

Trade in the Digital Era

Digitalisation is reducing the cost of engaging in international trade, connecting businesses and consumers globally, helping diffuse ideas and technologies, and facilitating the co-ordination of global value chains (GVCs). Today, more small parcels and lower-value digital services (applications) are being traded internationally; more services are becoming tradable; and goods and services are increasingly bundled in ‘smart’ products. These changes are bringing new challenges, going beyond managing digital disruption to ensuring that the opportunities and benefits from digital trade are realised and shared more inclusively.

Key messages

- Digitalisation has made it easier to engage in trade, co-ordinate GVCs, and diffuse ideas, changing how firms engage in international trade, what they sell and to whom.
- Digital trade is not new, but it is growing and raising a set of new challenges, not least related to ensuring that the benefits are shared more inclusively.
- Digitalisation is creating new trade opportunities for firms to sell more products to more markets, resulting in countries diversifying their export baskets. It is increasing trade in goods and services across all sectors and allowing countries to draw greater benefits from their trade agreements.
- However, barriers to digitally enabled services, which form the backbone of digital trade transactions, are growing.
- Although existing World Trade Organization rules and agreements cover digital trade, there are questions about how well adapted current frameworks are to the new realities of trade in the digital era.
- We need approaches that are more holistic, spanning goods, services and digital connectivity; approaches that involve more stakeholders, including governments, civil society and the business community; and approaches that are informed by the interests of a range of countries at different levels of development.
- As the current debate on data flows shows, the road ahead will be difficult. Many digital infrastructures are born global, raising key challenges for domestic and international policy in a world where borders and regulatory differences between countries remain. Principles of market openness, enshrined in trade agreements, can help countries approach some of the challenges in ensuring that the benefits from trade and key public policy goals can both be realised.

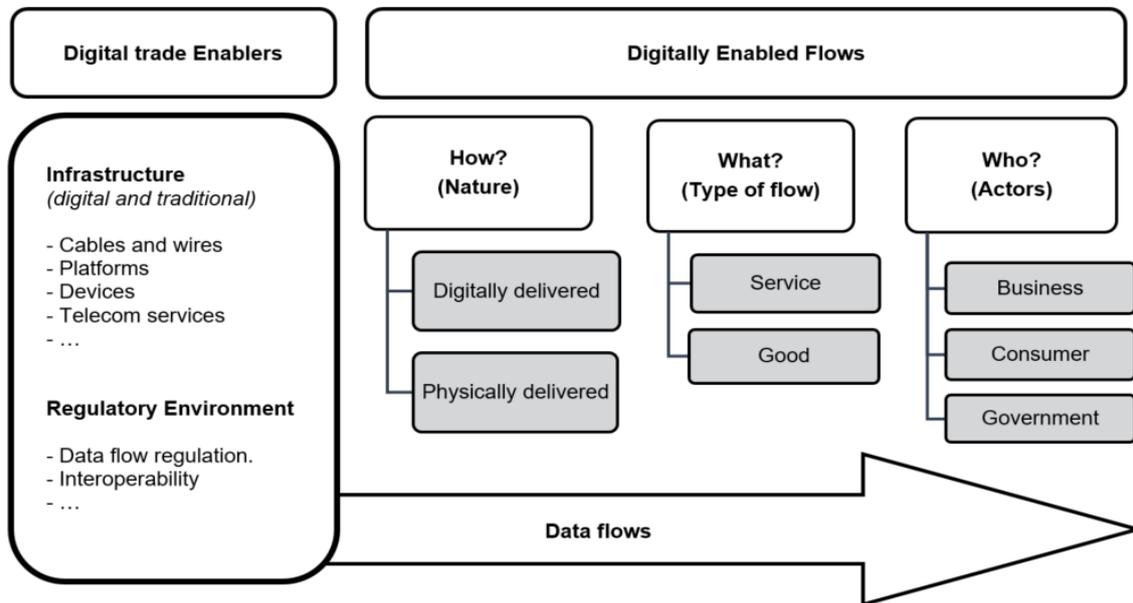
What is digital trade?

Digital trade is not in and of itself new. Digitally enabled transactions, be they in relation to goods or services, have been part of the landscape for many years and often raise the same, or similar, issues as non-digital transactions. This is because digital trade is not just about digitally delivered services, but also about increased traditional – including supply-chain – trade in goods and services enabled through growing digital connectivity. However, the scale of transactions, the emergence of new (and disruptive) players and business models are transforming production processes and industries, including many that were previously little affected by globalisation.

Although there is no single, recognised, and accepted definition of digital trade, there is a growing consensus that it encompasses digitally enabled transactions in trade in goods and services that can be digitally or physically delivered (Lopez-Gonzalez and Jouanjean, 2017). This includes digitally delivered software, e-books, data or database services;

and digitally enabled but physically delivered goods and services, such as a purchase of a good on an online marketplace or a hotel booking through a matching service. Digital trade involves business-to-business transactions, including within GVCs, as well as transactions between consumers or businesses through online platforms. All of these transactions are underpinned by data, which is the lifeblood of digital trade (Figure 1).

Figure 1. A typology for digital trade



Source: Lopez-Gonzalez and Jouanjean (2017), “Digital trade: Developing a framework for analysis”, <http://dx.doi.org/10.1787/524c8c83-en>.

What is the evidence on trade in the digital era?

While it is clear that digitalisation is important for trade, and trade is important for the diffusion of digital technologies, measuring the nature of the links and therefore the scale of the policy challenges is difficult. Even if traditional trade statistics for goods record many digitally enabled trade transactions, they do not differentiate goods transactions according to whether they have been digitally enabled or not. Similarly, in services, measurement of cross-border transactions has always been difficult but for digital trade, the challenge is compounded by the need to identify those services which are digitally ordered as well as those which are digitally delivered. The rise of 3D printing is also set to raise challenges in capturing digital delivery for products that arguably encompass both services and goods.

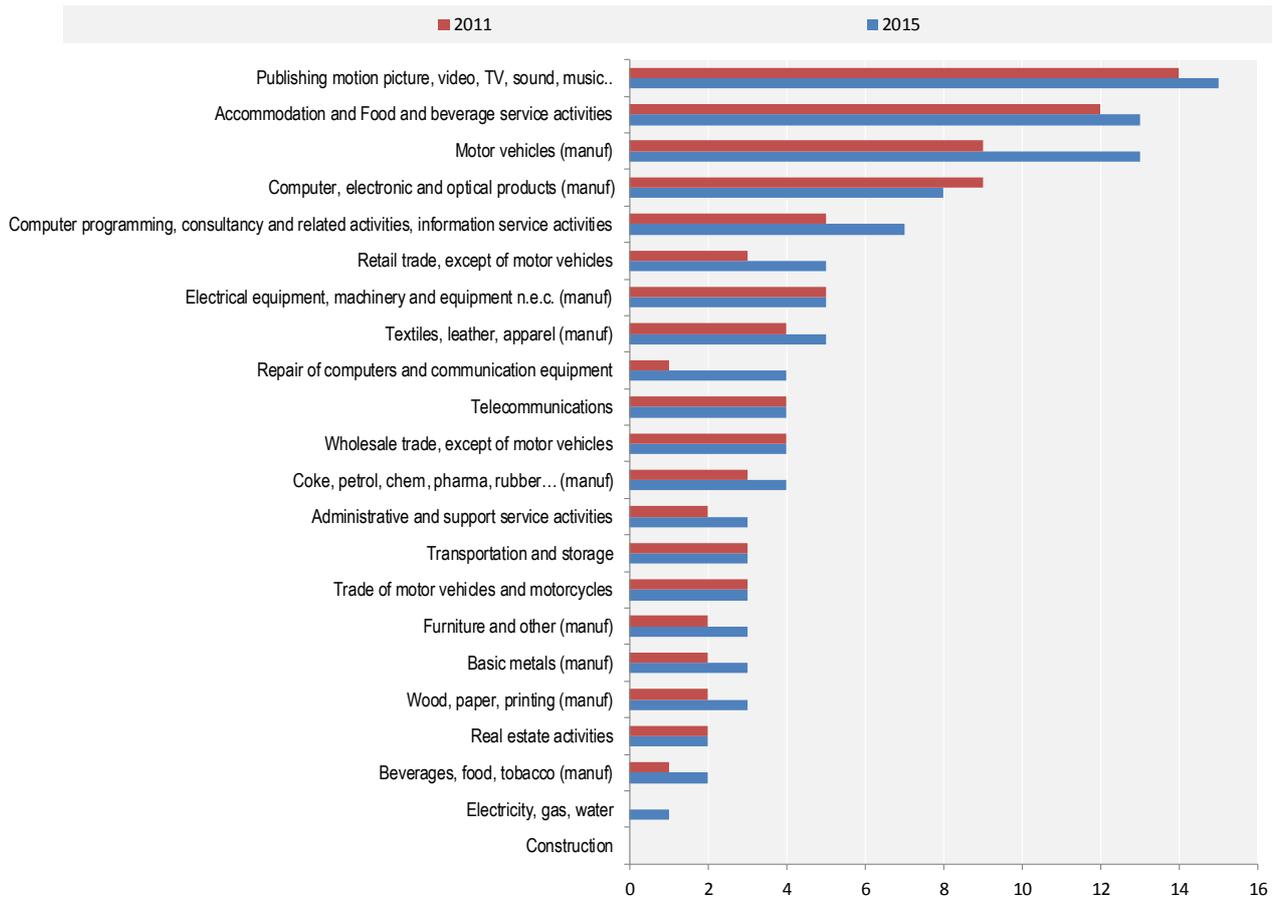
Although efforts are underway to better capture digital trade in official trade statistics (OECD, 2017), it will be some time before robust measures are identified. This also reflects the challenges in measuring digitalisation more broadly, with important progress made in the OECD’s *Measuring the Digital Transformation: A Roadmap for the Future* (OECD, 2019a). Until better measures for digital trade are available, analysis has to proceed carefully, using existing statistics to shed light on particular aspects of trade in the digital era.

Digital trade is growing...

A growing number of enterprises, across both manufacturing and services, are engaging in cross-border electronic sales (Figure 2). But there are considerable differences across industries and countries, and more to do to unlock the potential of digital trade. Digitalisation is linked with greater trade openness, selling more products to more markets and in less concentrated export baskets (Lopez-Gonzalez and Ferencz, 2018). A 10% increase in “bilateral digital connectivity” raises goods trade by nearly 2% and trade in services by over 3%.¹ And while digitalisation is important for all sectors, it is most important for exports in more sophisticated manufactures and digitally deliverable services (Figure 3).

Digitalisation also increases the benefits that can be drawn from regional trade agreements (RTAs). When combined with an RTA, a 10% increase in digital connectivity increases exports by an additional 2.3%. Finally, there is a statistically significant relationship between information and communication technology (ICT) goods imports, digitalisation and services exports, suggesting that, just as services have become more important for goods exports, ICT goods increasingly enable the export of digitally deliverable services.

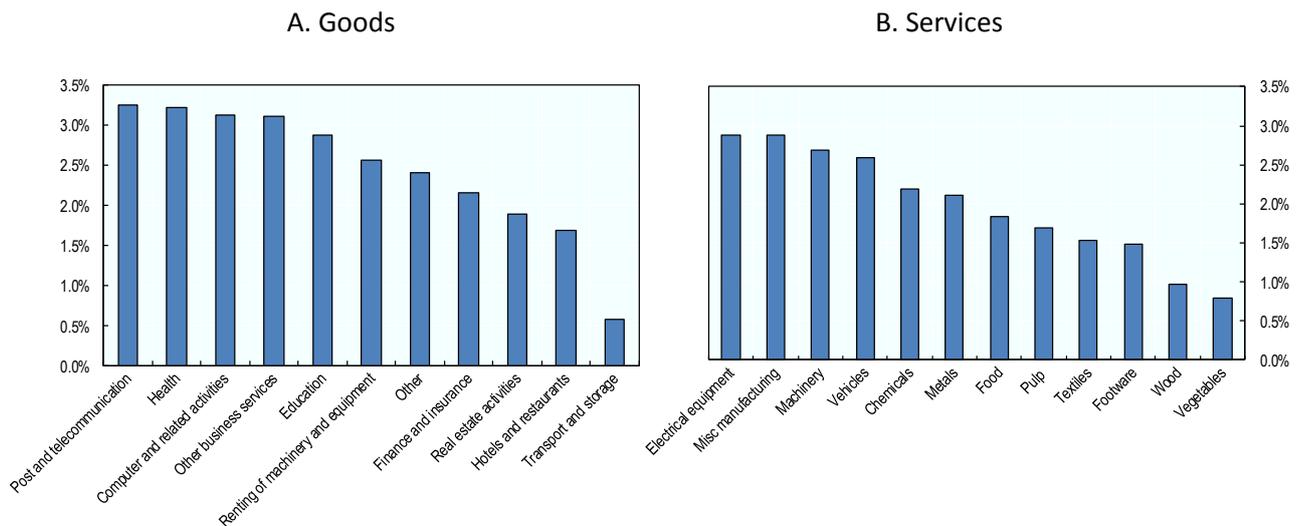
Figure 2. Enterprises engaged in cross-border electronic sales (2011-15)



Notes: Values are averages across sectors for EU28 countries. Cross-border sales are defined as selling to other EU countries and to the rest of the world.

Source: Lopez-Gonzalez and Ferencz (2018), “Digital trade and market openness”, <http://dx.doi.org/10.1787/1bd89c9a-en>.

Figure 3. Digitalisation has a positive impact on trade in goods and services



Note: This figure shows the percentage increase in exports as a result of a 10% increase in bilateral digital connectivity derived from a gravity model.

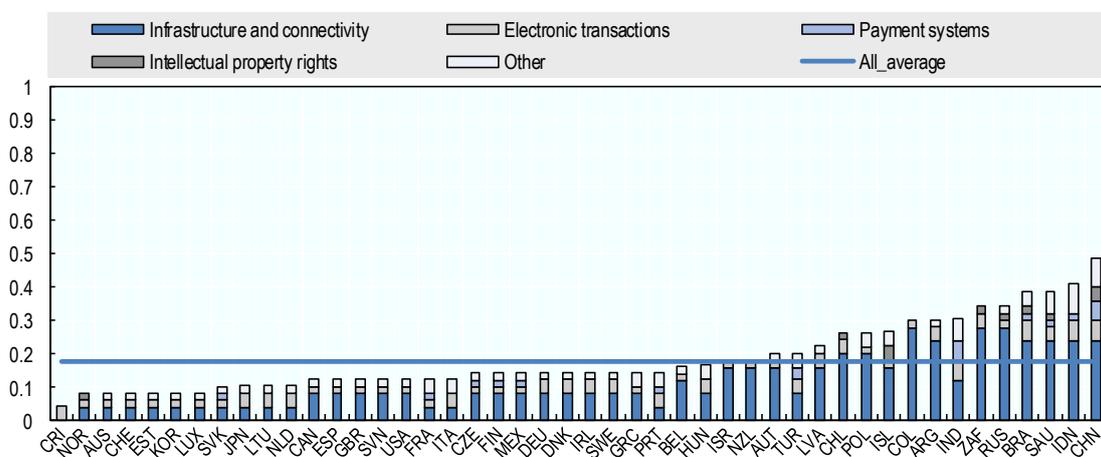
Source: Lopez-Gonzalez and Ferencz (2018), “Digital trade and market openness”, <http://dx.doi.org/10.1787/1bd89c9a-en>.

But so too are the measures that affect digitally enabled services...

Services play a crucial role in enabling digital trade transactions, so removing barriers to trade in services is key for market openness in the digital era. The OECD's new Digital Services Trade Restrictiveness Index (DSTRI) identifies, catalogues and quantifies cross-cutting barriers that affect trade in digitally enabled services across 44 countries, with data available for every year for the period 2014-18 (Ferencz, 2019).

The DSTRI reveals a diverse and complex regulatory environment affecting trade in digitally enabled services (Figure 4). Some of the most common measures relate to policies that impede access to communication infrastructure and movement of information across networks. Less common are barriers affecting electronic transactions and payments. However, other impediments such as the obligation to establish a local presence before engaging in digital trade are also common. A key emerging challenge is that the regulatory environment for digital trade is increasingly tightening, particularly for measures affecting infrastructure and connectivity, among which are measures affecting the movement of data (Ferencz, forthcoming).

Figure 4. Digital Services Trade Restrictiveness Indices, 2018



Source: OECD Digital Services Trade Restrictiveness Index.

What issues does digital trade raise for policy?

Current trade rules also apply to digital trade

As the digital transformation progresses, governments are facing new regulatory challenges. One issue is whether current trade rules adequately address trade in the digital age. Indeed, existing multilateral trade rules were negotiated when digital trade was in its infancy and, even if conceived to be technologically neutral, questions arise over whether they might require clarifications to reflect new forms of, and issues raised by, digital trade. That is, the question is not whether the rules apply, but rather how they apply.

Trade rules are traditionally predicated on identifying whether products are goods or services and the borders they cross, but new business models and the global nature of the Internet blur these distinctions. For example, a 3D printing trade transaction involves a design service crossing a border, but at the moment of consumption it is a good, so should trade rules for goods or services apply? If the transaction originates from a server in the United Kingdom but the intellectual property belongs to a company in Germany, what is the origin of the product? Today, firms can flexibly service markets from different locations, and their products bundle goods and services (for example, a smart home speaker connected to a voice-controlled digital personal assistant), making it increasingly difficult to identify the particular trade rules that apply to specific transactions.

But we need to promote more holistic approaches to market openness

The nature of the measures that affect digital trade is changing. Measures that affect access to and use of digital networks have become more important. Likewise, in the digital era, there are new consequences from some traditional trade issues (such as trade facilitation and *de minimis* thresholds in the context of growing parcel trade); and the emergence of new issues for trade (e.g. related to the movement of data or the interoperability of e-payment systems).

Today, a simple digital trade transaction rests on a series of enabling or supporting factors. For instance, ordering an e-book depends on access to a retailer's website. This in turn depends on the regulatory environment setting the conditions under which the retailer establishes the webpage and the cost for the consumer of Internet access – a cost which, in turn, is affected by the regulatory environment in the telecommunications sector. Lastly, purchase of the e-book will also be affected by the ability to pay electronically and the tariff and non-tariff barriers faced by the physical device used to read the e-book.

A barrier on one of these transactions will affect the need or ability to undertake the other transactions. This means that market openness needs to be approached more holistically, taking into consideration the full range of measures that affect any particular transaction. For instance, Internet access may be a necessary but not sufficient condition for digitally enabled trade in goods to flourish. If logistics services in the receiving (or delivering) country are costly due to service trade restrictions, or if goods are held up at the border by cumbersome procedures, then the benefits of digital trade may not materialise.

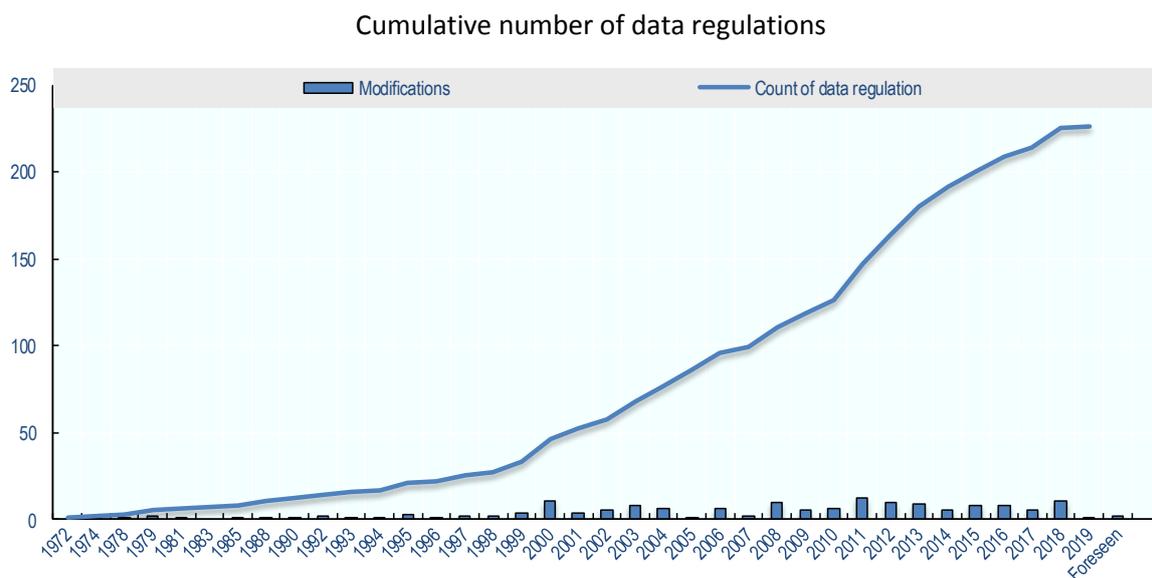
A holistic approach to market openness also means going beyond the issues that traditionally concern trade policy makers to understanding how these interact with other policy domains such as innovation, infrastructure, connectivity and skills. Market openness is a necessary but not sufficient condition for digital trade. New technologies are often made available through international trade, and access to global markets for both inputs and outputs is necessary for scaling production and increasing competitiveness. But taking advantage of this is only possible for firms with the skills and capacity to adopt new data-driven solutions. Successful firms in the digital age combine adoption of new technologies with access to global markets, so trade policy needs to be seen in the context of a range of other policies which also matter for the shared benefits from digital adoption to materialise.

And we need to talk about data

Trade and production are also now heavily dependent on moving, storing and using digital information (data), increasingly across borders. Data enables the co-ordination of international production processes through GVCs, helps small firms reach global markets, can be an asset that can be traded, or a conduit for delivering services, and is a key component for automation in trade facilitation.

However, the ubiquitous exchange of data across borders has given rise to concerns by governments and citizens about some of the potentially negative effects of so much information being collected, transferred and used, often without the knowledge of data subjects. Concerns related to privacy and security, amongst others, have led to growing calls for deeper and more widespread regulation of the Internet and its underlying data flows. As a result, governments are updating data-related regulations and increasingly conditioning the transfer of data across borders or requiring that data be stored locally (Figure 5) (Casalini and Lopez-Gonzalez, 2019).

Figure 5. A growing number of data regulations



Note: Data regulations include different types of regulation relating to data transfers and local storage requirements.

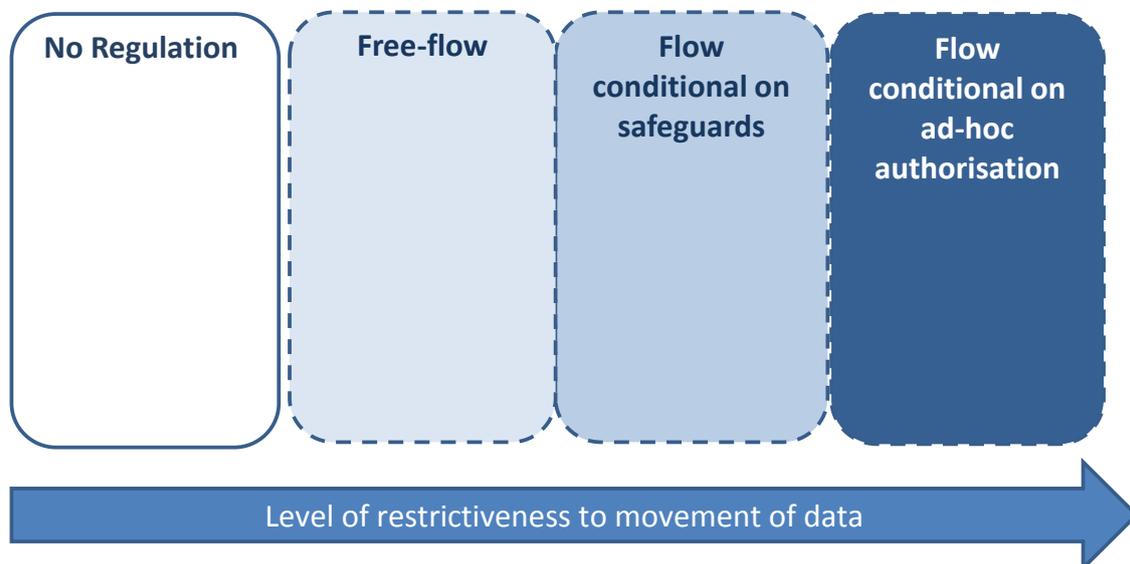
Source: Casalini and Lopez-Gonzalez (2019), "Trade and cross-border data flows", <http://dx.doi.org/10.1787/b2023a47-en>.

There are many reasons why countries may wish to regulate data flows. One is to safeguard the privacy of individuals and their personal data. Approaches to privacy and personal data protection also vary across cultures, which is why regulation also differs. Countries may also restrict the flow of data, or mandate that data be stored locally, in order to meet other regulatory objectives such as access to information for audit purposes. Restrictions to data flows might also arise for the protection of information deemed to be sensitive from a national security perspective, or to enable national security services to access and review data. But some countries are also increasingly using data regulation with a view to helping develop domestic capacity in digitally intensive sectors, as a form of digital industrial policy.

Similarly not all data, or data regulation, are the same. Four broad approaches to regulating cross-border data flows are emerging (Figure 6). These are not mutually exclusive; different approaches can apply to different types of data even within the same jurisdiction (health data, for instance, might be subject to more stringent approaches than data related to product maintenance).

1. At one extreme, there is no regulation of cross-border data flows, usually because there is no data protection legislation at all (largely least developed countries). While this implies no restrictions on the movement of data, the absence of regulation might affect the willingness of others to send data.
2. The second type of approach does not prohibit the cross-border transfer of data nor does it require any specific conditions to be fulfilled in order to move data across borders, but provides for ex-post accountability for the data exporter if data sent abroad is misused.
3. A third approach conditions the flow of data by permitting transfers only to countries that have received an adequacy determination (i.e. a public or private sector finding that the standards of privacy protection in the receiving country are adequate); and/or where appropriate private sector safeguards, such as contractual mechanisms, are provided; or in the case of some narrow exceptions.
4. The last broad type of approach relates to systems that only allow data to be transferred on a case-by-case basis subject to a review and somewhat discretionary approval by relevant authorities. This approach relates to personal data for privacy reasons but also to a more sweeping category of data referred to as “important data”, including in the context of national security.

Figure 6. Typology of cross-border data flow regulation



Note: Data regulations include different types of regulation relating to data transfers and local storage requirements.

Source: Casalini and Lopez-Gonzalez (2019), “Trade and cross-border data flows”, <http://dx.doi.org/10.1787/b2023a47-en>.

Restrictions on data flows can have trade consequences, when, for instance, they affect the movement of data critical for the co-ordination of GVCs or for small and medium-sized enterprises (SMEs) to trade. As governments approach the question of how to regulate cross-border data flows, it will be increasingly important that the international and trade dimensions of data regulations are also considered, to ensure that privacy, security, protection of intellectual property and the benefits of digital trade, are all comprehensively understood, considered, and balanced.

While digital infrastructures such as the Internet were born global, and offer new opportunities for firms of all sizes, they also raise considerable challenges for policy in a world where borders and regulatory differences between countries remain. Some useful principles for promoting open exchange in the context of regulatory heterogeneity can be found in existing trade agreements (Casalini, Lopez Gonzalez and Moisé, 2019). These principles are arguably becoming even more important in the digital era:

- **Transparency**, both inclusive processes and access to information, is especially important in digital trade with more, and smaller firms, trading in more countries with more complex transactions.
- **Non-discrimination**, is critical to ensuring shared benefits and for enabling digital trade to prosper alongside its analogue equivalent, but raises new issues in the digital era. Are digital and analogue products “like”?
- **Avoiding unnecessary trade restrictiveness** is key to finding balance and ensuring that regulatory objectives are fully met in a way that is least restrictive to trade. This is a challenge: in the digital age, local regulation can have global impacts, especially on SMEs.
- **Interoperability** and open standards can increase the capacity of different systems to interact. Where harmonisation is not achievable or desirable, interoperability may help overcome issues related to technical and regulatory heterogeneity and enable greater sharing of the benefits of digital trade.

How can we help move the agenda forward?

Digital trade promises new opportunities for individuals and firms of all sizes, but also raises new challenges. Understanding the drivers of this new paradigm for trade, and finding solutions in dialogue with all stakeholders will be key in getting the policy mix right and making digital trade more inclusive for all. The OECD can help by providing data, information and analysis to help motivate and inform trade policy positions. Our work on digital trade aims to help unpack the issues at stake, providing new frameworks and analysis to help governments think through what matters for market openness in the digital age.

Note

1. Digital connectivity between two countries, or the potential thereof, is proxied using the minimum of the share of the population that is using the Internet, with both supplying and demanding countries requiring good Internet connectivity.

Further reading

Casalini, F. and J. Lopez-Gonzalez (2019), “Trade and cross-border data flows”, *OECD Trade Policy Papers*, No. 220, OECD Publishing, Paris, <http://dx.doi.org/10.1787/b2023a47-en>.

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Digital technologies and large-scale data flows are fundamentally changing how people live and work, interact with one another, participate in the economy, and engage with the government. The OECD’s *Going Digital* project examines how government policy can help ensure this digital transformation benefits all by increasing growth and improving well-being. Going Digital Policy Notes provide insights into key trends, opportunities and challenges, and the policy directions needed for making the most of digital transformation.

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