

E. Conclusions

The world trading system has always been shaped by technological progress. Not only is technology a determinant of trade costs, but it also defines what products can be traded across borders, and it affects patterns of comparative advantage.

Today's digital revolution has come about because of the shift from mechanical and analogue electronic technology to digital technologies, which have been rapidly adopted in the information and communication sectors in particular, and accompanied by sweeping economic and even social changes. All of this started with one fundamental innovation: the internet.

The internet economy has remodelled many facets of our lives, from how we interact with each other, to what we buy and how we work. As new digital technologies leverage the internet to process and analyse big data, computers, automation and data analytics are coming together in an entirely new way that is transforming the global economy and global commerce. Increasingly, trade in goods and services now includes large data and intellectual property contents, and new markets, products and business models are emerging.

This report has examined four digital technologies that are likely to affect trade significantly in the years to come: the Internet of Things, artificial intelligence, 3D printing and Blockchain. The effects of these digital technologies on international trade have been analysed from both a qualitative and a quantitative perspective.

One of the most significant effects of digital technologies is the extent to which they reduce various trade costs, such as transport and logistics costs, the cost of crossing borders, information and transaction costs, and the costs of cross-border payments. Transport and logistics costs combined account for more than half of the variation in trade costs in agriculture and manufacturing, and for more than 40 per cent of the variation in trade costs in services. Thus, the application of artificial intelligence, the Internet of Things and Blockchain to reduce transport and logistic costs are likely to have the largest effects on overall trade costs.

Digital technologies are also blurring the distinction between goods and services and are increasing the importance of data flows and intellectual property. For example, a 3D printed object is also a "3D traded object" – a good that is produced on the basis of

a design protected by intellectual property that is transmitted by electronic means as a service.

The Report has also discussed four ways in which digital technologies affect the composition of trade. First, digital technologies increase the services component of trade, because of the ease of supplying services digitally, because new services emerge and replace trade in goods, and because international production networks increase the services content of manufacturing goods. Second, digital technologies foster trade in certain type of goods (time-sensitive, certification-intensive and contract-intensive goods), while at the same time reducing trade in digitizable goods. In addition, the "sharing economy" business model may affect trade in certain consumer goods, such as housing and transport services. Third, digital technologies affect the complexity and length of global value chains, reducing the costs of coordinating geographically dispersed tasks, but at the same time providing increased incentives to (re)locate production near large markets or near centres of innovation. Fourth, digital technologies change patterns of comparative advantage by increasing the importance of factors such as the quality of digital infrastructure and market size, as well as institutional and regulatory determinants of comparative advantage, including intellectual property protection.

These broad qualitative patterns are largely confirmed by quantitative analysis. The WTO's Global Trade Model (GTM) shows that future technological changes are expected to increase trade growth, especially the growth of trade in services. Global trade is projected to grow by around 2 percentage points more than the baseline growth rate, and the share of services trade is projected to grow from 21 per cent in 2016 to 25 per cent in 2030. Moreover, the share of imported intermediate services in manufacturing is projected to increase.

All of these changes seem likely to open new opportunities for developing countries and smaller firms. However, the digital divide, in its various aspects, remains a reality. Quantitative analysis suggests that developing countries will gain an increasing share of global trade, but the extent of that share will depend on their ability to catch up in the adoption of digital technologies. As the *World Trade Report 2017* outlined, technology adoption and diffusion hinge on a number of factors, including feasibility, affordability and managerial culture, as well as legal and regulatory frameworks and public acceptance.

The digital divide is only one among several challenges raised by the advent of digital technologies. Issues related to market concentration, the loss of privacy and security threats increasingly dominate policy agendas in many economies. While digitalization can have significant pro-competitive effects, it can also potentially limit competition by enabling exclusionary or collusive behaviour. Digital technologies make it easier to generate, collect and store personally identifiable data. While this offers private, social and business benefits, concerns about individual data privacy have also become widespread. In addition, cyberattacks can seriously threaten the security of individuals, firms and governments, and can have disruptive economic effects.

Given the cross-cutting nature of digital technologies, as governments progressively develop regulation to take into account the growing digitalization of their economies, the set of policies that have an impact on international trade expands. When it comes to regulating consumer protection in online transactions, data privacy, cybersecurity, competition policy for digital markets, and intellectual property protection, this report shows that governments follow very diverse approaches – reflecting the diversity in public policy objectives across countries.

The global nature of the current transformation suggests that international cooperation is necessary, and the evolving nature of trade that new "policy dynamics" are required. As the distinction between goods and services is increasingly blurred, and the role of intellectual property in international trade increases, policies related to trade in services

and intellectual property become increasingly relevant. If trade is increasingly fuelled by cross-border data flows, mercantilist approaches to trade policy cooperation are rendered less relevant than regulatory cooperation. The challenge for governments is to find the right balance between principles and policies that promote technological progress and international market integration on the one hand, and principles and policies that ensure that they retain the ability to pursue legitimate objectives while regulating the digital economy, on the other. The principle of legitimate objective – which aims to ensure that government policies do not represent disguised restrictions on trade and that they are not more trade-restrictive than necessary – is an integral part of WTO legal texts. The question is whether this principle, as currently embodied in WTO texts, is sufficient to address the challenges raised by the expansion of digital trade.

The way we do business is going to change dramatically over the coming years, in ways that are likely to pose new challenges to the trading system as it exists today. WTO members will have to consider how they want to respond to these challenges.