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Better measurement of the digital transformation

Better measuring digitalization: Initiatives of international organizations on conceptual and measurement issues[1]

Note by Eurostat, International Monetary Fund and the Organisation for Economic Cooperation and Development

Summary

This note presents recent work and future plans of international organisations on measuring the digital economy and digital transformation. It builds on the documents provided by OECD, Eurostat and IMF for the October 2019 and February 2020 meetings of the Bureau of the Conference of European Statisticians (CES). The note is mainly focused on statistical measurement issues for the digital economy, the collaborative economy, the digital transformation and the related new data sources.

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[1] This document was scheduled for publication after the standard publication date owing to circumstances beyond the submitter's control.

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I. Introduction

1.   Measuring the size and observing the different features of the digital economy is of crucial importance to understand and analyse economic developments relating in particular to growth, productivity, inflation, employment and also well-being. It requires strengthened international and multi-stakeholder dialogue on measurement. This has also been explicitly recognised by the G20[2]. Official statisticians at the national and international level are addressing the challenge by undertaking initiatives to develop sound theoretical frameworks and related statistical sources and measurement tools for the digital economy. Much of the work on the conceptual and measurement aspects is taking place in the context of national accounts.

II. Identifying and measuring the size of the digital economy – Work under the auspices of the Inter-Secretariat Working Group on National Accounts

2.   In March 2018, the UN Statistical Commission indicated digitalisation as one of the three priority areas for the research agenda on the System of National Accounts (SNA), the other two being globalization, and wellbeing and sustainability. ISWGNA established three subgroups to work on each of the priority areas. In November 2018, for each priority area the Advisory Expert Group on national accounts (AEG) identified a list of specific issues to prioritise according to their relevance, urgency and potential impact on the current system of national accounts, the SNA 2008. For digitalisation, the list includes:

(a)   Framework for a satellite account on the digital economy;

(b)   Valuation of free assets and free services;

(c)   Recording of data in the national accounts;

(d)   Crypto assets;

(e)   Price and volume measurement of goods and services affected by digitalisation.

3.   The digitalisation subgroup, co-chaired by U.S. Bureau of Economic Analysis (BEA) and Statistics Indonesia, with Eurostat ensuring the secretariat, comprises 15 experts from national statistical institutes, international organisations, central banks and academia. The subgroup is expected to develop guidance notes on each of the five topics above in the course of 2020. The guidance notes will provide a review of the options to deal with the different issues, to indicate their potential impact on SNA (i.e. if they would require a change to the 'fundamental principles', if they provide a clarification of the current system or if they would result in additional tables/satellite accounts), and to recommend the way forward.

4.   Research work on some of the topics is well advanced, while on other topics it is still at a less developed stage.

5.   Extensive work has already been done to conceptually define a framework for digital supply-use tables that could be used to create a satellite account on the digital economy, in

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[2] The G20 endorsed the 2017 Roadmap for Digitalization: Policies for a Digital Future, published a Toolkit for Measuring the Digital Economy in 2018, building upon previous work by OECD. Apart from motivating the development of a stronger evidence base for analysis and policy-making across key dimensions such as digital infrastructure, ICT-enabled innovation, and the use of digital technologies in society, the Digital Toolkit was also designed to better monitor and analyse the role of the digital economy for jobs and growth, and the impact of digitalisation on well-being.
This project will build upon G20 and other relevant work to develop a *Roadmap Towards a G20 Common Framework on Measuring the Digital Economy*, including a set of representative indicators for measuring the digital economy, focusing on some key policy challenges, notably jobs, skills and growth. The G20 work has the intention to revisit the G20 Toolkit in light of the work on measurement of the digital economy underway across international organisations, including OECD, EU, IMF, ITU, UNSD and UNCTAD. The aim is to support the G20 in developing and agreeing on a common set of representative indicators for measuring the digital economy.

particular by the Informal Advisory Group on measuring GDP in a digitalised economy, chaired by BEA, coordinated by OECD, with participation from a significant number of countries and other international organisations. The subgroup on digitalisation is now building on that work through the aforementioned guidance notes. The next steps mainly concern finding ways to support countries to overcome measurement concerns in populating the framework. A request for estimates of a group of high priority indicators, derivable from digital SUTs, was sent to countries in late 2019 in preparation for the Advisory Group's June 2020 meeting.

6. Extensive research has also been carried out on crypto assets, notably by IMF and OECD. In particular, the IMF Committee on Balance of Payments Statistics has issued a clarification note on the crypto assets. Concrete proposals for the definition, classification and recording of crypto assets of different nature have been discussed by AEG, and a provisional holding position has been arrived at for written consultation (see https://unstats.un.org/unsd/nationalaccount/aeg/2019/M13_2_3_5_Crypto_Assets.pdf), on the basis of which a guidance note will be prepared. However, in view of future developments, further research remains to be done.

7. Considerable work has also been carried out on price and volume measurement of goods and services affected by digitalization. Initial investigations suggest that the overall impact of potential mismeasurement on GDP growth is not large enough to explain the 'productivity puzzle' – i.e. a decreasing or slowly rising productivity in a context of fast technological development – but, for individual products and sectors, the size of potential mismeasurement may be significant. Both Eurostat and OECD are working with countries to identify 'outlier countries' in the evolution of price indices and to investigate the sources and methods being used, and significant efforts are being made by a number of countries and academics to improve measurement.

8. Research on the valuation of free assets and free services (e.g. Facebook, Google Search or Gmail) is less advanced, at least in the sphere of official statistics' efforts. Many of those services are undoubtedly bringing utility to households and many households would pay for them if they were not free (as some interesting research shows). However, including imputed estimates of consumption and indeed production in the national accounts is not trivial from a practical perspective nor necessarily without contention from a conceptual perspective (as one could argue that consumers do ultimately pay through higher prices of goods and services that are advertised; as the firms paying for the services seek to be compensated). The subgroup is currently identifying possible options to deal with these issues.

9. Similar challenges arise in considering digital assets that are developed by firms, and in particular databases, where the discussions in the 1993 and 2008 SNAs on the treatment of data – i.e. are they produced or non-produced – have become magnified. IMF, OECD and Statistics Canada have conducted some preliminary work in this area. At present, only the software in databases and costs associated with the digitisation of information embodied in databases are considered assets in the national accounts; meaning that there is a disconnect between national accounts valuations of databases and the value that firms would associate with them internally for business strategy and management purposes. The key question here takes us back to the earlier discussions in the 1993 and 2008 SNAs: is data (or rather the information content of data) produced or non-produced? There is no question as to whether information has value, but the issue is how it should be recorded and what are the implications of doing so, for example on current definitions of primary income. The subgroup is currently identifying possible options to deal with these issues.

10. While not officially under the auspices of the Inter-Secretariat Working Group on National Accounts, the finalisation in December 2019 of version 1 of *the Handbook on Measuring Digital Trade* was a significant milestone in the effort towards measurement of the digital economy. The handbook, developed out of the OECD-WTO chaired Inter-Agency Group on International Trade Statistics, includes a conceptual framework to define digital trade as well as providing a mechanism to bring together and share existing national and international efforts on measuring digital trade and/or dimensions of it. It is envisioned that regular updates will keep this Handbook a living document reflecting the continuing work occurring in this space.

11.   The progress of work and views for the future steps on revision of the national accounts should be presented to the 2020 UNSC.

III.   Measuring the collaborative economy

12.   The collaborative economy as a way of offering and using products and services through online platforms that connect consumers and producers is one of the interest areas. With Eurostat leading, the European Statistical System (ESS) is making advances in the area of the collaborative economy, starting with short-stay accommodation followed by transport and other services (platform work). Eurostat – jointly with other Commission services – is conducting discussions with major international platforms to obtain their data for statistical use. This initiative aims at gathering data to measure the size and impact of the collaborative economy directly from international platforms. In this way, the data would provide an important contribution to the quality of the existing official statistics by reinforcing the coverage in areas that are not reachable by traditional sources (e.g. households acting as producers) and by providing entirely new data in related socio-economic areas.

13.   There is also a high interest in new forms of work, as jobs of good quality allow for decent living conditions and are therefore central to the EU policy making. Digitalisation has brought two kinds of new forms of work: platform jobs, where new ICT developments are an important driving force and the jobs are particularly flexible; and specific contracts with zero hours. In both cases, an important question is the extent of the social protection coverage for the people exercising these new forms of work. For platform jobs, Eurostat is developing, within the EU Labour Force Survey, a pilot data collection for a possible implementation in 2022 (overall number of platform workers and their labour market characteristics) and is currently looking at possibilities offered by web scraping data from digital platforms to get timely and frequent data on trends in the number of platform workers. This work is complementary and fully consistent with the OECD-ILO-European Commission Technical Expert Group developing a *Handbook on measuring platform work* to be published in 2021-2022.

IV.   Measuring the digital transformation

14.   Eurostat continues developing, producing and publishing sets of indicators and providing assistance and advice to the other services of the EU Commission that are in charge of publishing indicators and scoreboards on digital transformation. Data are needed first for further orientation and later for monitoring the EU policy initiatives in the digital area, varying from working conditions, ethics of artificial intelligence and consumer protection to innovations, competitiveness and fair digital taxation.

15.   Eurostat participates in the shaping of the future Digital Economy and Society Index within the EU Commission. This will ensure that the existing surveys will evolve in such a way that, in combination with new digital data sources and techniques, they will allow for providing up to date relevant data on the digital transformation of the EU economy and society. In addition, the EU Commission will be equipped with a strong evidence base to monitor the achievements of its political priorities related to the implementation of the Connected Digital Single Market.

16.   The existing and new dimensions such as digital connectivity, e-commerce, e-services, e-government, robotics, cloud computing, big data analysis, cybersecurity and digital skills will be covered. Data on the use of artificial intelligence in the business sector, which represents a top priority of the EU regarding innovation and competitiveness, will provide information on the progress made in this area. In addition, linking the existing business statistics at micro-level could provide additional insight into the economic and social impact of digital technologies.

17.   In addition to the above lines of work, which are mainly related to economic statistics, OECD 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.

18.   Digital technologies have radically changed the way people work, consume and communicate over a short period of time. OECD 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), OECD has gathered evidence on the opportunities and risks created by the digital transformation. To that end, a large number of studies have been reviewed in a range of disciplines. 33 indicators of key impacts of the digital transformation have been assembled, including 20 indicators to monitor digital opportunities and 13 indicators to reflect digital risks.

V.   New digital data sources

19.   It is important to mobilize as much as possible new digital data sources, alongside existing data sources, to better measure digitalisation. New digital data sources can vary widely: transaction data from mobile telecom operators, sensor data from personal communication devices or from smart electricity consumption meters, road traffic loops, data obtained from the internet, such as social media or web-scraped data from job vacancy or real estate agencies' websites, scanner data, electronic reservation systems data, electronic data on credit card transactions, etc. These data are to a large extent generated automatically by the machines and held by private actors.

20.   The use of new data sources on a large scale in a sustainable perspective requires clearer rules for statistical offices to access data of general interest held by private actors, to help open up the data sources and create a thriving environment for brand new statistical products and services. Through direct access to these data sources, significant progress in terms of evidence-based policymaking as regards the scope, timeliness and accuracy of official statistics, will be made possible while lowering the existing burden on respondents.

21.   Eurostat is considering creating new digital data sources directly for statistical use. A project is underway for establishing a smart surveys platform for the development of capabilities for conducting smart surveys and moving towards citizen statistics. The initial focus will be on launching trusted smart surveys, by using Apps and collecting in a participatory manner information on the budget and time use of households (diary-based survey).

22.   The intended outcomes are to make available, and operational, the capabilities for producing and processing statistical information from statistical processes that would use trusted smart surveys. They comprise: a European platform, providing the functional and technical environment for implementing a set of common functions and configurable services that can be used within ESS to build particular instances of trusted smart surveys, for specific application domains and/or target areas; innovative solutions for processing the input personal data in a privacy-preserving fashion (e.g. secure multi-party computation or non-modifiable transaction logging); an incentives library and templates for the promotion of citizen engagement and participation (e.g. gamification, personalised feedback) providing building blocks for moving towards citizen statistics. Preparatory work has already started in 2019, with over two years preparatory work for the smart survey platform, aiming at the evaluation of existing tools, and the development of solutions for privacy preserving data processing.

VI.   Training – workshops and courses

23.   An updated EU Digital Education Action Plan will focus on digital literacy and on equipping young people and adults with the skills they need for life and work in the digital

age. As regards statistics, the issue of skills is particularly important for the sustainable development of robust and agile statistics on digitalisation. Eurostat has included courses on digitalisation issues in the 2020 European Statistical Training Programme for statisticians.

24.   In September 2019, the IMF Statistics Department gave a series of lectures on the digital economy and its measurement in national accounts, price statistics and monetary and financial statistics at a workshop for central bank and national statistics office staff hosted by the Bank of Indonesia for the countries in the region. OECD prepared lectures on other topics for the workshop. Material for a course on measuring the digital economy originally planned for early 2020 is also being prepared.

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