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MEASURING DIGITAL TRADE: TOWARDS A CONCEPTUAL FRAMEWORK

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The Internet and digitalisation are fundamentally changing the way people, businesses and governments interact, including across borders. The growing importance of what is commonly referred to as 'digital trade' and the emergence of new (and disruptive) players has resulted in increased interest from within the statistics community and amongst policy makers for the development of a statistical framework that captures these phenomena. This paper aims to address these various policy demands, building on existing efforts to advance the development of a conceptual and measurement framework for digital trade; with explicit reference to key policy questions surrounding digital trade; drawing in particular from the OECD WPTGS 2017 Stocktaking Questionnaire.

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MEASURING DIGITAL TRADE: TOWARDS A CONCEPTUAL FRAMEWORK

1. Introduction

1. The Internet and digitalisation are fundamentally changing the way people, businesses and governments interact. This has led to a new phase of globalisation underpinned by the movement of data across national borders, changing the nature, patterns and actors in international trade in goods and services. While digitally related transactions, either in goods or services, have existed for many years, the current scale of transactions and the emergence of new (and disruptive) players transforming production processes and industries, including many that were previously little affected by globalisation, is significant.

2. However, despite the growing importance of what is commonly referred to as ‘digital trade’, little empirical and internationally comparable information currently exists, inhibiting a full understanding of the scale and policy challenges of digital trade, which has in turn raised concerns about the capacity of current statistics to measure this phenomena. Moreover, the growing importance of enterprises with new business models – such as Uber, Airbnb, Facebook and Spotify – raise a number of additional complications, including in relation to the nature of the activity, for (services) trade policy. WTO's recent Public Forum (27-29 September 2016), which featured more than 20 sessions on digital trade and related topics, concluded, for example, that there was a need for improved efforts to measure digital trade.

3. An important impediment to the availability of data on digital trade – and certainly statistics that are coherent with the current accounting frameworks (SNA 2008, BPM6) and that are comparable across countries – is the lack of a clear definition of digital trade and of a comprehensive conceptual measurement framework.

4. A number of steps are however being taken towards developing such a conceptual framework. For example, in 2016, the UPU, UNCTAD, OECD and WTO established a collaborative project to measure cross-border e-commerce transactions, generally recognised as one important dimension of digital trade. A complementary line of work has been pursued by UNCTAD in its Partnership work on Measuring ICT for Development, which distinguishes between ICT and (potentially) ICT-enabled services. Moreover, in the summer of 2016, in anticipation of its forthcoming Presidency of the G20, Germany's Sherpas asked the OECD to reinforce efforts in this area, in collaboration with other IOs.

5. This paper aims to address these various policy demands and builds on these collective efforts to advance the development of a conceptual and measurement framework for digital trade; with explicit reference to key policy questions surrounding digital trade. In this respect it is important to note that such a framework necessarily needs to broaden the scope of measurement beyond the traditional statistical notion of cross-border trade in goods and services, in order to recognise the significant economic benefits that accrue from international flows of data, which often fall below the radar screen of conventional trade statistics but are increasingly important conduits and determinants of related trade flows. By developing a concrete typology of all the flows involved, and relating these as much as possible to the various existing statistical frameworks (including especially the national accounts), this paper also provides concrete insights into both the ‘low-hanging fruit’ with respect to measuring the various aspects of digital trade as well as the – sometimes substantial – challenges ahead.

6. The remainder of this note will first provide more detailed background information on both the G20 request to OECD, and on the ongoing work of the Task Force on measuring cross-border e-commerce. Section 3 presents the outline of a draft conceptual measurement framework. The section also highlights how the digital nature of trade transactions is a multifaceted concept, and provides systematic examples of how the often overlapping nature of these facets can provide a useful (draft) characterisation of digital trade. Section 4 uses the typology as a framework to review what (type of) statistics are already available to shed light on (parts of) digital trade, and also provides an overview of new and on-going activities that can be developed in the coming years, drawing in particular on the results of the Stocktaking Questionnaire that was sent to OECD WPTGS members in December 2016. Section 5 concludes by outlining a work-plan for further the work.

WPTGS members are invited to comment on this paper and the proposals for further work. In particular, thoughts on the following points would be very welcome:

- ***What is the opinion of the WPTGS on the draft conceptual measurement framework presented in this paper?***
- ***Would any of the WPTGS members like to participate in an Expert Group Meeting (to be organized by OECD, WTO, UNCTAD and UPU, under the auspices of the Inter-Agency Task Force on International Trade Statistics), in the fall of 2017?***

2. Background

2.1 Policy questions on digital trade

7. In much the same way that reductions in transport and coordination costs enabled the fragmentation of production along global value chains (GVCs), falling costs of sharing information – relaxing in turn some of the traditional constraints associated with engaging in international trade, be this asymmetric information, hold-ups or contract enforcement – are powering the digital trade revolution. Services can now be fragmented across national borders, through collaborative processes, and delivered via digital platforms as never before. At the same time, falling informational barriers, arising from growing digital connectivity, are enabling more physical, or traditional, trade to take place, increasing access to foreign markets for firms in a way that would previously have been unimaginable, particularly for SMEs.

8. But digital trade also presents significant challenges for policy makers and businesses. For example the intangible nature of digitalised services has created strong fiscal incentives for their source (country of origin) to be located wherever that may be most advantageous, in turn further blurring already grey distinctions between conventional cross-border trade in services (GATS Mode 1), consumption abroad (Mode 2) and services provided through foreign presence (Mode 3), and posing new challenges for the way international trade and investment policy-making is made as well as how international trade, especially services, is measured. In addition, significant income streams can now be generated through data itself, the collection and dissemination of which is subject to myriad national laws, for example, governing privacy. Data flows – even though these are generally not recorded in international trade statistics, particularly intra-firm transactions – underpin modern trade, both in enabling corporations to manage global production networks under global value chains and in automation for trade facilitation. Hence barriers to data flows can give rise to barriers to trade.

2.2 G20 initiative on digital trade

9. The German Presidency of the G20 has placed digital trade high on the agenda of the G20's Trade and Investment Working Group (TIWG), and has asked the OECD to provide the required input for discussions. Recognising on the one hand the policy need for high quality and cross-country comparable data on digital trade, and on the other hand that the development of such statistics will take substantial time, it was agreed in consultation with other international organisations and experts, that the OECD would deliver an outline conceptual framework and typology of digital trade, and measurement action plan, for the January 2017 G20 TIWG, including findings from initial analytical work on digital trade. This paper, in essence, reflects an updated version of those documents and an earlier paper discussed at the October 2016 TFITS meeting.

10. The G20 TIWG met most recently (on 1-2 March 2017) to finalise the draft G20 priorities on digital trade. Measuring digital trade was highlighted as one of the three main priorities for future work, and G20 TIWG encouraged “efforts to intensify the work already underway in relation to mapping and measuring digital trade”, and “further progress on this work by national statistical agencies and international organizations”. International Organisations, including the OECD, as well as the Inter-Agency Task Force on International Trade Statistics (TFITS) have been asked to update the TIWG at next year's TIWG meeting under the Argentinean presidency, describing progress on the development of “a common understanding of Digital Trade that is broad enough to cover existing approaches, and flexible enough to take into account ongoing technological evolution [...], identify biases and gaps in measuring digital trade in statistics, including related to transactions not leaving a monetary footprint, and [to] suggest ways to address these challenges and propose any areas where early progress could be made.”

2.3 UNCTAD-UPU-WTO-OECD collaboration on measuring cross-border ecommerce

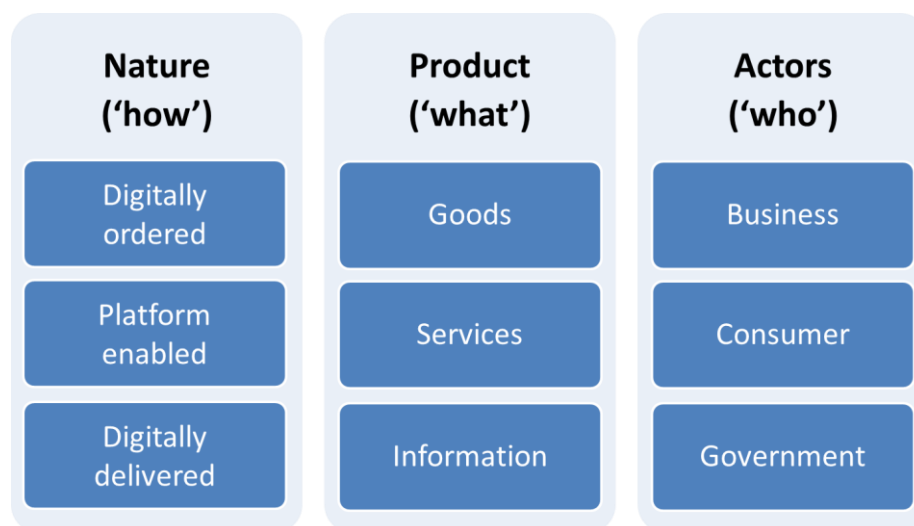
11. Prior to the G20 request, OECD, UNCTAD, UPU and WTO had already teamed up to investigate related measurement challenges in relation to cross-border ecommerce flows (*i.e.* those products and services that are *ordered* digitally); bringing together specialists from government, international organizations and, importantly, the private sector. Two meetings were held, in February and in April 2016.

3. Contours of a measurement framework

12. International trade transactions can be dissected along a variety of dimensions. The distinction between goods and services is the most traditional, as is, in the area of trade in services, the breakdown by mode of supply. The focus on digital trade brings however a variety of new dimensions to the fore. The growth of e-commerce has increased the focus on better understanding and identifying the ordering and delivery process (both of which can be digital), and has also brought attention to the different (institutional) nature of partners involved in international trade.

13. In the conceptual framework introduced below, a total of three dimensions of digital trade are identified: the nature of the transaction ('how'), the product ('what') and the partners involved ('who'). Figure 1 depicts these dimensions as well as their underlying components. In particular the first column, on the nature of the transaction, determines which transactions are considered part of 'digital trade'. The second dimension, 'product', introduces information, or data, as a separate product to consider in addition to goods and services. The last dimension looks at the actors involved; which is shown for simplicity below as three categories, but in principle could be defined using the institutional sector classification of the SNA, with additional breakdowns possible for the size and sector of businesses, as a means of providing important information on the role (and take-up) of digitalised tools by SMEs for example.

Figure 1. Dimensions of digital trade¹



14. Each of these dimensions is discussed below in more detail. For several of these, it is possible to build upon methodological and conceptual work that has already been developed, which is made explicit

¹ Note that column 1 has been slightly modified as compared to the paper circulated to WPTGS in December, reflecting ongoing refinement of the framework.

below. In others, additional work is very likely necessary to further operationalize the framework below and make it useful (and practical) for measurement by statistical offices and/or central banks.

3.1 The digital nature of transactions

15. The first component of the framework involves the digital nature of the transaction ('how'), distinguishing between those cross-border transactions that should be considered 'digital' and those that should not. It is important to emphasise however, that this is not a question with a simple binary answer. Many digital transactions have a variety of potentially overlapping characteristics, reflecting the ordering process, the role of intermediaries, and the final delivery of the good or service concerned.

Digitally ordered

16. The first dimension that helps identify digital trade involves those cross-border transactions that are *digitally ordered*, that is, international trade in goods and services that reflect e-commerce, which in turn is generally defined as follows:

“An ecommerce transaction is the sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders. The goods or services are ordered by those methods, but the payment and ultimate delivery of the goods or services do not have to be conducted online. An ecommerce transaction can be between enterprises, households, individuals, governments, and other public or private organizations. To be included are orders made over the web, extranet or Electronic data interchange. To be excluded are orders made by phone, fax or manually typed email.”²

Platform enabled

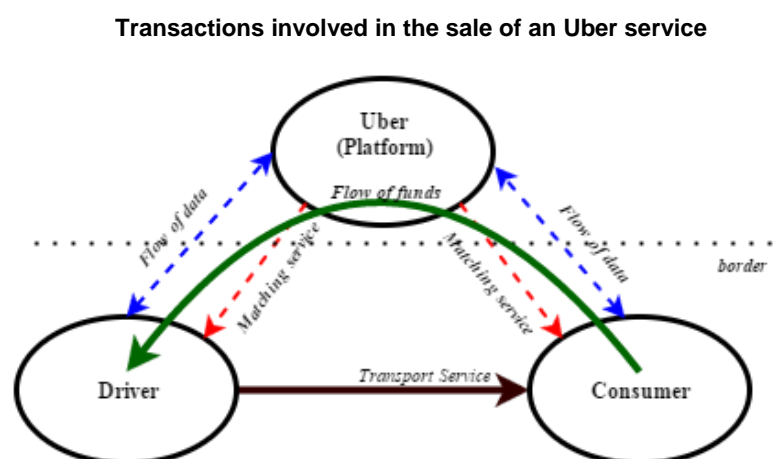
17. One of the most salient features of the digitalization of international trade is the emergence of *intermediary platforms* such as Amazon, Uber, Alibaba or AirBnB. While not all digital trade transactions by necessity involve such intermediary platforms, they are clearly changing the economic and competitive landscape nationally as well as internationally.

18. Transactions involving intermediaries, in turn, include a number of distinct categories, each of which raising different questions for trade/investment policy and measurement: foreign goods or services purchased via a foreign on-line intermediary; foreign goods or services purchased via a domestic on-line intermediary; domestic goods or services purchased by a foreign on-line intermediary; and domestic goods or services purchased by a foreign-owned domestic intermediary. Indeed, one of the most salient measurement challenges involves the identification of not only the international trade transactions, but also some measure of domestic transactions that may be facilitated by a foreign (or indeed foreign-owned) intermediary. To illustrate this point, Box 1 describes the example of an Uber transaction. At its most basic, this involves the purchase of a transport service, but how the service is provided determines whether or not there is a trade transaction and importantly how this transaction is to be measured.

² OECD, Guide to Measuring the Information Society, 2011

Box 1. Example of transactions via intermediary platforms: unpacking an Uber transaction

In the “physical world”, a taxi would have to pass in front of a customer who would pay for the ride in cash or card. The Uber application adds a new tradable digital service which enables the transaction by matching the car driver and the customer and managing payment (see the figure below). The transaction between the driver and the rider (consumer) takes place in a particular country, but the supporting transactions, the provision of the matching services, payments and insurance cover, are potentially provided from another country (assuming that Uber is not operating through a mode 3 local presence).



The example illustrates some of the measurement challenges. For example, since Uber owns no cars, should Uber be classified as a transport service or a business service? This has important implications not only for statistics but also for trade policy: If Uber is a transport service, then its operations are subject to the GATS mode 3 commitments; if a business service, then its operation is subject to mode 1 commitments in the business service sector. At the moment, the 2008 System of National Accounts (# 14.126) specifies that the service provided should be recorded as trade in transportation services, with Uber consequentially classified in the transport sector but it is not clear that all countries follow this, nor indeed whether the same rules of classification necessarily govern that used to determine Uber's classification for trade purposes.

Digitally delivered

19. The third dimension is referred to as *digitally delivered*; in other words, it captures those services and data flows that are delivered digitally as downloadable products. Examples include software, e-books, data and database services. Goods, as physical items, are not very likely to be digitally delivered *en masse*. However, 3D printing may possibly result in a (future) category of transactions that could possibly classify under digitally delivered goods, if these transactions are deemed to be fundamentally different from trade in services (of 3D blueprints) transactions.

3.2 The product involved: goods, services and data

20. Traditional statistics on international trade identify how cross-border transactions involve either goods or services. The notion of digital trade introduces a third category, *i.e.* the importance of information or data. This distinction differentiates between the types of products being traded, digitally enabled goods, digitally enabled services, digitally delivered services, and digitally delivered information (or data flows), and determines the trade policy environment faced (*e.g.* GATT or GATS, but potentially also other agreements).

21. Clearly, perhaps the biggest measurement challenge for digital trade concerns such data flows. In many cases, data flows do not result in a monetary transaction per se, but they may support one (such as

generating advertising revenue). For example, a social networking site such as Facebook offers "free" services to users who, in exchange, provide their data. There is no monetary transaction between Facebook and the user (and in terms of existing international standards, no trade); however, the data collected by Facebook is the basis of the revenue that company receives from advertisers. While the advertising revenue monetary flow is captured in trade statistics, the data flows upon which they depend are not. It is clear that this raises issues concerning consumer surpluses and indeed at the international level who is ultimately financing those surpluses. For example free digital products (such as Facebook) are in general available to all, but the funding model (advertising) does not discriminate between countries. In other words advertisers (and ultimately consumers through paying higher prices) in one country may be indirectly generating consumer surpluses in another.

22. In a similar manner, and because they are free, the international accounting system does not in general impute transactions related to the use of public goods (such as open-source or free software). Again this raises issues concerning the measurement of consumer surpluses but also potentially policies, such as anti-dumping and competition policies, if the freely available software is designed to gain market share with a view to the introduction of subsequent priced models.

3.3 Partners

23. International trade is traditionally considered to take place between enterprises – and to lesser extent between enterprises and governments. Technological change has however provided individual consumers (households) with the possibility to purchase goods and services from foreign suppliers on a scale that was hitherto impossible. Similarly, the possibility to sell online has lowered – or has in any case the potential to lower – the barriers to export, allowing especially smaller firms to market their products abroad. These developments means that new policy attention is given to better understanding the nature of the partners involved in international trade.

24. While clearly not an exclusive list, the following relationships are among the main categories that are identified in the discussions on for example e-commerce:

- **Business-to-Business (B2B)**. Trade transactions that involve two enterprises. This has been the main mode of international trade in the past and initial studies indicate that the bulk of cross-border ecommerce transactions is accounted for by these types of transactions.
- **Intra-firm trade** or transactions between related enterprises. An important sub-set of B2B trade transactions involves the transactions between enterprises that are part of the same enterprise group (multinational enterprise). In the area of trade in services, such trade flows are already identified as transactions between related enterprises (BPM6, MSITS2010).
- **Business-to-Consumer (B2C)**. Trade transactions that involve businesses selling directly to households, bypassing traditional retailers. This type of cross-border transaction is thought to have grown substantially with the rise of the internet and ecommerce.
- **Consumer-to-Consumer (C2C)**. Trade transactions that involve two consumers (households). While traditionally, such cross-border transactions were rare (even if domestic transactions did occur), information and communication technologies have allowed platforms like AirBnB and Ebay to develop and mediate such cross-border transactions.
- **Business-to-Government (B2G)**. Trade transactions that involve businesses selling to governments.

25. The overview above strongly resembles the traditional institutional sectors identified in the national accounts: households, non-financial corporations, government and financial corporations³, which group the institutional units with broadly similar characteristics and behaviour. It would therefore be advantageous to use the existing definitions of these institutional sectors when trying to break down the partners involved.

3.4 Examples of how the measurement framework can be applied to classify digital trade

26. The typology developed above can be used to classify and typify digital trade transactions, which will facilitate the subsequent measurement discussions. Table 1 provides a series of examples of how such a multidimensional breakdown would look, limiting the examples in first instance to B2B, B2C and C2C transactions, as well as to goods and services only, partly for brevity, and partly because further (conceptual and measurement) challenges arise, and investigations will be needed, with respect to data flows and B2G.

Table 1. Examples of digital trade by category

How?			What	Who	Description
Digitally ordered?	Platform enabled?	Digitally Delivered?			
Y	N	N	Good	B2B	An enterprise in country A purchases a good online, directly at the supplier of the products located in country B, via the supplier's web-shop or EDI. For example, a component used in the production.
Y	N	N	Good	B2C	A consumer in country A purchases a good (e.g. clothes) online (for final consumption), directly at the web-shop of the supplier of this product located in country B.
Y	Y	N	Good	B2B	An enterprise in country A purchases goods, from a supplier in country B, via an online platform which may be located in country A, country B or elsewhere. For example, the ordering of office furniture via eBay.
Y	Y	N	Good	B2C	A consumer in country A purchases a good online from a supplier in country B, via an online platform, which may be located in country A, country B or elsewhere, for final consumption, for example ordering a book on Amazon.
Y	N	N	Service	B2B	An enterprise in country A purchases a service online, directly at the supplier, but the service is delivered physically (for example a transportation service).
Y	N	N	Service	B2C	A consumer in country A purchases a service online, directly at the supplier in country B, and the service is delivered physically (for example, a hotel reservation made directly at the hotel).
Y	Y	N	Service	B2B	An enterprise in country A purchases a service online from a supplier in country B, via an online platform, which may be located in country A, B or elsewhere. The service is subsequently physically delivered (for example standardised maintenance or repair services).
Y	Y	N	Service	B2C	A consumer in country A purchases a service from a supplier in country B, via an online platform; the services is subsequently physically delivered, for example, tourist ordering a ride-sharing service (Uber).
Y	N	Y	Service	B2B	An enterprise in country A purchases a service online, directly at the supplier, which is subsequently also delivered digitally (for example, standardised maintenance or repair services)
Y	N	Y	Service	B2C	.A consumer in country A purchases a service online, directly at the supplier from country B, which is subsequently also delivered digitally, for example an insurance policy

³ This list is generally considered to reflect the *domestic* institutional sectors and is completed with the 'rest of the world', reflecting all non-domestic partners. Clearly these can be dissected

Y	Y	Y	Service	B2B	An enterprise in country A purchases a service from a supplier in country B via an online platform, which may be located in country A, B or elsewhere. The service is delivered digitally. For example, a firm orders a logo design via a platform for graphical designers.
Y	Y	Y	Service	B2C	A consumer in country A purchases a service from a supplier in country B, via an online platform, which may be located in country A, B or elsewhere. The service is delivered digitally. For example, music streaming subscriptions
N	N	Y	Service	B2B	An enterprise in country A places an <i>offline</i> order for a service at a supplier in country B, the service is subsequently digitally delivered. For example bespoke consultancy services, BPO services.
N	N	Y	Service	B2C	A consumer in country A purchases a service <i>offline</i> at a supplier in country B, but the service is digitally delivered. For example educational services with online lectures.
Y	Y	N	Service	C2C	A consumer in country A purchases a service from another consumer in country B, via an online platform, located in country A, B or elsewhere. The service is physically delivered. For example accommodation sharing (AirBnB)
Y	Y	N	Good	C2C	A consumer in country A purchases a good from another consumer in country B, via an online platform, located in country A, B or elsewhere. For example second hand goods transactions via online market places.
...

4. Review of existing statistics on digital trade

27. As already mentioned, the systematic data collection on what part of international trade can be considered ‘digital’, and on the breakdown of digital trade by the products or services, partner countries and institutional sectors (business, consumers, government) involved, has yet to be developed. It is however important to emphasise that while there are some important exceptions (*e.g.* services fully ordered and delivered digitally), most WPTGS members that responded to the Stocktaking questionnaire indicated that current trade statistics do not significantly underreport digital trade flows.

28. A variety of countries have already started measuring at least some parts of the different components that characterise digital trade (as defined above). From this work, some stylized facts are emerging, as well as avenues to develop further insights. These are summarised below following three dimensions proposed in the framework. A final separate section is included to cover the issue of cross-border data flows.

4.1 Digital ordering

Information from enterprise and household surveys

29. Statistics on the digital nature of the ordering process (e-commerce) have been developed for a number of years in a range of OECD countries, mostly through ICT and e-commerce enterprise surveys (covering B2B and B2C), as well as via household surveys on internet use (covering B2C and (partly) C2C transactions). These data show, for example, that in the EU28, in 2016, 16% of all turnover of enterprises larger than 10 employees was derived from e-commerce (products and services ordered online), up from 12% in 2008. Sales via e-commerce were especially important for accommodation services (29%), the manufacturing of computers, electrical equipment and machinery (26%) and the manufacturing of food, beverages, textiles and paper (22%). E-commerce is a less important sales channel for professional and scientific activities (7%) and construction and real estate activities (2%).

30. Similar figures were obtained for Canada, where in 2013, 24% of enterprises’ turnover was derived from online sales and just under half of Canadian enterprises (47%) purchased goods or services online in 2013. In the US, higher estimates were reported (up to 60% of transactions in manufacturing

shipments appear as e-commerce) but caution should be used since these figures do not exclude intra-firm trade, and orders per handwritten e-mail are also considered as e-commerce.

31. Likewise, household surveys indicate that nearly half (49%) of all individuals in Europe have ordered online in the past year (2016), whereas this was only a quarter in 2008. 22% of individuals ordered online from a shop located outside their home country – more than double 2008 shares. The total value of such purchases remains however small in comparison: in Canada (November 2016), only 5% of total sales to consumers (domestic and cross-border) took place via online channels. The most recent figures for the US (for Q3 2016) showed that 7.7% of all sales to consumers were characterised as ‘e-sales’, and for Europe, an estimated 8% of all purchases by consumers were made online.

32. Although these results suggest that B2B transactions account for the bulk of trade in digitally ordered goods and services, the evidence points to a not insignificant and growing share of cross-border purchases made by consumers. For example data for Canada show that over one-third of on-line sales by Canadian enterprises is attributable to consumers. In addition, the relatively smaller share of consumers may reflect a downward bias caused by the fact that the transactions may only superficially involve a domestic counterpart. For example, although an order may be via a locally operated on-line site, the transaction may in effect involve a non-resident enterprise which operates the domestic on-line site). Similarly, the scale of B2B transactions may be overstated if the counterpart, from the exporter’s perspective, is an online intermediary and not the final consumer (this may occur especially in the case of services).

33. Importantly, these surveys do not yet provide a detailed split of the value of *cross-border* transactions, and, mindful of the complications described above in identifying the real economic transactions taking place, practical compilation guidance appears necessary.

34. A variety of possible avenues to obtain additional information exist. Clearly, a relatively straightforward option would be to add questions to surveys regarding the breakdown of online purchases and sales into domestic and international transactions, as already highlighted *e.g.* by UNCTAD⁴. However such an approach would necessarily entail a not insignificant increase in reporting burdens that may be difficult to achieve. Another possibility will be to explore microdata linking, for example by integrating merchandise trade statistics with e-commerce enterprise surveys, albeit coupled with stylised assumptions relating to foreign/domestic e-commerce splits. Further refinements could also be made in combination with BEC classifications to provide estimates of the share of cross-border sales that can be classified as B2B and as B2C.

35. The WPTGS Stocktaking survey indicated that several members have already started concrete projects along these lines. For example, Germany is developing TEC data for NACE Rev.2 47.91 (retail sales via mail order), and others (Luxembourg, Netherlands, Slovenia) are exploring the ability to capitalise on ICT surveys. Regarding Business-to-Consumer (B2C) cross-border e-commerce, most countries flagged the possibility of using credit card data to obtain insights into cross-border purchases – not only for goods but also for services.

Information from merchandise trade statistics

36. The possibility to identify trade flows that are the result of a digital ordering process as opposed to a non-digital one can also be explored from the perspective of merchandise trade statistics. Digital trade is often identified as an important reason for the increase in small value transactions, as digitalization

⁴ UNCTAD, ‘In Search of Cross-Border E-Commerce Trade Data’, UNCTAD, Technical Notes on ICT for Development N°6.

allows businesses to order smaller amounts of inputs (just-in-time) and enables consumers to purchase from the global market place. The on-going growth in these transactions, which are generally recorded as ‘below-the-threshold’: *i.e.* lower than the *de minimis* value below which no import duties and taxes are collected increases the need to review and if necessary improve estimation methods for these *de minimis* transactions.

37. The WPTGS stocktaking questionnaire showed that the *de minimis* thresholds currently in use vary strongly across countries (for example from zero in Turkey, to 2500 USD in the United States). In most cases, trade below the threshold is (still) considered very small (1-3% of international trade), and more than half of OECD countries already make adjustments for these values, even if it is acknowledged that methods may be improved. In depth studies by several countries (*e.g.* Australia) suggest that virtually all (~90%) of these adjustments involve consumption goods.

38. In this respect, initiatives developed by the World Customs Organization (WCO), to start exploring the possibility to identify and monitor e-commerce transactions in customs records, *e.g.* via improved (electronic) identification of origin/destination and content of packages (*e.g.* via the S10 bar code, or special (simplified) declaration forms for ecommerce) can provide an important future data source.

4.2 Platforms

39. An important characteristic of digitalisation is the advent of digital intermediaries such as AirBnB, Uber, Amazon, eBay or Alibaba, that facilitate (cross-border) digital trade in goods and services. Better understanding their role in international trade is an important policy objective. In addition, as noted above, there is also a need to have more insights on domestic transactions that are facilitated by a foreign (or indeed foreign-owned) digital intermediary. In theory, the transactions related to payments for intermediation services should be recorded as trade in services or payments for services within current statistics, but in practice it may be difficult to separate the intermediation fees from the value of the service provided.

40. At present, 8 countries are able to identify foreign owned digital intermediaries in their economy, while 5 are able to identify payments to non-resident digital intermediaries. Most countries noted that digital intermediaries *should* be in the business register, but that formal identification could be difficult in the absence of a specific industry classification in which these enterprises are active. Identification based on business name would be feasible. Responses indicated the likelihood, in most cases, that cross-border trade in services transactions of such intermediaries would be classified under *trade related services*, but further investigation would be needed.

4.3 Digital delivery

41. While for trade in goods, the concept of ‘digital trade’ often refers primarily to the nature of the ordering process, the concept of digital delivery is more prominent in the realm of trade in services, even if a significant part of digitally delivered transactions will also be facilitated via a digitally ordering process, especially fully digital and downloadable products, such as software, music, e-books, data and database services. However, as already indicated in section 3.4, there is likely a sizeable group of services that are digitally delivered but not digitally ordered: especially intra-firm cross-border transactions, including those involving data, which will likely involve ‘analogue’ contracts (or even none at all).

42. The concept of digital delivery is consistent with what is described by the TGServ Task Group as ICT-enabled services, *i.e.* ‘services products delivered remotely over ICT networks’. While not all services can be delivered remotely over ICT networks (as many services require physical proximity for delivery and

consumption), ideally, from a data collection point of view, all international trade in services transactions, should be divided into those that are ‘digitally delivered’ and those that are ‘not digitally delivered’.

43. To facilitate the development of initial estimates on the potential scope of digitally delivered services, the TGServ Task Group proposed a classification of services that are “potentially ICT enabled”, using the EBOPs 2010 classification, including amongst others, ICT services, sales and marketing, management, administration, and back office services, engineering, R&D, and education. The US BEA and US Department of Commerce have used these services items to provide an upper bound estimate of digitally delivered services, for both the US⁵ and the EU⁶. This indicated that for example, in 2014, US exports of services that were potentially ICT enabled amounted to \$400 billion, representing more than half of all U.S. exports of services. Likewise, for EU countries, potentially ICT-enabled services trade represented 56 percent of all services exports to non-EU countries and 52 percent of all services imports from non-EU countries.

44. Clearly, further work remains necessary to identify what part of the *potentially* ICT enabled (*i.e.* potentially digitally delivered) services are actually delivered through digital means. Including questions in trade in services surveys that ask for this breakdown represent a potential avenue to provide this additional breakdown in a way that is fully consistent with existing trade in services definitions and statistics. In addition, since all digitally delivered cross-border services transactions by definition involve services delivery via Mode 1, such information can help in the provision of statistics on trade in services by Modes of Supply.

45. Alternatively, linking trade in services surveys with data from ICT enterprise surveys at the micro (enterprise) level, can, in combination with certain assumptions, also provide insights into the share of international services transactions that is delivered (and/or ordered digitally).

46. In addition, for services digitally delivered to consumers, whether by enterprises (B2C) or via the ‘sharing’ economy (C2C), most WPTGS members mentioned the use of household surveys in combination with credit card data, and a few countries have started investigations on this source. Other sources that are considered include Gaming Authorities (for gambling transactions done through overseas websites, the United Kingdom, for example, estimated this at GBP 2 billion in 2015), Apple and Google data, tourism surveys and tax records.

4.4 Cross-border data flows

47. Cross-border data flows do not necessarily result in a monetary transaction *per se*, but they may support one, such as generating advertising revenue. For example, a social networking site such as Facebook offers “free” services to users who, in exchange, provide their data. There is no monetary transaction between Facebook and the user (and in terms of existing international standards, no trade); however, the data collected by Facebook is the basis of the revenue that the company receives from advertisers. While the advertising revenue monetary flow is (should be) captured in trade statistics, the data flows upon which they depend are not. In addition intra-firm transactions in cross-border data flows are unlikely to be recorded at all.

48. Responses highlighted that this is a topic at the frontier of statistical knowledge. At present, none of the 33 respondents has conducted a study into quantifying cross-border data flows. Similarly, no country

⁵ Alexis Grimm (2016) ‘Trends in U.S. Trade in Information and Communications Technology (ICT) Services and in ICT-Enabled Services’ US BEA.

⁶ Jessica Nicholson (2016) ‘ICT-Enabled Services Trade in the European Union’, US Department of Commerce ESA Issues brief number 3-2016.

has yet investigated the size of intra-firm data flows. Countries were also not convinced of the need to add imputations for the value of cross-border data flows into balance of payments statistics (with 15 out of 16 countries against).

49. Regarding future work on measuring cross-border data flows, respondents flagged a variety of concerns: conceptual and practical. Conceptual issues revolved around how such flows would fit into the overall accounting framework. Practical issues included the absence of an internationally agreed methodology on the valuation of data and the subsequent classification and treatment of such flows as well as feasibility challenges

5. Next steps towards measuring digital trade

50. In the discussion of outlines of the framework introduced in this paper, it has already become clear that important measurement challenges exist when trying to capture digital trade. As reviewed in this paper, while good progress on which to build further has already been made in some areas, little remains known for now on for example the underlying size of cross-border data flows in terms of bytes let alone monetary values. Moreover, there is scant information concerning the extent to which firms (particularly SMEs) use digital channels (whether through intermediaries or their own sites) to sell goods and services across borders, and even less information concerning the size of these flows. In addition, a significant grey area remains on the operations of multinationals (conventional multinationals and digital intermediaries such as AirBnB, Amazon and Uber) and their ability to either record services or primary income flows depending on how they deliver services (to third parties or intra-firm). And it is not clear that consistent treatment of the underlying flows exists across countries, affecting not only on estimates of international trade and investment flows but also GDP.

51. Section 3 provided the first outlines of a possible measurement framework for Digital Trade. Work will continue in the coming months to *further refine this measurement framework*, building on the feedback received from WPTGS and others. It is important to note in this respect that the proposed typology above is not set in stone but should help shape the basis of discussion as the work advances by providing a broad (but fluid for now) overarching view of the key transactions and players that need to be considered in finalising an internationally agreed framework. In the same vein it is also important to note that the framework is not designed to produce a series of measures that are necessarily additive. For example, many users will be interested in the size of cross-border trade flows that are affected by e-commerce whilst many others will be interested in the related imports from or value added created by foreign and foreign owned digitally intermediaries facilitating e-commerce transactions. Others may be interested in the underlying economic value associated with data. As such as the work evolves, and as a better understanding of data availability and measurement challenges emerge, a view may also emerge that the framework should be refined in a way that delivers mutually exclusive components.

52. In parallel, building on existing national initiatives, countries can explore a variety of *pilot studies for data compilation*, combining existing data sources with new approaches, involving either new questions in surveys, data linking – in particular building on the strong expertise of WPTGS members in this area - or the exploration of new data sources including credit card information or other private sector sources. This will enable the development of best practices for more comprehensive measures of digital trade that cover the entire universe of trade transactions, providing insights into what parts of trade statistics can be considered digital, with their relevant product and partner breakdowns.

53. To support this work among OECD countries as well as more broadly, including in the context of the G20 work on Measuring digital trade, a variety of concrete steps are envisaged. First of all, the

upcoming meeting of the inter-agency Task Force on International Trade Statistics⁷, which will take place in October, will be paired with an Expert Group Meeting (EGM) involving national statistical offices to foster the development statistics for this domain. To support this discussion, a more detailed version of this paper, including the results of the WPTGS discussions, will be prepared.

54. Following the TFITS EGM discussions, OECD will prepare a draft paper with recommendations will be prepared for the 2018 TIWG meeting in Argentina: setting out a definition, and typology of digital trade; highlighting gaps in measuring and mapping digital trade; identifying potential biases in international trade statistics; and providing recommendations, where necessary, on data sources and accounting standards. These efforts will all be fully coordinated with related fora, especially if the emerging recommendations point to potential changes in accounting practices that have wider consequences for the economic accounting system, for example concerning valuations of data flows and transactions without a monetary footprint, where recommendations may have implications for GDP (2008 SNA) and Balance of Payments (BPM6) international accounting standards.

55. Feedback from the 2018 TIWG will then be incorporated for the 2018 WPTGS meeting, following which countries would be invited to assist in the development (and timing of) a Handbook on Digital trade. The expectation at that stage would be to target the development of a draft Handbook in time for the Autumn 2018 TFITS and IMF BOPCOM meetings for feedback, with a view to circulation for global consultation and, ideally, White Paper endorsement at the 2019 UN Statistics Commission meeting. The aim of the Handbook would be to describe recommendations for improved measurement of digital trade within current accounting standards. If in the course of this research, desirable changes to current SNA and BPM accounting standards would emerge, the Handbook would highlight these as issues requiring further consultation, within the consultation frameworks of the IWGNA and BOPCOM.

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Co-chaired by OECD and WTO and reporting to the UN Statistical Commission