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TRADE IN THE TIME OF PARCELS

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Trade in the Time of Parcels

Javier López González and Silvia Sorescu

Today, more parcels are crossing international borders than ever before. While this has given rise to new opportunities, not least for individuals and SMEs who are now more directly engaged in trade, it is also raising new challenges. This paper explores this complex and evolving environment, identifying the types of goods that are traded as parcels and the different actors along the parcels supply chain, as well as the policies to help ensure that parcels get to where they are needed. Empirical analysis shows that progress on digital connectivity and trade facilitation measures, such as increased transparency or automating border processes, are likely to have a greater trade-enhancing impact on parcel trade than on "traditional" trade. In contrast, greater differences in regulations across countries in transportation, courier or logistics services are associated with lower trade in parcels. Overall, enabling benefits from trade in parcels and facing forthcoming challenges requires a comprehensive policy approach across a number of areas and throughout the parcel supply chain.

Key words: E-commerce, COVID-19, SMEs, trade facilitation, services, gravity estimation

JEL codes: C54, F13, F68, L10

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Key messages

Cross-border trade in parcels connects consumers and businesses across the globe

- The wider use of digital platforms and websites to sell goods across borders has reduced information constraints, contributing to a significant increase in the number of parcels crossing borders. As a result, individuals and smaller firms are more engaged in trade than ever before, a trend that has accelerated during the COVID-19 pandemic. This, in turn, can serve as an important avenue for an inclusive economic recovery.
- Existing evidence on postal and express deliveries suggests that parcel trade (especially during recent lockdowns) largely involves electrical machinery, such as ICT goods; medical products; appliances; and items of leisure such as games and toys. However, quality data remains limited, underscoring the need for continued data collection efforts.
- Clicking the purchase button on an item sets in train a complex network of actors and processes, involving digital platforms, e-payment solutions, postal and courier operators, multi-modal transport networks, fulfilment centres, last mile delivery and Customs authorities.

Getting parcels to where they are needed requires coordinated action across diverse policy areas

- Parcel business models are evolving – from sending individual consignments across borders to the growing use of "fulfilment centres" powered by artificial intelligence. From click to doorstep, parcel trade touches upon a range of policy areas:
  - *Behind the border*: Issues such as access to the Internet, e-payments or consumer protection *determine* the interest and ability of individuals and firms to engage in trade in parcels.
  - *During transit*: The conditions under which postal or courier services operate, and issues related to transport services determine how, and at what cost, products move to and from the border.
  - *At-the-border*: Administrative processes, risk management, standards and issues around revenue collection affect the cost and length of time that items spend at Customs.
  - *Throughout the supply chain*: A range of cross-cutting elements, such as access to digital infrastructure and cross-border data flows, affect the connections between the many different actors involved in the parcels supply chain, including in the context of returns.

What can policy makers do?

- The empirical evidence shows that trade in parcels is likely to be more sensitive to digital connectivity than "traditional" trade. Moreover, the regulatory environment that underpins digital transactions, the rules that support the activities of carriers and couriers, and the trade facilitation environment at the border, all shape parcel trade, sometimes to a greater extent than traditional trade.
- With digital adoption accelerating as a result of COVID-19 lockdowns, a new normal in trade in digitally-ordered parcels is emerging. Enabling benefits from, and addressing challenges facing, trade in parcels requires a comprehensive approach to the parcel supply chain. This means:
  - *Greater attention to enabling the services that support parcel trade*, such as through appropriate frameworks for e-payments and reducing restrictions on logistics, courier and transportation services such as air transport.
  - *At the border, digitising processes, streamlining procedures and identifying new ways to better collect import and other taxes* to help Customs and other border agencies deal with rising workloads as a result of growing trade in parcels and enable them to focus on risk management.
  - *Continuing international discussions to create robust digital trade frameworks* that include more transparent and interoperable regulations on consumer protection, returns and data flows.

Executive summary

Cross-border trade in parcels is increasingly connecting supply and demand globally

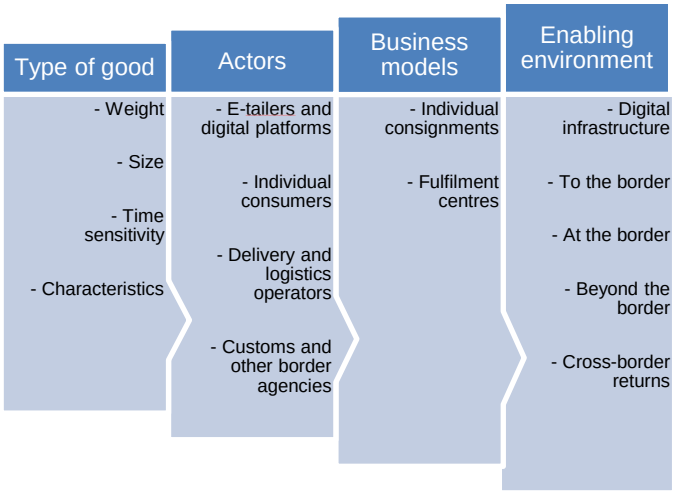
The wider adoption of digital platforms and websites by firms and individuals has reduced information constraints, connecting supply and demand globally and leading to growing international trade in digitally ordered goods. Many of these products are shipped across borders in individual consignments in what is known as *parcel trade*.[1] This has enabled individuals and smaller firms to be more engaged in trade than ever before, both as importers and exporters, a trend that has accelerated during the COVID-19 pandemic.

Clicking the purchase button on an item sets in motion a complex network of actors and processes, involving digital platforms, e-payment solutions, postal and courier operators, multi-modal transport networks, fulfilment centres, last mile delivery and Customs authorities. Each provides different solutions tailored to the needs of sellers and consumers, contributing to rising digital sales and a growing number of parcels crossing borders.

The COVID-19 pandemic led to a marked increase in e-commerce orders during the first two quarters of 2020. In Asia-Pacific, Europe and North America, online orders grew between 50-120%, contributing to already growing parcel trade. Consumer surveys indicate that these trends are likely to continue in most regions, even as brick-and-mortar stores reopen.

A comprehensive framework is needed to understand the landscape for cross-border parcel trade, including in the context of challenges experienced during COVID-19. This paper proposes such a framework to analyse the evolving environment for cross-border trade in parcels, exploring the types of goods that are traded as parcels, the different actors and business models for parcel supply chains, and the policies that help ensure that parcels get to where they are needed.

Trade in parcels: Framework for analysis



[1]Parcels, or goods delivered in individual or small consignments, can be defined using a variety of different parameters such as weight, size, time sensitivity for delivery, or the mode through which they are delivered (see Section 2.1).

Trade policies are an important part of the enabling environment for parcels

The sale, delivery and distribution channels for parcel trade operate according to different business models. Shipping an individual parcel item directly from a business to a consumer is most common for goods that have a higher unit-value, or intermittent demand with relatively lower sale volumes. Markets for such products are typically less predictable, and businesses usually do not hold stocks close to final consumption. This means that products directly purchased from international sellers – often via digital platforms – are sent from the business' warehouse to consumer as parcels using express carriers or postal distribution channels.

By contrast, for products with more predictable and regular sales volumes, sellers often rely on business models that use bonded warehouses or distribution centres (also known as fulfilment centres). Large digital retailers tend to favour the use of such distribution centres, which generally involve shipping containers of products using more traditional sea or air freight and storing goods in warehouses after border clearance in regional or country hubs. This means that many products delivered as parcels may travel in containers through more traditional trade routes and only move as parcels, individually, during the last leg of the journey to customers.

Identifying the nature and value of parcel trade is difficult. This is, in part, because parcels often fall below certain value thresholds, meaning that they clear Customs through simplified and expedited procedures, often without being recorded in official statistics. That said, existing data on cross-border postal or express delivery dispatches can provide insights into some aspects of this trade. Data for European countries suggests that parcel trade is concentrated in electrical machinery (including ICT goods), medical products, and appliances. Other goods such as tools, clothing items, toys and games, or books and other printed products, are also increasingly traded through parcel consignments.

The parcels supply chain comprises a mix of physical and data-driven, technology-based elements. The way these elements interact and how different actors participate in the supply chain determines the efficiency of cross-border delivery, including getting parcels to the border, across the border and beyond.

This paper attempts to identify the issues that need to be considered at different stages of the parcel supply chain and how they relate to each other. From click to doorstep, there are, broadly speaking, four segments to a cross-border parcel transaction that matter from an international trade perspective: *behind the border* (related to the domestic regulatory environment in which the transactions take place); *in transit* (referring to getting products to the border and beyond, including last mile delivery); *at the border (*relating to Customs clearance, risk management and revenue collection); and *throughout the supply chain* (focusing on the cross-cutting elements affecting how actors interact).

Ensuring that parcels get to where they are needed requires policy action along several dimensions: behind the border in areas such as (electronic) payments or consumer protection; at the border in terms of administrative processes, standards or revenue collection; but also while in transit, in terms of logistics, postal, and transport services. Cross cutting elements, such as digital infrastructure and cross-border data flows, are also key throughout the whole supply chain as they connect all the different actors involved in parcel transactions.

Empirical analysis identifies the impact of changes in different policy variables on exports of parcels in a selection of countries. This gravity modelling exercise suggests that parcels might be more sensitive to digitalisation than traditional trade; that is, that the degree of digital connectivity appears to have a greater impact on cross-border trade in parcels than on traditional trade. It also shows that changes in the prevailing regulatory environment for digital trade has a strong impact on trade in parcels. At the same time, greater differences across countries in the regulations that underpin transportation, courier and postal services are also associated with lower trade in parcels. Finally, the empirical analysis underscores that trade facilitation measures at the border are key for increasing the movement of parcels across borders.

COVID-19 is raising new issues for parcel trade

Measures taken to control the spread of COVID-19, including limiting the movement of people, reinforcing border controls and introducing new border protocols (including to protect people handling and inspecting goods), while necessary, have impacted the various modes of transportation used in parcel trade to varying degrees. The speed of processes throughout the logistics chain has been affected by necessary physical distancing protocols, but also by inconsistencies in what constitutes an "essential activity". These come on top of constraints stemming from lockdowns and curfews that already affect the ability of firms to produce. With many logistics firms operating multi-hub routes when shipping parcels internationally, these restrictions accumulate, also making it much more difficult to schedule operations.

Delays in shipments and increases in the costs of shipping during the pandemic have particularly affected small and medium size enterprises (SMEs). At the same time, the ability to continue selling goods online has been critical in enabling many firms to stay afloat during COVID-19, as well as in enabling customers to obtain needed items. Changes in business operations have been necessary in order to meet demand, from adjusting delivery schedules and processes, to diversifying suppliers and prioritising particular orders.

What can policy makers do to enable trade in parcels and face forthcoming challenges?

Trends towards greater digitalisation have accelerated during COVID-19 lockdowns, leading to a *new normal* in trade in digitally ordered parcels. Enabling benefits from trade in parcels and facing forthcoming challenges requires a comprehensive policy approach to the parcel supply chain. This means:

- *Paying greater attention to enabling the services that support parcel trade*. Diverse, competitive and interoperable e-payment frameworks are needed and restrictions on logistics, courier and transportation services such as air transport could usefully be reduced to facilitate greater trade in parcels. The OECD Services Trade Restrictiveness Indicators (STRI) for the transport, logistics and courier sectors, and components of the digital STRI (DSTRI), can help shed light on where restrictions might add to overall trade costs in the parcel supply chain.
- *At the border, digitising processes, streamlining procedures and identifying new ways to better collect import and other taxes*. This will help Customs and other border agencies deal with rising workloads as a result of growing trade in parcels and enable them to focus on risk management. The OECD Trade Facilitation Indicators (TFIs) highlight important aspects in terms of border formalities and automation of border processes that can help streamline the clearance of parcels at the border.
- *Continuing international discussions to create robust digital trade frameworks that include more transparent and interoperable regulations on issues such as consumer protection, returns and data flows*. These issues are transversal across the parcel supply chain. For instance, the cross-border movement of data underpins all the different activities of participants in the parcels supply chain, from consumer to producer, at the border and through the different modes of transport. Continued discussions on these issues, including at the WTO and in trade agreements, will enable greater predictability, transparency and interoperability of regulations.

1. Introduction: Why looking into cross-border parcels trade matters

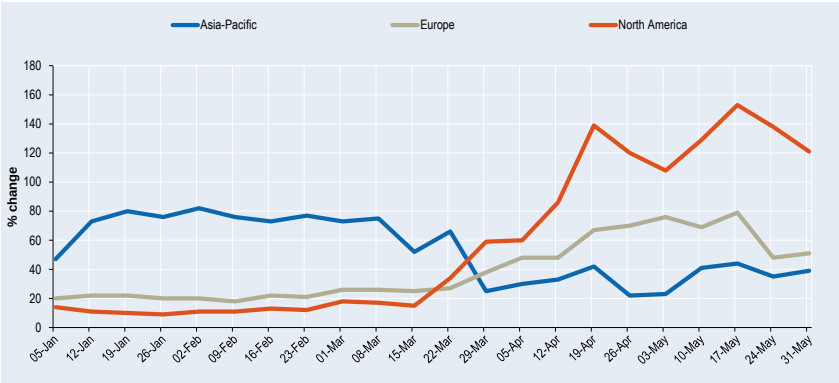
The digital transformation has led to important reductions in the costs of engaging in international trade, changing not only how and what we trade but also who trades and how people, businesses and governments interact (Lopez-Gonzalez and Jouanjean, 2017[1]). In particular, the wider use of digital platforms or websites to sell goods across borders has helped reduce informational constraints, connecting supply and demand globally. This has contributed to an important rise in digital sales and an increase in the number of parcels crossing borders. By some estimates, the volume of cross-border parcel trade had grown over three times faster than the volume of global merchandise trade in the pre-COVID-19 decade (UPU, 2020[2]) (WTO, 2020[3]).

As a result, and largely through trade in parcels, herein understood as goods that travel in small consignments, individuals and smaller firms are more engaged in trade than ever before, both as direct importers but also as exporters. They rely on new digital platforms to support different aspects of their transactions, including marketing, searching and payment, while more established actors, such as postal services or express companies, help ship goods domestically and internationally.

In response to the COVID-19 pandemic, enforcement of confinement measures and the need to maintain greater physical distancing have pushed many offline activities to the online realm, accelerating already fast-growing rates of digital adoption. By some estimates, the first semester of 2020 saw digital adoption advance by three to four years (WTO, 2020[4]). Shopping in brick-and-mortar shops has been replaced with ordering goods and services online, leading to unprecedented increases in e-commerce orders during the first two quarters of this year. As lockdowns were gradually implemented across different regions, online orders were up 70% year-on-year in the Asia-Pacific during the first quarter of 2020, while in North America, online orders at the end of May 2020 were up 120% year-on-year; and in Europe, they were up 50% on average (Figure 1) (Emarsys Insights, 2020[5]).

Figure 1. E-commerce grew as lockdowns were implemented across different regions

Growth in goods orders through e-commerce, selected regions, January – May 2020



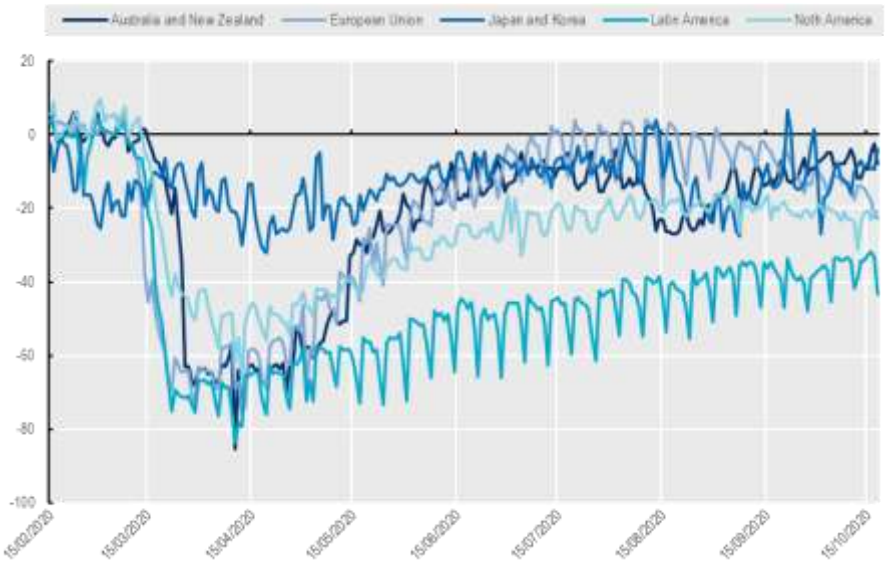
Note: Trends are based on weekly orders since January 2020 divided by orders in the same period in 2019. Information based on transaction data of 2 500 brands across 100 economies. Trends are based on the number of orders completed and payments processed, not the number of products sold.
Source: (Emarsys Insights, 2020[5]).

Google Mobility data – which tracks physical mobility around retail establishments – indicates that consumers were slow to return to physical shops, even as businesses reopened their doors as of June 2020 following lockdowns (Figure 2).[2] During part of this period (June-September 2020), online orders grew around 38% year-on-year globally; they increased again by over 50% when lockdowns were re-imposed as a response to the second waves of COVID-19 (October-December 2020).[3]

This suggests that consumers are likely to continue shopping through digital channels even as physical stores reopen. In markets where more moderate 'online conversion' rates existed before the pandemic, such as the United Kingdom or the United States, e-commerce continues to grow across all product categories. In markets such as the People's Republic of China (hereafter referred to as 'China'), with already high rates of online shopping prior to the pandemic, consumer participation is not expected to rise by as much, but the share of expenditure online is expected to rise (McKinsey, 2020[6]).

Figure 2. Mobility to retail and recreation centres has still not fully recovered

Reduced mobility for retail and recreation, % change relative to baseline



Note: Data shows mobility trends for places like restaurants, cafes, shopping centres, theme parks, museums, libraries, and movie theatres. Changes for each day are compared to a baseline value for that day of the week defined as t the median value, for the corresponding day of the week, during the five-week period 3 January–6 February 2020.
Source: Own calculations based on data from the Google Mobility Reports (https://www.google.com/covid19/mobility/).

The e-commerce landscape, and by extension the landscape in which cross-border parcel trade takes place, is therefore becoming more important in terms of economic activity and growing dynamism (OECD, 2019[7]). The parcels supply chain consists of both physical and data-driven elements. The way these interact and how different actors participate in the supply chain is critical to the efficiency of cross-border delivery, including getting parcels to the border, across the border and beyond the border to their final destination. In this respect, some trade costs have fallen due to cost savings from digitalisation; however, many other challenges remain when exporting or importing parcels.

Against this backdrop, this paper aims to map the different issues at stake across the parcels supply chain and to identify the role that trade policies play in its functioning. Section 2 looks at existing evidence on the pattern of parcels trade and the key actors in parcels supply chains. Section 3 analyses the behind-the-border, at-the-border, and beyond-the-border challenges faced by these different stakeholders when shipping and delivering parcels, with a view to informing a policy framework for analysis. Section 4

[2] See Financial Times, "Pandemic crisis: Global economic recovery tracker", https://www.ft.com/content/272354f2-f970-4ae4-a8ae-848c4baf8f4a (24 September 2020).

[3] https://www.bazaarvoice.com/blog/the-impact-of-covid-19-on-e-commerce-in-2020/.

assesses how the different policy areas that matter for parcel trade have evolved in order to shed light on emerging challenges. Section 5 then provides an econometric analysis of the role of some of these policy areas. The last section concludes and discusses some policy implications.

2. There are many different pieces to the parcels ecosystem puzzle

While parcel trade has long been a feature of international trade, the widespread adoption of digital technologies is now enabling firms to internationalise at lower cost, and consumers to access a wider range of goods from a wider range of producers. To better understand trade in parcels, an overview of the different actors and parameters that define the market is needed, including the structural factors and the policy environment that shape this market. To this end, this section provides an overview of the key features of parcels trade.

2.1 What are parcels?

Parcels, or goods delivered in individual or small consignments, can be defined using a variety of parameters. These include the weight and size of a consignment, the time sensitivity for its delivery, or the mode through which it is delivered (whether postal, express carrier, truck transport, air cargo, cargo ships, etc.). Parcels, whether postal or not, exclude letters, postcards or other items of direct mail.

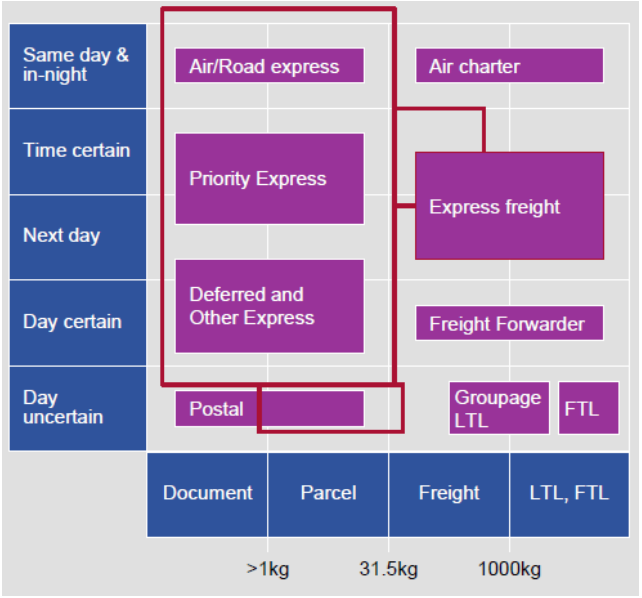
In terms of weight, parcels are most commonly defined as goods with or without commercial value of up to 31.5 kg.[4] Postal parcels, which refer to packages below 2 kg, are also defined by a maximum size relating to their length, width or circumference (for example, as identified in the Universal Postal Union Convention Manual for cross-border postal parcels).[5] That said, different express carriers have their own definitions, with varying maximum weight and size thresholds, which also matter for determining shipping costs.

The time sensitivity of delivery (i.e. specific delivery time window) is another important aspect of trade in parcels. Businesses or individual consumers are often willing to pay for faster delivery, which will be directly linked to the mode of transport used, whether road, air, maritime, or rail transport. Moreover, cross-border parcel trade increasingly involves inter-modal transportation, with parcel consignments shipped using different combinations of modes (Figure 3).

[4] For instance, this is specified as the upper bound in the EU Cross-border Parcel Regulation (Regulation 2018/644 of the European Parliament and of the Council of 18 April 2018 on cross-border parcel delivery services, OJEU L112/19 of 2.5.2018, Article 2 (1)).

[5] Article 17-2014 of the UPU Convention defines that “parcels shall not exceed 2 metres for any one dimension or 3 metres for the sum of the length and the greatest circumference measured in a direction other than that of the length.”

Figure 3. The parcels market is defined by package weight, size, time sensitivity and mode of delivery



Note: This figure is for illustrative purposes only. LTL denotes less-than-truckload shipping, covering the transportation of relatively small freight, with freight loaded onto pallets or package freight loaded into crates. LTL usually relies on trucks, rail, air, or intermodal transport modes. It can accept loose (non-palletised) cargo and generally mixes freight from several customers in each trailer. FTL denotes full-truckload shipping, covering the movement of large amounts of homogeneous cargo, generally the amount necessary to fill an entire semi-trailer or intermodal container.
Source: (Accenture, 2015[8]).

2.2 What products cross borders as parcels?

Significant challenges remain in measurement

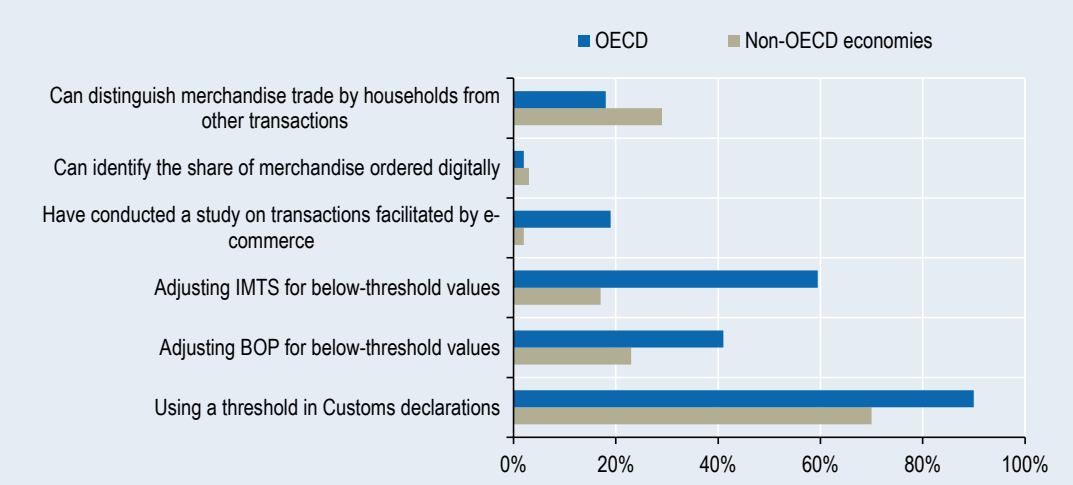
The (OECD-WTO-IMF, 2020[9]) *Handbook of measuring digital trade* highlights the continuing challenges around measuring trade in digitally ordered goods,[6] as economies worldwide still struggle with their identification (Figure 4). Specific challenges arise due to parcels falling below *de minimis* thresholds, which mean that they are subject to expedited procedures with fewer documentation requirements. The value of parcels falling below this threshold is thus often not recorded, making it difficult to identify this trade in official statistics. Moreover, not all digitally ordered goods that are traded are delivered via parcels, and not all cross-border parcel shipments will have been digitally ordered. Nevertheless, there is likely to be a strong correlation in the growth of use of digital channels (including platforms) and cross-border trade in parcels.

Despite the considerable efforts made to capture the scale and value of trade in digitally ordered goods, many challenges remain. For instance, using surveys may be complicated because individuals find it hard to assess the value of their online expenditures. They are also often not aware whether a digitally ordered item originated from a domestic or a foreign supplier. At the same time, the accounting systems of many businesses do not split online and offline transactions, nor do they always identify the location of their customers and suppliers. The adoption of different practices for data collection and estimations, differences in sectoral coverage and the actors involved (B2B, B2C, etc.), and the imputation of values from ranges recorded in surveys can also affect comparability of estimates (OECD-WTO-IMF, 2020[9]).

[6] The *OECD-WTO-IMF Handbook* defines digitally ordered trade as "the international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders".

Figure 4. Challenges in measuring the scale and value of trade in digitally ordered goods

Share of economies in specific group (%)



Note: Survey conducted in 2016 and covering national statistical offices in 35 OECD economies and 39 non-OECD economies. IMTS denotes International Trade Merchandise Statistics. BOP denotes Balance of Payments.
Source: (OECD-WTO-IMF, 2020[9]).

However, while comparable statistics on cross-border trade in parcels will not be available for some time, existing data points can help bring some of the pieces of the cross-border trade puzzle closer together. These include the use of business surveys[7], household surveys, information based on credit card use and other payment processing firms, as well as information from postal and courier operators, or customs transactions (OECD-WTO-IMF, 2020[9]).[8]

Existing evidence on the characteristics of parcel trade

According to existing *aggregate estimates* from 2016, domestic dispatches dominated the parcel market (76%), but there were wide differences across regions. International dispatches represented up to 42% of all dispatches in the Asia-Pacific region and just under 20% in Latin America and the Caribbean, but averaged only 3% in other developing regions (Figure 5). An additional dynamic has been the greater expansion of business-to-consumer (B2C)[9] parcel transactions from an originally business-to-business (B2B)[10] dominated market, with about a fifth of B2C transactions being cross-border. This has led to

[7] For instance, the European Community Survey on ICT Usage and E-commerce, the OECD Model Survey on ICT Usage by Businesses, or Canada's Survey of Digital Technology and Internet Use.

[8] Another avenue to explore in developing statistics on international digitally ordered transactions involves microdata linking, for example by integrating merchandise trade statistics with e-commerce enterprise surveys, albeit coupled with stylised assumptions relating to foreign/domestic e-commerce splits, or proportionality assumptions when applying the share of foreign sales that occurs via e-commerce equally to all products and trading partners.

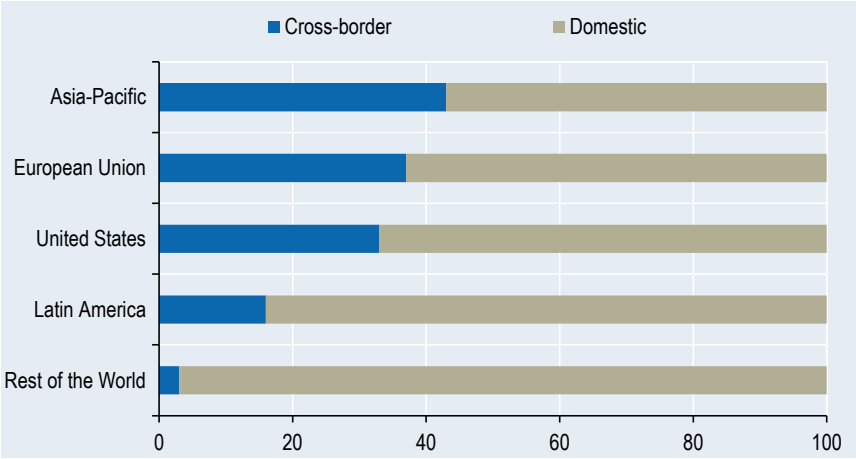
[9] B2C involves sales by enterprises to consumers and by traditional bricks-and-mortar retail or manufacturing firms that add an online sales channel. There is a wide range of channels to reach consumers, including social networks, crowdsourcing platforms, dedicated websites, mobile applications and more. The products sold may be physical goods as well as digital products and services (UNCTAD, 2015).

[10] B2B can involve online versions of traditional transactions related to goods that are subsequently sold to consumers via retail outlets. It can also involve the provision of goods and services to support other businesses, for example through outsourcing and offshoring. There are various specialized B2B platforms, typically catering to certain industries or value chains (UNCTAD, 2015).

changes in the way parcels are transported and delivered (Accenture, 2015[8]).[11] While dated, this information provides a broad picture of prevailing trends before the COVID-19 crisis.

Figure 5. The importance of cross-border trade in parcels varies across regions

Domestic vs. cross-border parcel shipments (2016)



Source: Estimates based on ITC (2016[10]).

Statistics on cross-border trade via postal or express deliveries for selected European economies can also provide some insights into important features of parcel trade.[12] This includes information on the types of parcels traded over the last decade, as exports and imports of selected European economies to and from non-EU economies,[13] including during the COVID-19 mandated physical distancing measures.

This sample of parcel exports and imports for selected European economies highlights that the types of products traded as parcels are diverse. The most traded product categories over the last decade include electrical machinery (such as ICT goods), medical and pharmaceutical products, and appliances and parts thereof. Other goods such as tools, clothing items, toys and games, or books and other printed products are also often traded through parcel consignments (Figure 6) (Eurostat Comext, 2020[11]).[14]

[11] Prior to COVID-19, there was an increasing number of deliveries per stop on average, with more efficient last mile delivery practices allowing for consolidation; and a higher variability in parcel volumes, with more peaks and troughs over the course of the year.

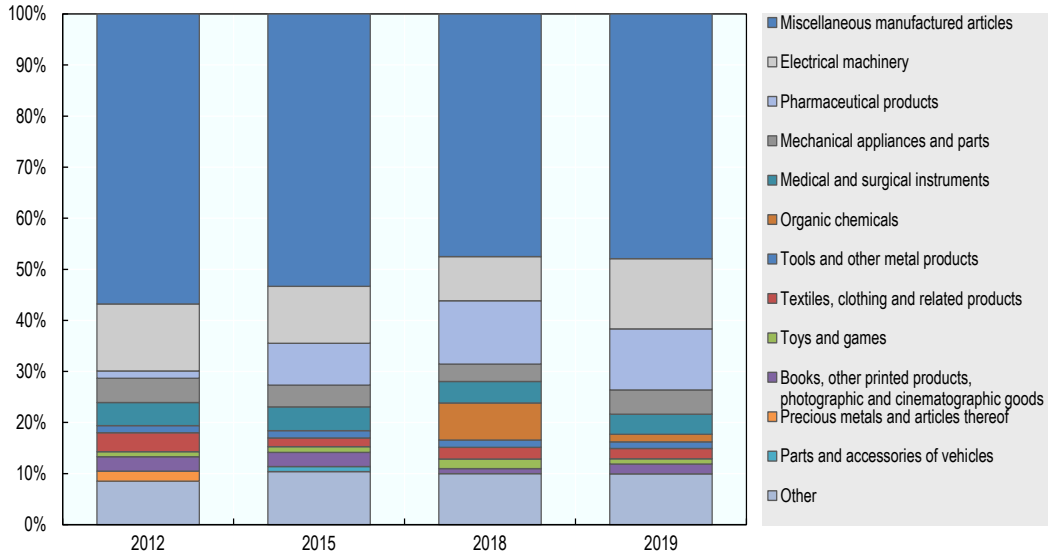
[12] The available data cover goods specifically identified as postal and express consignments, but that cannot be attributed to a specific mode of transport (i.e. air, sea, road, rail freight). The data is nevertheless likely to capture a significant share of cross-border parcel consignments (particularly those falling under *de minimis* thresholds), enabling the identification of patterns of products traded, as postal or express consignments for which the transport mode can be identified would rather capture 'bulk' trade destined for fulfilment centres. The data is likely to also have a strong linkage to purchases made online, as European Commission surveys highlight that only 12% of consumers have purchased from a retailer or service provider in another EU country using a channel other than the Internet (European Commission, 2015[79]).

[13] The exporting and importing partners of the selected European Union economies in the Eurostat Comext database include a sample of diverse economies, covering various regions (list of economies is provided in Table A G.1; for each trade transaction recorded, a selected EU economy is always part of the transaction as an exporter or importer).

[14] The significant share of products categorised as 'miscellaneous manufacturing' might reflect some of the measurement challenges described above. They might also arise from challenges originating in the quality of information provided on the type of good when shipping a small package (described further below in Section 4.3).

Figure 6. Patterns of parcel consignments, 2012-19

Share of sector in parcel consignments trade value (%)



Note: The data records extra-EU imports and exports of goods specifically identified as postal and express consignments for selected EU Member States. Product categories are aggregated at HS 2-digit level and sector names shortened for illustration purposes.
Source: Authors' calculations based on (Eurostat Comext, 2020[11]).

A key challenge when using this type of data is that it cannot identify whether traded products were purchased online or not. However, survey information suggests that a similar mix of products were being purchased online. These include apparel, consumer electronics, computers and household appliances; books and other leisure items; health products; and clothing (Figure A A.1) (International Postal Corporation, 2019[12]).[15]

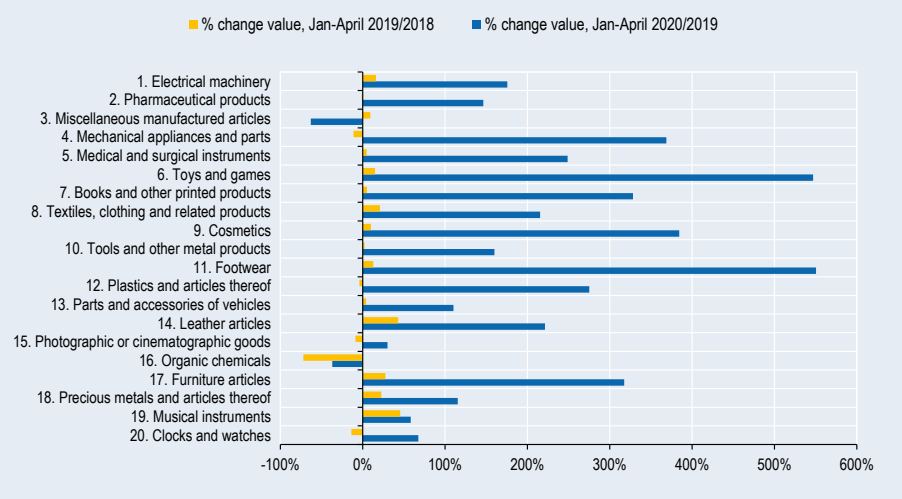
During the early part of 2020, between the months of January and April, when lockdowns were first being implemented, there was an unprecedented increase in the value of trade in parcels across a range of sectors. For instance, according to the data for European countries, the year-on-year 2019 to 2020 change in the value of parcels trade in the electrical machinery sector was 180%, while the comparable figure was only 10% for the same period from 2018 to 2019 (Figure 7a). Indeed, in the European Union, the average year-on-year change in the value of parcel trade was 30 times larger in the period January-April 2019 to 2020 than in the period January-April 2018-19. These trends continued during August and October 2020, coinciding with a new wave of lockdowns across many European economies (Figure 7b) (Eurostat Comext, 2020[11]).

Throughout, absolute increases in cross-border parcel trade were highest for electrical machinery, pharmaceutical products, mechanical appliances, and medical instruments. Electrical machinery include devices such as computers and related accessories, with growing demand likely arising from increased teleworking as a result of confinement measures. At the same time, home fitness equipment and other home appliances drove the increase in product categories such as mechanical appliances. The evidence also shows that, books, toys and games, textile items and tools also witnessed considerable increases, all products associated with spending more time at home (Figure 7) (Eurostat Comext, 2020[11]). These trends are in line with emerging data on e-commerce patterns. Data from the United States in the first quarter of 2020 shows that, overall, purchases increased most for items related to personal protection, home activities, groceries, and ICT goods (such as computer monitors) (Bazaar Voice, 2020[13])

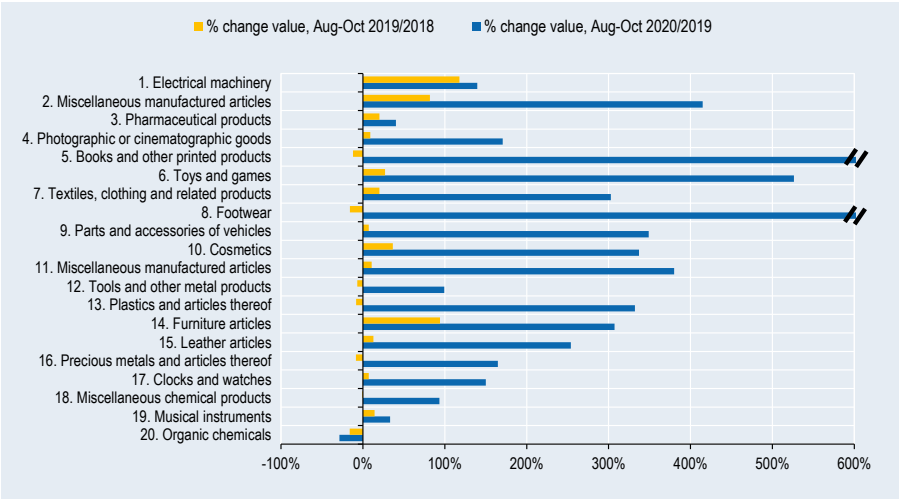
[15] Based on estimates of consumers purchasing online.

Figure 7. Parcel consignments crossing borders during the different waves of COVID-19

A. Total trade value, January-April 2020/19 compared to January-April 2019/18



B. Total trade value, August-November 2020/19 compared to August-November 2019/18

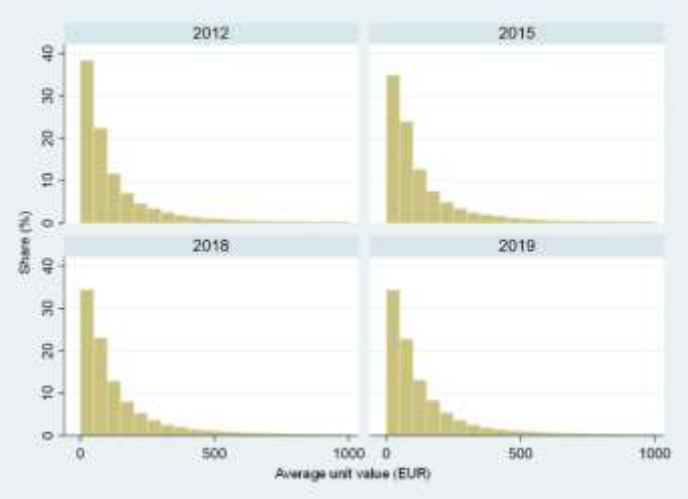


Note: Numbers next to sector name indicate the ranking in terms of products traded during January-April 2020 and August-November 2020. The data records extra-EU imports and exports of goods specifically identified as postal and express consignments for selected EU Member States. Product categories are aggregated at HS 2-digit level and sector names shortened for illustration purposes.
Source: Eurostat Comext (2020[11]).

About two-thirds of cross-border parcel consignments were valued below EUR 100 in 2019 (Figure 8), with little change to this during COVID-19. This pattern has slightly evolved throughout the decade however, with more expensive products being increasingly traded through parcels: about 40% of parcels were valued below EUR 50 in 2012, a share that went down to 34% in 2019 (Eurostat Comext, 2020[11]). Here too, the pattern with products purchased online appears to be consistent, as postal surveys highlight roughly two-thirds were valued below EUR 50 in 2019 (Figure A A.2).

Figure 8. Average unit value of cross-border parcel shipments, 2012-19

Share in total parcels traded (%)



Note: The data records extra-EU imports and exports of goods specifically identified as postal and express consignments for selected EU Member States. The average value in EUR is a unit price derived based on values and quantities traded as reported in the Comext database.
Source: Eurostat Comext (2020[11]).

2.3. The actors in the parcels ecosystem

The parcel supply chain has evolved from a more traditional pick-up-transportation-delivery model to a more diversified and service oriented model including different actors providing marketplace, payment, fulfilment or warehousing solutions to meet both sellers' and customers' needs. Understanding the parcel ecosystem requires thinking about the different actors and the ways they interact with each other.

Firms, (e-)retailers and digital platforms

Firms of all sizes are increasingly selling their products and purchasing inputs electronically. In OECD countries, digital orders represent as much as 70% of overall orders across firms of all sizes. However, challenges remain for smaller firms, where only 31% receive orders through digital means (Figure 9) (OECD, 2020[14]). While this share has nearly doubled over the past five years, the lower digital adoption is troubling because SMEs that trade through digital or social media platforms are more likely to engage in trade by exporting to more destinations (Facebook-OECD-World Bank, 2020[15]). There is also increasing evidence of SMEs buying more of their inputs online. A recent survey undertaken across 14 developing and emerging economies highlights that about 43% of SMEs purchasing online are doing so outside their domestic market (Suominen, 2017[16]).

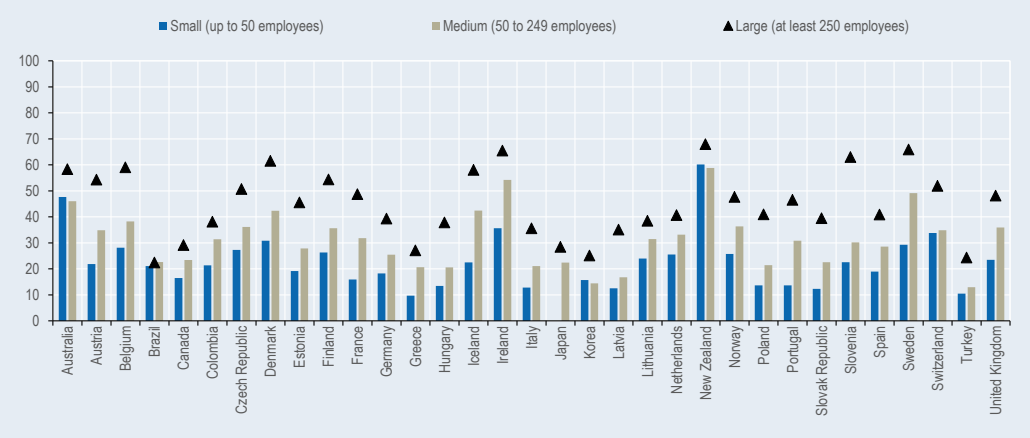
Many of these sales arise from the growing use of *digital platforms* which provide a "plug-and-play" infrastructure that helps reduce many of the costs of engaging in trade. The platforms help firms expand customer reach and establish trust-based relationships domestically and internationally (McKinsey Global Institute, 2016[17]); they reduce the need for some of the more traditional (physical) intermediaries; and relax informational constraints related to trading in different markets (OECD, 2019[7]).

Marketplaces are transactional digital platforms that facilitate e-commerce transactions between a large number of individuals and organisations which otherwise may have difficulty finding or transacting with each other (OECD, 2019[18]). In terms of reach – as estimated by the average number of monthly visits – this space is dominated by few online marketplaces such as Amazon, PayPay Mall, eBay, Mercado Libre, or AliExpress (Figure 10). Patterns are more nuanced at the regional level – while in North America or Europe the market tends to be split between a wider range of platforms, in other regions such as Asia-Pacific, Latin America or Africa, the market is much more concentrated (WebRetailer, 2020[19]). In addition, social media platforms such as Facebook are also gaining a foothold in this space (Facebook-OECD-World

Bank, 2020[15]). Overall, platforms have also been increasingly taking on new roles through e-payment services, warehousing and shipping, beyond the role of transaction intermediaries (OECD, 2019[18]).

Figure 9. Businesses receiving orders through computer networks

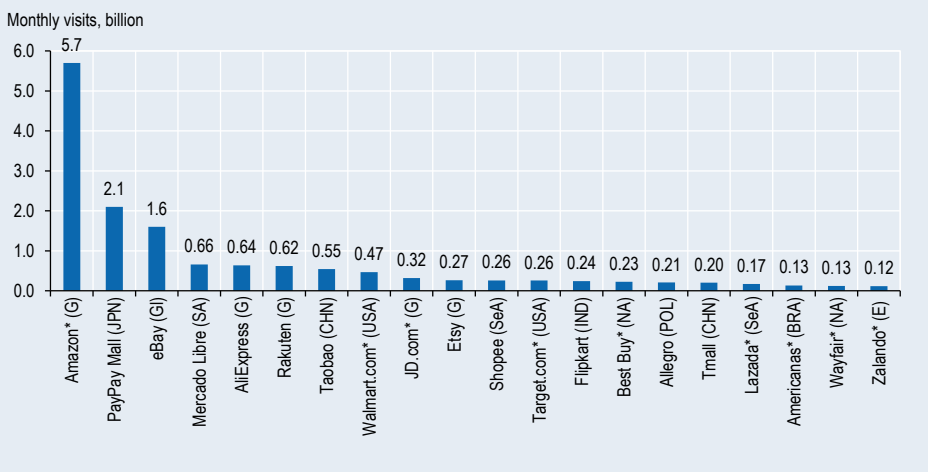
Share of firms in firm size category (%), 2019 (or latest available year)



Note: Computer networks include Electronic Data Interchange (EDI) type messages and the Internet. Small firms are those with 10 to 49 employees, medium firms are those with 50 to 249 employees, and large firms have 20 employees or more.
Source: OECD (2020[14]).

Figure 10. Online marketplaces with widest reach globally

Monthly visits (billion), February 2020



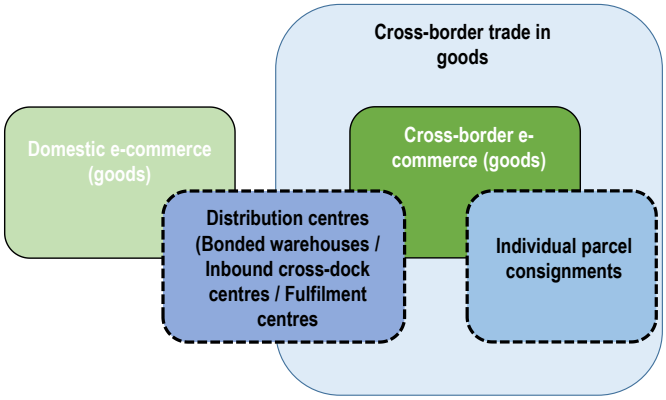
Note: * denotes where the marketplace is also a retailer selling its own brands. Estimated monthly visits for February 2020 using information from SimilarWeb. Traffic to different domains for the same marketplace (e.g. amazon.com, amazon.co.uk, amazon.de etc.) has been combined.
Source: (WebRetailer, 2020[19]).

Comparable cross-country information on the extent of gross sales through e-commerce marketplaces in overall cross-border trade remains scarce (see data challenges discussed in Section 2.2). Moreover, domestic purchases using digital platforms can have an important cross-border component, which depends, in part, on the business model used to satisfy the transaction. Indeed, the sale, delivery and distribution channels related to parcels trade come in different *business models* (Figure 11). In addition to

the *type* and *value of parcels,* the *business model* also matters as it can imply different ranges of costs for both sellers and consumers.

Shipping an individual parcel item directly from a business to a consumer is most prevalent for goods that have a higher value or intermittent demand and relatively lower sale volumes. The markets for such products are typically less predictable and businesses usually do not hold stocks close to consumers. This means that products are directly purchased from international sellers, often via digital platforms, and sent from the business to the consumer as parcels using international express (courier) or postal channels of distribution (Kathuria et al., 2020[20]). They can therefore take longer to arrive to consumers.

Figure 11. Parcels trade business models



Note: The figure is for illustrative purposes.
Source: Authors' elaboration.

By contrast, for products with more predictable and regular volumes of sales, sellers rely on business models using bonded warehouses or distribution centres (the latter can be facilities such as inbound/outbound cross-dock centres or fulfilment centres). When shipping via a bonded warehouse, a business will make bulk shipments of inventory, with the assessment of any duties and other import taxes deferred until a customer places an order. A third-party logistics provider will manage the goods in the bonded warehouse and can post the goods to the customer via a domestic courier service once the goods are sold. In some cases, the warehouse operator can provide services to the seller in addition to storage or stock-keeping; they can assist with logistical support, knowledge of regulations (i.e. tariff classification, valuation, origin) as well as acting as the importer on record (PwC Customs, 2012[21]).

Large digital retailers often favour the use of distribution centres *(*inbound/outbound cross-dock centres or *fulfilment centres)*. These increasingly rely on Artificial Intelligence (AI) to predict demand with a view to saving on trade costs and enabling faster delivery. This can involve shipping containers with products using more traditional sea or air freight and storing goods in warehouses after border clearance in regional or country hubs (Box 1). It can also involve firms, including SMEs, exporting more limited sets of their goods through consolidated shipping[16] that are sold through the digital platform and stored in the fulfilment centre until ordered. When individual orders are placed online, they are fulfilled by delivery to the final consumer from warehouses located closer to the consumer, most often via parcels (Kathuria et al., 2020[20]).

The type of business model followed by the supplier of the product ordered also matters in the context of COVID-19. Those products that were already in fulfilment centres or could be shipped in bulk or consolidated shipping would have suffered fewer disruptions in the short term relative to those that required direct cross-border delivery to consumers (see the discussion on COVID-19 challenges in Section 3.2).

[16] Consolidated shipping is a shipping method that allows consignments from multiple shippers to be transported in one shipment. This can include different products shipped in the same container.

Box 1. A growing network of distribution centres helps in the shipping and delivery of parcels

Over recent years and across many regions, large warehouses – known as 'fulfilment centres' – have been set-up outside big cities, close enough to airports or seaports and highways or near parcel delivery hubs to cater to last mile delivery. These 'fulfilment centres' can host a wide variety of products, hold inventory, and have allotted space for processing returned items. Depending on their position in the supply chain, several types of distribution can be identified, either linked directly to parcels traded internationally or exclusively linked to last mile delivery.

Types of distribution centres directly linked to cross-border parcels trade

- *Inbound cross-dock centres.* These are large-sized distribution centres sorting inbound flows from vendors (sent through air or maritime cargo) to regional fulfilment centres. These facilities tend to be located close to major container ports, airports or intermodal road and rail facilities and their inventory is held until required by other fulfilment centres, mostly in the form of consolidated loads of various items.

- *Fulfilment centres.* The main purpose of fulfilment centres is to process and fill online orders. Fulfilment centres are specialised by the type of items they handle, particularly in terms of size. Consolidated import parcels can be stored directly here, without passing through inbound cross-dock centres. In terms of regional variation, in the case of Amazon fulfilment centres, their size can range from 16 245 m^2 in MENA, 24 757 m^2 in Asia-Pacific, 49 067 m^2 in North America, and 52 799 m^2 in Europe. In the United States, the average size of an Amazon fulfilment centre / airport parcel hub is of 65 160 m^2.

Types of distribution centres relevant for last-mile delivery

- *Sortation centres.* The purpose of these distribution centres is to sort parcels originating from fulfilment centres towards smaller destination units such as postal codes. Packages can be directed to a local post office or to a delivery station for the last mile.

- *Delivery stations.* These refer to facilities often designed for the last step before final delivery, located within metropolitan areas. They sort parcels according to well-defined delivery areas that are then serviced by contracted delivery companies. These facilities are also being used for the delivery of fresh goods.

- *Prime parcel hubs.* These are specialised distribution centres carrying a limited line of items that can be rather quickly delivered, often in less than two days. Items held in inventory are selected on the basis on their high and relatively predictable demand. The hubs tend to be located in the largest metropolitan areas. Some can be co-located with fulfilment centres in order to be quickly replenished but are operated independently.

The location and size of distribution / fulfilment centres could be used for approximating the volume of parcels shipped across borders. To put things into perspective in terms of the capacity of Amazon fulfilment centres to host imported parcels, the example of the DHL Hub in Leipzig, which is a key entry/exit point for parcel trade in Europe, can be useful. Recent investments in the Hub mean that it can now operate up to 150 000 packages per hour (up from an average of 100 000 per hour in 2015) in its 87 000 m^2 of terminal space and almost 47 km of sorting system space. If the lower bound operating schedule of the Leipzig Hub (100 000 packages per hour) were to be sustained for a full working week, it would imply that about 6 million packages could be stored per m^2 per hour in a hub of a similar size. Envisaging that a similar amount of packages could be stored per m^2 per week over the total surface of the fulfilment centres identified in Table 1 across the different regions, then the total number of packages stored by year by Amazon could amount to 70.4 billion. Comparing this with other available estimates of cross-border parcels of 103 billion in 2019, this suggests that the size and location of fulfilment centres could be used as a proxy for estimating cross-border parcel trade.

Table 1. An example of size and coverage of fulfilment centres

Illustrative example from Amazon fulfilment centres / airport parcel hubs

Region	Country	Number of fulfilment centres	Total size (m^2)	Average size (m^2)
North America	United States	199	12 966 826	65 160
	Canada	11	565 323	51 393
	Mexico	3	146 415	48 805
South America	Brazil	2	61 821	30 911
Europe	United Kingdom	36	1 167 426	32 429
	Germany	29	1 119 632	38 608
	France	11	525 547	47 777
	Italy	8	367 867	45 983
	Spain	9	434 801	48 311
	Poland	6	579 055	96 509
	Slovakia	1	59 978	59 978
Asia - Pacific	Japan	18	756 449	42 025
	India	60	675 863	11 264
	Australia	4	83 929	20 982
MENA	United Arab Emirates	2	62 977	31 489
	Egypt	1	18 205	18 205
	Kuwait	1	2 671	2 671
	Saudi Arabia	3	37 843	12 614

Note: The list of centre types is not exhaustive.
Source: (MWPVL International, 2020[22]).

Source: (Huria, 2019[23]) based on (MWPVL International, 2020[22]); (Pitney Bowes, 2020[24]) and own estimates.

Individual consumers

From the perspective of the consumer, there are a number of advantages to cross-border trade in parcels, including wider access to more, and more competitively priced, goods (Annex B) (International Postal Corporation, 2020[25]). With the COVID-19 crisis affecting the purchasing power of many consumers, these motivations are likely to become even more important.

The percentage of individuals in OECD countries that had participated in online purchases during the last 12 months increased by about 61% between 2009 and 2018 (OECD, 2019[7]). However, participation varies across income levels, with individuals in OECD countries at the top quartile of the income distribution being 79% more likely to have participated in online purchases over the previous year (OECD, 2019[7]).

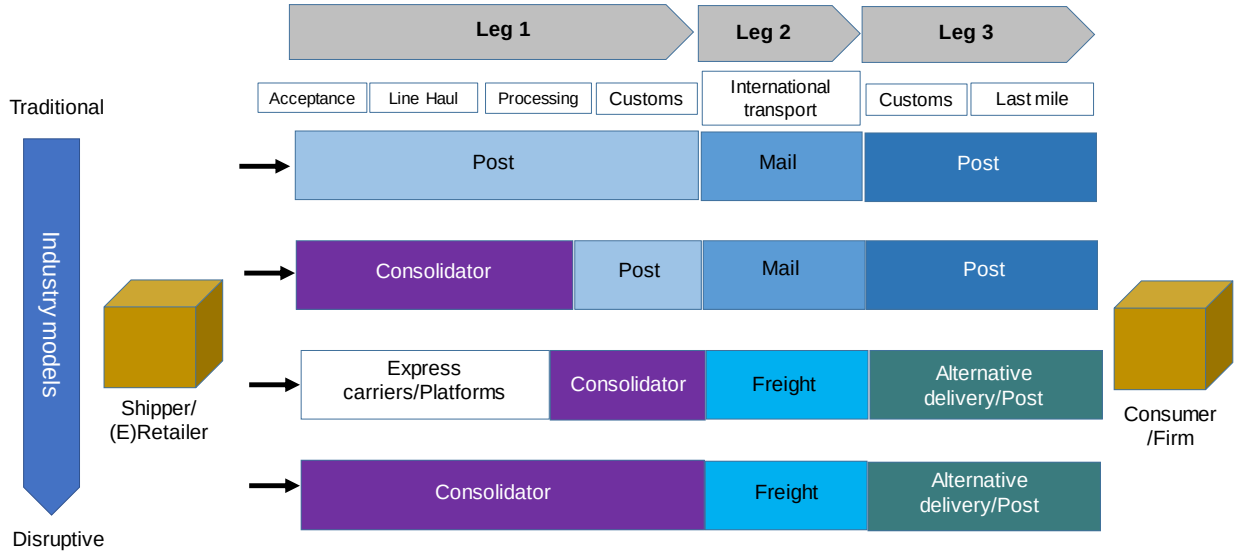
Prior to COVID-19, shopping across borders appeared most prevalent across Western Europe, Middle East, and Asia-Pacific. Most consumers purchase goods through both domestic and cross-border e-commerce (Annex B) (PayPal, 2018[26]). As highlighted above, domestic e-commerce can nevertheless have an important trade component.

Individuals are also increasingly involved in parcel trade as sellers, particularly through Consumer-to-Consumer (C2C) platforms. Indeed, many use platforms such as Etsy to sell arts and crafts across borders or eBay to auction goods online.

Delivery and logistics operators, the arteries of parcel trade

Clicking the purchase button on an item sets in motion a complex network of actors and processes (Figure 12). At the heart of the parcel eco-system are the logistics providers, including express delivery companies, postal services, and freight forwarders (Annex C). Growing demand for their services and rising competition has resulted in important cost reductions and an evolution in the delivery services they offer.[17] These now include door-to-door, customs-cleared, next day or time-defined delivery services, and deferred services (i.e. a slower delivery) with track and trace services. These advanced logistics services are the life-blood of parcel trade, with digital platforms increasingly competing in this space. The role of freight forwarders in consolidating and deconsolidating parcels is also becoming gradually more important (WEF, 2018[27]).

Figure 12. A complex network of actors ensures that parcels arrive at their destination



Note: Consolidated shipping is a shipping method that allows containers from multiple shippers to be transported in one shipment.
Source: Based on (Accenture, 2015[8]).

The delivery process will also depend on the *volumes* as these will affect the unit cost of delivery:[18]

- First, overall volumes in the sending country affect the delivery operators' costs for collection (i.e. lower volumes in collection imply lower economies of scale and thereby higher unit costs of delivery).
- Second, specific volumes between two countries affect cross-border transport costs (i.e. a lower cross-border flow implies lower economies of scale and thus higher unit costs of delivery).
- Third, overall volumes in the destination country affect transport, distribution and sorting costs. Higher volumes in the destination country mean that high fixed costs in automated sorting and "last mile" delivery are split between more units. This lowers the unit cost of delivery. A higher population density in the destination country increases the parcel volumes per km^2. This increases economies of scale and lowers the unit cost of transport and delivery. Areas with a

[17] Remaining differences between postal operators and express carriers, for instance in terms of data exchange and digital capabilities, can affect the costs and delivery times.

[18] The route that parcels take not only depends on the flow of consignments between two countries, but also on the flow of consignments within each country. This implies that delivery between two cities located close to each other but on different sides of a national border may not take place along the shortest or fastest route, but along the route that allows for the optimisation of each national delivery network, i.e. the route with the largest volume.

high population density also tend to have a higher prevalence of multi-household buildings, which reduces delivery costs through fewer stops on the delivery route.

Higher last-mile delivery costs inherent in some residential destinations have prompted the emergence of new players in last-mile delivery, including domestic regional carriers, local couriers and crowd-sourced independent contractors. Postal operators remain, however, key actors in the last-mile delivery. The seller is, in many cases, also dependant on the last-mile delivery operator for the return process. This can have an important impact throughout the delivery services network, in terms of both volumes transported and cost implications (WEF, 2018[27]).

3. What are the measures that affect parcel trade?

3.1. Prima facie evidence from surveys

Available surveys can provide *prima facie* evidence on some of the challenges firms and consumers face when engaging across different parts of the parcel trade ecosystem.[19] In developing countries, existing evidence highlights that obstacles to e-commerce tend to affect smaller companies more than larger ones. E-commerce-related logistics and access to finance appear to pose most challenges for small businesses (Annex D). Mid-size and large companies, meanwhile, struggle most with logistics, digital and other types of regulations (Suominen, 2017[16]).

In developed countries, while not exclusively covering parcels, available evidence for EU companies that sell online to other EU countries highlights that about half of the firms surveyed consider delivery costs too high, with 27% agreeing that this was a major concern. At least one in five firms considers that the expense involved in resolving cross-border complaints is a major problem, while 19% view guarantees and returns as too expensive (Annex D). In terms of online purchases, the top three concerns appear to be the costs associated with the resolution of cross-border disputes, the level of delivery costs, and the adequacy of the protection of data abroad (European Commission, 2015[28]).

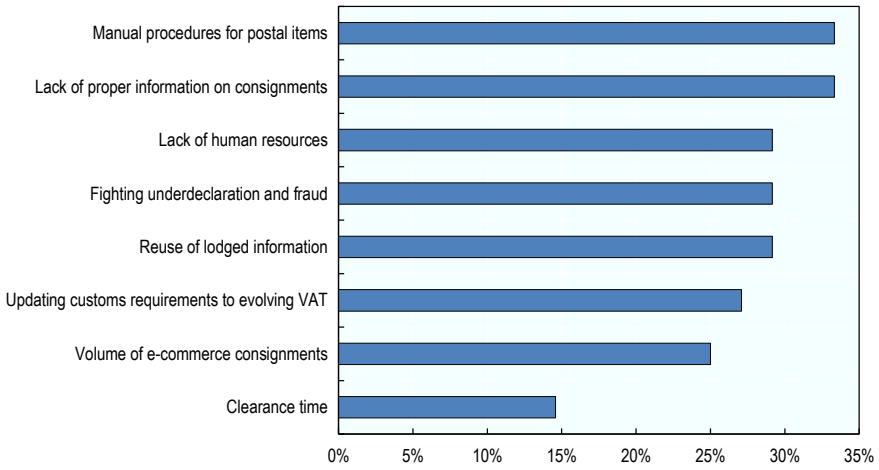
Consumer surveys administered in the European Union highlight that four in ten consumers find that products have been delivered later than estimated (39%). Just over one in ten (11%) say their products were not delivered at all. 22% mention they received either a damaged product or a different one from the product ordered. More than one in ten consumers has had to pay unanticipated extra charges (13%) or has encountered unfair contract terms (15%) when shopping in the last 12 months. In terms of unfair commercial practices, 26% noted they have been offered a product for free that ultimately entailed delivery charges (European Commission, 2018[29]).

At the border, in addition to the increasing number of transactions, Customs authorities have been highlighting challenges relating to the quality of information for individual consignments; the use of information technology; the use of risk management and the ability to enforce standards; as well as revenue collection (Figure 13) (WCO, 2017[30]).

[19] For instance, information about buying and selling activities online can be complemented with additional evidence from logistics operators or Customs administrations to paint a portrait of different aspects of the parcel trade ecosystem. While these surveys are not directly comparable – due to differences in design and sampling strategies – they offer information on perceptions of different trade costs. In addition, the coverage of the surveys involving businesses engaged in e-commerce may not exclusively focus on cross-border parcel goods enabled by e-commerce, but also include digital products and services.

Figure 13. Key challenges for facilitating parcels identified by Customs authorities

Share of answers (%)



Note: Survey conducted in 2017, covering Customs administrations in 48 WCO member economies.
Source: (WCO, 2017[30]).

3.2. Challenges and opportunities arising during the COVID-19 pandemic

Challenges in getting parcels from click to doorstep continued to evolve throughout the different waves of COVID-19. The measures taken to control the spread of COVID-19 during Q1 2020, including limiting the movement of people, reinforcing border controls or introducing new protocols at borders (or measures to protect the people in charge of handling and inspecting goods), while necessary, have impacted the various modes of transportation used in parcel trade, albeit to different degrees. The speed of activities throughout the logistics chain has also been affected by necessary distancing protocols, but also by inconsistencies in many cases around what constitutes an "essential activity" exempted from certain or all restrictions. These issues come in addition to constraints stemming from lockdowns and curfews affecting the ability of firms to produce. With many logistics operators operating multi-hub routes when shipping parcels internationally, restrictions accumulate, making it much more difficult to schedule operations (OECD, 2020[31]).

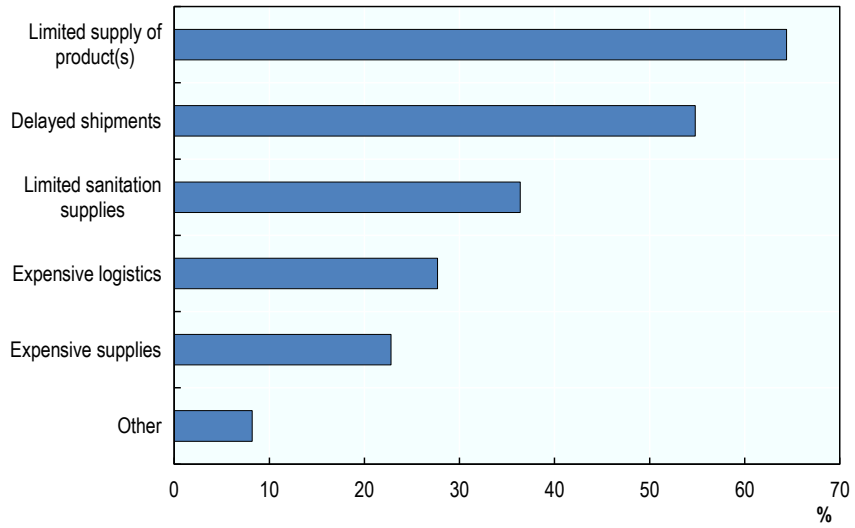
Information reported by logistics operators between February and May 2020 highlights four key challenges in shipping parcels internationally during the first wave of COVID-19. Challenges were encountered *in transit* (network capacity limitations and restrictions on type of shipments, e.g. weight, size, product type); *at the border* (delays associated with specific controls / new protocols / volume increase); and during the *last mile* (geographic restrictions with closures of specific routes / delays) (OECD, 2020[31]).

These varied across regions. For instance, network capacity limitations and last mile delivery restrictions appear to have been an issue across most regions. However, in some regions, restrictions applied to specific types of products (in most cases relating to new requirements on medical supplies or personal protective equipment). Delays associated with specific controls or new protocols at borders appeared to be particularly significant in Europe and Central Asia, Asia-Pacific and especially North America. In Latin America and the Caribbean, the Middle East and North Africa and Sub-Saharan Africa, restrictions relating to network capacity and last mile delivery were also important implying that volumes of parcels reaching borders might have been be lower than in other regions. Across various regions, several postal operators reported that specific routes (inbound and/or outbound) had to be completely suspended due to lack of transport capacity at the height of the crisis (OECD, 2020[31]). Delays in shipments and increases in the costs of shipping during the pandemic are likely to have been especially harmful for SMEs (Figure 14a).

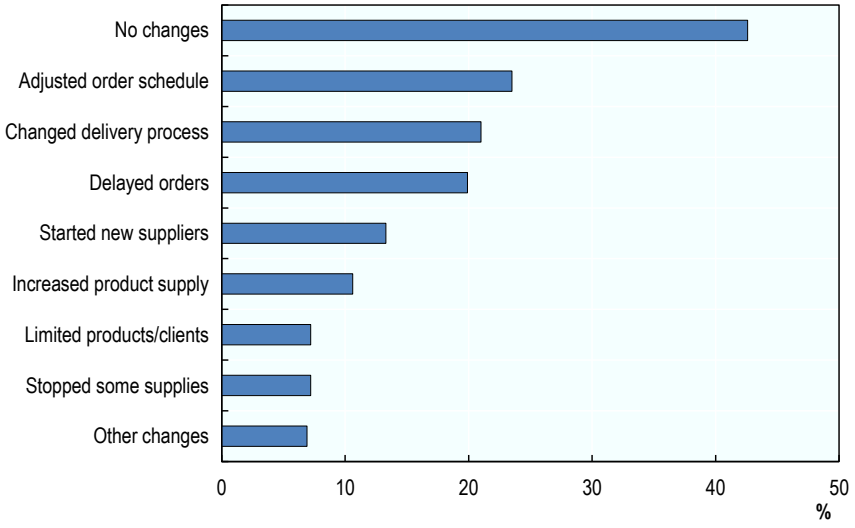
At the same time, the ability to continue selling goods online helped many firms remain afloat during the COVID-19 pandemic. Changes in business operations were nevertheless necessary in order to meet demand, from adjusting delivery schedules and processes, diversifying suppliers, but also prioritising certain orders (Figure 14b) (Alexeev et al., 2020[32]).

Figure 14. Challenges and opportunities for SMEs trading through platforms during COVID-19

A. Main challenges faced (share of responses, %)



B. Changes to business operations during COVID-19



Note: Panel a. 5 251 responses; panel b. 5 772 responses.
Source: (Alexeev et al., 2020[32]) using (Facebook-OECD-World Bank, 2020[15]) survey.

By early May 2020, new trade facilitating administrative measures at borders outnumbered the new, potentially cost increasing, protocols that had been (often temporarily) introduced in the early stages of the pandemic (OECD, 2020[33]). Facilitating measures that focused on electronic submission and processing of documents, as well as increasing use of automation in the clearance process, also helped with streamlining procedures for parcels, notwithstanding continued staffing disruptions at border posts where physical distancing measures remained in place.

In sum, survey evidence suggests that a number of challenges remain for parcel trade, largely related to getting products to the border, across the border and beyond. With trade costs representing a higher share of the value of parcels and relatively limited scope for economies of scale, these are likely to be particularly onerous for this type of trade. Of the at-the-border issues, with some variation, the most salient appear to be related to cross-border logistics and border formalities. Of the issues relating to getting the products to the border and beyond, some of the most important concerns seem to be raised by the level of delivery costs, the resolution of disputes and complaints between suppliers and customers, the security of payments, and the protection of data underpinning the transaction.

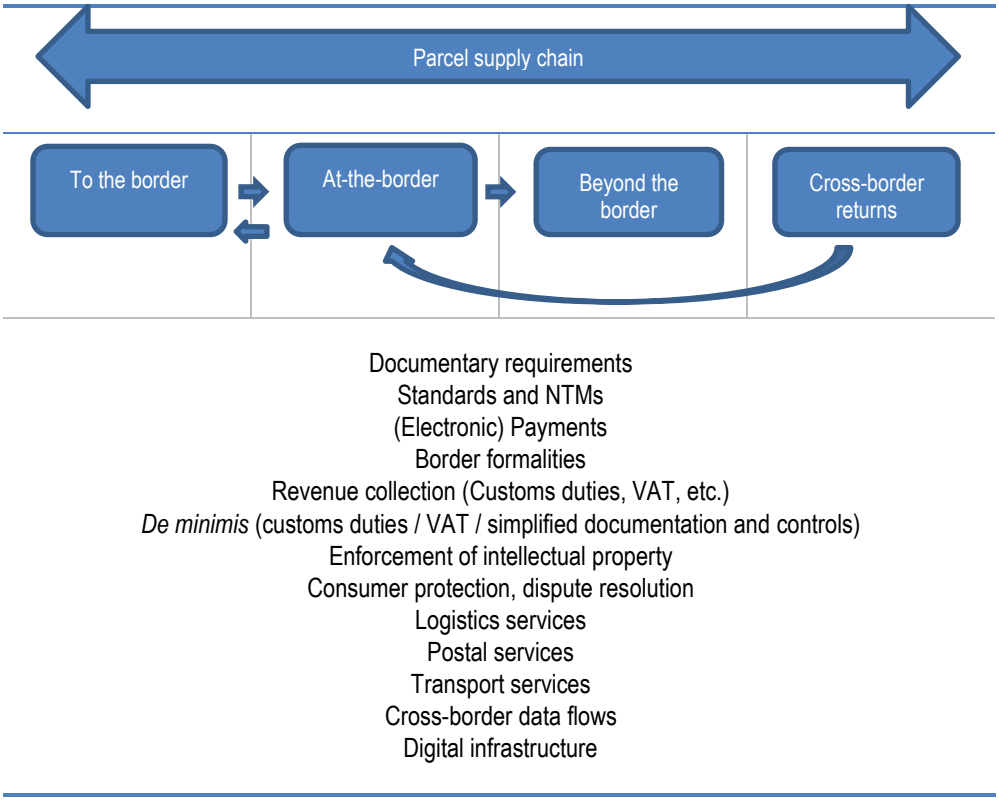
4. Where trade policies matter in getting parcels shipped and delivered: A framework for analysis

4.1. Policies along the parcel supply chain

The information gathered through different stakeholders' surveys, including the challenges experienced during COVID-19, as well as through the overview of trade patterns and business models (shipping parcels individually versus through fulfilment centres) highlights the need for a comprehensive framework for analysis of cross-border trade in parcels. Such a framework can provide insights into the issues that need to be considered when engaging in cross-border trade in parcels. Broadly speaking, there are four segments of the cross-border parcel supply chain where trade can play a crucial role (Figure 15):

- *behind-the-border* (related to the broader environment)
- *during transit* (to the border and beyond the border)
- *at-the-border*
- *throughout the supply chain* (cross-cutting elements affecting how actors interact).

Figure 15. Getting parcels shipped and delivered across borders: Framework for analysis



Note: The figure is for illustrative purposes and non-exhaustive.
Source: Authors' elaboration.

4.2. Undertaking the transaction so that the parcel can be shipped to the border

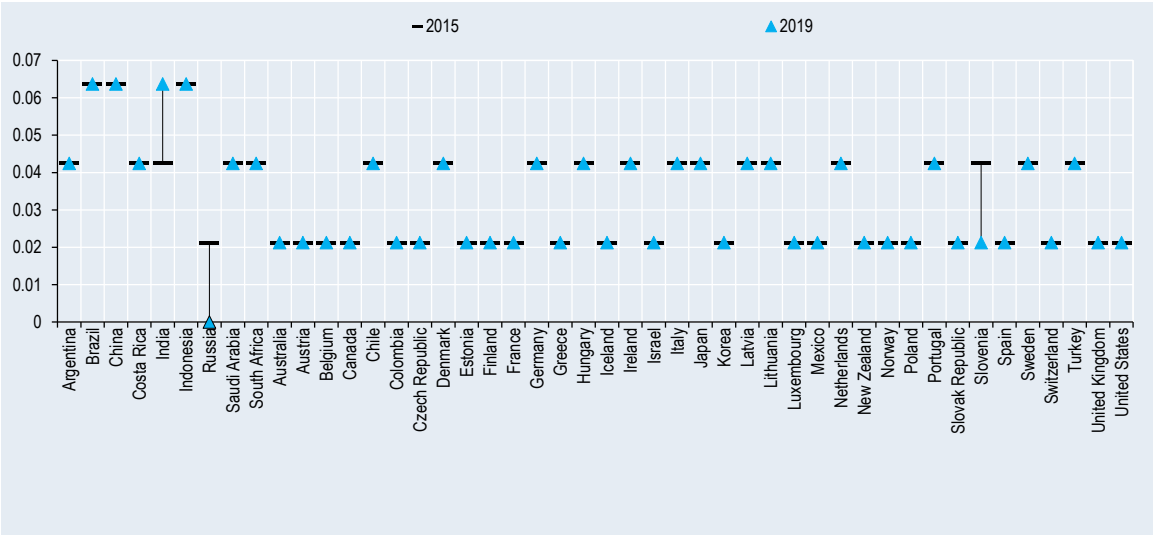
Overall regulatory framework for the transaction

When ordered online, undertaking a commercial transaction often requires an *e-transaction law* recognising the legal equivalence between paper-based and electronic forms of exchange. The UNCTAD repository of e-transactions legislation identifies that 158 economies have already adopted such laws, of which 62% are developing economies. While more than 90% of countries in Europe and the Americas have e-transaction laws in place, the share in Africa is lower at 61% (UNCTAD, 2020[34]).

The OECD Digital Services Trade Restrictiveness Index (DSTRI) highlights that several measures continue to affect the environment for cross-border electronic transactions across the economies it covers (Figure 16).[20] Specific licenses or authorisations for e-commerce activities, in addition to ordinary business licenses, are required in six countries, and in four of them, discriminatory conditions apply for foreign entities seeking to obtain such licenses. Implementing international standards for electronic contracts remains a challenge across the board, although key electronic authentication measures, such as recognition of electronic signatures, are generally in place. Online tax registration and declaration are also not possible in one-third of the countries (Ferencz, 2019[35]) (OECD, 2020[36]).

[20] The OECD STRI provides information on regulations affecting trade in services in 22 sectors across all OECD member countries and Brazil, the People's Republic of China, Costa Rica, India, Indonesia, Malaysia, the Russian Federation, South Africa, and Thailand. These countries and sectors represent over 80% of global trade in services.

Figure 16. Restrictions to electronic transactions



Note: This figure isolates the electronic transaction element in the DSTRI. The STRI indices take values between 0 and 1, with the latter being the most restrictive. They are calculated based on the STRI regulatory database, which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The indices are based on laws and regulations in force on 31 October 2019.
Source: (OECD, 2020[36]).

(Electronic) Payments

Payments services are a key element of the supporting environment. They bring together a range of participants from the end-users of payment services (the payer and the payee), to the front-end and back-end payment service suppliers (WEF, 2020[37]). More specifically, electronic payment systems[21] enable transactions to occur digitally among consumers, merchants, or other account-holders, as an alternative to cash or cheque.

E-payment systems include services through which individual payment transactions are verified and through which transfers of funds between banks participating in the transactions are managed and facilitated. These can enable transactions conducted not only through payment cards (e.g. credit, debit, or prepaid cards), but also through other devices that enable digital payments (e.g. mobile phones or "smart" devices and their digital wallets) as well as devices leveraging application programming interfaces (APIs) and open banking models (ICC, 2020[38]).

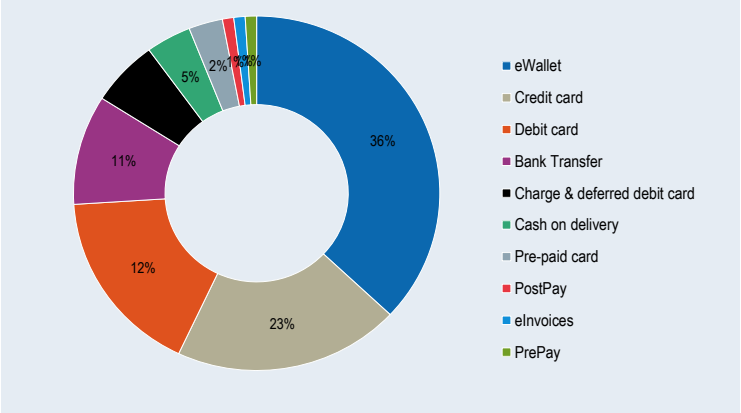
The landscape of e-payments services has changed tremendously in recent years, creating a multitude of options for digital transactions, all of which can support trade in parcels (Figure 17a). Cross-border payments are an increasing share of consumer payments most notably in Asia-Pacific, Europe and MENA (Figure 17b).

However, the technology and financial infrastructure supporting the development of digital money solutions and the propensity to adopt these remains heterogeneous across regions (Figure 18). While Asia-Pacific and Europe appear to have made most progress, these technologies are still incipient or emerging in regions such as Latin America and the Caribbean, MENA, and Sub-Saharan Africa.

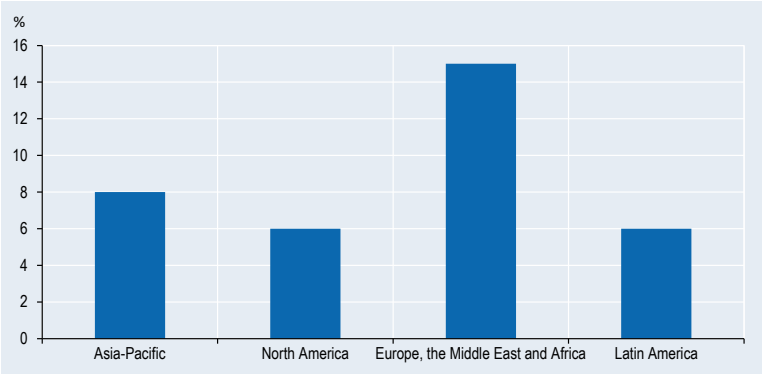
[21] While the term "e-payments" encompasses a broad range of instruments, their distinctive feature is that the whole transaction is carried out through electronic means. Under the WTO, e-payment systems are financial services that fall within the scope of paragraph 5(a)(viii) of the Annex on Financial Services to the General Agreement on Trade in Services (GATS), which covers all "payment and money transmission services, including credit, charge and debit cards, travellers' cheques and bankers drafts." Consistent with the principle of technological neutrality, "all payment and money transmission services" includes payments through any technological means, including electronic payments.

Figure 17. E-payment methods worldwide are evolving

A. Global e-commerce payment methods, 2018



B. Share of cross-border B2B and B2C payments in payments revenue, by region, 2018



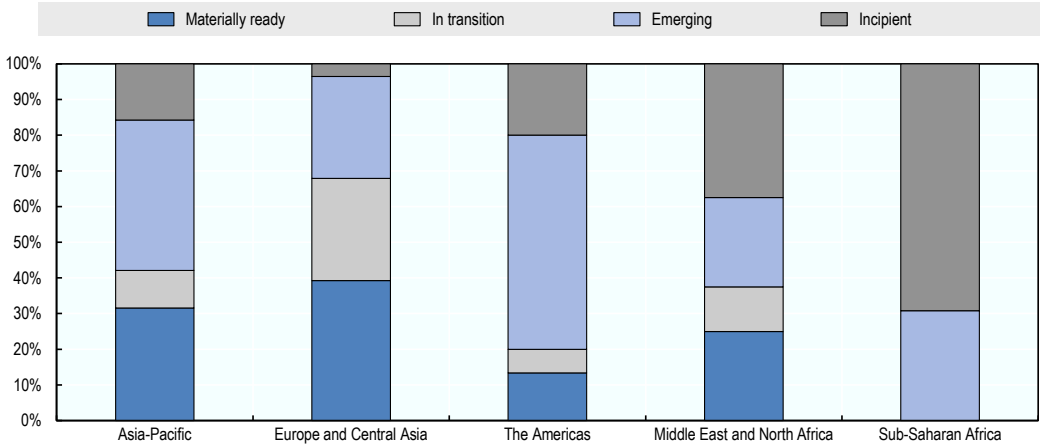
Note: Payments revenue by region in 2018: Asia-Pacific: USD 880 billion; North America: USD 515 billion; Europe, the Middle East and Africa: USD 345 billion; Latin America: USD 210 billion.
Source: Panel A: (WorldPay, 2019[39]); Panel B: (McKinsey, 2019[40]).

E-payment service suppliers can face issues such as ensuring payment safety and reliability; interoperability of financial service providers; licensing and other requirements for new types of financial services; risk mitigation for infrastructure failures; or inadequate infrastructure (e.g. relating to ICT or in terms of power supply infrastructure). On the demand side, cash-on-delivery remains popular in many developing countries, often due to lack of trust, perceptions of safety, financial illiteracy, socio-cultural factors favouring face-to-face interactions, slow or no Internet connections, and poorly targeted design of financial products and services (WEF, 2020[37]).

Access to a diverse and competitive e-payment market is essential to increase financial inclusion – and thus participation in trade – for both consumers and SMEs. E-payment systems allow e-sellers and platforms to accept multiple payment types in real time. Enabling international suppliers to compete on an even keel can result in more interoperable and efficient options for both businesses and consumers (WEF, 2020[37]). The DSTRI captures measures that affect payments made through electronic means. Indicators highlight that a number of economies apply measures restricting access to some payment methods. More efforts are also needed for domestic security standards in payment transactions to align with international standards across several economies in Asia and Europe. However, much higher restrictions remain at the level of commercial banking rather than electronic payments (Figure 19).

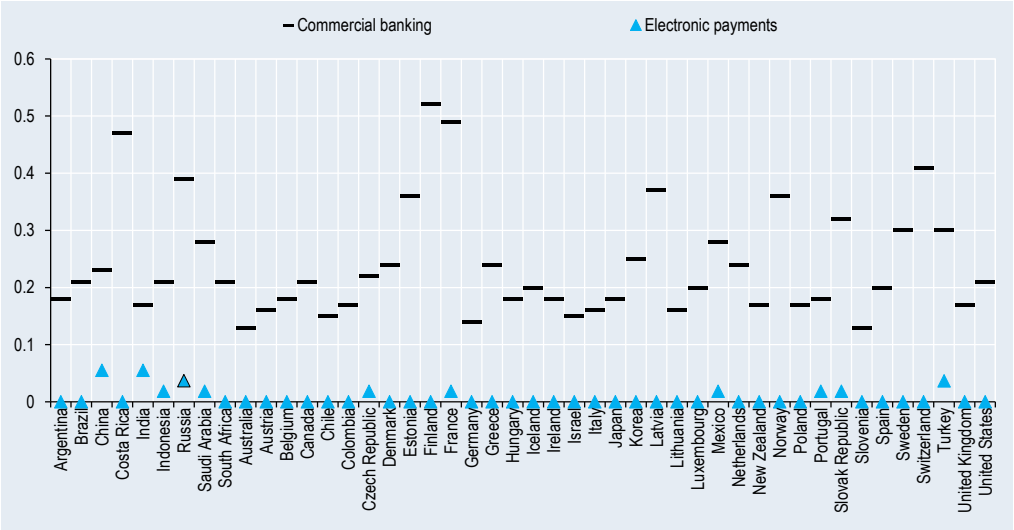
Figure 18. Enabling environment for using digital money

Digital Money Index, share of economies by geographic group (%)



Note: The Digital Money Index tracks performance across four areas: government and market support; technology and financial infrastructure; digital money solutions; propensity to adopt.
Source: (Citi Bank and Imperial College London, 2019[41]).

Figure 19. Trade restrictiveness in electronic payment services versus commercial banking



Note: This figure isolates the electronic payments element in the DSTRI. The STRI indices take values between 0 and 1, with the latter being the most restrictive. They are calculated based on the STRI regulatory database, which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The indices are based on laws and regulations in force on 31 October 2019.
Source: (OECD, 2020[36]).

4.3. Sending a parcel and getting it across the border

Getting a parcel across the border involves a range of steps, from preparing and submitting the necessary trade documents to clearance at the border. Some of these steps are specific to parcels consignments and can involve several agencies and encompass various procedures including collection of duties and taxes.

In sending a package and clearing it at the border, different elements of information on its sender, recipient or contents will matter. These elements will depend on whether the parcel is shipped individually or if it is part of a consignment transported in bulk destined for a bonded warehouse or distribution centre. As

highlighted in Section 3.1, issues relating to the quality of information for individual consignments remains one of the two top challenges for Customs authorities at the border.

The elements of information provided on the parcel will also be important for purposes of revenue collection, as well as for the range of controls and checks to be applied to the parcel. Complex Customs and other border agencies procedures can also add to the challenges of clearing increasing parcel volumes.

Information is key in streamlining the border clearance process

When parcels are shipped in bulk or consolidated freight, the shipping company or logistics operator will usually act as the importer on record and undertake the necessary border formalities for the clearance of goods. In order for an individual parcel consignment to be shipped and cleared at the border, various elements of information on its origin, contents and destination are needed. This information triggers checks on goods subject to specific customs controls and ensures that safety and security controls are undertaken. This information is therefore necessary for streamlining and expediting the handling of the consignments upon arrival, including through pre-arrival processing and risk management where these are in place.

In practice, Customs administrations – based on national legislation and other requirements – should specify the minimum data elements required to provide for immediate release of consignments under each category of goods. Reporting obligations can be different for parcels valued under a specified *de minimis* threshold compared with higher value consignments since many Customs authorities apply simplified declarations for low-value goods. In this area, the *WCO Immediate Release Guidelines* provide a list of the indicative elements to be included in the customs declaration applying to small packages, including when these fall below the thresholds at which simplified declarations apply (i.e. a full Customs declaration is not required) (WCO, 2018[42]).[22]

Reporting obligations can also differ between postal operators and courier operators (such as express carriers). Courier operators usually complete all border formalities on behalf of consumers. In many countries, they transmit the required declaration data for the goods to Customs prior to the arrival of the goods, using electronic data interchange (EDI), in order to allow for the processing of the information against risk selection criteria and to notify the courier computer system which parcels have been selected for inspection.[23] Postal operators use standardised forms[24] depending on the weight and value of the package, but not all postal operators have the ability to provide advance electronic information, thus requiring Customs to screen parcels manually for revenue collection and other risk management purposes.

The information that postal or courier operators are able to provide to Customs depends on the quality of the information provided by the parcel sender on the intended recipient, the goods traded (i.e. nature and description of the good, value) and the mode of transport. However, providing a complete set of data can prove challenging, especially for SMEs sending goods to multiple destinations where there are different data requirements in terms of forms and elements of information.

The ability for Customs to process this information prior to the arrival of packages depends on their existing pre-arrival processing systems. Information from the OECD Trade Facilitation Indicators (TFIs) highlights that, in only a third of economies across Europe and Central Asia, MENA, the Americas and Asia-Pacific, do procedures in place allow Customs agencies to process information received in advance (Figure 20).[25]

[22] In line with the WCO data model.

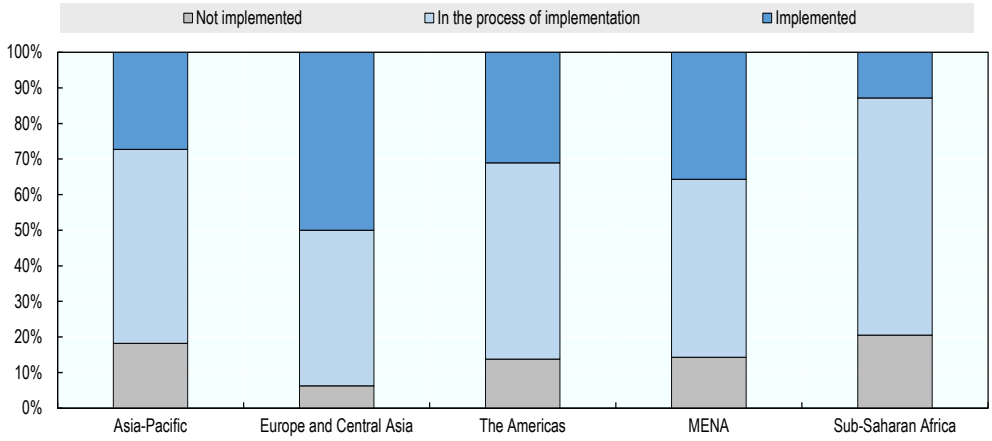
[23] Parcels are identified via a scanning process upon arrival.

[24] The Universal Postal Union (UPU) standardised form CN22 for packages under 2 kg in weight or valued at less than 300 special drawing rights (SDR) and the standardised form CN23 for packages valued over 300 SDR.

[25] In addition to enabling traders to submit pre-arrival information in advance of the arrival of the goods, the actual capacity of Customs to process this information on time and the share of import and export transactions covered in practice by these systems also matters. Sub-Saharan economies face the most challenges: in two-thirds of the economies covered in this region, pre-arrival processing remains a work in progress.

Figure 20. Pre-arrival processing capacities worldwide

Share of countries in selected region (%)



Source: Information based on the OECD Trade Facilitation Indicators dataset, (OECD, 2020[43])

Postal operators are increasingly using digital technologies in their transactions. The Universal Postal Union (UPU) has been making continued efforts towards engaging domestic postal operators in the exchange of electronic data, for example through the Customs Declaration Systems (CDS), which allows customers to enter data about an item online and enables postal operators to provide Customs with advance data about a postal item. The provision of a postal online customs declaration service increased from 14% in 2015 to 33% in 2017 (UPU, 2020[2]).

The use of advance electronic data is becoming a cross-cutting issue, as it also underpins revenue collection, security and safety, and measurement and analysis of parcels trade. The *WCO Framework of Standards on Cross-border E-commerce* (Annex E) underlines the importance of the legal framework and the use of international standards for advanced electronic data.

Revenue collection (customs duties, VAT/GST, and other taxes)

Depending on the destination country and the legislation in place, parcels can be subject to a range of customs duties and domestic value added or goods and services taxes (VAT/GST). In addition, different International Commercial Terms (Incoterms) can be applicable. These can be DDP (Delivered Duty Paid), where the seller is responsible for handling the risks and costs of the shipment, including import duty and any other charges related to delivery. Or the shipment can be DAP (Delivered at Place), where the seller is responsible for handing the risks and costs of the shipment but the receiver/consumer is responsible for settling all charges in order for Customs to release the shipment and have it delivered. According to the latest IPC survey (IPC, 2020[44]), import duties were most likely to be paid at the point of purchase (48%), while 23% of consumers paid customs duty when the parcel was in transit and 23% paid the duty when receiving the parcel.

Where the parcel falls under a *de minimis* threshold for customs duties and taxes, these charges are not applicable to the traded good.[26] In a similar manner, where a parcel falls below a *de minimis* threshold for VAT/GST, these taxes are also not collected for the consignment. These thresholds continue to vary widely however, including across different types of consignments (Box 2 provides examples for customs duties *de minimis*) and countries. Applying different regimes can increase the costs of collection for Customs and other border agencies (ITC, 2017[45]).

[26] Goods may however still be subject to import processing fees and charges, depending on the jurisdiction.

The emergence of new participants in global trade, including more direct participation by individual consumers, and the increase in the volume of digitally-ordered small consignments, have brought new challenges for customs administrations, including in the context of revenue collection (OECD, 2019[46]). Addressing taxation issues while implementing health and security measures can be challenging for Customs authorities. Collecting duties and domestic taxes on cross border parcels requires effective ways of identifying different aspects of a transaction: obtaining a description of the goods, their value, ascertaining the shipper and buyer details, and collecting amounts due. Customs administrations are also reporting a growing misuse of the *de minimis* regime, with sellers splitting and/or under-valuing consignments for tax avoidance purposes (WCO, 2017[30]).

The challenges faced depend on the business model used to ship parcels internationally, whether as individual consignments or through consolidated shipping and temporary storage in fulfilment centres. Timely data exchange between Customs, tax authorities and other relevant actors within the supply chain (such as express couriers and postal operators) is needed to mitigate some of the emerging challenges.

For the private sector, different *de minimis* and VAT/GST obligations across different jurisdictions can present challenges for firms engaging in cross-border parcels trade. These relate to uncertainties about applicable VAT/GST rates for particular goods headed to particular jurisdictions, or to different requirements for invoicing, registration, record keeping, or reporting obligations.

Box 2. Examples of *de minimis* regimes for customs duties

De minimis thresholds can differ according to the type or value of a shipment.

- Some jurisdictions exclude commercial transactions and apply the *de minimis* threshold only to certain types of transactions. These can include “samples and gifts” (e.g. India, Korea), “personal gifts/shipments” (e.g. Korea, Uruguay), or “samples” (e.g. Kazakhstan). Some jurisdictions can apply different thresholds depending on whether the consignment is a “commercial” or “non-commercial shipment”.
- Some jurisdictions can either limit the *de minimis* regime to specific commodities or exclude specific goods from the regime (such as tobacco, alcohol or medicines).
- Some jurisdictions have different thresholds for different types of shipments. For example, Brazil and Bolivia apply *de minimis* thresholds exclusively to postal shipments with a value up to USD 50 and USD 100 respectively. Azerbaijan has a separate threshold of USD 200 for postal shipments.
- Some jurisdictions impose additional conditions on low-value shipments subject to their *de minimis* regime. For example, Uruguay applies a *de minimis* threshold to personal gifts for up to four shipments per year.
- Some jurisdictions can apply preferential treatments in the context of their trade agreements. For instance, Korea applies a higher *de minimis* threshold to personal shipments and samples coming from the United States under the existing FTA, while under the USMCA, Canada and Mexico apply higher thresholds than that used on a multi-favoured nation (MFN) basis.

Note: This list is for illustrative purposes and is not exhaustive.
Source: Authors’ compilation based on reporting by (GEA, 2020[47]) and (WCO, 2017[30]).

Revenue collection models differ across countries, reflecting importing country circumstances and decisions with respect to striking a balance between revenue collection, avoidance of distortions to competition, and reducing compliance costs for sellers and buyers. The WCO Framework of Standards for Cross-border E-commerce documents the existing models for parcels revenue collection (Annex F). The effectiveness of any model depends on the facilitating environment at the border. The exchange of advance electronic data and the environment for electronic payments matters, as does the operation of risk

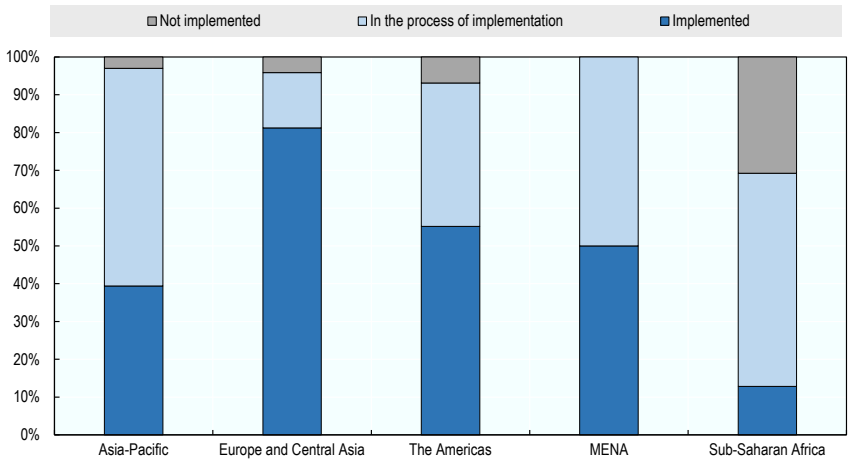
management systems in an automated environment and whether Customs is able to separate release from clearance.

Risk management for facilitation and control

Most economies have made significant progress in the implementation of Customs risk management systems, but the OECD TFIs show that operations in an automated environment – which will be key for processing increasing number of individual consignments – are at this stage most advanced in Europe, North America, Asia-Pacific and MENA (Figure 21). Risk management systems are key for the balance between ensuring compliance and reducing costs and time to businesses, as they allow Customs to focus limited resources on high risk consignments. Here again, the quality of information provided in the trade documentation will be key in addressing risks relating to classification, valuation, smuggling, intellectual property rights, or collection of taxes and charges. Continuing efforts to implement other trade facilitation tools such as Single Windows, Authorised Operator (AOs) programmes and Mutual Recognition Agreements for AOs could also be leveraged in support of simplified tax collection.

Figure 21. Use of automated risk management varies across regions

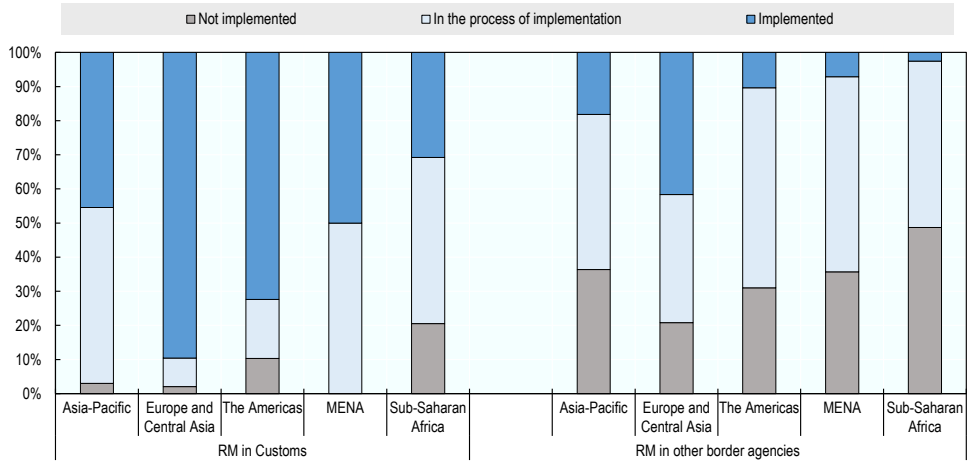
Automated risk management, share of economies by region (%)



Source: Information based on the OECD Trade Facilitation Indicators dataset (OECD, 2020[43]).

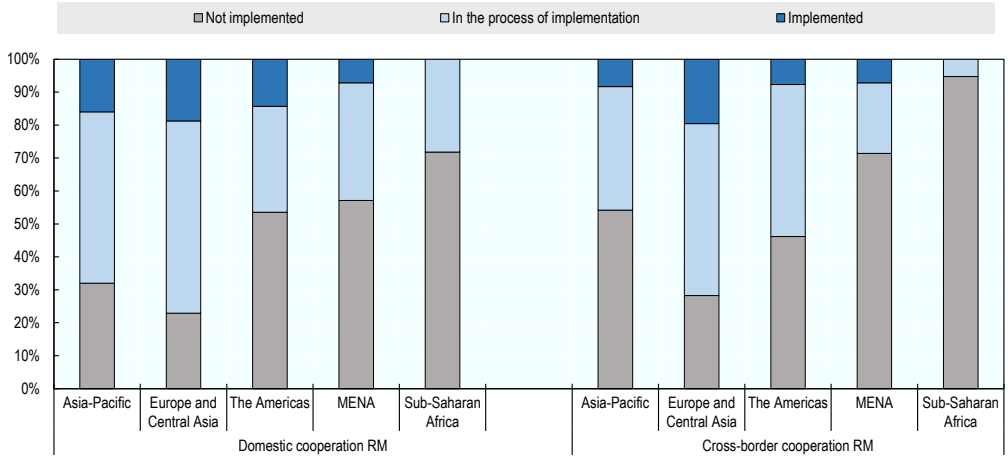
Risk management is being deployed in Customs authorities across most economies, but less so to date by other border agencies (Figure 22). Even where this exists in other border agencies or is in the process of implementation, coordination across agencies needs to be improved to effectively manage the time-sensitive flow of parcels without straining control operations (Figure 23). Domestic and cross-border co-operation in risk management may also need to be supported by IT systems allowing for the sharing of information and of the results of inspections. Full implementation of risk management systems in Customs, as well as other relevant agencies, can also help address issues relevant to potential under-invoicing and misclassification; or illicit trade, such as in counterfeits. (OECD/EUIPO, 2018[48]) highlight the latter as a growing challenge for enforcement, in particular infringement of copyrights, trademarks, design rights and patents.

Figure 22. Risk management is used by Customs more than other border agencies



Source: Information based on the OECD Trade Facilitation Indicators dataset, (OECD, 2020[43]).

Figure 23. Even where risk management is being implemented, co-operation between agencies remains weak



Source: Information based on the OECD Trade Facilitation Indicators dataset, (OECD, 2020[43]).

Technical regulations and standards in the border processing and clearance of parcels

Non-tariff measures (NTMs), such as registration, labelling, packaging or traceability requirements, apply whether goods enter as parcels or are shipped through consolidated freight, and determine the controls that Customs and other border agencies will apply to ensure compliance with standards. This means that the same risks associated with 'traditional' trade also apply to parcels. However, new challenges also emerge.

As shown in Section 2.2, parcel trade is concentrated in a number of sectors, such as ICT goods, medical products, and appliances and other such final products. These sectors tend to attract a higher number of NTMs, which, while necessary, can be costly to implement for traders – particularly SMEs. Indeed, in the sectors where parcels are most traded, *ad valorem* equivalents of NTMs range from 2% to 30% (Cadot, Gourdon and van Tongeren, 2018[49]).

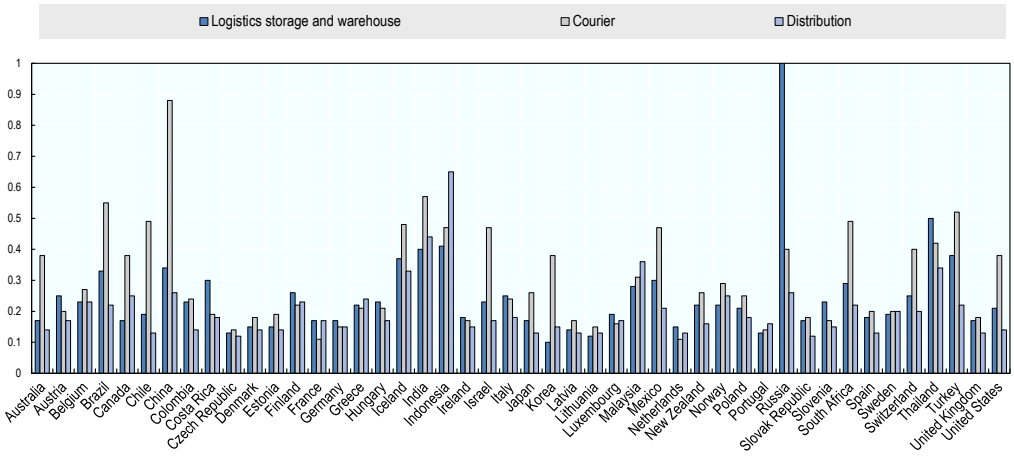
Moreover, when a number of different NTMs apply to a specific parcel, other border agencies beyond Customs need to be involved in the clearance process. With the growing number of parcels crossing borders, growing workloads in the clearance process pose a challenge. This can, in part, be mitigated through better information availability, allowing firms, including SMEs, to anticipate the different requirements for faster clearance when trading parcels across different markets. Co-operation mechanisms such as Single Windows can also ensure that traders have access to the necessary information on standards and submittal of all trade documentation. Other co-operation mechanisms, such as sharing of inspection results between agencies or delegating controls to Customs, can help streamline processes and reduce delays in clearance (OECD, 2020[43]).

4.4. Trade restrictiveness across logistics and transport services in shipping and delivering parcels

Actors in transportation and logistics services enable small parcels to be shipped, stored and delivered internationally (Section 2.3). However, *logistics services* remain subject to a wide range of sector-specific regulatory measures (Figure 24), imposing additional costs on traders (Benz and Jaax, 2020[50]). Restrictions in *courier services* – including express delivery services – concern mainly foreign entry, including requirements related to statutory monopoly for express delivery. A third of the 46 economies covered by the OECD courier STRI require commercial presence to provide cross-border courier services, while the market position and scope of postal services continues to vary across countries, from a statutory monopoly for a broad range of services, to a commercial company competing with other courier services providers. Government-owned enterprises retain a prominent role in the courier services sector in most countries covered by the STRI. In addition, minimum capital requirements to operate courier services are widely observed (OECD, 2020[36]).

For *storage and warehousing services*, the OECD STRI highlights that measures mainly concern restrictions on foreign entry, competition and regulatory transparency. For instance, the government retains control of a major operator in more than half of the economies covered by the STRI; nonetheless, few economies grant any privileges to such operators in competition law. Six economies regulate fees for warehouse and storage services in airports or ports (OECD, 2020[36]).

Figure 24. Trade restrictiveness across logistics and courier services moving parcels

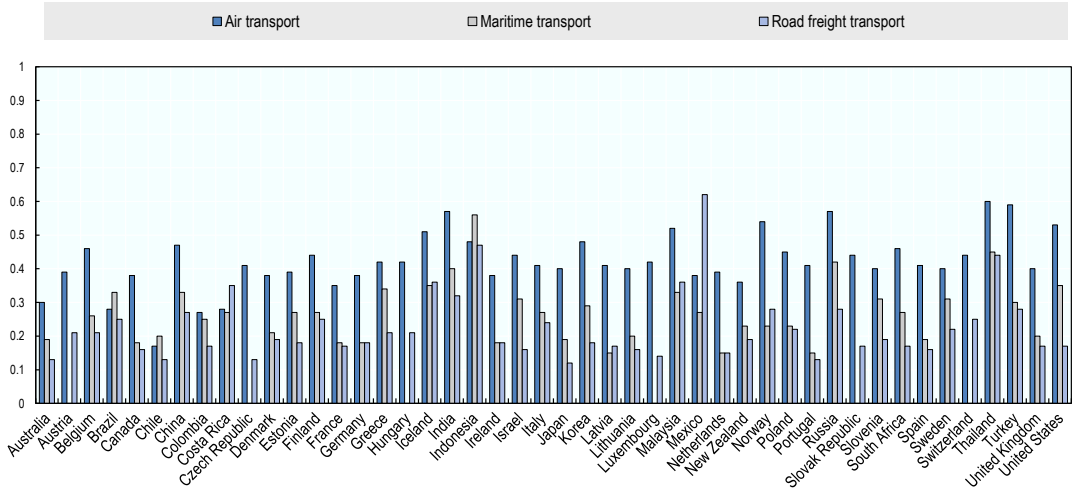


Note: The STRI indices take values between 0 and 1, with the latter being the most restrictive. They are calculated based on the STRI regulatory database, which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The indices are based on laws and regulations in force on 31 October 2019.
Source: (OECD, 2020[36]).

In *distribution services*,[27] restrictions on foreign entry account for 40% of the total OECD STRI scores. In addition, all countries covered limit market access for natural persons providing services on a temporary basis as intra-corporate transferees, contractual services suppliers or independent services suppliers. Courier and distribution services are becoming increasingly important also for the last mile delivery of small parcels. This means that restrictions on these services can affect competition and therefore costs of operating in parcels.

(E-)retailers and manufacturers depend on air, maritime or road transport services to work with logistics providers to move small parcels across borders. Across all economies covered by the OECD STRI in these sectors, barriers remain. These include discriminatory measures and domestic regulations that can affect market access and the creation of competitive markets, impediments to competition and technical standards, as well as a range of measures related to regulatory transparency and administrative requirements. On average, trade restrictiveness remains highest in air transport services compared to maritime and road freight transport (Figure 25).

Figure 25. Restrictiveness in transport services



Note: The STRI indices take values between 0 and 1, with the latter being the most restrictive. They are calculated based on the STRI regulatory database, which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The indices are based on laws and regulations in force on 31 October 2019. Air transport services are defined as passenger and freight air transport (ISIC 51), carried domestically or internationally. The STRI for this sector covers commercial establishment only.
Source: (OECD, 2020[36]).

These restrictions matter for parcel trade because shipping involves greater use of multi-modal networks of transportation and distribution hubs and routes. This increases the interlinkages between different transport modes and different logistics services, and therefore barriers affecting one sector can have important spillovers onto another sector and overall trade costs. Moreover, in light of COVID-19 and the resulting strain on air cargo capacity and increasing shipping rates, some routes have already started adapting. Several liners are, for instance, launching express services between China and the United States – including to meet the growth in online shopping – using smaller ships that can reduce the trans-Pacific journey by a week, but at a cost more than double of a standard trans-Pacific service.[28]

[27] The OECD STRI for distribution services includes regulations relating to e-commerce, given the increasing prevalence of multi-channel retail services as a form of distribution services.

[28] This includes liners such as Zim, Matson or CMA CGM. See Bloomberg, https://www.bloomberg.com/news/articles/2020-06-28/supply-chain-latest-u-s-companies-buy-more-china-faster?sref=kl8fK3TM.

4.5. Where consumer protection meets trade policy

Consumers can be exposed to digital manifestations of risks they have traditionally faced offline, such as fraudulent and deceptive commercial practices, as well as new forms of risk particular to the digital space. For example, consumers may struggle to understand their rights and obligations when they make purchases through e-payment systems or when they transact across borders. Moreover, in an environment where digital platforms collect information about users, and can leverage this information in their relationship with them, concerns about data use, privacy, security, and market competition arise. The extent to which hazardous products remain available to purchase online even when and where they have been banned or recalled from the market, is also an ongoing cause for concern, particularly in cross-border contexts (OECD, 2018[51]). Moreover, a delivered product may simply not match consumers' expectations and they may want to exercise their right to return the product.

Consumer protection is a key factor in consumer trust in digital transactions. Surveys across European economies highlight that less than half of consumers have confidence in conducting cross-border online transactions. Exposure to unfair contract terms and conditions from cross-border retailers or unanticipated extra charges from cross-border retailers remain significant concerns for most European consumers purchasing goods online cross-border (European Commission, 2018[29]). In this context, it can be important that consumers have easy access to mechanisms to resolve disputes and obtain redress for economic harm resulting from transactions with businesses. Such mechanisms provide consumers with confidence that claims arising from online transactions with businesses will be settled in a fair and effective manner.

Consumer protection legislation aims to safeguard the economic interests of consumers, empower them with free and informed choice, and bestow rights if problems arise. Regulatory instruments, embodied in legislation, can specify a duty of information, a total prohibition of misleading and aggressive practices, or a prohibition of unfair terms in certain types of contracts (WEF, 2020[52]). (UNCTAD, 2020[34]) reports that out of 134 countries for which data are available[29], 110 have adopted legislation on consumer protection related to e-commerce. That share varies by region, from 73% in Europe to 46% in Africa and 72% in the Americas.

Variations in consumer protection laws across different markets can generate legal uncertainty, especially for traders who lack the necessary human and financial resources to carry out market intelligence on local consumer protection laws and regulations in each target market. This may also create a more costly, time-consuming and cumbersome adaptation process for websites, which can be particularly burdensome for SMEs, especially when businesses are unsure about what is actually required of them (WEF, 2020[52]).

To address these digital challenges, consumer protection enforcement authorities are collaborating actively with other domestic regulators. An (OECD, 2018[53]) survey of 31 economies highlights that 87% of countries have frameworks to enable co-operation among domestic authorities in the enforcement of consumer protection laws, including in areas like competition, privacy and data protection, financial services, health, environmental protection, and transport. The forms of co-operation vary, including information sharing, as well as collaboration on guidance for businesses, investigations and enforcement actions (OECD, 2018[53]).

The same (OECD, 2018[53]) survey shows that cross-border co-operation for consumer protection has become increasingly important in the cross-border digital space. Consistent with the *OECD Cross-border Fraud Recommendation* and the *OECD E-commerce Recommendation*, many countries have improved their frameworks for combating cross-border fraudulent and deceptive commercial practices and increased their ability to co-operate with consumer protection enforcement authorities in other countries through legislation, international arrangements and international co-operation networks.

However, many challenges remain. More than two-thirds of economies surveyed in (OECD, 2018[53]) report that inadequate resources are always (18%) or frequently (50%) barriers for cross-border co-operation. In addition, international enforcement activities may be restricted due to legal limitations on, for instance, the type of information that can be shared with foreign authorities, the kind of enforcement actions able to be taken against foreign businesses, and the conditions under which such enforcement may take place.

[29] For 57 economies it was not possible for UNCTAD to obtain data.

Issues associated with confidentiality, privacy and data protection also need to be taken into account in cross-border information sharing on these issues (OECD, 2018[53]).

4.6. Other cross-cutting elements in the enabling environment for parcels trade

The digital divide remains present between and within countries and regions

Households' access to the Internet within and between countries varies considerably. This 'digital divide' affects the ability of many people to purchase goods online (OECD, 2018[54]) (OECD, 2019[55]). Indeed, in a number of low and lower-middle income countries, less than 20% of households are able to access the Internet from home (WEF, 2016[56]). Even in upper-middle and higher income countries, Internet access can be an issue for disadvantaged population groups or those living in rural areas. Households' access to the Internet remains particularly an issue across regions such as Sub-Saharan Africa and parts of Asia, while important progress has been made in Eastern Europe and Latin America and the Caribbean (WEF, 2016[56]). This adds to the other existing challenges encountered in the access of some consumers to credit or debit cards enabling cashless transactions.

The high cost of access to the Internet in some jurisdictions can also be an issue. Here, regulatory frameworks can play a role ensuring that the environment is conducive to greater competition to help lower costs. There is considerable scope to lower trade barriers to foster competition in telecommunication services sectors with a view to helping firms and consumers enjoy greater access to higher quality services at lower prices (OECD, 2020[31]).

Cross-border data flows

Operators throughout the parcel supply chain execute individual stages of transport under various forms of contracts of carriage. There may be multiple consignments or contracts of carriage concurrently active during the transport phase, due to consolidations to generate efficiency in transport processes. The cross-border movement of data underpins all the activities in the shipping and delivery of parcels across borders. Data also contributes to increasing the visibility, for the original seller as well as for the final buyer, of the different locations of the product during the transportation phase.

Exercising overarching control and coordination of geographically dispersed processes of production and transport also involves moving data across different locations: organising input flows of goods and services, working with subcontractors and suppliers, and handling internal operations. This requires, inter alia, sending data about inventories, sales, demand forecasts, order status, human resources and production schedules. When delivering parcels, data transfers are needed to track-and-trace products as they are travelling to the border, across the border and beyond. When the product gets to the consumer their experience with the product they have purchased might also depend on the ability of the firm to receive, process and respond to continuous feedback. Increasingly, firms also offer after-sales services, the efficient provision of which requires monitoring the performance of products in view of handling maintenance, repairs, and spare parts, again all connected through data flows (Casalini and Lopez Gonzalez, 2019[57]).

With a growing online presence, more opportunities to record activities arise, fuelling concerns about privacy protection. The amount of information gathered and the use made of it is not always clear to the consumer. Privacy and security concerns play a key role in determining whether consumers order online or not. The extent to which firms can identify and split personal from non-personal data can also be an issue for firms, a process that is likely to be costly. Countries are increasingly introducing personal data protection frameworks, but lack of trust across the policy and regulatory environment can create administrative burdens and compliance inconsistencies across jurisdictions (Casalini and Lopez Gonzalez, 2019[57]).

For logistics, in order to enable end-to-end tracking and to enhance collaboration among all stakeholders in the chain, there is a need for standards for intermodal transport and interoperability in the exchange of data. Due to the use of different standards for identification and tracking between the various transport modes, it is often difficult to transmit all the information regarded as pertinent to the varied stakeholders in an intermodal transaction. A subset of information, normalised to accommodate each mode of transport, could enable sufficient pertinent details to render the shipment unique and identifiable in the seller-to-buyer

transaction. In order to accommodate this development for intermodal transport, the information would need to be provided and accepted into an information-sharing network, from which all authorised stakeholders can access the data for that shipment (Becha et al., 2020[58]).

4.7. Returning a parcel: "Reverse engineering" the trade policy environment

When a delivered product does not match consumer expectations or where there are other issues with the product, the consumer may want to return the parcel. The business model used in the initial delivery (i.e. if the product was shipped directly by the supplier to the consumer or the transaction was intermediated by a digital platform, including through a fulfilment centre) will generally determine the return process. For instance, if the parcel was shipped directly by the foreign seller, then the package will have to travel back to the place from where it originated, setting in motion a 'mirror' process to its initial delivery. In turn, if the sale was intermediated by a digital platform and went through a distribution centre network, in many cases, the parcel will not have to go back to its original supplier but can be returned to the fulfilment centre.

Customers may request a refund of the price of the goods, inclusive of VAT/GST. The refund process for the specified value of VAT/GST may present challenges. For example, challenges can arise where the VAT/GST has been collected and remitted to the tax authorities by a digital platform, whereas the refund of the price inclusive of VAT/GST is requested from or made to the underlying supplier. In such a context, the underlying supplier will therefore have to claim that amount back from the digital platform. Proof of goods being returned would be needed (such as such as import and/or export declaration and/or proof of order cancellation). Here, having in place interoperable electronic systems storing information on parcels that have been imported can also provide the necessary information for returns and the reconciliation of data concerning the imported and the returned shipment (if taxes and duties have already been paid) (OECD, 2019[46]).

5. What can available data tells us about policy determinants for parcels trade?

5.1. Existing quantitative evidence

To date, owing to a lack of data availability, only a handful of studies have undertaken analysis on the trade cost implications of parcel trade. These look at different subsamples of parcels, some which are digitally ordered and others which are not.

Looking at exports of goods traded through eBay relative to 'traditional' ('offline') trade in goods, (Lendle et al., 2016[59]) show that, on average, the effect of distance – a metric for aggregate trade costs – is 65% lower for goods traded through eBay (relative to offline trade).[30] (Lendle et al., 2016[59]) credit this result to lower search costs and growing trust in transactions enabled by online platforms (through, for example, seller-rating mechanisms). With lower informational costs, smaller businesses can connect with distant customers, which may explain why, on average, firms that conduct business on eBay are smaller than 'traditional' offline firms (Lendle and Olarreaga, 2014[60]).

Using proprietary data from Google, (Cowgill and Dorobantu, 2016[61]) find that a 10% increase in the distance between two trading partner countries lowers the volume of online trade by 5.3%. This contrasts with the findings from a meta-analysis of the determinants of 'traditional' trade, which finds that an increase in distance of 10% leads to a 9.3% decrease in trade (Head and Mayer, 2016[62]). Thus, by lowering the amount of trade lost due to distance, (Cowgill and Dorobantu, 2016[61]) provide further evidence corroborating the trade cost reducing impacts of digital platforms.

(Ansón et al., 2016[63]) exploit a dataset on international parcel delivery times from UPU to examine the impact of time-related uncertainty, which requires traders to hold costly inventories or build costly redundancies into supply chains, on traditional trade. The authors find that a one-day increase in international transport time uncertainty – measured as the standard deviation of recorded international transit times – reduces bilateral trade flows by just over 1%. Splitting the sample into intermediate versus

[30] Similar results are found in Anson and Helble (2013) who apply a gravity model to small parcels data from the UPU.

final goods, the study also finds that time and uncertainty matter more for movements of intermediates of the type that takes place within global value chains.

Using a similar sample of weekly parcel flows from UPU covering the period 2010-14, (Boffa, 2016[64]) estimates that consumers are ready to pay a 30% premium for an immediate purchase rather than waiting 18 days for delivery. This suggests that cross-border e-commerce might also face substantial 'waiting costs' – related to at-the-border, behind-the-border, international shipping, and domestic distribution costs. This might also explain why (Cowgill, Dorobantu and Martens, 2013[65]) find evidence of a significant home bias in online purchases.[31]

A study by the Inter-American Development Bank (IDB, 2016[66]) analyses the impacts of the trade facilitation programme *Exporta Fácil* (Easy Export) for goods traded through postal services in Peru since 2007. Under *Exporta Fácil*, firms can deliver their shipments to the local post office accompanied by a simplified export customs declaration (and other relevant documents as established by the regulations). They can also use the post office as both a customs broker that handles the processing of shipments and the respective documentation with customs, and as a logistic operator that ships the goods to the destination. The analysis shows that the programme helps small firms to start exporting, and that it helps with increasing the number of firms that export and the number of destinations reached. In addition, exporters learn from their *Exporta Fácil* experience: firms that become regular exporters survive longer and diversify destinations.

Using data on Internet retail sales, (Kang, Wang and Ramizo, 2021[67]) show that internet access and speed, online security, and financial inclusiveness matter in facilitating B2C online commerce.

Overall, the available empirical literature highlights that trade costs are key for cross-border parcel trade. However, insights into which types of policies may matter more in terms of these costs remains scarce.

5.2. Identifying how different policies affect parcels trade

Until better data on parcels trade become more readily available, identifying the links between this type of trade and policies using available information has to be approached with care. Data from the Eurostat Comext database, which identifies products shipped internationally via parcels, offers a starting point for empirical analysis. It permits analysis employing a structural gravity model on a panel dataset that records parcel transactions where selected European economies act either as exporter or as importer – covering 51 parcel origin countries and 76 destination countries[32] (including selected European economies together with other economies across various regions, these are listed in Table A G.1) – to assess the role that policies can play in getting parcels from click to doorstep (details in Annex G)[33]. To capture the different policy elements that affect parcels as they travel to, across and beyond the border, the policy indicators identified in the previous sections are used. Following (Lopez Gonzalez and Ferencz, 2018[68]), the potential for digital connectivity between two countries is proxied by the minimum of the share of the

[31] Cowgill, Dorobantu and Martens (2013) use Google e-commerce data (selected food, manufacturing and services sectors) to estimate the prevalence of home bias in online shopping in the European Union. More specifically, the authors find that the home bias appears to be strongest among sectors such as health care and finance and insurance. OECD (2019c) work uses credit card payment data to shed new light on the determinants of cross-border e-commerce. The work captures payments related to online transactions of both goods and services and attempts to identify the extent of home bias.

[32] The dataset only records transactions in which selected EU economies act as exporter or importer over the period 2012-19 and the respective trading partner is an economy outside the EU area (destination country or origin country, respectively). By using mirror flows, the number of reporting countries can be extended, however, only in the context of trade with EU countries.

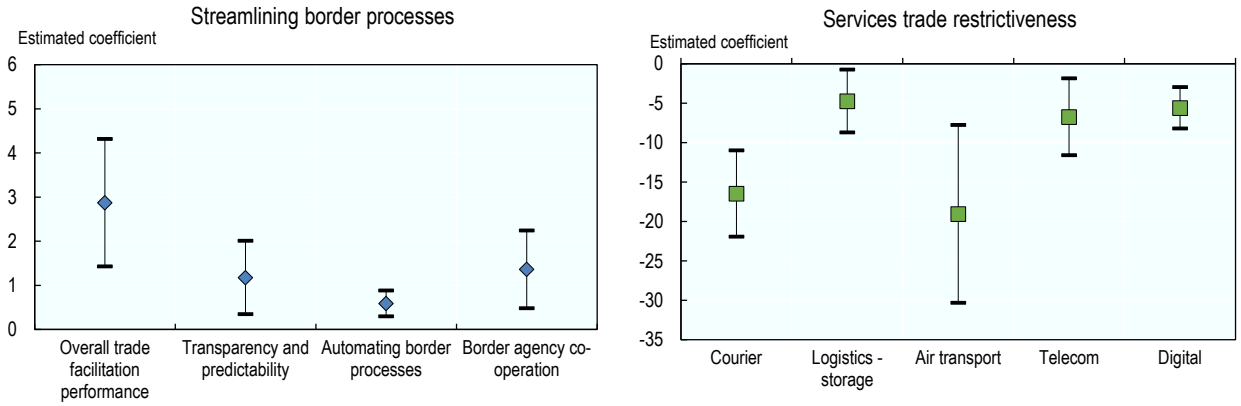
[33] Matching the availability of data for cross-border parcels trade (based on the Eurostat Comext dataset) with the various indicators permits testing of different country samples, as the availability by country and year differs by indicator. This implies that the different indicators are tested for different samples.

population that is using the Internet. This reflects the fact that, in order to enhance parcel trade, both supplying and demanding countries require good connectivity.[34]

Controlling for individual country-sector-year supply and demand conditions (using several sets of fixed effects), better digital connectivity is associated with exporting more parcels.[35] Indeed, a 10% increase in bilateral digital connectivity between two countries raises parcel trade exports by over 4%. This contrasts with the finding in (Lopez Gonzalez and Ferencz, 2018[68]) where a 10% increase in digital connectivity was found to increase overall goods trade by about 2%. While the comparison between these figures is not straightforward, it suggests that parcel trade may be more responsive to digital connectivity than 'traditional' trade.[36]

The modelling exercise also suggests that the overall regulatory framework that underpins digital trade – covering emerging issues such as data flows, electronic transactions and electronic payments – is an important component of parcels trade. A negative relationship is found between the digital STRI heterogeneity index[37] and parcel exports, showing that regulatory divergences between countries on issues related to the digital trade environment can reduce parcels exports (Figure 26). A negative relationship is also identified between parcels exports and heterogeneity across country pairs in the regulatory environment for telecommunication services. That is, the similarity of regulatory frameworks underpinning telecommunication services is found to play a positive role on parcel exports.

Figure 26. Summary of estimated coefficients



Note: Estimates in the figure are derived as averages across specifications where dependent variables are significant at 1%, 5% or 10% level (as summarised in Table A G.3) together with the confidence intervals.
Source: Authors' estimates based on specifications detailed in Annex G.

[34] According to (Lopez Gonzalez and Ferencz, 2018[68]) the measure acts as a mass parameter of potential digital connections reflecting the likely importance of digital connectivity. The minimum internet connectivity between trading partners is a bilateral measure, which allows introducing exporter-year and importer-year fixed effects to control for multilateral resistance.

[35] Results are in line with (Lopez Gonzalez and Ferencz, 2018[68]) who incorporate measures of digital connectivity or internet penetration into a gravity model of trade.

[36] Comparing coefficients across different specifications is complex, including in the context of identifying whether differences are statistically significant, and even where specifications are the same, coefficients are not directly comparable when samples differ (since coefficients need to be assessed at their means and different samples will imply different means).

[37] (Nordås, 2016[80]) builds STRI heterogeneity indices from assessing – for each country pair and each measure – whether or not the countries have the same regulation. For each country pair and each sector, the indices reflect the (weighted) share of measures for which the two countries have different regulation. The heterogeneity indices used here are based on the scores assigned to each measure.

Services such as courier, storage or distribution are also part of the policy environment that underpins trade in parcels, especially for getting parcels to the border and then to consumers. In addition, measures affecting transport services such as air cargo could also lead to higher costs for parcels trade. The modelling exercise suggests this is indeed the case, finding a negative relationship between regulatory heterogeneity in these areas – as measured by STRI heterogeneity indices – and parcels exports. Impacts appear to be highest for courier and air transport services, where restrictions are also greatest across countries. Estimated effects for distribution services are not statistically significant.

Finally, streamlining of border processes is also found to be important. More specifically, improvements in trade facilitation policies such as transparency, automation and streamlining of processes at borders, as well as border agency co-operation, are found to have a positive impact on parcel exports of between 6% and 14%.[38] As in the case of digital connectivity, while comparisons are not straightforward, the results indicate that parcel trade could be more responsive to these efforts than overall goods trade; reforms in transparency, automation and agency coordination have been found to have the potential to enhance overall goods trade by between 1% and 4% (OECD, 2020[33]).

Other policy areas highlighted in the previous section (Figure 15) – such as those related to revenue collection, standards, consumer protection, or cross-border data flows – are difficult to capture in the modelling exercise (including due to data availability) and would need to be explored carefully in future research, ideally using more granular data. Further work would also be required to better gauge the transmission mechanisms underpinning the correlations above and to account for sectoral particularities, including with regard to standards. Moreover, further work could look into how the marginal impact of services regulatory heterogeneity on parcels trade varies with the level of services trade restrictiveness in exporter and importer economies. Nevertheless, the above findings provide early insights into the relationships between parcels trade and different policies, and how digital connectivity, trade facilitation and services may together act as an enabler for this type of trade.

6. Conclusions and policy implications

This report provides a first comprehensive look at the emerging environment for cross-border parcel trade. It sets out the role of different business models and actors and uses available data to map the evolving patterns of parcel trade, noting existing measurement challenges. On this basis, it then explores the enabling environment in which parcels cross borders and how this is shaped by different trade policies. In the context of the COVID-19 crisis where the pace of digital orders has increased dramatically, it is ever more important to understand what and who is shaping trade in parcels with a view to enabling firms, including SMEs, and individuals to benefit from new opportunities. This can help contribute to an inclusive recovery.

The wider use of digital platforms and websites to sell goods across borders has helped reduce information constraints, connecting supply and demand globally and leading to growth in parcels trade. However, the parcel supply chain is complex. Clicking the purchase button on an item sets in motion a wide network of actors and processes. It is also evolving, from a more traditional pick-up-transportation-delivery model to a more diversified and service-oriented model including different actors providing marketplace, payment, fulfilment or warehousing solutions to meet both sellers' and customers' needs.

Available aggregate information shows that e-commerce and parcel trade is growing, but less is known about what parcels are crossing which borders and what their value is. Although this paper has attempted to fill some of the missing pieces through the use of data on postal dispatches for selected European economies, better trade in parcels statistics are needed to get a more granular feel for parcel trade and to enable more robust analysis on determinants and impacts. It is therefore important to accelerate measurement efforts under the OECD-WTO-IMF *Framework on measuring digital trade*.

[38] As measured by an increase of 0.1 points in the bilateral TFIs.

Nonetheless, useful insights can be gleamed from existing data to provide an initial sense of the relationship between parcels trade and different policies. This paper shows that digital connectivity is a key determinant of parcel trade. At the same time, it highlights that trade facilitation policies in the areas of transparency, automation, and border agency co-operation can have a positive impact on parcels exports. In contrast, regulatory divergence on courier, logistics or air transport services can have a negative impact on parcels trade. While it is not straightforward to compare results across different empirical assessments, results from this analysis suggest that parcels trade can be more responsive than overall goods trade to improvements in some of these policy areas (digital connectivity and trade facilitation).

Overall, the analysis shows that ensuring that parcels get to where they are needed requires policy action along a diverse set of issues: *behind the border* in areas such as (electronic) payments or consumer protection; *at the border* in terms of administrative processes, standards or revenue collection; but also while *in transit* in terms of logistics, postal, and transport services. *Cross*-cutting *issues* such as the digital infrastructure and cross-border data flows are also key throughout the whole supply chain, from businesses to consumers.

Governments seeking to make the most out of the evolving trade in parcels environment and to be prepared to meet the associated challenges need to approach policy-making holistically, taking a whole-of-the–parcel-supply-chain approach and involving the numerous actors that underpin the different elements of the parcel landscape.

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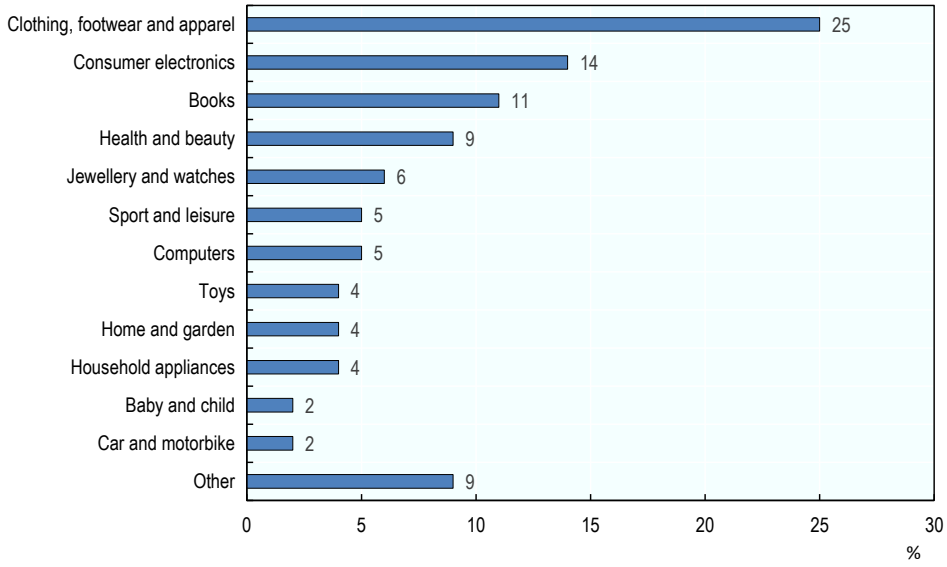
Annex A. Parcel trade as a result of e-commerce

Figure A A.1. Types of digitally ordered parcels traded

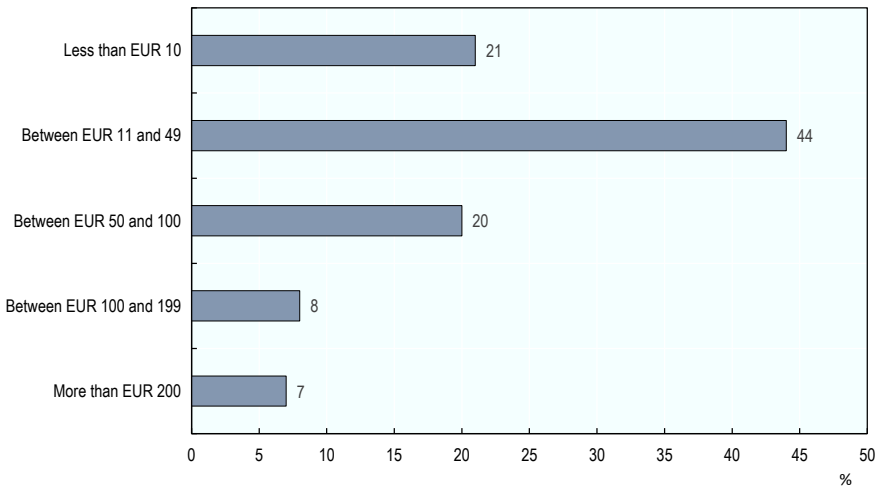
Share (%), 2019



Note: The survey covers 35 737 consumers in 41 economies in 2019.
Source: (International Postal Corporation, 2019[12]).

Figure A A.2. Average value of digitally ordered parcels traded

Share (%), 2019

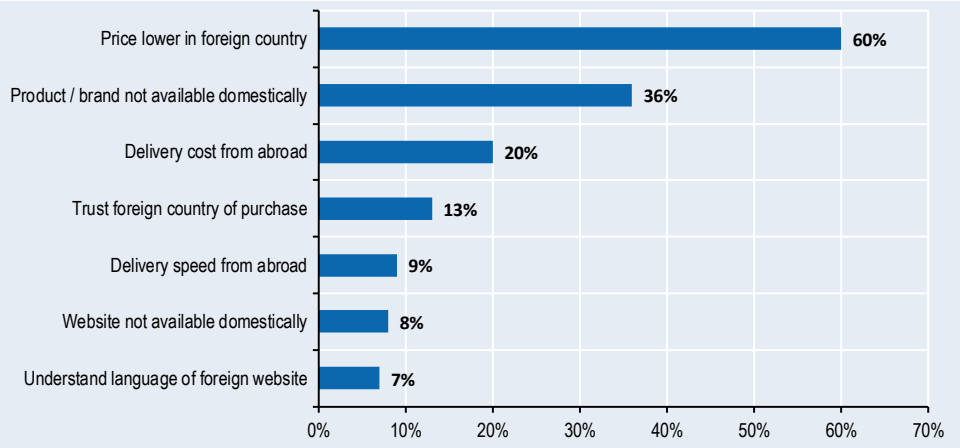


Note: The survey covers 35 737 consumers in 41 different countries in 2019.
Source: (International Postal Corporation, 2020[25]).

Annex B. Individual consumers and parcels trade

Figure A B.1. Factors motivating consumers buying cross-border

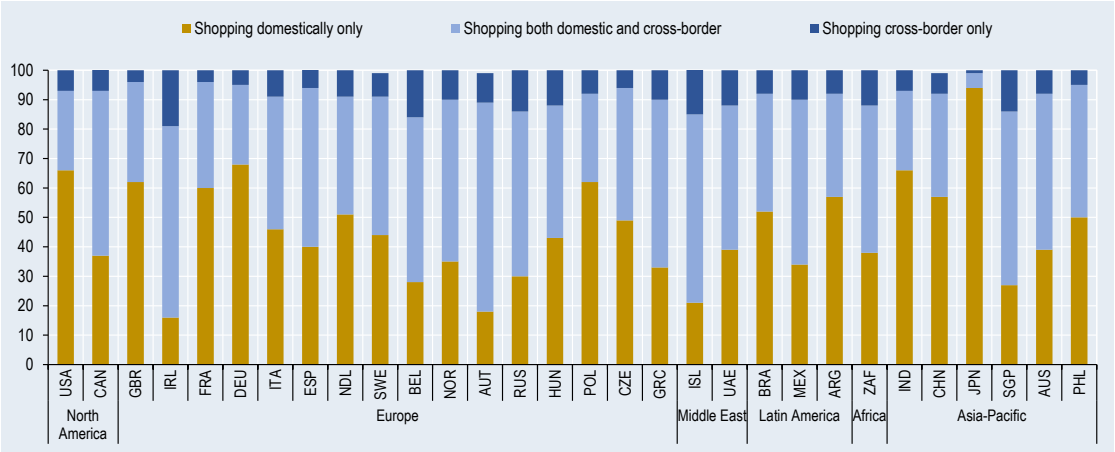
Percentage of responses (%), 2019



Note: Survey of 35 737 consumers across 41 economies. More than one response to the survey is possible.
Source: (International Postal Corporation, 2020[25]).

Figure A B.2. Prevalence of online cross-border shopping

Share of consumers by category (%), 2018



Note: Survey conducted on 34 052 consumers between 13 March and 1 May 2018.
Source: (PayPal, 2018[26]).

Annex C. Logistics actors in the parcel supply chain

Table A C.1. Types of delivery and logistics operators in the parcel supply chain

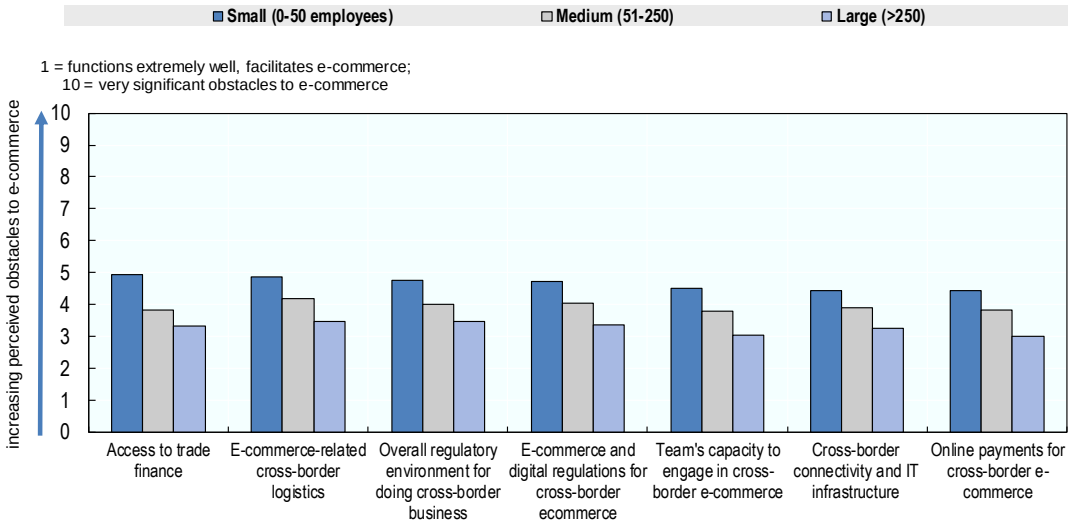
Type of logistics operator	Services provided
First-party logistics (1PL)	1PL refers to companies that use their own capacities (trucks, warehouses, etc.) to store and deliver goods to their customers.
Second-party logistics (2PL)	2PL refers to an asset-based carrier, which actually owns the means of transportation. Typical 2PLs would be shipping lines that own, lease or charter their ships; airlines which own, lease or charter their planes and truck companies which own or lease their trucks.
Third-party logistics (3PL)	3PL providers are integrated into the processes of their customers, organising the flow of goods and information for their customers for part of or for the entire logistics process. They can handle inventory, warehousing, packaging and customs clearance, as well as returns. Includes integrators / consolidators - provide delivery services to e-retailers, both domestically and cross-border (own cross-border network). 3PLs includes express carriers.
Fourth-party logistics (4PL)	4PL providers are asset-free system integrators who stand between firms and other logistics providers (often 3PLs) to ensure the coordination and organisation of all business processes along the supply chain. They oversee the entire supply chain to ensure the optimal use of the available resources. The ability to coordinate complex, cross-company business processes with the help of modern technologies and to supplement its own strengths with additional service providers is one of the key competencies of 4PLs. The particular task of a 4PL provider is, therefore, to take over the control and integration function within the supply chain without its own operating resources and to increase the efficiency of the supply chain. In this respect, a 4PL provider acts as a neutral intermediary between the client and the various service providers, trying (to the client's advantage) to optimise the various service offers in an overall package.
Fifth-party logistics (5PL)	5PL providers consolidate the requirements and capacity of 3PLs and 4PLs. A 5PL negotiates rates that are more favourable with transport service providers such as forwarders, airlines and shipping companies. 5PL can now include software solution providers, providing (e-)retailers and delivery operators with software solutions to support logistics and fulfilment, e.g. EDI, tracking, labelling, last mile delivery.

Note: The description of activities covered is for illustrative purposes.
Source: Authors' compilation.

Annex D. Survey evidence on the measures that affect parcel trade

Figure A D.1. Perception of obstacles to cross-border e-commerce in developing economies

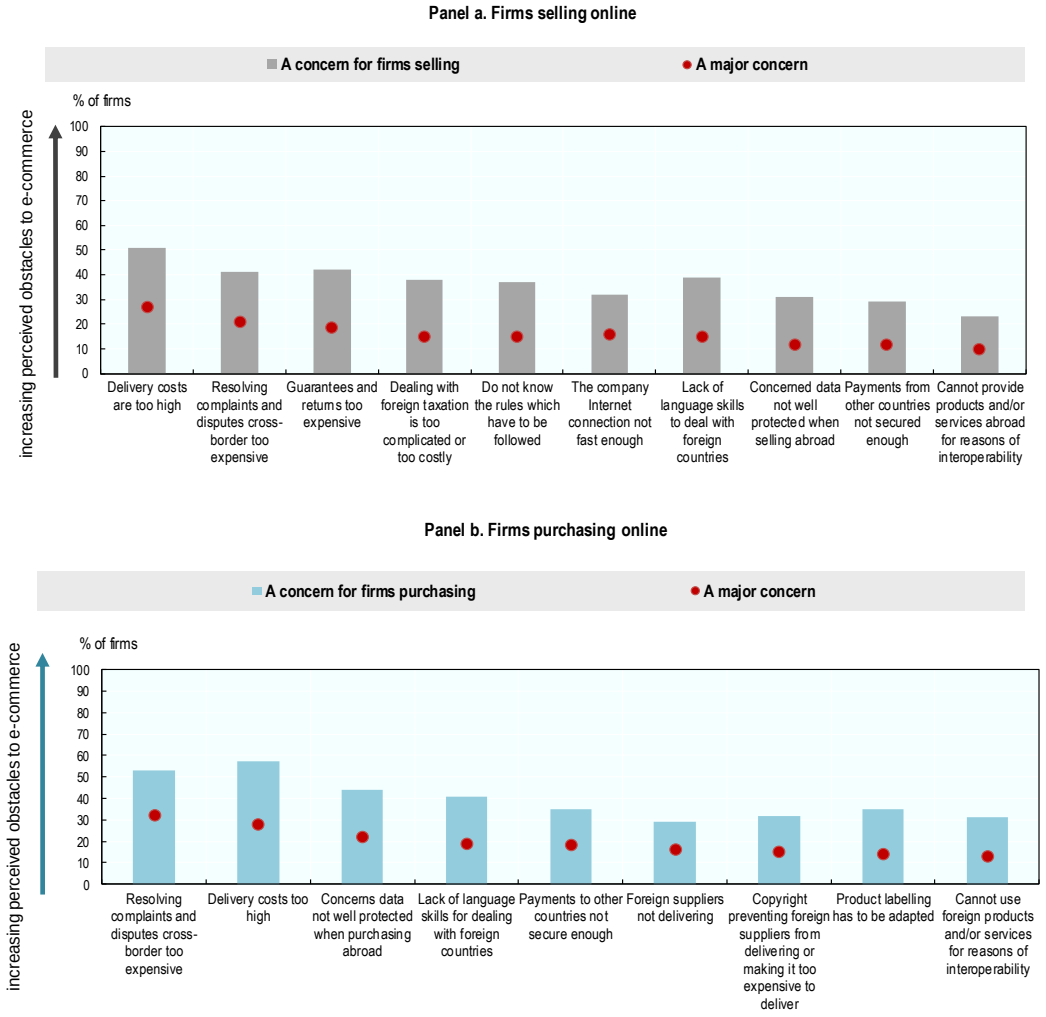
By firm size, 2017



Note: The chart shows the average score by firms size across 14 developing countries covered: Argentina, Brazil, Chile, Colombia, Mexico, Uruguay (in Latin America), Bangladesh, India, Pakistan, Philippines (in Asia), and Ghana, Kenya, Nigeria, South Africa (in Sub-Saharan Africa). The indicators have been rescaled to show the increasing obstacles to e-commerce.
Source: (Suominen, 2017[16]).

Figure A D.2. Difficulties that European firms encountered when selling to other European countries, 2014

Percentage out of total number of firms surveyed (%)



Note: Panel a: Covers a sample of 1 903 companies in the EU that sold their products and/or services online in another EU country in 2014 and those that used to do so or tried to do so. Panel b: Covers a sample of 3 859 companies in the EU that purchased some goods and/or services online from EU country in 2014 and those that used to do so or tried to do so.
Source: (European Commission, 2015[28]).

Annex E. WCO Framework of Standards on Cross-Border E-commerce

Building on the key principles laid down in the Luxor Resolution adopted in 2017, the WCO Framework of Standards adopted in July 2018 sets out baseline global standards on cross-border e-commerce (WCO, 2020[69]). The core of the Framework focuses on the exchange of advance electronic data for effective risk management and enhanced facilitation of growing volumes of cross-border small and low-value business to consumer (B2C) and consumer-to-consumer (C2C) shipments, and the adoption of simplified procedures with respect to clearance, revenue collection and return, among other things, in close partnership with e-commerce stakeholders. It also encourages the use of non-intrusive inspection equipment, data analytics and other cutting-edge technologies to support safe, secure and sustainable cross-border e commerce.

Principle 1: Advance Electronic Data and Risk Management

- Standard 1: Legal Framework for Advance Electronic Data
- Standard 2: Use of International Standards for Advance Electronic Data
- Standard 3: Risk Management for Facilitation and Control
- Standard 4: Use of Non-Intrusive Inspection Technologies and Data Analytics

Principle 2: Facilitation and Simplification

- Standard 5: Simplified Clearance Procedures
- Standard 6: Expanding the Concept of Authorized Economic Operator (AEO) to Cross-Border E-Commerce

Principle 3: Fair and Efficient Revenue Collection

- Standard 7: Models of Revenue Collection
- Standard 8: *De Minimis*

Principle 4: Safety and Security

- Standard 9: Prevention of Fraud and Illicit Trade
- Standard 10: Inter-Agency Cooperation and Information Sharing

Principle 5: Partnerships

- Standard 11: Public-Private Partnerships
- Standard 12: International Cooperation

Principle 5: Public Awareness, Outreach and Capacity Building

- Standard 13: Communication, Public Awareness and Outreach

Principle 6: Measurement and Analysis

- Standard 14: Mechanism of Measurement

Principle 7: Leveraging Transformative Technologies

- Standard 15: Explore Technological Developments and Innovation

Annex F. Approaches to revenue collection for small parcels

The WCO Framework of Standards on Cross-Border E-commerce documents the different existing approaches to revenue collection (WCO, 2020[70]) (WCO, 2020[71]):

> (i) *Seller/vendor based collection*: the non-resident seller/vendor would be required to assess, collect and remit duty and taxes on imports to the destination Customs or Tax administrations. This approach typically involves a registration process with either Customs or Tax administrations (or both), for non-resident sellers/vendors, and alignment with Customs processes to treat consignments that have and have not complied with the collection approach.
>
> (ii) *Intermediary-based collection*: duties and taxes due in the destination country would be collected and remitted on behalf of the buyer/consumer or consignee by different types of intermediaries, including e-commerce platforms/marketplaces, transporters (e.g., express carriers and postal operators), Customs brokers and freight forwarders. These intermediaries would be required to collect duties and taxes, either self-assessed or assessed on import by destination Customs or Tax administration, and remit them to the destination Customs or Tax administration, preferably periodically on an account basis.
>
> (iii) *Buyer/consumer-based collection*: the resident buyer/consumer/buyer would be required to remit duties and taxes relating to imports of goods to Customs or Tax administrations. The duties and taxes due should be calculated and assessed either through: buyer self-assessment of amount owed; Customs broker on behalf of the buyer/consumer assessment of amount owed; or Customs assessment of amount owed.
>
> (iv) *Hybrid approaches to collection*: different variants of the above approaches and hybrid approaches could also be considered. For example, a variation of the seller/vendor approach would include e-Commerce platforms/marketplaces as the seller/vendor. For businesses selling through marketplaces, the marketplace would be deemed the seller/vendor for revenue collection purposes, and would be required to assess, collect and remit duties and taxes. This approach reduces the number of entities required to collect revenue. This hybrid approach places the revenue collection at the point of sale, distinct from the traditional approach of applying duties and taxes at the border.

Another hybrid approach may combine the seller/vendor based collection and intermediary based collection approaches. The seller/vendor collects the amount of duties and taxes due from the buyer/consumer at the point of sale, along with the other costs (like shipping or transportation). The intermediary (e.g. express carriers and postal operators) remits the amount to the destination Customs or Tax administration, charging the seller/vendor through its account with the express carrier/postal operator. This approach reduces Customs clearance time, and the buyer/consumer knows exactly the amount of duties and taxes that have been charged at the point of sale.

The Global Express Association (GEA), representing express carriers, has proposed the introduction of an additional "informal" clearance threshold – above the *de minimis* – whereby duties and/or taxes are collected but the clearance process remains simplified (GEA, 2020[72]). GEA notes that the additional simplified clearance threshold should adhere to certain principles: avoid discrimination between foreign and domestic retailers in applying thresholds; be simple, low-cost, and easy to implement for governments, merchants of all sizes and carriers; align, to the extent possible, the collection and remittance process on imports with the domestic process for domestic taxes; consumption tax collection must be non-discriminatory, with collection and remittance conducted away from the border; and border formalities should focus only on health, safety and security. Analysing existing models worldwide, the GEA outlines the options of putting in place:

- a flat-rate import charge replacing all duties and taxes[39]
- a simplified duty structure based on a system of 'buckets' (groups of classification headings)[40]
- or maintaining a commercially meaningful *de minimis* threshold for customs duties and applying VAT/GST at the point of sale on all low-value imported goods, while allowing for a simple registration process for foreign vendors.[41]

[39] This approach may need to be checked against existing GATT duty schedules, to ensure that they contemplate this possibility for goods under the specified "informal" threshold value.

[40] In addition, applying the relevant duty at origin. Since 2012, Canada has operated such a system (the GHS or Generic Harmonised System) for shipments under CAD 500. Shipments falling below this value threshold are classified according to short descriptions, grouped under three 'dummy' HS codes (or "buckets") which replace the nearly 5 400 HS codes used to classify goods above that value. Each ´bucket´ is then assigned a rate depending on whether the goods are imported from a country with a Free Trade Agreement with Canada.

[41] Without requiring a fiscal representative in the country. This system is applied in Australia since July 2018. This Vendor Collection Model requires vendors, as well as electronic distribution platforms (EDPs) and re-deliverers, to register with the Australian Taxation Office (ATO). Only foreign suppliers with taxable consumer sales to Australia of AUD 75 000 per year or more are required to collect and remit GST under the legislated model. However, EDPs that facilitate taxable sales to Australia of more than AUD 75 000 are required to collect GST on all sales of low value goods that occur on their platform, including by sellers with sales of less than AUD 75 000. Also in line with the recommendations made in OECD (2019[46]).

Annex G. Gravity model for analysing determinants of trade in parcels

This report uses a structural gravity trade model estimated on a panel data set (Yotov et al., 2016[73]). Gravity models have become a workhorse of applied trade analysis, and both the theoretical underpinnings and the econometric methods have seen a significant development since their conception by (Tinbergen, 1962[74]). As trade data and dependent variables are observed in multiple years in this analysis, country-pair fixed effects are used instead of the set of typical gravity variables (i.e. geographical and cultural bilateral variables such as the distance).

The panel structure of the dataset allows including the time dimension in the exporter and importer fixed effects. Exporter- and importer-time fixed effects control for any time-varying country-specific characteristics. They also represent the inward and outward multilateral resistances that capture the effects of trade with other exporters/importers on any given bilateral trade relationship. Inward resistance is the relative propensity of the destination country to import a product from the origin country given the trade cost between both countries and compared to the trade costs between the destination country and all other potential origin countries (Yotov et al., 2016[73]) (Anderson, Larch and Yotov, 2018[75]). Similarly, outward resistance is the relative propensity of the origin country to export a product to the destination country given the trade cost between both countries and compared to the trade costs between the origin country and all other potential destination countries.

Given the availability of the policy indicators used, the period considered is 2012-19. Some indicators are only available over two-year intervals, which also allows to address the challenge highlighted by (Yotov et al., 2016[73]) in that adjustment of trade flows in response to trade policy changes will not be instantaneous. Country coverage will differ across specifications due to the differences in country coverage by policy indicators considered (e.g. the TFIs cover more than 160 countries while the STRI is available for all OECD economies and key emerging economies).

For each year, the data is pooled across all sectors available. The large dimension of the dataset and the number of different products traded parcels also permits the inclusion of sector-year fixed effects.

The regressions rely on variations of the following gravity specification:

$$X_{ijkt} = \exp\left[\beta_0 + \beta_1 Internet\_connect_{ijt} + \beta_2 TFI_{ijt} + \beta_3 STRI\_sect\_h_{ijt} + \delta_{it} + \delta_{jt} + \delta_{ij} + \delta_{kt}\right] * u_{ijkt}$$

where:

- X_{ijkt} is the value of exports of parcel goods traded between exporter country i and importer country j in year t at sector k level. The data is from Eurostat Comext database (by mode of transport "post"), available at HS 6-digit level and aggregated at HS 2-digit level.[42]
- $Internet\_connect_{ijt}$ is the minimum Internet connectivity between the exporter country i and importer country j in year t. Internet connectivity is the Internet use per 100 inhabitants. The data are from the International Telecommunication Union (ITU).

[42] The data cover goods specifically identified as postal and express consignments, but that cannot be attributed to a specific mode of transport such as air, sea, road, or rail freight in the Eurostat Comext database by mode of transport. The data is likely to capture a significant share of cross-border parcel consignments (particularly those falling under *de minimis* thresholds) enabling the identification of patterns of products traded, since postal or express consignments for which the transport mode can be specifically identified would rather capture 'bulk' trade destined for fulfilment centres. The exporting and importing partners of European Union economies in the Eurostat Comext database include a sample of diverse economies, covering various regions (list of origin and destination economies in Table A G.1). By using mirror flows, the number of reporting countries can be extended, however only in the context of trade with EU countries. The HS 2-digit sectors covered are also listed in Table A G.1.

- TFI_{ijt} is the minimum between the average trade facilitation performance of the exporter country i and importer country j in year t, thus allowing to construct a bilateral variable. The trade facilitation performance is measured by the OECD Trade Facilitation Indicators (TFIs), which are a set of eleven indicators covering the full spectrum of border processes.[43] Subsets of the indicators are also used alternatively in the regression, namely: an indicator of transparency which is the average of information availability, consultations with traders, advance rulings, appeal procedures, fees and charges; an indicator of streamlining processes as the average of documents, automation and procedures; an indicator of border agency co-operation, as an average of domestic and cross-border agency co-operation.
- $STRI\_sect\_h_{ijt}$ is the bilateral heterogeneity index (based on the scores) for services trade restrictiveness[44] between exporter country i and importer country j in year t. The data is for selected services sectors from the OECD Services Trade Restrictiveness Index database: courier, logistics (storage and warehouse), distribution, telecommunications and the digital STRI, which are alternatively introduced in the regressions.
- δ_{it}, δ_{jt}, δ_{ij}, δ_{kt} represent the exporter-time, importer-time, exporter-importer, and sector-time fixed effects. u_{ijkt} represent the residuals.

Standard errors are clustered at the exporter-importer pair level to correct for potential errors correlation across country-pairs, as recommended in the literature (WTO, 2012[76]) (Shepherd, Doytchinova and Kravchenko, 2019[77]). In other terms, the standard errors of estimated coefficients are allowed to have different distributions based on the importing and exporting countries pair. In fact, unobserved variables that systematically differ by importing and exporting countries pair could be omitted from the estimation and skew results.

Equations are estimated using a Poisson-Pseudo Maximum Likelihood (PPML) with High Dimensional Fixed Effects (HDFE) estimation method. This allows controlling for selection biases and minimises heteroscedasticity issues. The PPMLHDFE estimation method is described in (Correia, Guimarães and Zylkin, 2019[78]).

[43] More information is available at: https://www.oecd.org/trade/topics/trade-facilitation/. The eleven TFIs cover: (a) Information availability; (b) Consultation with traders; (c) Advance rulings; (d) Appeal procedures; (e) Fees and charges; (f) Formalities – documents; (g) Formalities – automation; (h) Formalities – procedures; (i) Internal border agency co-operation; (j) Cross-border agency co-operation; (k) Governance and impartiality.

[44] More information on OECD STRI available at: https://www.oecd.org/trade/topics/services-trade/. Further information on the construction of the STRI heterogeneity indices is available in (Nordås, 2016[80]).

Table A G.1. Exporters, importers and sectors covered by the specifications

Exporters ISO3
ARE, AUS, AUT, BGR, BLR, BRA, CAN, CHE, CHN, CZE, DEU, DNK, ESP, EST, FIN, FRA, GRC, HKG, HRV, HUN, IDN, IND, ISL, ISR, JPN, KOR, LTU, LVA, MEX, MYS, NLD, NOR, NZL, PAK, PER, PHL, POL, PRT, ROU, RUS, SGP, SVK, SVN, SWE, THA, TUR, TWN, UKR, USA, VNM, ZAF
Importers ISO3
AGO, ALB, ARE, ARG, AUS, AUT, AZE, BEL, BGR, BIH, BLR, BRA, CAN, CHE, CHL, CHN, COL, CYP[1], CZE, DEU, DNK, EGY, ESP, EST, FIN, FRA, GEO, GRC, HKG, HRV, HUN, IDN, IND, IRL, ISL, ISR, JPN, KAZ, KOR, KWT, LBN, LTU, LUX, LVA, MAR, MDA, MEX, MKD, MLT, MNE, MUS, MYS, NCL, NGA, NLD, NOR, NZL, PER, PHL, POL, PRT, QAT, ROU, RUS, SAU, SGP, SVK, SVN, SWE, THA, TUR, TWN, UKR, USA, VNM, ZAF
Sectors HS 2-digit classification
HS 29-38: Products of the chemical or allied industries
HS 39-40: Plastics, rubber and articles thereof
HS 41-43: Leather, handbags and related articles
HS 44-46: Wood and related articles
HS 47-49: Paper, paperboard and related articles
HS 50-63: Textiles and textile articles
HS 64-67: Footwear and related articles
HS 68-70: Articles of stone, ceramics, glass
HS 71: Pearls, jewellery
HS 84-85: Machinery and mechanical appliances, electrical equipment
HS 87: Optical, photographic, cinematographic materials
HS 94-96: Miscellaneous manufactured articles
HS 97: Works of art

[1]Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of United Nations, Turkey shall preserve its position concerning the "Cyprus" issue.
Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.
[2]The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.
Note: Sector names are shortened for readability purposes.
Source: Authors' elaboration based on Eurostat Comext.

Table A G.2. Share in bilateral trade flows observations, by sector (%)

HS Sector	Share (%)	HS Sector	Share (%)	HS Sector	Share (%)	HS Sector	Share (%)	HS Sector	Share (%)
HS 29	0.99	HS 41	0.11	HS 53	0.07	HS 65	0.75	HS 92	1.45
HS 30	0.65	HS 42	2.72	HS 54	0.28	HS 66	0.12	HS 94	1.78
HS 31	0.02	HS 43	0.25	HS 55	0.19	HS 67	0.46	HS 95	2.92
HS 32	0.74	HS 44	0.84	HS 56	0.36	HS 68	0.66	HS 96	2.42
HS 33	2.13	HS 45	0.03	HS 57	0.24	HS 69	0.73	HS 97	0.96
HS 34	0.89	HS 46	0.09	HS 58	0.55	HS 70	1.37		
HS 35	0.29	HS 47	0.01	HS 59	0.30	HS 71	2.11		
HS 36	0.02	HS 48	1.76	HS 60	0.16	HS 84	12.40		
HS 37	0.18	HS 49	2.53	HS 61	5.86	HS 85	17.06		
HS 38	0.79	HS 50	0.07	HS 62	6.94	HS 87	2.90		
HS 39	3.91	HS 51	0.22	HS 63	1.90	HS 90	9.67		
HS 40	1.63	HS 52	0.41	HS 64	1.92	HS 91	2.16		

Source: Authors' elaboration based on Eurostat Comext.

Table A G.3. Estimated effects by policy areas

A. Estimates including average trade facilitation performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Internet\_connect_{ijt}$	0.0389** (.0179)	0.0457*** (0.0192)	0.0366** (0.0195)	0.0365** (0.0195)	0.0399* (0.0205)		0.0381** (0.0192)
TFI_avg_{ijt}	2.4012** (1.1629)	2.0255* (1.2639)	3.1156** (1.4564)	3.3928** (1.5660)	2.1015* (1.1999)	3.8261** (1.6883)	3.2083** (1.6452)
$STRI\_h\_courier_{ijt}$		-16.6530*** (5.3466)					
$STRI\_h\_logistics_{ijt}$			-4.7396* (2.0957)				
$STRI\_h\_distribution_{ijt}$				0.6579 (6.999)			
$STRI\_h\_air_{ijt}$					-19.0603* (11.2796)		
$STRI\_h\_telecom_{ijt}$						-6.7410* (4.0851)	
$STRI\_h\_digital_{ijt}$							-5.6087** (2.6206)
Exporter-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Importer-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exporter-importer FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	440,341	249,372	249,372	249,372	249,372	249,372	248,643
Pseudo R^2	0.7947	0.8061	0.8051	0.8050	0.8055	0.8052	0.8027

Note: Specifications estimated with PPMLHDFE. Robust standard errors clustered at the exporter and importer levels in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates.

B. Estimates including transparency and predictability

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Internet_connect$_{ijt}$	0.0481*** (0.0198)	0.0516*** (0.0200)	0.0467** (0.0203)	0.0471* (0.0204)	0.0454** (0.0208)		0.0489** (0.0205)
TFI_transparency$_{ijt}$	0.7605* (0.5473)	1.7449* (0.9925)	1.1108* (0.1046)	1.0332 (1.1056)	0.0454* (1.1226)	1.5624* (1.0420)	0.6899* (1.0356)
STRI_h_courier$_{ijt}$		-19.1807*** (5.8805)					
STRI_h_logistics$_{ijt}$			-6.4860* (5.5276)				
STRI_h_distribution$_{ij}$				-1.9116 (7.3649)			
STRI_h_air$_{ijt}$					-23.8923* (12.0507)		
STRI_h_telecom$_{ijt}$						-7.5528* (4.9752)	
STRI_h_digital$_{ijt}$							-4.9054** (2.3878)
Exporter-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Importer-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exporter-importer FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	440,341	249,372	249,372	249,372	249,372	249,372	248,643
Pseudo R^2	0.7945	0.8062	0.8048	0.8046	0.8055	0.8047	0.8023

Note: Robust standard errors clustered at the exporter and importer levels in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates.

C. Estimates including automating and streamlining of procedures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Internet\_connect_{ijt}$	0.0526*** (0.0208)	0.0546*** (0.0208)	0.0511*** (0.0208)	0.0525*** (0.0212)	0.0499** (0.0215)		0.0541*** (0.0216)
$TFI\_automation\_proc_{ijt}$	0.5879** (0.2940)	0.1113 (0.5188)	0.3641 (0.5521)	0.4540*(0.2012)	0.2976 (0.5478)	0.1897 (0.5991)	0.5026 (0.5929)
$STRI\_h\_courier_{ijt}$		-18.1877*** (5.8507)					
$STRI\_h\_logistics_{ijt}$			-5.9675* (2.3609)				
$STRI\_h\_distribution_{ijt}$				-0.7692 (6.9110)			
$STRI\_h\_air_{ijt}$					-22.3439*** (11.9099)		
$STRI\_h\_telecom_{ijt}$						-7.1174* (4.0079)	
$STRI\_h\_digital_{ijt}$							-5.4667*** (2.4350)
Exporter-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Importer-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exporter-importer FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	440,341	249,372	249,372	249,372	249,372	249,372	248,643
Pseudo R^2	0.7939	0.8060	0.8047	0.8045	0.8054	0.8045	0.8023

Note: Robust standard errors clustered at the exporter and importer levels in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates.

D. Estimates including border agency co-operation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Internet\_connect_{ijt}$	0.0362**	0.0346*	0.0277***	0.0283*	0.0301*		0.0312*
	(0.0170)	(0.0175)	(0.0188)	(0.0192)	(0.0189)		(0.0184)
$TFI\_cooperation_{ijt}$	0.9943***	1.4031***	1.6865 ***	1.7070***	1.5323***	1.7126***	1.7255***
	(0.3747)	(0.5086)	(0.5365)	(0.5481)	0.4982	(0.5801)	(0.5318)
$STRI\_h\_courier_{ijt}$		-11.7973***					
		(4.7846)					
$STRI\_h\_logistics_{ijt}$			-5.0273*				
			(2.1543)				
$STRI\_h\_distribution_{ijt}$				-0.4246			
				(6.3514)			
$STRI\_h\_air_{ijt}$					-9.7309		
					(9.3779)		
$STRI\_h\_telecom_{ijt}$						-4.6533*	
						(2.1098)	
$STRI\_h\_digital_{ijt}$							-8.3179**
							(3.6156)
Exporter-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Importer-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exporter-importer FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	439,379	249,372	249,372	249,372	249,372	249,372	248,643
Pseudo R^2	0.7945	0.8073	0.8069	0.8068	0.8069	0.8069	0.8046

Note: Robust standard errors clustered at the exporter and importer levels in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates.

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Comments are welcome and can be sent to tad.contact@oecd.org.