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For discussion and
recommendations

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Agenda

**MEASURING THE DIGITAL ECONOMY:
CURRENT WORK AND FUTURE CHALLENGES**

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This short note provides an overview of past work and future objectives in relation to monitoring and measuring the impact of digitalisation on the economy and well-being more generally. After shortly introducing the OECD-wide horizontal project “Going Digital”, the note describes in some more detail the projects initiated within the OECD Statistics and Data Directorate. This mainly concerns output produced in the context of the system of national accounts; the measurement of digital trade; and the impact digital transformation may have on well-being.

The note is prepared to provide input to the CES Bureau discussion on better measurement of digital transformation.

I. INTRODUCTION

1. Digitalisation has allowed firms to radically alter production processes and their access to markets. At the same time, it has permitted consumers to access a larger variety of goods and services, often for no cost. Understanding the scale of this digital transformation is high on the agenda, not least because of the dearth of statistics currently available, but especially because, against a backdrop of a widespread productivity slowdown, many have questioned whether its impact is accurately measured.

2. To address these issues, the OECD launched the *Going Digital* project in 2017 bringing together policy and statistical experience across a number of OECD directorates. A major component of this initiative was *Measuring the Digital Transformation* that describes a range of statistics, and a complementary *tool-kit*, able to provide insights on digitalisation, whilst also setting out a roadmap to develop improved statistics in areas where gaps have been identified.

II. OECD HORIZONTAL PROJECT: SHORT SUMMARY OF THE OBJECTIVES

3. The Going Digital summit held on 11 – 12 March 2019, marked the culmination of the first phase of the OECD Going Digital project. The project involved input from, and co-ordination with, 14 OECD committees, member countries, accession countries, key partners and other international organisations. The summit saw the release of two significant outputs:

(a) Going Digital: Shaping Policies, Improving Lives, which highlighted opportunities, challenges and policy recommendations across seven core policy dimensions: access, trust, market openness, use, society, jobs, and innovation.

(b) An accompanying report, *Measuring the Digital Transformation*; a roadmap for the future, brought together a range of widely available indicators that targeted the seven policy dimensions, building on earlier national and international experiences, such as those produced for the G20¹. It also developed 19 roadmaps, grouped around nine action areas, where data gaps exist:

- (i) Make the digital transformation visible in economic statistics
- (ii) Get the narrative on impacts right
- (iii) Measure wellbeing in the digital age
- (iv) Design new approaches to data collection
- (v) Monitor transformative technologies (notably IoT, AI, Blockchain)
- (vi) Make sense of data and data flows
- (vii) Define and measure the skills needed in the digital era
- (viii) Measure trust in online environments
- (ix) Assess governments' digital strengths

4. Over 2019 and 2020, Phase II of the *Going Digital* project will continue to focus on implementing the measurement roadmap, while also motivating greater country uptake and development of the indicators outlined in the going digital toolkit. For more information on the objectives, the outcomes and the progress of the OECD measurement roadmap, reference is made to the relevant document (OECD, 2019a) and the following webpage: <https://goingdigital.oecd.org/en/>.

III. RECENT WORK OF THE OECD STATISTICS AND DATA DIRECTORATE ON THE DIGITAL ECONOMY

5. Work within the OECD Statistics and Data Directorate (SDD) has moved in parallel with that of the *Going Digital* project, but some aspects of the work predate the formalisation of the project.

6. The earliest work was a Statistics Working Paper (Ahmad and Schreyer, 2016), which sought to address many of the concerns that macro-economic statistics and their frameworks had been left behind by the pace of the digital transformation; concerns fuelled in large part by the widespread productivity slowdown and the view that the accounting frameworks were ill equipped to capture important dynamic of the transformation, in particular with respect to consumer surpluses.

7. The paper concluded that:

“On balance the accounting framework used for GDP looks to be up to the challenges posed by digitalisation.”

¹ G20 document (2018), G20 Toolkit for measuring the digital economy. Available at: <https://www.oecd.org/g20/summits/buenos-aires/g20-dctf-toolkit.pdf>

...
The measurement of price change and in particular the distinction between quality and price change, which is both a practical and conceptual consideration, require increased and concerted efforts.

...
At the same time, it is clear (notably from the discussions on free services, the increasing participation of households in the production process, and prices) that digitalisation brings further into focus the fact that GDP is a measure of production and not a measure of welfare or consumer surplus. This reinforces the need to complement GDP with other indicators that capture well-being.

8. As a follow-up to this initial paper, SDD, in collaboration with IMF, produced two empirical papers that set out to measure the potential size of mismeasurement on GDP and productivity (OECD 2017) and on prices (OECD 2019), both of which concluded that the productivity slowdown could not be explained by mismeasurement of the digital transformation. Both working papers did caution however, that additional work was needed to improve statistics, in particular with respect to measures of welfare.

9. In parallel with these efforts, at the 2016 OECD Working Party on National Accounts (WPNA), delegates agreed that an Informal Advisory Group on Measuring GDP in a Digitalised Economy (Advisory Group) should be created to advance the digital economy measurement agenda, the establishment of which was subsequently endorsed by the OECD Committee on Statistics and Statistical Policy (CSSP) in 2017. Similarly, in part motivated by the 2017 German Presidency of the G20, the OECD-WTO chaired Inter-Agency Task Force on International Trade Statistics (TFITS) agreed to create an expert group of national and international agencies to advance the measurement agenda on digital trade, and in particular to develop a Handbook on Measuring Digital Trade.

10. Since this time, the Advisory Group (which includes representatives from more than 37 countries and 7 international organisations, as well as representatives from OECD Working Party on Measurement and Analysis of the Digital Economy (WPMADe)) has physically met on three occasions, and the TFITS expert group will meet for the third occasion on 9 October 2019 to finalise the first version of the Handbook.

11. Additional efforts have also been made in the area of labour statistics with the creation of a Technical Expert Group on measuring platform work, jointly with the ILO, several agencies of the European Union (Eurostat, Eurofound and the Joint Research Center) as well delegates from National Statistical Offices. In the recent past, several attempts have been made at measuring the share of platform workers in the economy, with mixed results due to conceptual and measurement difficulties. The first meeting of the Technical Expert Group has taken place at the OECD on September 12 and 13. Some piloting of survey questions and the review of traditional and alternative measurement vehicles are planned for 2020 and 2021, while the publication of a Handbook is scheduled for 2021-2022.

12. Other OECD initiatives to advance the measurement agenda include:

(a) A Workshop on e-platforms, cloud computing and related products (September 2018)²

(b) A Workshop on Prices and Volumes in the national accounts (July 2019).³

13. Finally, a paper has been drafted on the measurement and recording of crypto assets (OECD, 2018). This paper, together with a paper prepared by IMF for discussion at the Balance of Payments Committee, has been discussed at the OECD Working Party on Financial Statistics, and the meeting of the Advisory Expert Group (AEG) on National Accounts (both November 2018). A revised paper, including the outcome of the written consultation of the AEG, is forthcoming, for discussion at the meeting of the AEG, to be held on 1-3 October 2019 in Washington D.C.

14. At the same time, SDD has worked to ensure coordination (to minimise duplication) of the efforts of these groups with other international initiatives, including through collaboration on G20 and APEC initiatives, and through dissemination to other bodies, such as the Advisory Expert Group (AEG), including the subgroup on digitalisation, the IMF Balance of Payments Committee (BOPCOM), the newly formed UN Committee of Experts on Business and Trade Statistics, and in statistical meetings of the UNECE and Eurostat.

15. In addition to the above lines of work which are mainly related to economic statistics, SDD is also working on monitoring the impacts of digital transformation on people themselves. At present, evidence of these impacts on well-being is still scarce in many areas. For example, relevant data on people's experiences of mental health or social lives are not collected frequently in a harmonised manner. The OECD Framework for Measuring Well-Being and Progress includes objective and subjective indicators of well-being outcomes covering 11 dimensions. A similar approach has been used to evaluate how the digital transformation affects these well-being outcomes.

A. Current work of the Advisory Group

16. The main focus of the efforts of the Advisory Group has been to develop a measurement framework that is able to *make the digital transformation visible in economic statistics* (the first action in *Measuring the Digital Transformation*).

17. This framework is built around the traditional national accounts framework of supply and use tables (SUTs), but with enhancements designed to better reflect the *nature* of digital transactions, as well as the products and actors involved (see Figure 1 below). Key to the design of what has become known as the Digital Supply-Use Tables is the nature of the transaction, defined as *those transactions that are digitally ordered and/or digitally delivered*.

18. Digital SUTs do not define the digital economy as such, as they recognise that there are a variety of perspectives from which the digital economy can be viewed, for example

² OECD workshop "Measuring online platforms and cloud computing in National Accounts", 6-7 September 2018, OECD building, Boulogne. A summary is available here:

[https://one.oecd.org/#/document/DSTI/CDEP/MADE\(2018\)6/en?_k=q4ohwu](https://one.oecd.org/#/document/DSTI/CDEP/MADE(2018)6/en?_k=q4ohwu)

³ OECD-Eurostat meeting on the measurement of Prices and Volumes in a Digitalised World; 2-3 July 2019, OECD convention centre, Paris. Agenda and related documents available here:

<https://community.oecd.org/community/nationalaccounts/content?filterID=contentstatus%5Bpublishe d%5D~category%5B2019-07-prices-and-volumes-in-digitalised-world%5D>

value created by digital industries versus consumption of digital products versus activities and jobs facilitated by digitalisation. As such their primary focus is to enhance the visibility of the digital transformation in core macro-economic statistics in a way that facilitates international comparability. Key accounting constructs in this sense include new aggregations of the following:

(a) **Digital industries:** Digitally enabling industries; Digital intermediary platforms (DIPs) charging a fee; Data and advertising driven digital businesses; Firms dependent on platforms; E-Tailers; Digital only firms providing finance and insurance services and Other producers operating digitally.

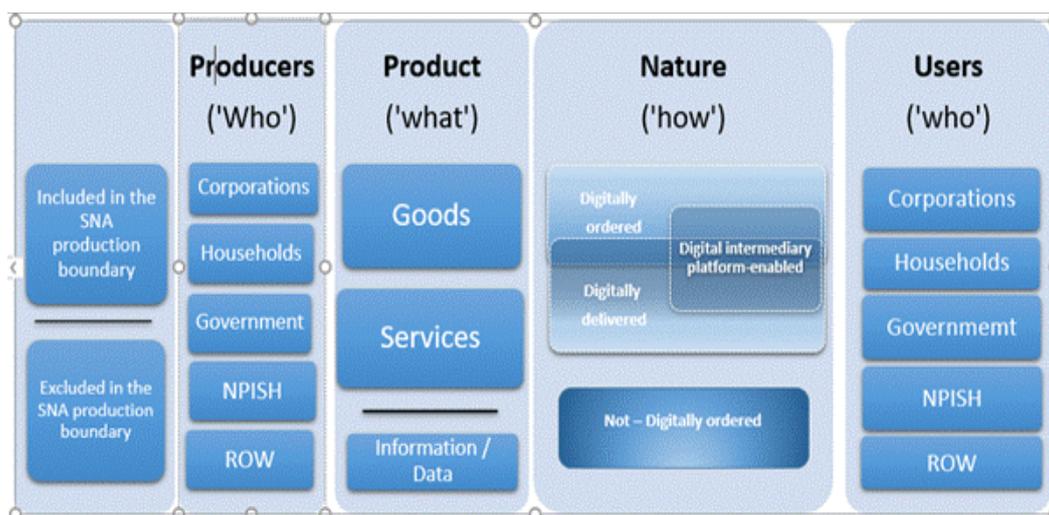
(b) **Digital products:** Those within the national accounts production boundary - Digital goods (ICT); Digital services excluding cloud services and intermediation; cloud services; DIPs services (DIPs); and non-digital services significantly affected by digitalisation – and those outside of it (see also Section 4) – Data; Free digital services provided by businesses; Free digital services provided by communities (i.e. from assets with collective ownership).

(c) **Digital Transactions:** Digitally ordered and Digitally delivered.

19. The tables have been deliberately designed to extract maximum leverage from current statistics (for example new aggregations of industries and products are feasible in many countries), from which a set of core set of indicators can be drawn (and the Advisory Group is currently working to develop this core set), but they have also been designed to be forward looking, notably with respect to the development of estimates broken down by the nature of the transaction, where many countries are exploring extensions to conventional e-commerce and/or ICT surveys and pragmatic measurement methods.

Figure 1.

Conceptual framework for measurement of digital economy



Source: OECD, 2019c (slightly adapted)

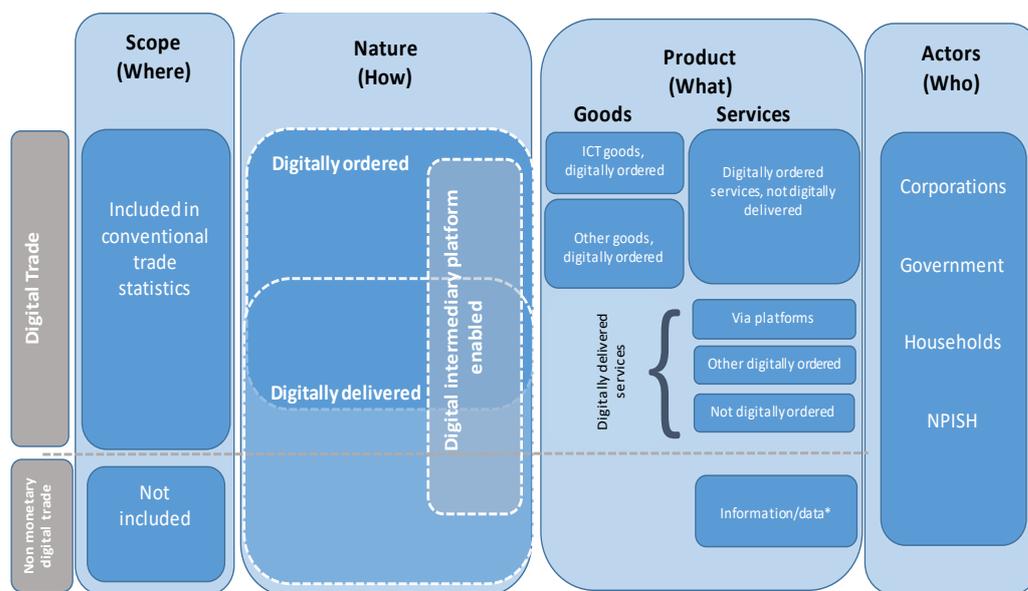
B. Current work of TFITS

20. TFITS has been working in parallel with the Advisory Group and, as such, has defined digital trade as “all trade that is digitally ordered and/or digitally delivered”. The framework

governing digital trade (see Figure 2, left hand side) is consistent with that used by the Advisory Group (recognising in turn the importance of estimating the value of non-monetary transactions), from which a simplified reporting template (Figure 2, right hand side) has been developed.

Figure 2
Digital Trade

(a) Framework



(b) Reporting Template

| | Total | By Exporter/Importer | | |
|---|-------|-------------------------------|------------|----------------------|
| | | Corporations (by industry) | Government | Households/ NPISH |
| (i) Digital Trade (ii+iv+vi+ix) | | | | |
| (ii) Digitally ordered ICT goods | | | | |
| (iii) of which via DIPs | | | | |
| (iv) Digitally ordered goods (other) | | | | |
| (v) of which via DIPs | | | | |
| (vi) Digitally delivered Services | | | | |
| (vii) of which via DIPs | | | | |
| (viii) of which digitally ordered (including via DIPs) | | | | |
| (ix) Digitally ordered services (not delivered digitally) | | | | |
| (x) of which via DIPs | | | | |
| <i>Addendum items</i> | | | | |
| (xi) Digitally ordered total (ii+iv+viii+ix) | | | | |
| (xii) ICT goods total (digitally and non-digitally ordered) | | | | |
| (xiii) Potentially ICT enabled services | | | | |
| (xiv) Non-monetary transactions in information/data (imputed) | | | | |

21. A first version of the Handbook, describing the framework and challenges, was presented to the 2019 meeting of the UN Statistical Commission. A revised version including compilation guidance on all of the various elements and specific components of digital trade will be presented for discussion at the 3rd meeting (9 October 2019) of the TFITS expert group on digital trade.

22. Recognising that the development of data sources for digital trade is rapidly evolving, in the short to medium term, the Handbook on Measuring Digital Trade will have a status as a living document, updated as new compilation practices emerge.

C. Current work on the impact of digital transformation on well-being

23. Digital technologies have radically changed the way people work, consume and communicate over a short period of time. While dwelling on the How's Life? well-being framework, OECD (2019d) provides a comprehensive description of digital impacts on people's lives and underlines some important data gaps. For each dimension of people's well-being (income and wealth, jobs and earnings, housing, health status, education and skills, work-life balance, civic engagement and governance, social connections, environmental quality, personal security and subjective well-being, plus ICT access and use as a cross-cutting dimension of the digital transformation), the report presents evidence on the opportunities and risks created by the digital transformation. To that aim, the report has reviewed a large number of studies in a range of disciplines and has assembled 33 indicators of key impacts of the digital transformation, including 20 indicators to monitor digital opportunities and 13 indicators to reflect digital risks.

24. The main insight from the report is that safe digital technologies improve the life of those who have the skills to use them. This message is two-sided. Benefiting from digital opportunities depends, first, on meeting some skills requirements, and second, on operating in safe digital environments. On the one hand, digital technologies can improve people's life by providing access to more information and services at a reduced cost: for instance, they simplify access to education, to health information, to consumption goods via online shopping, they cut transportation time via teleworking and improve the efficiency of energy use at home and at the city level; in sum, they make human activities more efficient.

25. On the other hand, digital technologies entail a major inequality risk for society, as they introduce a digital divide between those who have the skills to use these technologies and those who do not. These skills include digital skills but also the emotional and social skills associated with safely navigating the online world. Having this mix of skills, conveniently labelled as "digital literacy", is a pre-condition for people to harmoniously combine their digital and real lives, and to avoid the mental health problems associated with abuses of digital technologies. The second type of digital risks relates to safety issues such as cyber-bullying and cyber-security breaches. In a nutshell, making the digitalisation work for people's well-being requires building equal digital opportunities, widespread digital literacy and strong digital security.

IV. CHALLENGES REMAINING FOR MEASURING THE DIGITAL ECONOMY

26. There remain several areas associated with digitalisation, which remain a challenge for statistical organisations. The provision of free services is often cited as an example where the current SNA is deficient. This is despite the fact that the free service being "consumed" by households and paid for by corporations, is fundamentally similar to the free goods and services that people have consumed for years (e.g. radio, TV, and other free non-digital media), that are typically financed via advertising.

27. Digitalisation has however brought about two significant complexities to the issue. The first is the huge proliferation of free services available. On top of the well-known social media giants, there are now free applications ranging from traffic management, weight loss, to games created purely for entertainment. The second is that, in the process of generating these services, many companies develop databases of consumers that provide the basis for

targeted (and thus higher value) advertising, but the value of these databases (and in particular the underlying data) are not included in the asset boundary of the SNA.

28. Whilst there are reasons for the exclusion of ‘data’ from the production boundary, the debate continues (see Ahmad and Van de Ven, 2018). The frameworks for digital trade and Digital SUTs are consistent with the current recommendations in the 2008 SNA and BPM6, but at the same time they also recognise that, within the production boundary or not, some notion of the value of data and free services is required to provide insights on material well-being and productivity growth.

29. The real challenge however is to value these transactions. A single observation recorded by the platform is in itself not worth very much. However, when included with many observations, network effects kick-in and its value increases. If cleaned, organised, processed and analysed it may become even more valuable. At some point, the original observations of little or no value have helped to create a database of some value. Currently, there is no clear and practical⁴ guidance for how to measure the “data value chain”. Developing a robust typology on data and free digital services, as well as measurement guidance, will form a key focus of SDD work in the coming years.

30. The measurement challenges brought on by digitalisation extend beyond data and free services. The delineation between price and quality change is another and the evidence (OECD, 2017) points to significant variation on national approaches which could hamper international comparability. Further guidance and monitoring will be needed over the next few years.

31. Other challenges remain very much at the early stages of statistical development, notably with respect to the measurement of Artificial Intelligence (in particular machine-to-machine transactions) and Blockchain; both of which were flagged as priority areas in Measuring the Digital Transformation. Other areas where there remain information gaps concern employment estimates, in particular relating to gig/platform intermediated work which SDD will be exploring in a new technical working group managed jointly with other international organisations (EU, JRC, ILO).

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⁴ Many current proposals are often from a theoretical perspective without the practical considerations of compiling the economic outputs on a regular basis or a consideration of how the inclusion of these transactions might affect the usefulness of GDP as an economic indicator.

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