Executive summary

A. Introduction

Technological innovations have shaped global commerce.

From the invention of steamships, railways and the telegraph which fuelled the first industrial revolution in the early 1800s, to the advent of containerization in the 1950s and, more recently, the rise of the internet, technological innovations have significantly reduced trade costs and transformed the way we communicate, consume, produce and trade. However, technological advances are not a guarantee of greater or of stable

technical challenges still lie ahead of it, including

in their readiness to engage in the digital economy, and the impact of digitalization varies significantly across skill categories, increasing demand for high-skill workers which are complementary to that digitalization, while decreasing demand for less skilled workers when the latter are easily replaced by labour-saving technologies and automation.

Digital intensity differs across sectors and firms.

Sectors differ significantly in their dependence on digital technologies. On average, services firms are more intensive users of digital technology than manufacturing firms, while high-tech firms are more intensive users of industrial robots than services or low-tech firms.

Even in the most advanced economies, constant innovation and changing business models inevitably result in gaps in data collection.

Efforts to collect data on digital trade remain in their infancy, particularly in developing economies and least-developed countries (LDCs), where smaller transaction volumes and lower levels of ICT penetration call into question the value of dedicating limited resources to developing the relevant statistics. Despite these challenges, it is possible to illustrate the current state of the digital economy using available statistical and anecdotal evidence and to make inferences about its likely future direction.

Official data on e-commerce transactions is sparse and not comparable across economies, but it does offer some useful information.

In their latest Information Economy Report, the United Nations Conference on Trade and Development (UNCTAD) estimates that the total value of global e-commerce transactions, both domestic and cross-border, was US$ 25 trillion in 2015, up 56 per cent from US$ 16 trillion in 2013 (UNCTAD 2017a). The US International Trade Commission (USITC) offers a similar estimate of US$ 27.7 trillion for global e-commerce in 2016, up 44 per cent from 2012. USITC estimates the magnitude of business-to-business (B2B) transactions at US$ 23.9 trillion in 2016, six times larger than business-to-consumer (B2C) transactions (US$ 3.8 trillion). Current statistics do not break down e-commerce transactions by origin. As a result, domestic and cross-border transactions are not separately identifiable.

The statistical community has developed a “work in progress” conceptual measurement framework, taking into account the nature of the transactions (“how”); the product (“what”); and the actors involved (“who”). Under this framework, “digitally-enabled” transactions are split into “digitally-ordered” and “platform-enabled”. E-commerce transactions are understood to be digitally-ordered but may be aepv4-3l.1(t)-1

Information and transaction costs are especially important in manufacturing, where they account for around 7 per cent of total trade costs. Online platforms help to overcome obstacles such as a lack of information and of trust in cross-border transactions. In addition, the IoT and Blockchain may simplify verification and certification procedures, and real-time translation and online platforms facilitate communication in different languages.

Innovations in cross-border payments and financial services further facilitate trade – for example, e-commerce platforms that circumvent traditional payment systems through blockchain technologies may help to bring down the transaction costs of cross-border trade.

The potential decline in trade costs can

Digital economies are likely to reinforce the importance of skills and capital endowment, as they are capital-intensive and skill-intensive. AI, 3D printing and advanced robotics could reduce the role of labour as source of comparative advantage.

In contrast, physical infrastructure, border processes and geographical factors might become less relevant, which would benefit remote or landlocked economies, as well as economies with less developed physical infrastructures and customs procedures.

Energy infrastructure is an important factor in defining comparative advantage in digital-intensive sectors, because the servers that support digital technologies depend on storage devices, power supplies, and cooling systems that consume vast amounts of energies.

Another factor that could become more important for trade patterns in the digital age is market size. Digital technologies benefit from access to large amounts of information, which may be advantageous to large developing economies.

With regard to institutions, the digitalization of trade may magnify their importance for comparative advantage, given that data privacy and intellectual property rights regulation rely on credible enforcement, although new technologies may also reduce the role of institutions for comparative advantage.

In addition to these traditional sources of comparative advantage, new sources will arise for trade in digital-intensive products. The regulation of intellectual property rights, data flows, and privacy are likely to be of particular importance, as well as the quality of digital infrastructure, since reliable and fast network access is becoming a necessity for conducting business.

The advance of digital technologies brings about opportunities and challenges for developing and developed countries alike.

For instance, as digitalization increases the complexity of tasks performed by workers, developed economies may strengthen their comparative advantage in skill-intensive sectors, although as new technologies diminish the importance of physical infrastructure, developing economies may also gain comparative advantages in the sectors most affected by the shift from physical to digitalized trade.

Digital technologies may affect the international fragmentation of production. However, the overall impact on GVm0

to grow by around 2 percentage points more than in the baseline scenario as a result of these trends, and the share of the services trade is projected to grow from to 21 per cent to 25 per cent. Developing countries are likely to gain an increasing share of global trade, but the quantitative effects will depend on their ability to catch up on the adoption of digital technologies. If this catching up occurs, developing and least-developed economies' share in global trade is predicted to grow to 57 per cent by 2030, from 46 per cent in 2015, whereas if catching up does not occur, this share is predicted to rise only to 51 per cent. The organization of global production is projected to change through a rising share of imported intermediate services in manufacturing.

D. How do we prepare for the technology-induced reshaping of trade?

Digital technologies not only create new markets, new forms of trade and new products, but they also lower trade costs and change trade patterns. These changes offer new opportunities and trade gains, and governments may have a role to play in ensuring that firms can seize these opportunities.

First, governments may need to support or accompany private efforts to develop and facilitate access to affordable digital infrastructure and digital infrastructure services. They may also need to take measures to allow digital technologies to lower trade costs, for instance by enabling faster and more reliable management of data across borders or by facilitating trade operations and customs cooperation. At the same time, however, the reduction of trade costs may lower the prices of imported products relative to those of domestic products, possibly generating protectionist pressures from domestic producers subject to import competition.

Second, digital technologies may reshuffle comparative advantages, for instance by making it possible for firms in remote areas to sell digital products around the whole world or by making it profitable for firms in high-income countries to reshore certain activities. This raises questions as to how governments, in particular those of smaller and poorer countries, can seize new trading opportunities. An important dimension of this issue is the digital divide between richer and poorer countries.

Finally, governments will need to address concerns relating to consumer protection, cybersecurity, data privacy and competition that arise with digital trade in a way that is not more trade- -12.2 (e t)--16.4(n)1.u, fo156 Td3-104 (c

While the WTO framework, and in particular the General Agreement on Trade in Services (GATS), is relevant for digital trade and WTO members have taken certain steps to promote digital trade within the existing framework, there is debate as to whether and how more could be done to support inclusive digital trade.

As demonstrated by the discussions that have taken place since 1998 in the context of the WTO Work Programme on Electronic Commerce, existing

comprehensive provisions are often found in a