, 246	SC	H
157	Travel	237, 243	SDA + SDB3	I
158	Construction	249	SE	F
159	Insurance and pension services	253	SF	K (60%)
160	Financial services	260	SG	K (40%)
161	Charges for the use of intellectual property n.i.e.	266	SH	-
162	Telecommunication, computer, and information services	247, 262, 288	SI+SK1	J
163	Other business services	272, 273	SJ excl SJ34	M+N
164	Heritage and recreational services	-	SK23[a]	R
165	Health services	241, 896	SDB1 + SK21	Q
166	Education Services	242, 895	SDB2 + SK22	P
167	Government goods amd services n.i.e.	291	SL	-
168	Services not allocated	982	SN	-
169	Trade-related services	271	SJ34	G
170	Other personal services	-	SK24a	S

Source: Borchert et al. (2021), Table 7.
[a] EBOPS codes SK23 and SK24 are new to BPM6 and have o backwards corresondence in BPMS.
The concordance in this table differs from (Wettstein et al., 2019, Tbale 14) in three respects: