Facilitating Trade and Logistics for E-Commerce

Building Blocks, Challenges and Ways Forward

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The World Bank

December 2019

Contents

Executive Summary

The advent of e-commerce offers new challenges and opportunities for governments and firms. Although a larger number of firms can trade across borders because of e-commerce, the basic functions and roles of government at the border continue to remain the same, with emphasis on manual control of the transaction. However, more recently such manual methods have given way to a more modern approach.

This modern approach focuses on finding a balance between control and facilitation, using information and communication technology, data and performance measures all aimed at promoting compliance rather than focusing only on enforcement. Although this approach has resulted in significant reform in countries, e-commerce, technology, big data, and other developments have led to a renewed impetus in many countries for continuing the reform and modernization path. As countries travel this path of reform and modernization, many governments are grappling with the effect of these new developments.

This note identifies the various issues and challenges relating to e-commerce from a facilitation and logistics point of view and identifies potential solutions, particularly those in which the World Bank Group (WBG) can play a role in helping developing countries. The note draws from a wide array of developments and literature, and from work done by the WBG more generally in trade facilitation and logistics in assisting countries to improve their trade environment.

The note begins by establishing its purpose and objective together with setting out the scope of its focus and the importance of trade facilitation and logistics for e-commerce. The note asserts that although e-commerce remains a small share of total goods traded, its growth has been remarkable, resulting in major innovations in the way businesses approach new markets, positive implications for innovation, and growth for firms and economies.

E-Commerce is transforming trade globally. Business-to-Consumer (B2C) transactions grew from US$1.5 trillion in 2014 (Hanna 2016a) to US$2.3 trillion in 2017 and projected to grow to US$4.88 trillion in 2021[1] . E-commerce is growing four times faster than the world economy. Cross-border e-commerce market in 2015 was estimated at US$300 billion and is expected to be worth US$ 900 billion by 2020 (DHL[2]). The latter category of cross border e-commerce is impacted by trade facilitation and logistics. Poor trade facilitation and logistics has numerous effects on firms

[1] https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/

[2] http://www.dhl.com/content/dam/Campaigns/Express_Campaigns/Local_Campaigns/apem/express_campaign_spice_trade_apem_en.pdf

(market access, growth, sales, and exports) and consumers (price, choice, and delivery time). Border agency procedures increase the transit time between origin and destination, and therefore their procedures play a vital role in aiding or deterring exports and imports. Extended delays for a trader result in lost profitability because of inventory-holding costs or lost business opportunities because of failure to get goods to market in time (Hummels and Schaur 2012). For many exporters, the delayed delivery of critical imported inputs can derail the production process and result in costs that are higher than the market value of the imported components (Nordås, Pinali, and Geloso Grasso. 2006).

What, therefore, are the challenges and opportunities in facilitation and logistics for e-commerce? The note discusses the key challenges that include: (a) an undeveloped legal enabling environment; (b) a low level of readiness among border agencies to tackle e-commerce; (c) the need to improve national quality infrastructure; (d) poor integration of postal services with border agencies; (e) the need to improve air connectivity; (f) the poor reach of logistics and postal delivery in remote areas; and (g) the policy challenges created by exponentially advancing technologies in last mile logistics.

The note then goes on to explore the required building blocks for facilitating cross-border e-commerce as to address the challenges raised above and consist of: (a) improvement programs for creating a more conducive legal environment for automation; (b) improving automation and interconnectivity between agencies; (c) implementing simplified procedures to trade, including for e-commerce; and (d) implementing fully the WTO's Trade Facilitation Agreement. Although these are some of the issues that affect trade facilitation generally, they are also crucial for e-commerce. At a minimum, having these building blocks established enable the necessary improvement to countries' abilities to participate and benefit from e-commerce.

The note next discusses the importance of the role of postal services in the enabling of e-commerce and the need for their integration with Customs to greatly reduce the steps required for e-commerce goods arriving by the postal service to clear customs procedures (WCO 2015b). Postal operators in most countries are trusted intermediaries with a legal standing and often are required to serve all citizens. And, although many postal operators have been freed somewhat from government constraints in the last three decades; that is, they have been corporatized or privatized, they will need to continue to adapt to new developments, be more agile, contain costs, guarantee quality and reliability, and have technologies that can integrate with vendors and customers. Postal operators around the world are likely to be key players in cross border e-commerce provided they adapt sufficiently to service the market and most notably better integrate with customs.

Closely related to issue of postal service delivery are the logistics of last mile delivery and remote connectivity. Challenges in last mile delivery abound. Quite often, it is the most challenging and expensive leg of goods delivery and is estimated to be up to 50 percent of the delivery cost sometimes (DMCC 2016). Some characterize these last-mile distribution systems as networks: a

collection of nodes (that is, distribution centers) and links (that is, roads) over which goods flow using specific vehicle technologies (Merchán and Blanco 2015). For discussion purposes, a simple stylized network structure of last mile delivery with three key elements is proposed: the distribution center, the delivery vehicle, and the receiving point. With the rise of e-commerce, the models of these three elements are being revisited extensively by firms and will have implications for government policies. The developments and challenges to these three elements are explored.

For many small markets, the challenges of cross-border commerce and the opportunities it provides can be harnessed through stronger regional integration. The benefits of regional integration are well known, and this note further highlights how those benefits that lead to reduction in costs for traders and consumers are particularly critical for the e-commerce sector. Six steps are explored to improve e-commerce regional integration and cover: (i) a reduction in transaction costs; (ii) the development of common approaches to regulatory issues; (iii) the drafting of a strategy for the a regional economic community (REC) on e-commerce; (iv) to ensure that national efforts, particularly those related to the TFA articles that would enhance e-commerce, are fully implemented; (v) for trading partners to coordinate responses to last mile connectivity in border regions; and (vi) for trading partners to develop common approaches to air transport that would include a roadmap and provide for market access that would help expand the potential of ecommerce.

The note concludes with the summation that E-commerce offers new challenges and opportunities for governments and firms, but to maximize its benefits requires significant reform. This note has set out a path for countries to continuing the reform and modernization route with recommendations and an action matrix of specific improvements to the trade facilitation and logistics environment that will better position countries and firms to take advantage of the enormous potential that cross border e-commerce offers.

Introduction

Objectives

The objective of this note is to identify the key issues in trade facilitation and logistics that affect the e-commerce landscape, with a focus on cross border (trade facilitation) domestic delivery (logistics); highlight key challenges and opportunities, particularly for developing countries and small and medium enterprises (SMEs); and provide a roadmap for potential areas of World Bank support in that landscape.

The World Bank Group (WBG) has been working in trade facilitation and logistics for several decades and has provided extensive support to its members in improving their trade performance. This work has broadly covered areas such as customs and border management; information and communications technology for trade; logistics services, including competition issues; and trade-related infrastructure (ports, inland ports, airports, and so on). However, new developments, technological change and disruption in the fields of big data, automation and robotics, and e-commerce provide an opportunity to both policy makers and those advising them to take stock, review, and modify, if necessary, their reform path. As such, this note is one in a series being prepared on e-trade that seeks to develop a comprehensive set of solutions for supporting developing countries engaging in and benefiting from digital trade. The note series aims to increase knowledge of the challenges of e-trade, generate data, identify best regulatory practices, and, from there, design country-specific interventions for developing countries (Ferrantino and Molinuevo 2016).

The advent of e-commerce offers new challenges and opportunities for governments and firms. Although a larger number of firms can trade across borders because of e-commerce, the basic functions and roles of government at the border—providing security, collecting revenue, facilitating trade, and ensuring health and safety—continue to remain the same. However, the historical approach of government at the border—its emphasis on manual control of the transaction with limited data; focus on goods; physical inspection and identification of noncompliance; and limited cooperation with other agencies, private sector, or neighbors—has given way to a more modern approach. This approach focuses on finding a balance between control and facilitation, using information and communication technology, data, performance measures, and an approach aimed at promoting compliance rather than focusing only on enforcement that moves toward building partnerships with trade and collaboration among agencies and with neighboring trading partners. Although this modern approach has resulted in significant reform in countries, e-commerce, technology, big data, and other developments have led to a renewed impetus in many countries for continuing the reform and modernization path.

As they travel this path of reform and modernization, many governments are grappling with the effect of these new developments, including e-commerce, about cross-border trade. Governments are concerned about risks such as loss of revenue; effects on health and safety; smuggling; evasion and reduction in compliance of traders; and increased volume of small

shipments that still have the same processing costs as large, high-value shipments. Policy makers have to address questions such as the following:

- Do facilitation and logistics have specific challenges that hinder cross-border e-commerce?
- What opportunities—specifically, in facilitation and logistics—can help governments promote e-commerce?
- What are the building blocks for ecommerce?
    - Do regulations for commerce in goods adequately cover e-commerce–related trade?
    - What are the underlying laws and policies that need to be in place to create an enabling environment for e-commerce trade, and are they different from those for regular cross-border trade?
- What are some of the policy solutions, and how can we embed in them in our reform programs?

This note discusses some of these questions and provides guidance to policy makers. Table A in the appendix of the note highlights potential opportunities for WBG support to its clients.

Scope of Note

This note identifies the various issues and challenges relating to e-commerce from a facilitation and logistics point of view and identifies potential solutions, particularly those in which the WBG can play a role in helping developing countries. The note draws from a wide array of developments and literature (see bibliography) and from work done by the WBG more generally in trade facilitation and logistics in assisting countries to improve their trade environment. This note is limited in scope, that is, it does not seek to comprehensively identify all issues and challenges, nor identify all international obligations and commitments that affect e-commerce or present a definitive approach to solving the facilitation and logistics challenge for e-commerce. Instead, it highlights key issues that need to be addressed in relation to trade facilitation and logistics for e-commerce, including through the various opportunities available to the WBG, that is, the implementation of the World Trade Organization's Trade Facilitation Agreement and the opportunity to embed e-commerce–specific solutions in bank operations. Moreover, like with all trade transactions, there is need for three movements: goods or materials, information and money in ecommerce. While this note is not explicitly organized in such a manner, it aims to bring out the key challenges and developments on these movements in relation to ecommerce wherever possible.

The note does not focus on the key infrastructure gaps related to banking, payments, Internet and communication, or other road and transport infrastructure. These gaps are considered beyond the scope of this note. Issues related to the larger investment climate agenda and business regulation, including competition-related aspects, are also not covered in this note. In addition, the paper is not focused on B2B, B2C etc but rather on identifying the impact of government policies (or lack of) on facilitation and logistics.

The definitions of e-trade, e-commerce, digital trade, and the types of e-trade are elaborated in the concept paper (Ferrantino and Molinuevo 2016) by the World Bank. This note uses those definitions in referring to the above terminology. For other concepts in trade facilitation and logistics, the note references definitions and best practice developed by the WBG, World Customs Organization (WCO), World Trade Organization (WTO), and United Nations Conference on Trade and Development (UNCTAD), among others.

Box 1: Definitions of e-trade

With small differences, the main focus of most definitions of e-trade seems to be on the sale of goods and services through digital networks, with the explicit or implicit exclusion of orders made by telephone calls, facsimile or manually typed e-mail (OECD, 2011). This concept is adopted for the purpose of this analysis. However, in order to more accurately capture the different types of transactions involved in the digital economy, this analysis makes further specifications in the language:

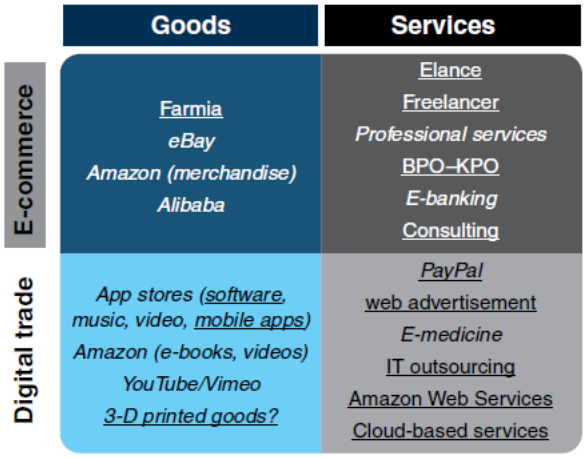
• The term "e-trade" is used for all forms of goods and services (both traditional and digital) traded internationally through electronic means, in line with our working definitions cited above;

• The use of "e-commerce" is reserved to describe the purchase of traditional goods and services
through digital means; whereas

• The transactions involving digital goods and services are referred to as "digital trade."

In this sense, both "e-commerce" and "digital trade" appear as subgroups of e-trade, as further explained in the section below and illustrated in Figure 1

Figure 1: Types of e-trade



The horizontal top row shows instances of digital trade where digital technologies facilitate the purchasing of 'traditional' goods and services, whereas the horizontal bottom row shows trade in products that exist and are delivered digitally, e.g., when digital products are downloaded/streamed/viewed online.

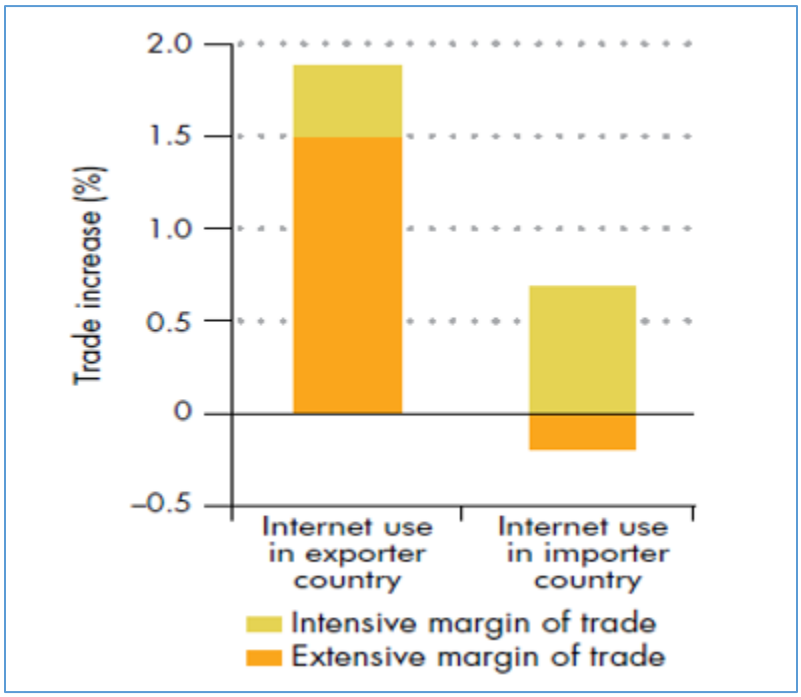
Business-to-consumer (B2C) goods and services are shown in *italics*, while B2B are underlined—note that some such goods and services can often *overlap* as they serve both B2C and B2B markets.

Source: E-trade for development, World Bank Group

Importance of Trade Facilitation and Logistics for E-Commerce

E-Commerce is changing the landscape for cross-border trade. Through e-commerce, firms can access global markets at the same time through digital means, reducing the costs associated with traditional business and means of finding new markets, which require investment in travel time and face-to-face meetings with new trading partners. Through online platforms and marketplaces, SMEs can enter new international markets without the need to establish a physical presence in a country, finding a ready-made and cost-effective export infrastructure (figure 1). E-Commerce platforms also offer services to engage with third-party logistics for delivery of goods to clients[3].

Figure 1: Internet Enables Access to New Markets, 2001–12



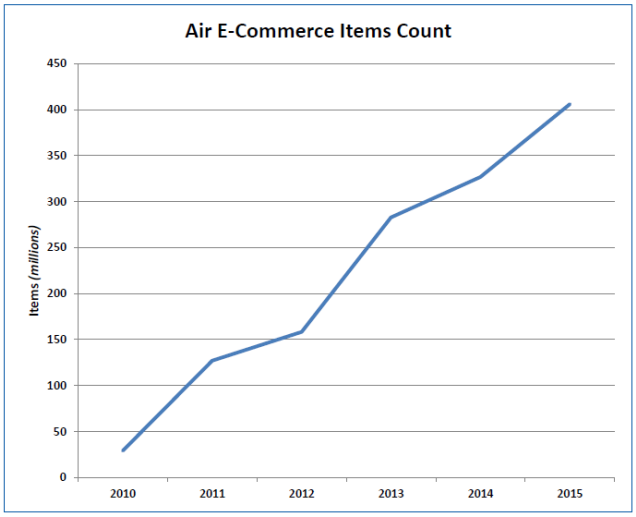
Source: Osnago and Tan 2015; World Bank 2016, 60.

Although e-commerce remains a small share of total goods traded, its growth has been remarkable, resulting in major innovations in the way businesses approach new markets, positive implications for innovation, and growth for firms and economies. In 2005, the share of total goods traded by e-commerce was 3.0 percent, increasing to 12.1 percent by 2012. Business-to-

[3] In 2017, for instance cross border ecommerce sales by SMEs accounted for over 25 percent of total third party sales on Amazon (Amazon)

Consumer (B2C) transactions grew from US$1.5 trillion in 2014 (Hanna 2016a) to US$2.3 trillion in 2017 and projected to grow to US$4.88 trillion in 2021[4] . The number of online shoppers has grown from 600 million in 2013 to 850 million in 2015 (UNCTAD 2016b). In 2015, 128 million consumers in China engaged in online purchases from other countries. Projections suggest that by 2020, in China alone, 700 million people will buy foreign products online with expected sales of US$157.7 billion (King 2016a). China is the largest online retail market with e-commerce sales of approximately US$1.33 trillion in 2018, it surpassed the US in 2013 (Digital Commerce[5]). In the United States, surveys show that as many as 96 percent of people shop online, spending five hours a week doing so (Renfrow 2016). In Latin America, e-commerce has increased from US$1.6 billion in 2003 to US$43 billion in 2013 (Brazil has the largest share at 59 percent) (Savrul, Incekara, and Sener 2014). In other markets like India where e-commerce is growing but still small at US$ 19.8 billion in 2018, over 1.9 million shipments a day (KPMG) even though online sales still represent only 2.9% of all retail sales (eMarketeer[6]). The Global Express Association calculates that more than 30 million shipments are processed daily and dispatched in more than 1,700 airplanes and more than 200,000 ground vehicles by its members (GEA 2016). Although overall cross-border shopping still accounts for just a fraction of total global e-commerce spending, it is growing at a rate of more than 25 percent annually (Stevens 2016). This exponential growth has implications (see figure 2): many governments are likely to see e-commerce as a driver of not only innovation but also export-driven or consumption-based growth (Schenk 2016; UPS 2016).

Figure 2: E-Commerce Growth in Items, 2010–15



Air E-commerce Items count is estimated to reach over 950 millions by 2025

[4] https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/

[5] https://www.digitalcommerce360.com/2019/01/24/chinas-online-sales-grew-almost-24-in-2018/

[6] https://www.emarketer.com/content/india-s-ecommerce-market-continues-to-surge

Sources: UPU 2015; UPS 2016.

Note: Air e-commerce items count is estimated to reach more than 950 million by 2025.

The upsurge of SMEs entering the global trade environment has been aptly described as the rise of randomized trade. Companies find themselves as "accidental exporters" (The Economist Intelligence Unit 2014, p. 15). They had no plan to conduct cross-border trade and come from unexpected parts of the world. Now, however, they have the tools to participate in global trade easily.[7] Data gained from firms in 18 countries that use eBay shows that more than 90 percent of SMEs using eBay are exporting to other countries. Two million sellers use Amazon, while Alibaba has over 8.5 million sellers and mails 4.3 billion packages via United Parcel Service around the world (Smith 2017). An increase in SMEs entering the global trade space has led to the rise of *micro multinationals*, particularly in the United States, where large multinational corporations' export share fell from 84 percent in 1977 to 50 percent in 2013[8]. Similar trends are also seen in other emerging markets. In Indonesia, small firms are using Lazada and Matahari Mall to expand their market share, while in India, Snapdeal, Flipkart, Amazon, and many others are popular.

Although large firms can exploit the opportunities afforded by e-commerce, SMEs, which form the largest share of firms of most developing countries, often deal only in small consignments and have difficulty navigating the complexity of international trade:

> Today's global trade practices are highly fragmented. A typical overseas purchase, for example, requires the various parties in the logistics process to trade more than 60 different documents across partners, countries, languages, and time zones. With edits, updates, and status changes, a typical shipment can require hundreds of document exchanges. Most of the information is re-keyed over and over into each partner's proprietary systems and transferred by fax, mail, and e-mail. This delays the movement of information and payments, and limits visibility across the trading community (Inbound Logistics 2007).

Managing international trade documentation and information requirements, the obligation to meet international and foreign domestic standards, and other shipping and logistics challenges drive up their costs and hamper their ability to trade. In other words, "today's trade rules largely reflect 20th century patterns of trade and are not well suited to supporting the growth of e-commerce" (Schenk 2016).

In terms of goods sold over the Internet, regulations and logistics have a significant effect on both the margin of cost to the consumer and an increase in the time for goods to reach their destination. Although the transaction is still traditional, consumer sensitivity to prices and time can particularly reduce market access for SMEs and affect the attractiveness of cross-border e-commerce for consumers. This note explores some of these issues because many governments are interested in exploring whether they need to make changes in regulations or the regulations' application so that their countries can benefit from e-commerce. Governments still need to ensure regulatory compliance, and consumers (stakeholders) still demand that goods comply

[7] Magnus Rentzhog (senior adviser, Swedish National Board of Trade).

[8] MGI-Digital-globalization-Full-report.pdf

with regulations on health, safety, and so on. Governments are concerned with risks such as loss of revenue; effects on health and safety; smuggling; evasion and reduction in compliance of traders; and increased volume of small shipments that still cost as much to process as large, high-value shipments. The e-Trade Readiness Index identifies a country's international trading environment as a critical factor for e-trade because the Internet may level the playing field but tariffs and customs procedures that affect delivery time and thus raise costs still play a large role in determining a country's ability to compete globally (The Economist Intelligence Unit 2014).

The annual State of Logistics Report (A.T. Kearney 2016) by the Council of Supply Chain and Management Professionals highlights that "'gaps' in infrastructure and 'accelerating trends for speed' will increasingly put pressure on a logistics system not designed for e-commerce–driven 'last mile, last minute' delivery service" (Kilcarr 2016). Marc Althen, president of Penske Logistics, noted that "consumer expectations are changing. They want their products delivered fast and they don't want to pay a lot of money for delivery. Shippers are struggling to meet the challenges these expectations create" (Schulz 2016). This circumstance is also crucial for policy makers to understand as they seek to determine the best approaches to regulating e-commerce logistics in both dense urban areas and remote locations. Current regulations may need updating in many countries.

Cost of Poor Trade Facilitation and Logistics

The cost of poor trade facilitation and logistics has numerous effects on firms (market access, growth, sales, and exports) and consumers (price, choice, and delivery time). The effect on market access for firms is lost sales and revenues and limited growth, and consumers do not benefit from lower prices and greater choice. The effect may be more intense for countries with small markets and for SMEs about their competitiveness. Border agency procedures increase the transit time between origin and destination, and therefore their procedures play an important role in aiding or deterring exports and imports. The Doing Business Trading Across Borders Indicator has highlighted for over a decade now that trade procedures, processing of documents, and compliance with clearance requirements by customs and other technical control agencies account for more than 50–60 percent of the total time to export and import in many countries around the world (World Bank 2010).

The time involved in trade matters for goods, because many products are subject to a rapid loss of value. This depreciation can be due to spoilage (for example, perishables), fashion cycles (for example, shoes and garments), and outdated technology (for example, consumer electronics) (Hummels 2007). Consumers' preferences can change quickly. As a result, time becomes important particularly if the period between order and delivery is so long that consumers alter their orders (Deardorff 2001). Extended delays for a trader result in lost profitability because of inventory-holding costs or lost business opportunities because of failure to get goods to market in time (Hummels and Schaur 2012). For many exporters, the delayed delivery of critical imported inputs can derail the production process and result in costs that are higher than the market value of the imported components (Nordås, Pinali, and Geloso Grasso. 2006).

Late delivery of goods is more problematic for e-commerce cross-border trade because e-commerce importers and consumers expect speedy delivery as part of e-commerce's business

model and service provision. Further, competition in the e-commerce space among firms and with physical retail locations is often based on quick and free delivery. “A core aim for many [of these firms] is, no matter what system is deployed, to deliver goods the same day that they are purchased and provide shoppers with one less reason to go to physical stores. The challenge is to achieve this at a low cost. Fulfillment costs currently account for 15% of sales for many companies and so reducing these whilst improving service is a fine line” (DMCC 2016, 60–61). Although Amazon pioneered this approach through a subscription service for prime membership (free two-day delivery for members), the method has rapidly taken off across firms and countries. In India, the major players often offer 1-hour delivery for certain products in certain cities. In the United Kingdom, surveys show that consumers are willing to pay up to US$7 for same-day delivery. In DHL's 2017 Holiday Survey, 27 percent of the integrator's customers surveyed said that they would "rather get a root canal than have personal holiday shipments come late." (Supply Chain Brain 2017). A 2016 Deloitte survey found that 89 percent of shoppers say they consider fast shipping to mean delivery within two days or less (Supply chain brain, 2016). Given these consumer preferences, meeting shipping commitments is crucial for survival of e-commerce firms, and any delays or costs create even more difficulty for these firms to trade.

Complicated and overly burdensome border agency procedures are a general problem for all international trade, but cross-border e-commerce experiences greater hardship. According to the Organisation for Economic Co-operation and Development (OECD), such procedures increase the price of goods by up to 24 percent (GEA 2016). Excessively complicated border procedures can be even more problematic for traders participating in e-commerce, because they send many small consignments, infrequently or irregularly using normally a faster method of shipment (i.e. air) rather than single large ones. Importers participating in e-commerce are often small businesses and, as a result, are more sensitive to the costs incurred from customs and border agency procedures. Some businesses have stated that customs procedures have contributed to their decisions not to enter certain markets, such as those in the Russian Federation (National Board of Trade, Sweden 2012). Another issue is that SMEs that ship occasionally would not be able to receive preferential treatment that AEOs (for example) might receive as given their infrequent participation in trade they do not qualify for benefits that accrue to low risk traders.

The use of manual procedures in physical documentation requirements continues to be the norm in many developing countries. For example, in Ukraine, electronic data interchange (EDI) files are not accepted by border agencies (National Board of Trade, Sweden 2012). Another example is the “comparison of customs fees for regular and e-commerce sized shipments of four food products from Canada to the USA. As these fees are largely charged on a flat rate basis, they place e-commerce shipments at a considerable competitive disadvantage relative to traditional truckload sized shipments. Customs fees remain geared towards large shipments and perhaps did not matter when most shipments crossing borders were large truck or container loads but does in the e-commerce world … Existing fee structures make cross border trade through e-commerce expensive” (Boyd, Hobbs, and Kerr 2003). Further, SMEs find it more expensive to ship items that don’t have economies of scale and cannot take advantage of bulk freight economies of scale.

Economic Opportunity for the World at Large for Trade

E-Commerce is transforming trade globally. E-commerce is growing four times faster than the world economy. Cross-border e-commerce market in 2015 was estimated at US$300 billion and is expected to be worth US$ 900 billion by 2020 (DHL[9]). A sizeable share of e-commerce is cross-border trade, estimated to average 16 percent among the six main markets—the United States, the United Kingdom, Germany, Brazil, China, and Australia (Hanna 2016a). The link between improving the trade facilitation environment and positively affecting trade is now well researched. According to one study, a 10 percent increase in a country's index of transparency and impartiality leads to a 5 percent increase in its import volume (Anderson and Marcouiller 2002). Others have found a positive correlation between better quality of regulations and increased bilateral trade (De Groot and others 2003). Hoekman and Nicita (2008) find that improvements in logistics performance and trade facilitation have a greater effect on increasing trade for a country than lowering tariffs. Reducing transaction costs related to trade, by changing public policies and improving regulations and procedures for import and export supply chains, are critical for enabling a country to expand its trade opportunities.

Time reduction for trade can positively affect growth, bilateral trade, exports, prices, and gross domestic product (GDP). According to data gathered through a 146-country study, a one-day reduction in inland transport time leads to a 7 percent increase in exports (equivalent to a 1.5 percentage point reduction in all importing-country tariffs) (Freund and Rocha 2011). Similar conclusions have been stated by Hummels (2007) who finds that one extra day in transit for time-sensitive products such as fruit and vegetables is equivalent to lowering their price by 0.9 percent. Hummels and Schaur (2012) show that one day saved in shipping time is equivalent to a 0.6–2.3 percent reduction in the ad valorem tariff for manufactured goods. They also find that long transit times reduce the probability that a country will export. Other World Bank analysis has found that a 1.0 percent reduction in time to export increases exports by 0.4 percent (Djankov, Freund, and Pham 2010; Hausman, Lee, and Subramanian 2012). Several studies have examined the effect of reducing the time and cost of trade transactions on promoting trade growth (table 1).

Table 1: Effects of trade Logistics Reform on Trade, Tariffs and Prices, and Income

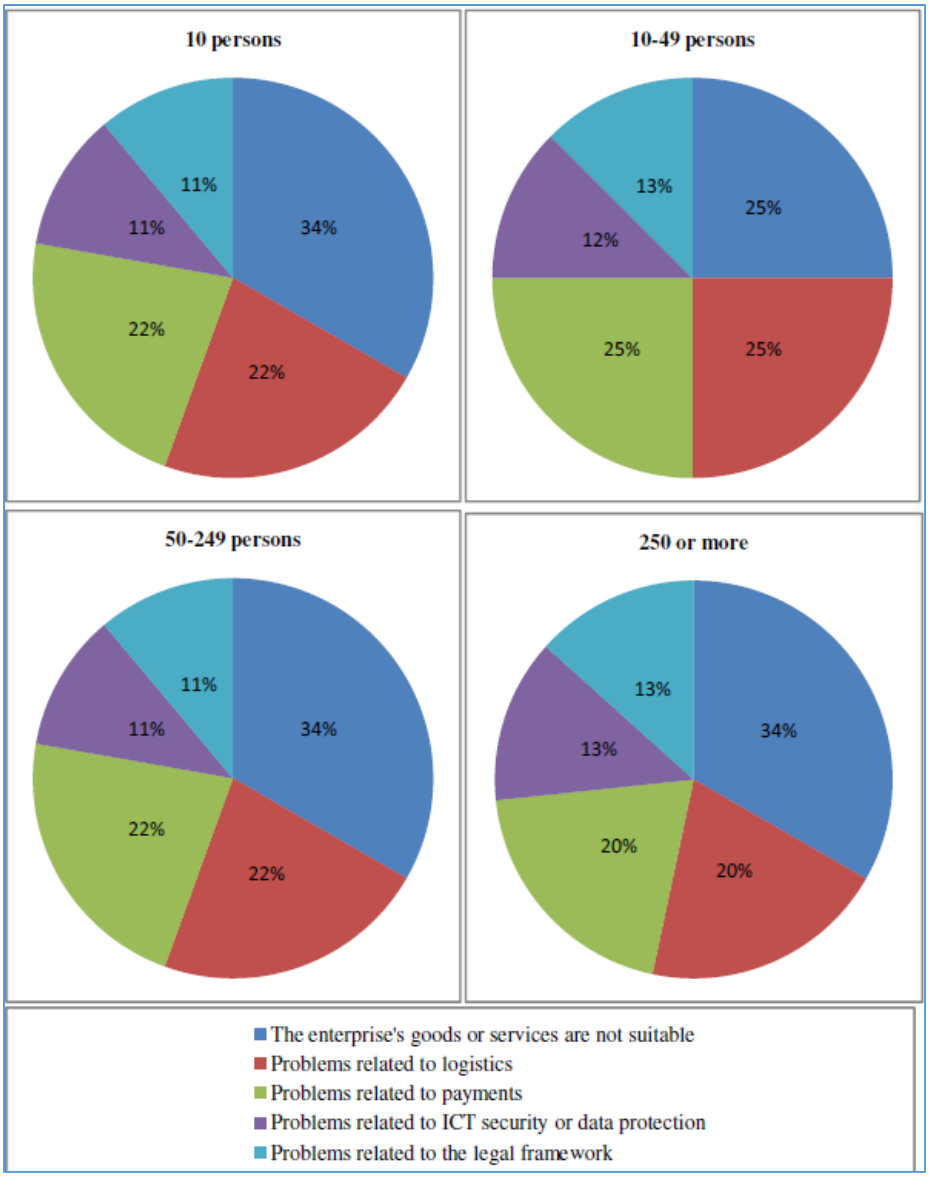
[9] http://www.dhl.com/content/dam/Campaigns/Express_Campaigns/Local_Campaigns/apem/express_campaign_spice_trade_apem_en.pdf

Effect of trade logistics reform on trade, tariffs and prices, and income		
Study	**Reform**	**Effect**
Trade		
Subramanian, Anderson, and Lee 2012	Reduction of 1% in time to export through targeted reforms	Potential increase in bilateral trade ranging from 0.64% for Sub-Saharan Africa to 0.18% for OECD countries, with increases for other regions falling in between
Djankov, Freund, and Pham 2010	Reduction in transit time resulting in reduction of 1% in overall time to export	Increase in exports of 0.4% on average
Hausman, Lee, and Subramanian 2012	Reduction of 1% in processing time for exports	Increase in exports of 0.37%
Tariffs and prices		
Hummels and Schaur 2012	Reduction of 1 day in shipping time	Equivalent to ad valorem tariff reduction of 0.6–2.3%
Hummels 2007	Increase of 1 day in delivery time	For time-sensitive products such as fruit and vegetables, equivalent to lowering price by 0.9%
Freund and Rocha 2011	Reduction of 1 day in inland transport time	Equivalent to a reduction of 1.5 percentage points in all importing-country tariffs
Income		
APEC 2002	Reduction of 5% in trade costs over 5 years	Increase in GDP of 0.98%
Walkenhorst and Yasui 2003	Reduction of 1% in trade costs	Increase in GDP of 0.27% for the Middle East and North Africa, 0.25% for non-OECD Asia Pacific, and 0.18% for Sub-Saharan Africa

Source: Subramanian 2012.

Despite promising statistics in the growth of e-commerce, firms report several challenges that impede their ability to take full advantage of e-commerce to engage in global trade (figure 4). Removal of some of these barriers would have a significant effect on a country's economy. For instance, according to the United States International Trade Commission, "removal of foreign barriers … would result in an estimated 0.1–0.3 percent increase in U.S. GDP…. U.S. real wages would be 0.7–1.4 percent higher" (USITC 2014, 14). Many of these barriers apply to both large firms and SMEs. However, some challenges affect SMEs more significantly while other challenges are ranked differently by SMEs in terms of importance. SMEs have low volumes and small margins compared to larger firms. Therefore, high costs associated with investment in new infrastructure or systems, education about policy and procedural requirements, and compliance with regulations that are often unpredictable can lead to unplanned activities that drive up their business costs, thus dampening the attractiveness of e-commerce. In many contexts, such barriers have led firms simply to avoid some markets. Surveyed firms in the European Union (EU) report that their most problematic issue is that their goods or services are not suitable to e-marketing and electronic platforms. Challenges around logistics, payments, security considerations, and the legal enabling environment are also cited as significant obstacles preventing SME engagement in e-commerce (Savrul, Incekara, and Sener 2014).

Figure 4: Challenges Faced by SMEs in the E-Commerce Environment, 2014



Sources: Savrul, Incekara, and Sener 2014; Eurostat database, 2014, http://ec.europa.eu/eurostat/data/database.

Note: ICT = information and communications technology; SME = small and medium enterprises.

The effects of time reduction on exports, prices, and tariffs are particularly positive for SMEs, e-commerce platforms, and logistics companies. "E-commerce is a huge export and growth opportunity for small and medium enterprises … in particular. It increases export participation and broad-based trade from SMEs. When trade transactions are cross-border, e-commerce increases export diversification and expands the gains from trade. It gives consumers a wider variety of goods and services at lower cost" (Hanna 2016a, 5). The World Economic Forum (2016) estimates that global trade can increase by as much as 70 percent because of trade simplification with the possibility of digitally enhanced platforms able to capture 20 percent of this increase. It estimates that this increase can not only provide SMEs access to a global marketplace with an

estimated growth in profits of more than US$600 billion, but also drive additional value of US$50 billion for logistics companies.

Challenges in Facilitation and Logistics for E-Commerce

This section discusses selected challenges for facilitation and logistics for e-commerce. Key challenges include (a) an undeveloped legal enabling environment; (b) a low level of readiness among border agencies to tackle e-commerce; (c) the need to improve national quality infrastructure; (d) poor integration of postal services with border agencies; (e) the need to improve air connectivity; (f) the poor reach of logistics and postal delivery in remote areas; and (g) the policy challenges created by exponentially advancing technologies in last mile logistics. These are briefly discussed below.

Challenges That Impede Firms from Engaging in E-Commerce

Undeveloped legal enabling environment

The appropriate legal and regulatory environment for trade transactions to occur on the Internet is a necessary building block for e-commerce. Regulations for e-commerce that enable e-signature, e-transactions, and e-payments are critical legal infrastructure that must be in place for e-commerce transactions. The importance of this necessitates a more detailed discussion that can be found later in the note.

Low level of readiness of border agencies

Most trade-related agencies in developing countries manage trade processes that are paper driven and centralized; there are multiple fees with burdensome procedures; and some agencies have overlapping roles. The level of readiness is different in developed economies in comparison to developing countries. For most border control agencies in developing economies, the focus is controlling goods at two stages—before import and at the time of import—with very little focus on post import activities. Paper-driven processes, combined with limited geographic presence of non-Customs border control agencies, represent an obstacle to traders and create a disadvantage for those that do not reside in the capital city of the destination country. Ordinary processing of documents requires physical visits to obtain forms, apply and submit supporting documents, pay fees, and collect the resulting certificate or permit. Several agencies often have a role in ensuring compliance for the same products, especially in the food and agriculture sectors.

There is little reuse of data, sharing of information, or collaboration in processes such as inspections of goods involving many agencies. The paper-driven processes are one cause for this situation, but weak institutional structures and lack of delegation also create inefficiencies. Although modest, the fees associated with the border control agencies' services are not transparent. Payment systems are mostly cash or check based, and payments must be made to either a local cashier or a dedicated bank and include handling of deposit slips to control the

procedure. The use of technology offers opportunities such as electronic payments that include mobile payments, but these are still nascent. Although these issues affect all aspects of trade, e-commerce, which must use the Internet and automation to facilitate trade, is clearly affected more so.

The low level of readiness among border agencies leads to increased costs and lengthy time to trade, which have a significant effect on firms engaged in e-trade, particularly SMEs. Cumbersome border agency procedures pose a significant challenge for firms that may not have the capacity to deal with regulatory requirements of multiple agencies in other countries, particularly if their procedures are paper based. These procedures significantly affect SMEs that are shipping small parcels to several locations; they do not enjoy the benefits of economies of scale of large, organized supply chains that move goods in large volume and can subsume high costs to comply with bureaucracy (The Economist Intelligence Unit 2014). The high costs owing to customs delays, late deliveries, or inefficient return procedures affect SME bottom lines more significantly.

Many Customs agencies perceive e-commerce as a threat, to varying degrees. The perception of a threat was driven by a range of factors, including the increased costs for the agencies associated with what was called a "tsunami of parcels"; perceptions of increased risks of counterfeit/illicit goods and smuggling; perceived loss of revenue through evasion of cross-border duties and taxes or substitution from bulk to individual imports (putting them below thresholds for tax/duty collection); and "unfair competition" with local retailers. Customs in many developing countries argue that a key role of border policies implemented by Customs was to protect local SMEs becoming more active in online retail, who are always on "the losing side" because of the growth of cross-border e-commerce[10].

In developed economies, customs and border agencies are focused on improving their management of risk for millions of parcels for which detailed data on consignors or consignees are not always available, adding complexity to the clearance process. Many OECD border agencies are discussing options with various third-party logistics providers and marketplace fulfillment companies to find solutions to manage these risks. The EU for instance estimates 5 billion Euros of revenue was lost annually because of the non-declaration of dutiable or taxable goods associated with e-commerce; that there was not a level playing field of regulations facing e-commerce firms; and the risks of intellectual property violations had grown[11].

Need to improve national quality infrastructure

As e-commerce expands, the importance of upgrading national quality infrastructure (standards, accreditation, metrology, and conformity assessment) and, importantly, the trade-related processes revolving around them become important. E-commerce consumers demand product traceability, and conformity to international standards helps reassure them that products are

[10] Key themes and implications of the World Customs Organization's First Global E-commerce Conference in Beijing, Feb 8-10, 2018, Jose Guilherme Reis.

[11] Key themes and implications of the World Customs Organization's First Global E-commerce Conference in Beijing, Feb 8-10, 2018, Jose Guilherme Reis.

efficient and safe. For many categories of goods being traded through e-commerce, the importance and use of standards and certification become crucial. The case of the exploding hoverboards in the United Kingdom in 2015 is an example. The National Trading Standards (2015) of the United Kingdom claimed that 15,000 of the 17,000 hoverboards, or 88 percent, that were shipped into the United Kingdom were deemed unsafe and detained at national entry points. It worked nonstop to prevent these from entering the supply chain (Collins 2015). Once the issue was identified, U.K. border agencies were able to manage the risk appropriately and consistently in accordance with the principles of risk management.

In many developing countries, however, inadequate attention to the national quality infrastructure affects potentially both health and safety and the speedy movement of products across borders. First, many developing countries have introduced many compulsory standards.[12] Although intended to protect health and safety, these standards also include quality-related elements, for which voluntary standards are typically more appropriate. The reasons for this variance are discussed in numerous other papers (see, for example, Huria and Brenton 2015[13]).

Regardless, this variance leads to an attempt to control a larger number of products upon entry in the importing country than is necessary, and enforcement at the border often becomes a further barrier to trade. Government agencies charged with community protection often face funding shortages and lack qualified personnel and equipment, creating difficulty for them to carry out their mandate effectively. Any rapid growth in the number of transactions and packages traded through e-commerce has obvious implications for overwhelming these agencies' resources and capacity, particularly when they do not focus on the community protection mandates A second issue related to the management of risk across the supply chain and the different levels of development of that risk amongst agencies in exporting countries (often low capacity developing countries) and importing countries. In developed importing countries for instance there is a large role for voluntary compliance unless products are identified as high risk given the large volumes of trade and this leads to the lack of visibility in the supply chain that can

12 Compulsory standards are often confused with technical regulations in many countries many developing countries have introduced many compulsory standards which are often confused with technical regulations. The confusion related to the use of the term "standards" stems from its multiple meanings, and from a frequent lack of clarity regarding the similarities, as well as the differences, between standards and technical regulations. Technical regulations are adopted to facilitate trade, protect consumers through information, and more broadly, human safety or health, the environment and other public goods.

[13] One reason for this has been the need to generate autonomous revenue for the standards institution which originates primarily due to a lack of the separation of the regulatory function from the rest of the NQI activities. Another is that standards setting bodies are often government agencies with little industry sponsorship or participation and ownership, particularly from the manufacturing sector which is most impacted. Internationally, best practice offers a different approach to NQI. WTO guidelines are that standards developed by national standards bodies should always be voluntary, while technical regulations developed by the state should be limited to concerns of safety, health and the environment. For instance, in the EU all standards developed by national standards bodies and by the EU's regional standards bodies are voluntary. These bodies have a high degree of institutional autonomy, and standards development is an open consensus-based process that includes producers, consumers, academics and the public sector

have dangerous and sometimes fatal consequences. It is in areas like this that perhaps new technologies like blockchain can be useful.

Lack of integration of postal services with border agencies

Generally, the level of integration between customs and postal operators has been low. Although good integration exists in some countries (for example, Germany), this is not true for most of the developing world. Globally, the Universal Postal Union (UPU) has made some efforts to help postal operators improve this integration with border authorities. One such effort is the development of a Customs Declaration System (CDS) to manage and capture customs declarations and process EDI messages between postal and customs offices. Because many postal operators lack automation, the CDS provides an opportunity for them to begin processing transactions electronically and attempt to perform selectivity, risk management, and duty calculations (UPU 2015) that will strengthen integration with Customs. However, besides system integration with the CDS, much more needs to be done, particularly for shipments in the e-commerce world.

The integration with customs authorities is also important from the point of view of revenue collection and compliance management. Despite the discussion of whether de minimis rates for package delivery should be levied (see the section on de minimis), duties and taxes where applicable need to be collected. Customs authorities that run risk management rely on collecting data from compliant operators, and the level of compliance from postal operators varies. A recent study conducted by the Copenhagen Institute (Basalisco, Wahl, and Okholm 2016) highlighted some challenges such as incomplete levying of the value added tax (VAT) and import duty on postal shipments into the EU. The study estimated the resulting loss to European public sector income of up to 1.3 billion euros (€) per year because customs collected VAT for only 35 percent of items shipped through postal services compared to 98 percent by private express companies (Basalisco, Wahl, and Okholm 2016). Proposed solutions include imposing either a push-back compliance responsibility to service providers or additional fees on provision of public services to respond to increased cost incurred by government-owned or -operated postal carriers. There has been a lot of discussion on this in the Australian context, with discussion about who should have the burden to assess and collect revenue that is then forwarded to the authorities.

Need to improve air connectivity and performance

Although e-commerce delivery before the last mile uses a mix of the various transport modes (ship, air, and land), the importance of air cargo cannot be overemphasized. Given the time-sensitive nature (and sometimes high value) of goods and the need for e-commerce companies to compete with brick and mortar retail, the availability of air cargo is crucial. As such, for many air cargo companies (whether traditional including those carrying cargo in passenger plain bellies, integrators or postal operators[14]), market access through traffic rights and, in turn, the requirement for a more liberal air cargo market, are quite important. Where such markets do not

[14] http://www.iata.org/whatwedo/cargo/stb/Documents/StB-Cargo-White-Paper-e-commerce.pdf

exist, the opportunity for e-commerce to develop may be limited. Related to air cargo liberalization is the need for the sector stakeholders to use modern practices. In many developing countries, cargo terminals are not fully automated or are not integrated with airline systems. Cargo documentation is mainly manual, and end-to-end visibility in the tracking process is absent and clearance at the border is impacted by this (see Figure 5)[15]. Although discussions on air transport and the transport sector in general are beyond the scope of this note, considering their importance to improving the logistics of e-commerce is worthwhile.

Figure 5: Average days for clearance of Air Cargo at international borders by Region, 2017

Region	Days	No. Shipments
Sub-Saharan Africa	2.37	368,985
Eastern Europe and Central Asia	2.12	373,291
Latin America and the Caribbean	1.72	629,237
South Asia	2.55	613,913
Middle East and North Africa	2.61	765,726
Western Europe	1.13	2,540,961
North America	1.30	2,675,081
East Asia and Pacific	1.11	3,685,606
World	**1.41**	**11,651,367**

Sources: IATA, 2017

Poor reach of logistics services in remote areas

Remote areas in developing countries often lack access to crucial logistics services, infrastructure, and delivery systems, which affects their ability to benefit from e-commerce. According to UPU data, more than 90 percent of citizens worldwide can potentially receive goods via postal services, but in Africa and Oceania, this figure drops to under 40 percent. In Africa and Oceana, parcels are commonly received at the post office. However, more than 10 percent of the population in both regions lacks access to home delivery or pick up at a post office (UNCTAD 2015). This is discussed further in the sections on connecting to remote markets and postal services.

[15] Amsterdam (Schipol airport), and Wilmington (USA) are two examples of airports that have become hubs for cross border commerce in the west (Supply Chain Brian, 2018).

Policy challenges created by exponentially advancing technologies in last mile logistics

The traditional logistics model has been impacted with the advent of the Internet and e-commerce. The traditional multimodal transport system (air, ship, and truck) shipped specific cargo based on volume, size, delivery priority, and value. Although these characteristics are still relevant for traditional commercial shipments, the e-commerce focus on high volumes of small packages has led to an increase in small package express couriers, a rapid increase in express post, and less-than-full container loads. Increasingly, a large part of the success of e-commerce will be shaped by how logistics provision is enabled efficiently and in a low-cost manner for consumers. The challenges facing a scale up, particularly in developing countries, are manifold and include developing logistics infrastructure, modernizing outdated or nonexistent regulations and policies, enabling connectivity in remote locations, and, most important, creating more efficient last mile logistics in urban areas where most e-commerce customers reside. Current conditions in last mile logistics in both developed and developing economies and the continued growth of e-commerce together suggest that policy makers' failure to keep up with innovations, trends, and developments affecting last mile delivery systems may adversely influence e-commerce growth. Although the market will, to a large extent, shape e-commerce companies' operating structure for logistics delivery, government policy and regulations can alter the direction of investment. Ensuring that sector policies are modern, transparent, and simplified is critical in the medium term.

Building Blocks for Facilitating Cross-Border E-Commerce

Discussion of the building blocks in this section aims to identify those issues that, although applicable more generally to facilitation and logistics, have a particularly important bearing on e-commerce. Improvement programs for creating a more conducive legal environment for automation; improving automation and interconnectivity between agencies; implementing simplified procedures to trade, including for e-commerce; and implementing fully the WTO's Trade Facilitation Agreement are some of those issues that affect trade facilitation generally but are also crucial for e-commerce and serve as its building blocks. At a minimum, these building blocks would improve countries' abilities to participate and benefit from e-commerce.

Legal Environment for Automation

The enabling legal environment for automation needs to be addressed at an economywide level. However, trade facilitation reform brings the need to light and puts it in context, acting as a catalyst for addressing the overall legal framework, particularly during the implementation of automation systems like electronic single windows and port community systems. For developing countries, setting up the enabling legal and regulatory framework also requires investing in new institutional mechanisms, including those that enable electronic record management and archiving, provide legal certainty and basis for electronic messages, create and empower entities that can emit electronic signatures, put in place systems for protection of data, and work with

the banking sector to enable electronic receipts and notices of payments. These are discussed in turn as follows.

Other factors affecting the legal environment for automation and e-commerce include the legal tradition and attitude toward regulations, enabling laws, and liability issues. Some of this effect is dependent on the prevailing or historical economic model, the quality of governance and rule of law, and the political commitment. However, these factors also affect general law making and are not discussed further in this note.

Data protection and privacy

Data protection is a critical enabler for constructing a safe environment for using an online service, buying a product online, registering for email, making payments, or providing personal information online. Traders and consumers can have confidence in using online services only through strong data protection regulations that avoid government abuse and company surveillance of consumer habits. More than 107 countries have passed laws to protect citizens' data, but many countries still require robust safeguards to protect citizens and consumers from misuse of personal information by government and business. Only 66 developing countries have passed data protection laws. Most governments realize that data protection is necessary, but comprehensive data protection laws that apply to all business sectors and to government are not yet developed. Adopting and enforcing privacy and data protection laws is a key factor in bridging the so-called digital divide, particularly as business and government adopt new technologies such as cloud computing (Privacy International n.d.).

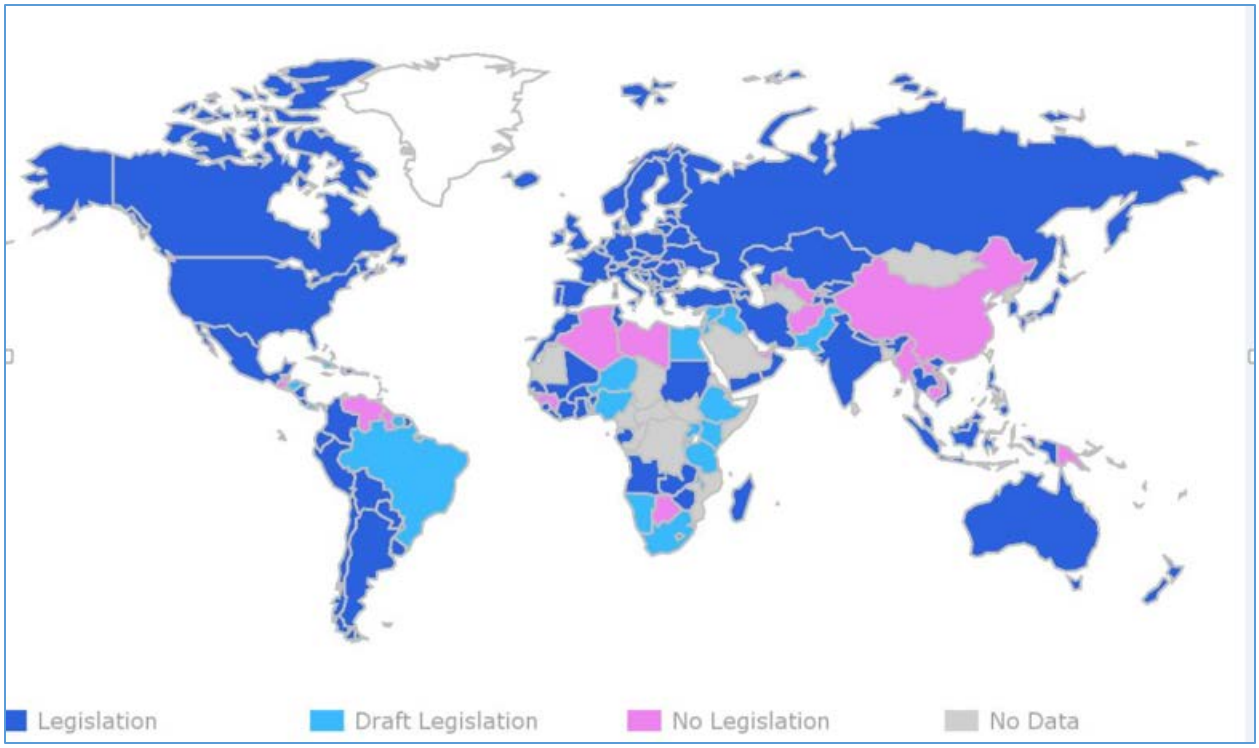
Privacy International (n.d.) defines data protection "as the law designed to protect your personal information, which is collected, processed and stored by 'automated' means or intended to be part of a filing system." Data protection laws should encompass the following basic principles:

- Limits on the collection of personal information
- Collection of information that is relevant to the purpose intended and used for agreed purposes
- Rules about disclosure of personal information (with the consent of the individual)
- Storage of information in a secure space with security safeguards
- Limits and rules on who has access to the information
- Accountability for providing rights noted above by the entity that collects and stores information

International trade leads to data being sent across borders possibly to countries that have limited data protection. For data that move across borders, guidelines have been created to support an international framework that ensures data security (map 1). Countries or regions (for example, the EU) that have strong privacy and trade confidentiality laws will often consider the legal protections, as well as technical security measures, when embarking on systems and tools that enable cross-border trade, particularly in an e-commerce environment. The EU's 1995 Data Protection Directive is the most comprehensive data protection regulation to date (European Parliament and Council 1995). It standardizes laws across EU member states to facilitate trade within the European market. The directive stipulates that data can be sent to non-EU countries only if those countries have data protection laws, which can have implications for trade. Canada

also has good practice examples; it has two pieces of legislation that relate to government and the private sector and additional laws at the provincial level. The OECD (1980) Guidelines on the Protection of Privacy and Transborder Flows of Personal Data, agreed upon in 1980 and updated in 2013, also outline data protection principles. The most robust international legal instrument is the Council of Europe 1981 Convention for the Protection of Individuals about the Automatic Processing of Personal Data. Non-European countries can ratify it, but it has had limited uptake to date. Another example is the Safe Harbor Framework developed by the U.S. Department of Commerce and the European Commission, a voluntary, self-regulatory framework that enables U.S. firms to engage in data transfers between the EU and the United States and to process data on EU citizens. In 2016, the Safe Harbor Framework was replaced by the EU-U.S. and Swiss-U.S. Privacy Shield Frameworks as a valid legal mechanism to comply with EU and Swiss requirements on the transfer of personal data from the EU and Switzerland to the United States. It is a voluntary mechanism that has more clearly defined certification requirements that have been accepted by the EU and Switzerland (UNCTAD 2016a; U.S. Department of Commerce.

Map 1: Data Protection and Privacy Legislation, Worldwide, 2016



Source: UNCTAD 2016c.

Developing countries attempting to create data protection laws try to follow best practice and often opt to be consistent with the EU directive. They face challenges in terms of the cost to enforce data protection laws and the lack of public and private sector knowledge and cooperation on the issue. Lack of data protection regimes can raise trader concerns about integrity of payment systems and fraud. For cross-border e-commerce trade, research has

revealed that consumers in developing countries are worried about the use of their personal data. However, overly strict data protection laws can restrict activities such as investment, innovation, and emergence of new technologies (UNCTAD 2016a).

There are also specific guidelines for data protection in terms of tools that enable cross-border trade. For example, Recommendation No. 35 by the United Nations Centre for Trade Facilitation and Electronic Business includes a discussion of the issue of data protection about protecting information and data within a single window from unauthorized access or dissemination, noting that this is vitally important (UN CEFACT 2010, annex II). Technical and legal issues are related to this aspect, and data protection can be particularly important for a cross-border single window environment. Regarding the legal dimension, issues of information security (for example, the various technical measures for protecting information and data) and data protection will intersect with those related to trade confidentiality and privacy laws. For online trade transactions, data that require security and protection include financial information used in connection with the collection of duties, taxes, and fees and sensitive (and even classified) law enforcement information used primarily by government officials to enforce a wide variety of civil and criminal laws (for example, ensuring food safety and public health and combating smuggling, terrorism, money laundering, and narcotics trafficking). Thus, ensuring appropriate protection of this type of data and information is fundamental to protecting the information assets of the government as well as those of private sector participants in cross-border trade and e-commerce.

Legal validity for electronic transactions

Providing legal validity for electronic transactions is a precondition for enabling e-commerce. E-Transaction laws provide electronic transactions with the same legal equivalence as paper-based transactions. Several international organizations have been involved in the development of international legal standards for enabling electronic commerce. Without the adoption of such standards, traders lack legal certainty and legal validity for e-commerce transactions. Therefore, countries must adopt a robust electronic transactions law that will enable the electronic aspects of trade transactions. Such a law should provide for both electronic commerce types of transactions (for example, B2B, B2C, and consumer-to-business transactions) and electronic transactions within the context of government transactions (that is, government-to-government, business-to-government, and government-to-business transactions).

The United Nations Commission on International Trade Law (UNCITRAL)[16] has completed an important international convention[17] and two model laws[18] that provide important benchmarks

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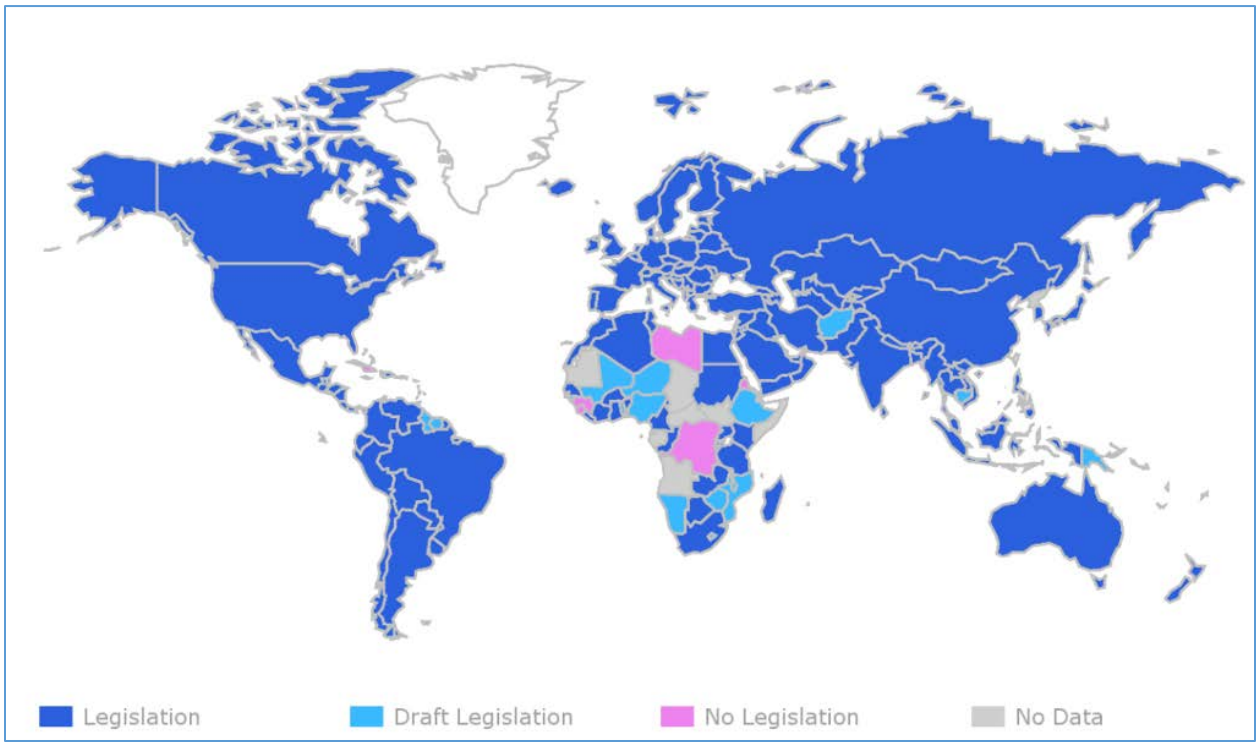
[16] For additional information regarding UNCITRAL and its work, visit http://www.uncitral.org/uncitral/en/ index.html.

[17] The *United Nations Convention on the Use of Electronic Communications in International Contracts* was adopted by the UN General Assembly on November 23, 2005. See Resolution Adopted by the General Assembly [on the report of the Sixth Committee (A/60/515)] 60/21. United Nations Convention on the Use of Electronic Communications in International Contracts, Official Records of the General Assembly, 60th Session, A/RES/60/21. Six countries have ratified this convention and 18 have signed it. The convention entered into force on March 1, 2013. The convention and an explanatory note by the UNCITRAL Secretariat are available at http://www.uncitral.org/pdf/english/texts/electcom/06-57452_Ebook.pdf.

[18] The *UNCITRAL Model Law on Electronic Commerce (1996): with additional Article 5 bis as adopted in 1995* and the *UNCITRAL Model Law on Electronic Signatures (2001)* may be accessed at http://www.uncitral.org/uncitral/en/uncitral_texts/electronic_commerce.html.

for international standards in the field of electronic transactions law. The United Nations Convention on the Use of Electronic Communications in International Contracts, known as the UN Electronic Communications Convention, provides international legal standards for electronic transactions in its substantive provisions (Articles 4–14). It also provides a vehicle in Article 20 of the convention whereby a ratifying country can decide to apply the e-transaction provisions of the convention to a wide range of earlier treaties and international agreements to which that country may be a party. This approach permits a ratifying country to extend the reach of its legal framework for electronic transactions to other types of international transactions. To date, 145 countries have adopted such laws (map 2; box 1). Africa has the most countries that have lagged in the adoption of such laws. In addition, UNCITRAL developed the Model Law on Electronic Commerce (1996), which has been widely used as the framework for enactment of domestic electronic commerce law. Provisions of this UNCITRAL Model Law have been enacted or have inspired legislation in at least 60 countries and in many territories and dependencies as well. Some countries have also used the UNCITRAL Model Law on Electronic Signatures (2001) for guidance on domestic law in this area.[19]

Map 2: E-transaction Legislation, Worldwide, 2016



Source: UNCTAD 2016a and b.

[19] Approximately 30 countries have based some of their electronic commerce law on the Model Law on Electronic Signatures (2001).

Box 1: Zambia's Electronic Communications and Transactions Act

The Electronic Communications and Transactions Act of 2009 (ECT Act) (Government of Zambia 2009) provides the underlying framework for Zambia to enable electronic transactions for trade transactions and e-commerce. It is similar to the type of enabling law that other countries have enacted to allow government ministries and agencies involved in the import, export, and transit of goods to use electronic data messages, electronic filing of documents, licenses and approvals, and payment systems even though a particular ministry's specific enabling law does not provide for the use of electronic modalities in its operations. The ECT Act covers issues related to the legal requirements for a data message (Section 4), electronic documents as "writings" when required by law (Section 5), electronic signatures (including digital signatures) (Section 6), the admissibility of data messages as evidence (Section 8), and data retention (Section 9). Section 12 of the ECT Act appears to permit the use of one data message to meet the requirements for filing in cases where a law requires multiple copies. It also appears to mandate that an "expression in a law … including the words 'document', 'record', 'file', 'submit', 'lodge', 'deliver', 'issue', 'publish', 'write in', 'print' or words or expressions of similar effect …." include data messages.[a] Further, the ECT Act provides for a wide variety of additional legal issues regarding electronic transactions such as consumer protection in electronic transactions (Part VI), the protection of personal information in electronic transactions (Part VII), database protection (Part VIII), and a series of criminal law provisions (including "Cyber Crimes") (Parts XI, XII, and XV).

a. The full text of Section 12 is as follows:

(1) A requirement in a law for multiple copies of a document to be submitted to a single addressee at the same time shall be satisfied by the submission of a single data message that is capable of being reproduced by that addressee.

(2) An expression in a law, whether used as a noun or verb, including the words "document", "record", "file", "submit", "lodge", "deliver", "issue", "publish", "write in", "print" or words or expressions of similar effect, shall be interpreted so as to include or permit such form, format or action in relation to a data message unless otherwise provided for in this Act.

Use of electronic signatures, certification authorities, and mutual recognition

Digital signatures provide legal certainty on the validity of a contract, which is critical for e-commerce transactions. *Electronic signature* is the broad term that encompasses various types of signatures in electronic formats and the methods used to create them. The primary purpose for these types of signatures is to provide, in some sense, the equivalent to handwritten signatures and other types of devices (for example, seals and rubber signature stamps) used in the paper environment for authenticating such signatures.[20] Because contracts in the e-

[20] See Explanatory Note by the UNCITRAL Secretariat on the United Nations Convention on the Use of Electronic Communications in International Contracts, para. 149. The *United Nations Convention on the Use of Electronic Communications in International Contracts* was adopted by the UN General Assembly on November 23, 2005. See Resolution

commerce space are paperless, digital signatures provide integrity for an electronic contract and make it binding[21]. Thus, developing standards to ensure the security and reliability of digital signatures is essential. Over 60 countries have adopted some form of electronic signature law (Electronic Signature Authority 2011). Mutual recognition of certification authorities (who certify certain digital signatures) may be important in cross-border transactions where a country has decided to use a specific type of digital signature for cross-border transactions. However, two countries may have different standards' or certification authorities, and this is often seen as a difficulty when it is not really the case. For instance, country A would not send a document across borders if it did not comply with its own standards. To accept the document in its jurisdiction Country B simply needs to have mutual recognition – not of the actual digital signatures – but of the process to generate the document. If the process does not involve a digital signature it's just as good. This is the approach ASEAN has taken to the exchange of electronic COOs (e-Form D) where there is no central certification authority or agreed digital signature standard.

UNCITRAL (2009) has prepared an extensive guidance document related to electronic signatures titled "Promoting Confidence in Electronic Commerce: Legal Issues on International Use of Electronic Authentication and Signature Methods." The various texts provide important underlying legal principles in electronic commerce and electronic transactions for international trade. In its guidance document, UNCITRAL (2009, para. 16) defines several broad categories of electronic signatures and authentication methods:

- Electronic signatures can be based on the knowledge of the user or the recipient, for example, a person knowing certain passwords or personal identification numbers (PINs). These might include clickable "OK" or "I confirm" boxes used on secure websites where the user has already logged in using a password or PIN.
- E-signatures can be based on the physical features of the user, for example, biometrics that require an individual's handwritten signature using a digital pen on a digitizing pad.
- E-signatures can be based on the possession of an object (sometimes called a "token") by the user (for example, the codes or other information stored on a magnetic card).
- Other various types of authentication and signature methods might also be used to indicate the originator of an electronic communication such as a facsimile of a handwritten signature or a name typed at the bottom of an electronic message or email.

Ideally, good practice legislation should not favor specific technologies even if driven by security concerns (that is, requiring a specific authentication for an automation system) because this approach drives up costs. The type of electronic signature required should be based on the level

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Adopted by the General Assembly [on the report of the Sixth Committee (A/60/515)] 60/21; United Nations Convention on the Use of Electronic Communications in International Contracts, Official Records of the General Assembly, 60th Session, A/RES/60/21. The convention and an explanatory note by the UNCITRAL Secretariat are available online at http://www.uncitral.org/pdf/english/texts/electcom/06-57452_Ebook.pdf.

[21] In some legal systems (e.g. English law) most contracts are binding even without a signature as long as the intent can be demonstrated and the same applies to the electronic world. Often, the lack of a PKI infrastructure to support digital signatures is cited as an excuse for not moving to an electronic environment where, in fact, 'intent' is implicit in an electronic record that could only have been generated through a duly authorized process.

of security that is needed for a transaction. Not all transactions require the highest level of security, which may carry very high costs. For example, digital signatures at one of the highest levels of security are those created using asymmetric cryptography (such as that used in public key infrastructure methods) combined with certification of the signatures by a third party (usually called a "trusted third party.") Digital signatures are a subset of electronic signatures, and the name usually is given to technological applications that use asymmetric cryptography (UNCITRAL 2009, paras. 24–52). The choice of the electronic signature or signature systems will depend on a variety of factors. One factor is national policy decisions about the use of electronic signatures in electronic commerce, particularly as established in a country's electronic transactions law and partly related to the desired level of security needed for risks associated with transactions. A further consideration may be free trade agreements that typically require technology neutrality.

Data retention and electronic archiving

Retaining records and filings is an important aspect of trade facilitation generally and no less important in the electronic environment. In addition, its legal aspects need to be addressed; that is, archived data must be secure and maintained in a form and format that will be legally enforceable later. Storage of electronic data is critical for e-commerce because it allows legal documents to be archived in an electronic environment that can be accessed by multiple parties for legal purposes even if they are in different countries. Establishing the necessary regulatory framework for data retention and electronic archiving anticipates decisions on several legal issues. For example, many countries have created data retention schedules for certain types of information. This framework includes distinctions between data related to regulatory filings and data involving personally identifiable information. In the latter case, governments will sometimes define the maximum time for which such data may be retained and then require that they be destroyed. Customs administrations often have criteria for retention of information and data in the paper environment. Depending on national policies, these criteria can also be adapted through regulations for the electronic environment.

Electronic archiving—the storage of electronic data and information—covers a wide range of areas. For example, it includes the definition of the formats in which data will be stored and the requirements of national law such as those dealing with original documents that might be needed for subsequent use in an enforcement proceeding or in relation to possible civil disputes or, on a short timeframe, in post-clearance audit procedures. An important issue here will be the choice of the technology used for data storage, which will be based on the legal requirements for its subsequent use, for example, as evidence in a legal proceeding.

Access to and sharing of data

Laws and regulations providing for the access to and sharing of trade data information (including customs data) among government agencies and between government and traders should be considered. For example, whether one governmental organization is legally permitted to share data and information with another or, conversely, to provide such information to another governmental organization is unclear. Further, privacy or confidentiality laws or regulations in some countries prohibit the sharing of certain types of information among government organizations except when permitted by law. These issues should also be reviewed in the context

of possible cross-border transactions. In many countries, cross-border access and sharing considerations have had to be authorized in national law before information can be shared or exchanged with another customs administration or with another country. Other countries will need to know that data sharing is legally permitted within a trading partner country to ensure that processed transactions have legal validity. Storage of data on a cloud or on a server in a third country also becomes problematic.

Many businesses face restrictive laws and regulations when attempting to store and transfer data across country borders. For example, Norwegian law prevents the collection and storage of Norwegian customers' social security numbers. This practice means businesses engaged in cross-border e-commerce must find creative ways around this problem, and the issue becomes more problematic when acquiring credit history reports without a social security number (National Board of Trade, Sweden 2012).

Simplifying Trade-Related Regulations and Procedures in E-Commerce

The movement of goods across borders is aligned to support big businesses, and customs regimes provide facilitation measures that are more tailored to big business. Often countries find dealing with small consignments challenging for multiple reasons, including the amount of resources required, particularly where automation is not fully deployed; potential loss in revenue, especially from false declarations; prevalence of under-invoicing; large number of unknown players (vendors and consignees) involved; and security, particularly in environments where contraband and illicit goods are a challenge. However, some specific facilitation measures that improve the efficiency of trade transactions can significantly affect e-commerce and SMEs that are trying to take advantage of it (The Economist Intelligence Unit 2014). These include customs practices that mandate the use of a de minimis threshold and pre-arrival processing that enable customs and other government agencies to conduct their clearance and transactional processes online. VAT in the EU raises another issue – the multiplicity of rates impacts the ability of SMEs who don't use a platform to reach customers to be competitive. Similarly, having a simplified declarations regime for low-value shipments helps small traders move their goods faster. Facilitation for providing evidence around rules of origin also needs to be in place so that providing certification is not overly costly for small traders. E-commerce goods are time sensitive and require advance information and online processing. Stakeholders need to be engaged to ensure greater compliance, and political will to make decisions that enable simplified solutions is important. A detailed discussion on this follows below. Table 2 shows the application of some of these measures in selected countries.

Table 2. Types of Simplified Measures Used, Selected Countries, 2016

DEST	Cat 2 (informal entry, D&T waived, immediate release)	Cat 3 (Simplified Entry, Duties & Taxes Payable)	Cat 4 (formal entry, duty & tax payable)	Domestic Tax
AUS	< AUD1000		> AUD1000	10%
CHN - Normal	<50 RMB * (in payable duty & tax)	< 5000 RMB	> 5000 RMB	17%
CHN – GAC 26 (e-Commerce)	NA	<2000 RMB	> 2000 RMB	17% (30% discount off VAT); 10%, 20%, or 30% (30% off consumption tax)
INDO	< $50	< $2000, <100 kg	> $2000, >100 kg	10%
JPN	< 10,000 JPY	< 201,000 JPY	> 201,000 JPY	8%
KOR	< 150,000 KW*	< 3,000,000 KW	> 3,000,000 KW	10%
MAL	< RM 500		< RM 500	6%
NZ	< NZ 400		> NZD 400	15%
PH	< PHP 10,000	< PHP 50,000	> PHP 50,000	12%
SIN	< S$400		> S$400	7%
TW	< NTD 3000	< NTD 50,000	> NTD 50,000	5%
TH	< 1500 BHT	< 40,000 BHT		7%
VN	< 1,000,000 VND	< 2,000,000 VND	> 2,000,000 VND	10%
USA	< $800		>$800	NA

* China GAC 26: < 800 RMB for shipments from HK, TW, and Macau
** Korea's Cat 2 for US shipments is 300,000 KW

Source: UPS 2016 [Permission to be confirmed]

Note: AUD = Australian dollar; AUS = Australia; BHT = Thai baht; Cat = category; CHN = China; D&T = duties and tax; GAC = General Administration of Customs; INDO = Indonesia; HK = Hong Kong SAR, China; JAPN = Japan; JPY = Japanese yen; kg = kilogram; KOR = Republic of Korea; KW = Republic of Korea won; MAL = Malaysia; NA = not applicable; NTD = New Taiwan dollar; NZ = New Zealand; NZD = New Zealand dollar; PH = the Philippines; PHP = Philippine peso; RM = Malaysian ringgit; RMB = Chinese renminbi; S$ = Singaporean dollar; SIN = Singapore; TH = Thailand; TW = Taiwan, China; VAT = value added tax; VN = Vietnam; VND = Vietnamese dollar.

Simplified regimes

Traders could be provided different types of simplified procedures that make the declaration process less complex and easier to prepare and present to border agency officials. One mechanism used frequently by customs agencies is the streamlined customs clearance procedure that enables traders to use a simpler customs declaration document. Such a procedure can be used for low-value shipments and goods that need to be expedited (perishables or small parcels delivered by express couriers). The Common Market for Eastern and Southern Africa (COMESA) provides an example. It has offered a simplified customs clearance procedure for its member

countries—the COMESA Simplified Trade Regime (STR)—that is employed by small-scale traders to facilitate their import and export documents (Zimbabwe Revenue Authority 2014). Currently, the STR is applied to goods that have been grown or are wholly produced in the COMESA region and appear on the STR's Common List. In addition, to the streamlined procedure described earlier, goods need to comply with the normal food safety, plant, and animal health regulations and may still require any import or export permits. The STR allows for faster clearance times at border posts, reduced clearance costs, and predictability of duties levied. The STR is meant to be used by small-scale cross-border traders exporting goods valued at US$1,000 or less per consignment. A key improvement to this procedure would be to integrate other border agencies (such as those for quarantine and food safety) and streamline their procedures to improve the benefits overall. Currently, the STR provides the following benefits:

- *A simplified certificate of origin.* The certificate should be signed and stamped by a customs official at the border post for all goods that appear on the Common List.
- *A simplified customs document.* Traders are supposed to declare goods that appear on the Common List, and duty is not payable on the declared goods.
- *A common list of qualifying goods.* The Common List will be in the gazette of each member state and be notified to the public. Once in the gazette, the Common List will also be displayed at all border posts within COMESA.

A simplified regime for e-commerce that builds on aspects of COMESA's STR could be developed for developing country environments.

The Korea Customs Service (KCS) of the Republic of Korea has introduced streamlined import and export clearance procedures for goods bought online. For imports, KCS has created a list clearance process in which the declaration requires 26 data points rather than the 69 data points required in a general declaration. Commercial samples or goods bought for personal use with a free on-board price under US$200 are tax exempt. Goods bought online are provided rapid clearance. Completion of customs clearance of expedited cargo that is submitted under the list clearance procedures through the e-clearance system (UNIPASS) reportedly takes less than four hours. For exports, a simplified export declaration for e-commerce requires 37 data points, reduced from 57 data points. To help traders that are not used to dealing with standardized data requirements, KCS has set up a Harmonized System Navigation service that traders can use to identify the correct Harmonized System code by searching the product name. To facilitate e-commerce exporters, KCS has begun to archive e-commerce export data of goods sent by postal operators. It uses these data to issue certifications of export so that traders can receive VAT refunds and access trade finance. Pre-clearance procedures are also available to e-commerce goods sent by the postal operators (WCO 2015a).

In Latin America, another approach is being tested with waiver of clearance requirements for small packages. In Brazil, the introduction of simplified customs procedures in 1999 for goods under a certain weight and value has increased the number of exporters by 11,000 and increased the number of shipments by more than 120,000. The value of exports under this simplified regime was US$272 million in 2012 (The Economist Intelligence Unit 2014). In Finland, Venue, an online system for importing or exporting e-commerce goods, allows traders to make an incomplete advanced declaration up to a certain value for faster processing. The Global Express

Association (2016) notes that today less than 50 countries have simplified entry thresholds, six of those countries apply it for postal agencies only, three countries for personal use or noncommercial use, and one country for gift use. Further, no common threshold exists, and the value for simplified entry can range from US$14 to US$11,000, though half the countries that apply it have thresholds lower than US$500 (GEA 2016).

Another facilitation mechanism that would be of value for developing countries is the use of informal entry provisions, used currently by the U.S. Customs and Border Protection (CBP). Informal entries do not require a posting of a bond, and clearance is immediate upon payment of duties. This approach can be used for imports that are valued under US$2,500. Informal entry enables a trader to use simplified clearance forms and does not require the use of a customs broker. However, informal entries are not tax exempt (CBP 2015). Despite the ease that informal entries offer, many developing countries are quite reluctant to use such provisions. Valuation is often a significant problem because customs duty and taxes and fees collected at the border are a significant part of total national revenue and an express courier manifest sometimes can be used to avoid customs duty. Fraud, consignment splitting, and counterfeits are particularly more difficult to detect in these countries given the lack of resources and nascent application of risk management techniques.

A simplified return procedure is often essential for e-commerce companies to operate profitably, but few countries offer such benefits. In many countries, the cost of returning goods bought online, including filing paperwork, and recouping fees and duties can be quite onerous. According to a company in a Turkish survey, it typically handled 50 returns for every 150 products sold, adding significant costs to its operations (National Board of Trade, Sweden 2012). Such costs become more expensive for e-traders that ship their goods over borders if they must pay logistics costs for returned goods and obtain refunds for duty paid. In Turkey, a seller must pay all costs incurred for returns, which can become fairly expensive without expedited procedures or exemptions. Often, many companies choose to forgo collecting returns because it is uneconomical. A company in Sweden stated that returns often result in payment of 500 Swedish kronor in customs duties and shipping costs. To circumvent such costs, some companies choose to invest in bonded warehouses in the destination country to avoid addressing customs procedures and duties for e-commerce goods (National Board of Trade, Sweden 2012). One solution is to provide selected businesses with simplified procedures and duty-free treatment for returned goods, which is currently offered by Swedish Customs (National Board of Trade, Sweden 2012), though this is not a common practice.

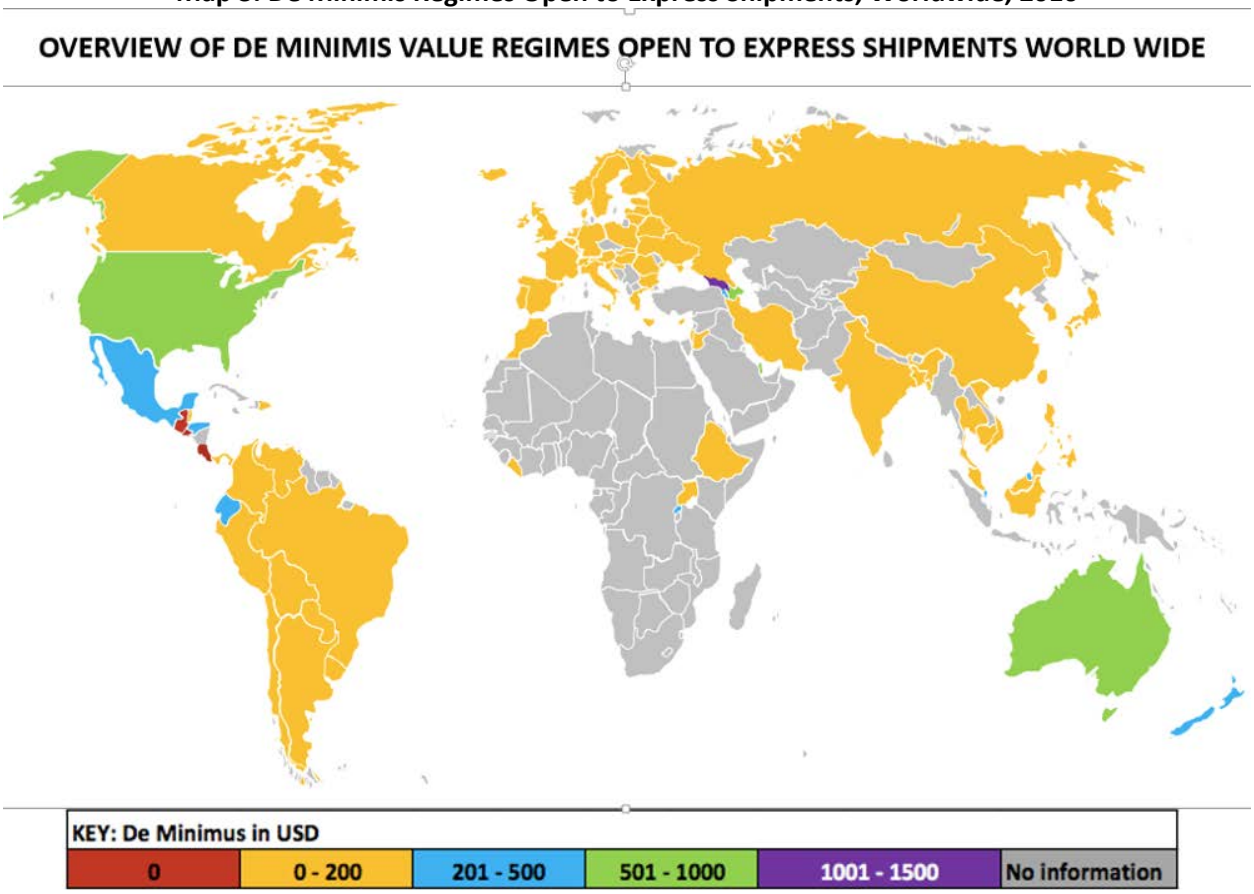
De minimis

Guideline 11 of the ICC Customs Guidelines (ICC 2012) defines “de minimis” as a valuation ceiling for goods, including documents and trade samples, below which no duty or tax is charged and clearance procedures, including data requirements, are minimal. According to Transitional Standard 4.13 of the Kyoto Convention (WCO 2000), customs administrations can determine “a minimum value and/or minimum amount of duties and taxes below which no duties and taxes will be collected.” Goods that fall within that threshold can also enjoy lower documentary requirements. Administrations implementing a de minimis regime can also apply the WCO’s (2014) Guidelines for the Immediate Release of Consignments by Customs, which enables the

immediate release goods using a consolidated declaration that can be a manifest, waybill, cargo declaration, or inventory of goods. The WTO's Trade Facilitation Agreement (Article 7) calls for the use of de minimis thresholds to facilitate expedited shipments.

From the perspective of promoting e-commerce, current de minimis levels in most countries are probably too low (map 3). Governments in many developing countries fear that raising the de minimis levels will result in loss of revenue, because customs duties and fees from trade transactions can often account for 20–60 percent of government revenue. Governments need to evaluate whether the collection of duties on low-value goods is worth the effort to achieve revenue targets. Government agencies need to weigh the costs associated with the collection of VAT and import duties against the actual value of duties collected for low-value shipments because the cost of collecting those duties can often exceed the revenue generated in some countries. In such cases, resources could be better spent elsewhere to ensure focus on sources that yield higher revenue. For government, logistics operators, importers, and consumers, in many cases, raising the de minimis threshold could reduce the cost for all parties involved and reduce time to trade (see table 3).

Map 3. De Minimis Regimes Open to Express Shipments, Worldwide, 2016



Note: Where multiple thresholds were indicated, the highest value has been considered

Source: Global Express Association 2016 [Permission to be confirmed]

Note: Where multiple thresholds were indicated, the highest value as been considered.

Table 3: Raising the De Minimis Threshold: Implications for Stakeholders

	Government agency	Supply chain operator
Cost reduction because of raised de minimis threshold	Import compliance costs ICT costs Transfer costs between revenue and customs agencies Establishment of VAT numbers for nonregular importers	Data collection, analysis, cleansing, and entry costs for full customs declarations Bad debts with duties and VAT Establishment of VAT numbers for nonregular importers Customer service calls for queries on shipment problems and delays
No effect if de minimis threshold is raised	Advance cargo information costs Safety and security inspection costs Warehousing and storage costs Personnel training costs	Advance cargo information costs Safety and security inspection costs Warehousing and storage costs Personnel training costs

Source: (EU 2016)

Note: ICT = Information and communication technology; VAT = value added tax.

Raising de minimis levels can often positively affect SMEs. Tax exemption and simpler clearance procedures would dramatically reduce the cost of clearance procedures. Because SMEs face higher costs owing to their business and sourcing practices, they tend to import and export small consignments. Low de minimis levels elevate the cost of compliance for small consignments, thus raising the prices of production and final goods for SMEs. For SMEs participating in global value chains, this is particularly relevant because intermediate products often cross many borders before they become final products. Raising de minimis levels could lower cross-border costs. For SMEs, a higher de minimis threshold may also reduce their reliance on customs brokers because often they rely on intermediaries to process customs and other government agency clearance procedures. In Surinam, traders complained about the same high costs for customs brokers, particularly for low-value shipments bought online. According to estimates by the Peterson Institute (Hufbauer and Wong 2011), the 3.8 million shipments that fall under the US$800 range managed annually by the U.S Postal Service (USPS) would produce a net gain (determined by the value of time saved to customers, plus cost savings to express firms, USPS, and CBP, minus loss of tariff revenue) of US$17 million if the de minimis threshold were raised to US$1,000. The United States eventually changed rules in March 2016 by allowing Americans to import a single shipment of most foreign goods with a total value of US$800 without having to pay import duties or tax (up from US$200 previously). The Philippines also raised its de minimus level from $10 to $210. On the other hand, in 2018 Russia reduced its de minimus to Euro 500 to enable Russian firms to compete with foreign imports.

International returns have also been made easier. Before this increased amount of US$800, a 30 percent duty was applicable on single shipments of imported products with a total value of

US$200 and above (Stevens 2016). A buyer purchasing costume jewelry for US$201 would have to deal with a duty of 110 percent. Express industry experts were gearing up for a much larger volume of packages as a result (Stevens 2016). However, security and supply chain integrity issues may still require use of customs brokers. In the United States, the National Customs Brokers and Forwarders Association of America lobbied the CBP and the U.S. Department of Treasury after the new de minimis rule was issued to "develop regulations that mandate that all goods entered into the United States are considered 'customs business,' thus requiring either the direct involvement of the actual importer or a licensed customs broker who is bound under [the Trade Facilitation and Trade Enforcement Act of 2015] to validate an importer's identity" and argued that "duty free does not mean data free" (Johnson 2016).

In the EU, for example, the cost to collect the VAT for de minimis shipments exceeds the revenue collected. Proposals suggest raising the de minimis threshold to €80 from the current €22. The increase would produce an estimated total savings of €32 million annually. Similarly, in 2005, before the de minimis threshold was raised to 1,000 Australian dollars ($A), the Australian Productivity Commission estimated that a higher de minimis threshold of $A 1,000 would result in $A12 million in savings. Recently, Australia changed some rules on the practice with vendors who sell more than $A 75,000 of low-value goods that are classified as items sold for less than $A 1,000. Vendors now need to register and collect a goods and services tax from consumers and then pay this amount to the Australian tax authorities. Trade facilitation is not affected because this new rule does not require payment at the border for goods valued at less than $A 1,000.

Government views vary on the level at which to set "de minimis" thresholds under which duties/charges are not levied, and simplified clearance procedures apply. Unsurprisingly, the international e-commerce industry wants high de minimis thresholds. For example, Australia has recently lowered its de minimis for GST collection to $0, meaning all e-commerce imports will have GST levied upon them (but not duties). New Zealand Customs expressed a cautious view that it was too early to make dramatic changes in policy without an understanding of the impact on e-commerce, and without the right partnerships being in place between companies involved in e-commerce, and Customs and other government agencies. Various models were presented by WCO Members and the by the OECD for collecting revenue on e-commerce shipments, but it was not clear whether any existing approaches generate revenue higher than the cost of collecting that revenue[22].

Policy makers in developed economies like the EU, however, face pressure from domestic producers and retailers of unfair competition if VAT is included in de minimis practice. Tax agencies everywhere fear revenue losses, particularly if a good cost-benefit analysis has not been undertaken, and thus are hesitant to provide VAT relief for low-value goods under the de minimis system. If a country's duty collection process at the border is still manual and paper based, VAT exemption is even more unlikely. A vendor collection process like that just introduced by

[22] Key themes and implications of the World Customs Organization's First Global E-commerce Conference in Beijing, Feb 8-10, 2018, Jose Guilherme Reis.

Australia is certainly streamlined because it does not affect trade facilitation at the border negatively. However, it is likely to require more resources for post-import control. A second approach is to require consumers to pay directly to Customs or the tax agency, but this has too many challenges and is unlikely to work. A third approach is to use the delivery companies or third-party logistics providers or potentially the marketplaces to collect and remit VAT. In this approach, some of the more sophisticated operators are more likely to be able to comply though many may not. Postal operators in many countries may have difficulties in complying because they are still automating and modernizing their services. Overall, the cost-benefit analysis shouldn't just be from the perspective of revenue (cost of collection vs revenue raised) but also the wider economic impact of lowering consumer prices through e-commerce and providing access to cheaper imported inputs.

Customs agencies in many developing countries often perceive that duties on online purchases are a source of revenue and that a change in de minimis policy can threaten the achievement of revenue goals. According to a McKinsey analysis of Chinese online buyers, nearly one-fifth of the digital consumers buy goods from vendors outside China because they found the items too costly or in limited supply domestically (Wang, Lau, and Gong 2016). The Chinese government has recently formalized import and value added taxes on cross-border commerce, which is likely to make these goods more expensive. Similarly, the government of Trinidad and Tobago may introduce a 7 percent tax on online purchases of goods and services from companies that reside outside the country and are not obliged to pay taxes in Trinidad and Tobago. Such companies include Dell, Walmart, Staples, and Amazon, which sell and ship products to Trinidad and Tobago from the United States. The government states that the rationale for such a tax is to mitigate "foreign exchange outflows from online purchases, reduce revenue leakage and assist local manufacturers and service companies to compete with overseas retailers" (*Trinidad and Tobago Guardian* 2016).

The policy implications for countries are important because de minimis rules vary across countries and product treatment differs according to value or type of shipment. This differentiation can create distortions and uncompetitive outcomes, favoring one country or trading partner over another. Although the increased de minimis threshold in the United States clearly favors consumers, U.S. SMEs now face competition from foreign producers and could be adversely affected. Reciprocity among trading partners whereby de minimis rules in one country are respected in another country would alleviate these concerns, such as between the United States and Canada.[23] An agreed de minimis threshold within a trading bloc is another option that could reduce price distortion and differentiated treatment. Such an option is being explored in the Asia-Pacific Economic Cooperation (APEC) and the EU. This regional cooperation on de minimis levels might be a better approach – there is less complexity across different jurisdictions, less risk of competition in setting rates, and more confidence given to individual governments that they are setting the threshold at the "right" level. This is something that logistics operators in APEC ask for at the APEC level.

[23] Canada has a de minimis threshold of Can$20 in contrast to the U.S. de minimis threshold of US$800.

Globally, members of the WTO (2017) adopted a declaration on global electronic commerce in May 1998 at their Second Ministerial Conference in Geneva that included the statement that "members will continue their current practice of not imposing customs duties on electronic transmission." They also agreed to establish a comprehensive work program to examine all trade-related issues arising from electronic commerce. Since the Fourth Ministerial Conference in Doha in 2001, discussions have included "classification of the content of certain electronic transmissions; development-related issues; fiscal implications of e-commerce; relationship (and possible substitution effects) between e-commerce and traditional forms of commerce; imposition of customs duties on electronic transmissions; competition; jurisdiction and applicable law/other legal issues" (WTO 2017). Some regional trade agreements have also begun formalizing 'no customs duties. The Recent EU Canada trade agreement imposes a permanent moratorium on customs duties, fees or charges for digital products transmitted electronically between Canada and the EU[24].

The private sector has attempted to advocate against both tax and nontax measures that restrict e-commerce. Typically, this advocacy is conducted through chambers of commerce, freight forwarders, and express associations at the national, regional, and global levels. Prominent marketplaces also have tried to highlight the issues. Jack Ma, the founder of Alibaba, has encouraged G-20 (Group of Twenty) nations to create digital free trade zones to reduce the cost of trade regulations for small businesses. Ma states that current trade facilitation practices are geared toward large businesses that can manage complex regulatory and market-entry requirements. He believes these digital free trade zones could enable small businesses to sell their products internationally without having their consumers incur high costs related to import duties and cumbersome customs clearance (King 2016b).

Simplifying compliance for rules of origin

Rules of origin certification can also be burdensome for companies, particularly SMEs engaged in cross-border e-commerce. Because cross border e-traders typically engage in small consignments to many countries, providing certificates of origin becomes more expensive for them than for traditional traders that deal with fewer countries and larger consignments. Transport regulations can also limit the storage of goods to a specific location to comply with rules of origin for products. As a result, some traders must invest in local warehouses in their export market country, which reduces the bureaucratic hassles but creates another source of cost all together. For small traders, this may not be an option and may limit access to markets considerably (National Board of Trade, Sweden 2012). Countries have introduced two initiatives to simplify rules of origin: self-certification and e-certification. Both tools could dramatically reduce the bureaucratic procedures applicable to rules of origin certification and support e-commerce traders in their ability to comply with rules of origin.

[24] However CETA allows for internal taxes and charges on digital products transmitted electronically, provided those taxes and charges are consistent with CETA's other chapters.

Often countries impose burdensome formalities and documentation requirements for confirming rules of origin. Importers in Ethiopia are required to submit a considerable number of documents to process regulatory formalities with customs and other regulatory agencies. The Ethiopian Revenues and Customs Authority requires the additional formality of a chamberized invoice from Ethiopian importers. Chamberization is merely an act of obtaining a stamp and seal of a chamber of commerce, often done to certify the authenticity of a shipping document. The importer is then required to pay a service fee, which varies from place to place but can often be as much as US$150. The rationale behind chamberization is the involvement of an independent third party to verify the authenticity of a shipping or trading document. Although this appears to be a noble objective, the safeguard mechanisms for guaranteeing the authenticity of an invoice are no better in many chambers of commerce than in the authorities in the importing nation. Given that chambers of commerce do not physically inspect the goods in most cases, they cannot, for instance, assure that the prices indicated in the invoice reflect the true value of the goods and that no under- or over-invoicing is occurring. This situation makes chamberization of invoices a superfluous procedure and merely adds a transaction cost for importers and increases prices for consumers. This formality is even more burdensome because it is enforceable on all Ethiopian imports covering all products and regardless of origin of the goods, but SMEs may have the biggest burden. For companies engaged in e-commerce, chamberization would probably be a deal breaker.

Self-Certification

Self-certification is generally good for trade, not just for e-commerce, but its effect on SMEs and e-commerce is likely to be significant. Some countries have begun exploring self-certification schemes that allow a producer, exporter, or importer to issue origin certificates. Self-certification eliminates intervention by additional agencies, but its effectiveness relies on customs or tax agencies to ensure verification of compliance. In the United States, self-certification procedures depend on customs being able to conduct risk analysis to verify and ensure the origination point of its preferential imports (UNCTAD 2011). The WTO (2013a) Ministerial Decision of December 7, 2013, on the Preferential Rules of Origin for Least-Developed Countries stated in paragraph 1.8: "The documentary requirements regarding compliance with the rules of origin should be simple and transparent. For instance, requirement to provide proof of non-manipulation or any other prescribed form for a certification of origin for products shipped from [least developed countries] across other Members may be avoided. Regarding certification of rules of origin, whenever possible, self-certification may be recognized. Mutual customs cooperation and monitoring could complement compliance and risk-management measures." At a meeting in April 2015 in Florence, Italy, the WTO Committee on Rules of Origin reviewed the documentary requirements and certification practices of selected countries and regional groupings and recommended that whenever possible, self-certification may be recognized (WTO 2015; see table 4).

Table 4: Status of Administrative Requirements for Certificate of Origin, Selected Countries, 2015

Are WTO members using documentary requirements that are simple and transparent?

Country / group of countries	Administrative requirements	CO	Comments/ additional requirements
European Community (EBA)	• Certifying Governmental authorities to be notified to the Commission • Notification of Stamp used	• Form A to be stamped by certifying authorities • Form A- Special quality paper • Origin criteria to be indicated in form A	• System of registered exporters who issue statements of origin in 2017. • Cumulation uses GSP form A
Japan	• Certifying authorities to be notified to Japan • Notification of stamp used	• Similar to EU above, but Form A is not requested for some products.	• Cumulation and donor country content require additional forms
Canada	• Self certification admitted with use of Form A or Canada CO • Special certificate for Textile and clothing products	• Form A- Special entries on criteria and percentage requirement, no need for official stamp • Self declaration-Entry with percentage required	• For textile and clothing - Special certification B255 - Entry the specific RoO criteria
United States	• No certificate of origin required	• No CO-importer based declaration	
AGOA	• Same as above	• Same as above	• Special visa requirements apply for textiles and clothing

Source: WTO 2015.
Note: AGOA = African Growth and Opportunity Act; CO = certificate of origin; EBA = Everything but Arms; EU = European Union; GSP = Generalized system of Preferences.

Rules of Origin self-certification facilitates trade by enabling exporters or producers to self-declare the origin of their goods without presenting a certification of origin issued by designated regulatory authorities. The EU has recently introduced the Registered Exporter system (the REX system[25]), which is based on a principle of self-certification by economic operators who will make *statements on origin themselves*. An economic operator will need to be registered in a database by the competent national authority to be categorized as a registered exporter. The REX system will progressively and completely replace the current system of certificates of origin issued by governmental authorities and will be applied in the context of bilateral trade agreements between the EU and partner countries, with CETA (Comprehensive Economic and Trade Agreement) between the EU and Canada being the first pilot (European Commission 2017b). In 2010, the Association of Southeast Asian Nations was one of the first to initiate a self-certification scheme, which provides certified economic operators the opportunity to self-certify the originating status of goods (ASEAN 2015). In 2010–11, The APEC Committee on Trade and Investment launched the APEC Pathfinder Initiative for Self-Certification of Origin to reduce administrative burdens and costs associated with navigating complex documentation and

[25] The REX system was introduced January 1, 2017.

procedures of rules of origin when using free trade agreements. Eleven countries participate in the initiative: Australia; Brunei Darussalam; Canada; Japan; Korea; Malaysia; New Zealand; the Philippines; Singapore; Taiwan, China; and the United States (APEC 2016b). These practices, when effectively run, will contribute to cost reduction, particularly for smaller exporters often located at a distance from the regulatory authority (table 5).

Table 5: Status of Self-Certification, Selected Countries, 2015

Are WTO members providing for self-certification of origin?

Country / group of countries	Administrative Requirements	Compliance
European Community (EBA)	• Form A required • Self certification allowed up to shipment of 6000 euros • Self certification allowed in FTAs	**NO**, Introduction of a new system in 2017
Japan	• Form A required. • No documentary evidence for a number of products • Self declaration up to 200.000 JPY (~1'600 USD)	**Partially**
Canada	• Self certification allowed with specifications of the rules of origin criteria used	**Yes**
United States	• Not applicable since the declaration is made by the importer	Not applicable
AGOA	• Same as above	Not applicable
China	• Not available • No small consignment provision	**No**
India	• Not available • No small consignment provision	**No**

Source: WTO 2015.
Note: AGOA = African Growth and Opportunity Act; EBA = Everything but Arms; FTAs = free trade agreements; JPY = Japanese yen; USD = U.S. dollars.

Before implementing self-certification for rules of origin, developing countries are likely to face numerous challenges that must be recognized and mitigated. Although the private sector manufactures and produces goods in many developing countries, many firms are often less knowledgeable about the rules of origin that apply for trade agreements, and this may lead to errors. Systems for good practice record keeping are not always in place, which affects the ability of authorities to verify and audit. Moreover, authorities sometimes lack good risk management and intelligence systems or the resources to put in place a compliance program. Authorized operator and preferred trader programs have only just begun being implemented in these countries. In addition, the legal environment (customs law, trade Law, and so on) may not enable self-certification, penalties, sanctions for noncompliance, or procedures for voluntary disclosure.

Most developing countries have not yet implemented advance rulings, which can help reduce errors and enable the private sector to self-certify with confidence. Trading parties also need agreements among themselves to share information and cooperate extensively to catch fraud and misuse. Although automation systems are steadily being deployed in most developing countries for trade-related transactions, they also are not always available to all parties. Once fully implemented across all border control agencies, such systems could enable self-certification.

Electronic certificate of origin

Electronic certificate of origin (eCO) refers to a certificate of origin created and shared via the Internet. Chambers of commerce issue millions of certificates of origin annually. Currently, chambers of commerce offer two types of eCO services: (a) e-application, which is applied electronically but issued manually; and (b) fully integrated and paperless eCO service, which includes electronic issuance of the certificate of origin with electronic signature, rubber stamps, and security features in place. The approved eCO may be printed at the premises of certificate of origin applicants. Issuing certificates of origin online helps keep pace with the rapid shift to e-commerce and improves efficiency in serving the business community.

To address concerns on fraud and the need to improve supply chain security, many chambers of commerce also provide online services for certificates of origin for a secure trading environment. An eCO reinforces the integrity of certificates of origin because online systems can include security features such as authenticity verification, optical watermarking technology to distinguish between original and copies, digital rubber stamps of authorized officials, microprint to deter unauthorized reproduction, 2-D barcode to ensure data integrity, public key infrastructure technology to ensure data security and authenticity, and printer control language to control the printing of only one original certificate of origin. Therefore, the eCO system ensures greater transparency and lowers time and cost among customs administrations, exporters, importers, banks, and stakeholders.

The eCO provides several advantages over manual procedures. It increases consistency of applications, resulting in fewer rejections; minimizes data inaccuracy; and helps combat fraud and forged documentation. In addition, recipients of an eCO and foreign authorities can also check the authenticity of a document online. An eCO saves time and costs for customers of local chambers of commerce by eliminating the need to travel and queue for the submission and collection of a certificate of origin. It enables chambers of commerce to provide certification services in an efficient, transparent, and secure environment. It also saves time and cost for chambers of commerce by significantly reducing the burden for extensive filing and storage facilities for paper-based certificate of origin documentation. For SMEs, e-certification provides for online application tracking, e-notification on status of applications, direct link to banks for clearance of letters of credit, and speedy customs clearance.

A key challenge for chambers of commerce is to create trust and ensure the validity of the eCO. Currently, many government agencies do not trust the information provided by chambers of commerce. More work needs to be done to create confidence in e-certification in developing countries (table 6).

Table 6: Status of E-Certification, Selected Countries, 2015

Country	Organization	Tools
Australia	Australian State Chambers of Commerce	e-certify, Ozdocs
Belgium	Federation of Belgium Chamber of Commerce and Industry	DigiChambers
Brazil	Confederation of Commercial and Business Associations of Brazil (CACB)	Certisign
	National Confederation of Industry	Digital Certificate of Origin (COD)
Canada	Canadian Chamber of Commerce	Tradecert, eCertify
France	Paris Île-de-France Regional Chamber of Commerce and Industry	GEFI
Hong Kong SAR, China	Hong Kong General Chamber of Commerce	Tradelink System
Ireland	Chambers Ireland	TradeCert
Netherlands	The Netherlands Chamber of Commerce DAE	Electronic Cos
New Zealand	New Zealand Chambers of Commerce	eCertify
Norway	Norway Chambers of Commerce	eCertify
Singapore	Singapore International Chamber of Commerce	CrimsonLogic
Korea, Rep.	Korea Chamber of Commerce and Industry	KCCI Trade Certification Service Center
Switzerland	Basel Chamber of Commerce	e-Origin
United Kingdom	British Chamber of Commerce	e-z Cert, Tradecert
United States	ACCE eCertify ACCE Affinity Program	Tradecert

Source: http://unctad.org/meetings/en/Presentation/aldc2015_06-agenda6_wto_en.pdf
Note: ACCE = Association of Chamber of Commerce Executives; KCCI = Korea Chamber of Commerce and Industry.

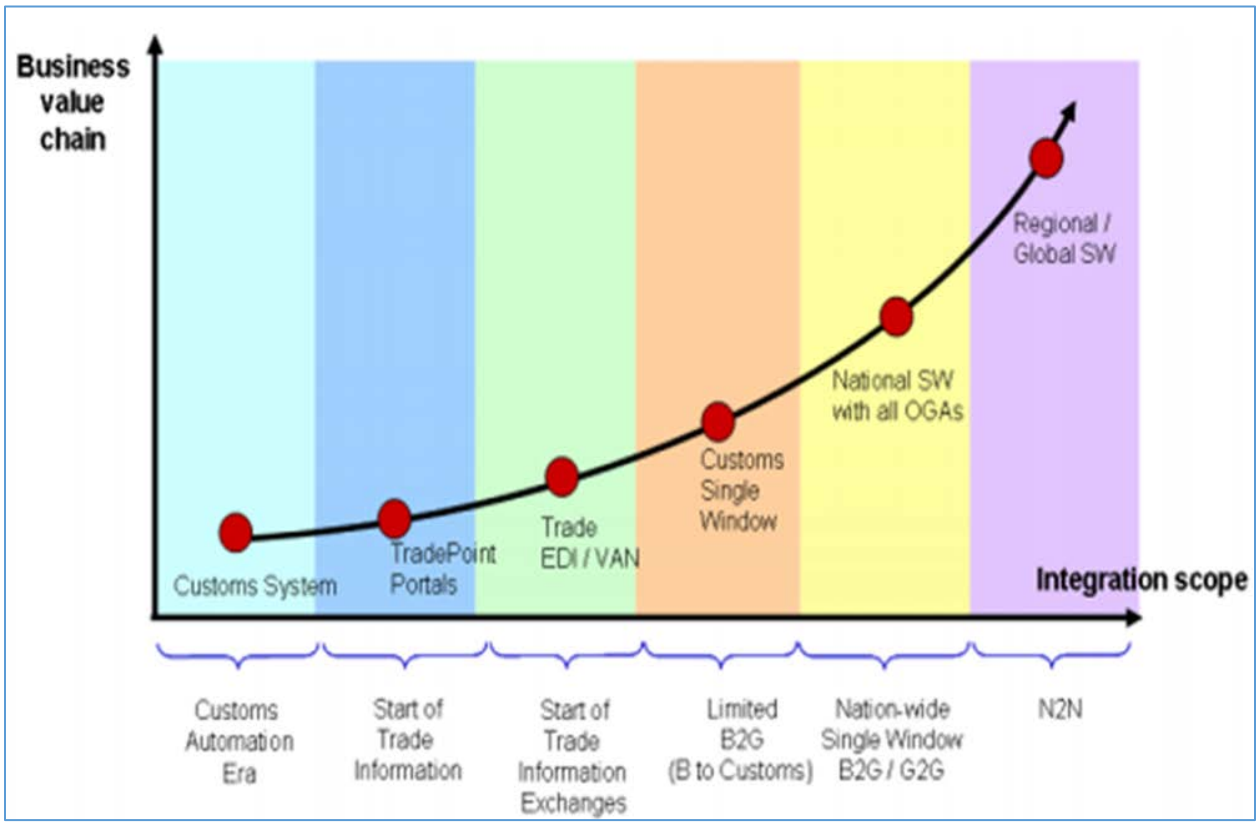
Automation to Interconnectivity in a Digital Age

Although border management practices are being modernized, often emphasizing automation, adaptation to e-commerce for customs and border agencies has been slow.

Since the 1960s, governments have invested in automation to lower trade transaction costs, reduce time to process paperwork, and improve the efficiency of transactions to facilitate trade. In the late 1990s and early 2000s, more ambitious efforts began with the implementation of national single window systems that brought together many trade-related agencies to process permits, certificates, and payments online through a single system (see figure 5). Customs and trade-related agencies saw a unique opportunity to make procedures more transparent and efficient, as well as more predictable through ICT. The automation environment, particularly in trade facilitation and logistics in developing countries and least developed countries, requires addressing numerous different facets before consumers and businesses can benefit from a lowering of costs:

- Legal issues to ensure an effective trade facilitation system (discussed earlier)
- The level of automation among trade-related agencies that regulate cross-border trade and their interconnectivity within agencies and their offices, between agencies, and, particularly, between agencies of neighboring countries in areas with regional communities and customs unions
- Network access and bandwidth that relates to telecommunication infrastructure nationally and specifically at borders
- Sophistication of the business community, especially the logistics providers, to take advantage of electronic developments

Figure 5: Trends in Automation



Source: Koh 2011.

Note: B2G = business-to-government; EDI = electronic data interchange; G2G = government-to-government; N2N = network to network; OGAs = other government agencies; SW = single window; VAN = virtual area network.

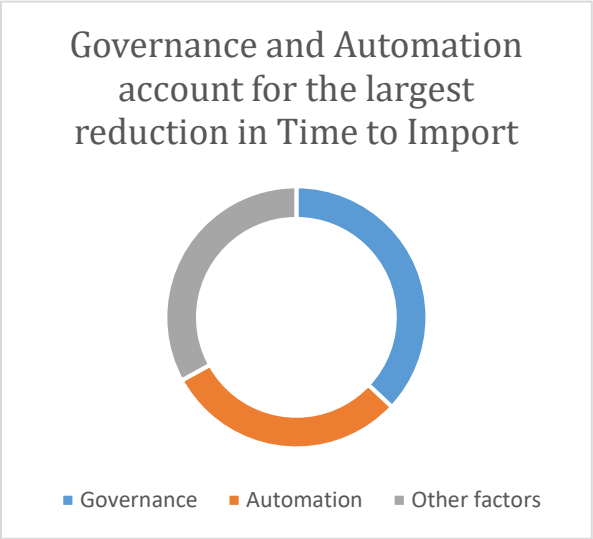
Many countries struggle with automation because of the lack of ICT infrastructure, poor Internet services, outdated software and hardware, and uneven capacity of public and private sectors to handle transactions electronically. Clearly, developing countries cannot embark on automation reforms at a rapid scale. Realities such as reduction of funding limitations, reengineering

procedures, commitment of government actors to share information, and creation of an administrative culture that is comfortable with e-transactions take time.

Automation of trade-related procedures is successful only if the solutions are tailored around available ICT infrastructure, ICT access and skills, and interest in engagement by traders. If traders are involved initially in an automation process and can help propose solutions, identify challenges, support and advocate for reform, and monitor the reforms, the likelihood of success and sustainability is higher. Governments need to foster private sector engagement and should ensure outreach and engagement with the private sector stakeholders to guarantee that they fully benefit from new systems and tools. Such engagement can also help change the perception from one of governments being instruments of compliance to that of governments providing services that benefit private sector growth. If positive engagement is not fostered, many of the intended benefits gained through automation in trade could go largely unnoticed.

Automation provides real-time savings in trade transactions. In a recent World Bank Group study, trade facilitation measures in the TFA that had the most effect on time reduction included automation. Automation (including the electronic exchange of documents and the application of risk management procedures) is responsible for about 30 percent (figure 6) of the reduction in time to import (Hillberry and Zhang 2015).

Figure 6: Share of Governance and Automation in Time to Import, 2015



Source: World Bank 2010.

Typically, customs agencies are further ahead in automation of procedures than other agencies in the trade facilitation space. Thus, although customs agencies can clear goods before arrival at port because of the electronic systems and information at their disposal, the quarantine, health, and standards agencies may still be handling paper and lack the systems to conduct clearance procedures in advance, provide decisions in a timely manner, and conduct business online. A transition from paper documentation and manual procedures to automation of procedures and

interoperability of systems is a prerequisite to customs and other agencies providing such facilitation. Interconnectivity among agencies has been met with less enthusiasm and more resistance because it suggests information sharing, creation of opportunities for shared or joint transactions, and more accountability. Central America, for example, has a common electronic general declaration for customs among five countries that is transmitted regionally through an electronic platform. The same platform has now enabled ministries of health to process mutual recognition of sanitary registration among the five countries so that registration of products requiring sanitary controls does not have to be duplicated five times. Colombia, Costa Rica, and Mauritius have implemented electronic single window systems that enable traders to interact with numerous government agencies online to finalize paperwork required to conduct trade. Port single window or port community systems developed in France, Spain, and the United Kingdom serve to automate all transactions at a port for traders. Countries are experimenting with other enabling technologies to process payments, conduct transactions through mobile telephony, use electronic sensors and scanners to control cargo, and use RFID (radio-frequency identification) to track cargo as it moves through a trade corridor or to track suppliers across a supply chain. Although many of these initiatives are works in progress, they have resulted in significant time and cost savings to traders. The following section discusses some automation tools in more detail.

Publishing information online

With automation and digital transformation, traders expect greater transparency of information, predictability of procedures, and traceability of transactions. In this context, government agencies have begun providing traders with easier access to trade-related regulations, practices, and policies. The WTO TFA recognizes the importance of this access, and Articles 1–5 of the agreement, which focus on transparency, accountability, and predictability, include the following:

- Publication and availability of information
- Opportunity to comment on information before entry into force and consultations
- Advance rulings
- Appeal or review procedures
- Other measures to enhance impartiality, nondiscrimination, and transparency

In most developing countries, information about rules, regulations, and procedures is paper based and not easily accessible to the public. In addition, neither customs nor other border authorities have developed and published practical guides to their import, export, and transit procedures, including appeal procedures. Some border agencies—in particular, customs—publish required forms and documents on their websites. Most countries do not have specific legal provisions that require or authorize customs or other border agencies to develop and publish on the Internet the practical guides to their procedures or required forms and documents. Few countries have formal administrative procedures concerning publication of website information by the border authorities. Publication of such information appears to be done on an ad hoc basis. Moreover, website information is not promptly updated. Often this is due to limited resources available for website maintenance. To respond to this problem, Lao

PDR[26]Bangladesh[27], Botswana[28], Cambodia[29], Lesotho,[30] Nepal[31], Vietnam[32]and Malawi amongst others have recently implemented a national trade portal that allows importers and exporters to find all the information they require for importing and exporting goods (see figure 7). Centralizing information into one virtual location is especially beneficial for SMEs, because many lack the resources of large firms to research requirements and manage logistics and, as a result, face a disproportionate cost burden in participating in e-commerce.

Figure 7: Botswana Trade Portal

Source: Botswana Trade Portal, http://www.botswanatradeportal.org.bw/.

Providing advance information online

To address heightened security measures and protect international supply chains against terrorist threats, governments have placed an increased regulatory burden on international trade (Kerswell and Kunaka 2015). As such, many customs administrations have provisions and requirements for advance submission of detailed cargo and vessel data (in some cases, advance customs declarations as well) for purposes of risk assessment for contraband, revenue fraud, trade facilitation, and so on. In the United States, the Automated Manifest System was designed by U.S. Customs and Border Protection to facilitate cargo arrival and release information among steam shipping lines, airlines, and railways for shipments destined to or transiting the United States. Currently, it is used for electronic air manifests only, while the electronic truck, rail, and sea manifests have been transitioned to ACE (Automated Commercial Environment), which is the

26 For information on the Lao Trade Portal, visit http://laotradeportal.gov.la

27 For information on the Bangladesh Trade Portal, visit http://bangladeshtradeportal.gov.bd

28 For information on the Botswana Trade Portal, visit http://botswanatradeportl.org.bw

29 For information on the Cambodia Trade Portal, visit http://cambodiantr.gov.kh

30 For information on the Lesotho Trade Portal, visit http://www.lesothotradeportal.org.ls/.

31 For information on the Nepal Trade Portal, visit http://nepaltradeportal.gov.np

32 For information on the Vietnam Trade Portal, visit http://vietnamtradeportal.gov.vn

U.S. Single Window. The EU Advance Cargo Declaration Regime was effective January 2011. It is like (and possibly modeled on) the U.S. Automated Manifest System, but differs regarding application to all shipping sectors, no required bonds, and other aspects.

Advance information is a practice that should generally be encouraged and, where it exists, continued. It supports improved customs and border management outcomes by facilitating improved access to transactional data (timeliness) that allows enhanced profiling and targeting of all transactional risks in a streamlined and nonduplicative manner. Risk management–based systems allow customs and other border agencies to determine the type of cargo and its level of risk and conduct the clearance process in advance of the cargo arriving at the border. This approach allows for faster processing time and less waiting time at the border, enabling a speedier delivery to destination. Goods that are determined to be low risk can then be cleared for release before the goods arrive at the border, allowing them to leave the border point immediately when they arrive. The decision to release the goods can also be transmitted to the carrier so that the goods can seamlessly pass through the border, thereby reducing lengthy delays for completion of paperwork or payment of duties at the border and decreasing costs associated with storage at the border.

Most developed economies have created advanced information submission requirements that shippers, importers, and exporters are obligated to meet. In the EU, economic operators must be registered and have an identification number, submit electronic information (entry or exit) at least 24 hours before arrival or departure for deep sea container shipping (4 hours for deep sea bulk shipping and 2 hours for short sea shipping), submit an arrival notification to customs on arrival, and issue a movement reference number if an advance cargo declaration has been completed. The receiving customs office in the EU conducts a risk analysis for safety and security and determines risk type and action to be taken, if any. The United States implements a series of advanced-cargo-declaration type of initiatives that include the CSI (Container Security Initiative), the C-TPAT (Customs-Trade Partnership Against Terrorism), the 10+2 initiative, the Secure Freight Initiative, and the AQUA (Advanced Qualified Unloading Approval) Lane, some of which affect SME e-commerce trade. In several developing countries, customs agencies process declaration information after the goods have arrived in the country and documents are presented to customs. This approach causes delays because the goods must stay at the border while customs and other border agencies complete their due diligence processes.

The implications and challenges for e-commerce logistics and facilitation are clear, especially for SMEs for whom meeting complex trading requirements can mean the difference between trading internationally or not. Advance cargo declaration combined with issues related to de minimis and simplified clearance regimes all affect SME e-commerce trade. The EU's new requirement for simplified declaration requires members to exchange automatically information about each consignment (unique ID, value, weight, and consignee information), which may reduce the burden on SMEs. However, the connectivity of customs to postal departments in the EU is still varied across its member countries, and thus, these developments will take time to be implemented. Typically, any direct costs relate to overall information technology systems infrastructure, not specifically the capacity to lodge in advance. As such, most costs relate to those incurred by the provider, not by a border agency or government authority. In certain cases,

however, SMEs may face challenges simply from the disproportionate time and complexity of meeting advance information requirements. Although large firms can take advantage of the authorized economic operators' concept if it is applicable to them and beneficial, SMEs are normally not eligible.

Advance electronic shipment information enables border agencies to provide faster facilitation measures for cross-border trade that have important benefits for e-commerce. Pre-arrival processing is electronic submission of information about the goods that is transmitted to government trade-related authorities before the arrival or departure of goods. For air cargo, pre-arrival information is particularly important because it allows customs agencies to grant immediate release. Because a large volume of e-commerce cross-border trade comes by parcel or courier, the use of pre-arrival information for faster processing of air cargo shipments is critical to e-commerce. It allows for better resource allocation of customs and border officers and improved management of risk. High-risk consignments can be identified and controlled more easily. Decision-making times can improve, helping reduce costs and allowing parcel delivery companies to meet their customer delivery deadlines and reduce warehouse costs. EU members reported that advance electronic data for postal items were likely to become a legal requirement as part of the customs security program (WCO 2016b).

Both the WTO TFA (Article 7.1) and the Revised Kyoto Convention (Standard 3.25) allow for traders to submit goods declarations and supporting documents before arrival of goods. Customs can also provide faster clearance processes using a simplified declaration and introduce an expedited shipment regime. The TFA already promotes the use of such a regime for air cargo (Article 7.8) that would allow for less bureaucracy. Such facilitation measures can be provided to e-commerce–related goods.

For obtaining worthwhile advanced information and given the high volume of packages in the e-commerce world, the importance of government and customs authorities' capacity to accept and process advance electronic data is critical. Businesses, including SMEs, need to be made aware of the importance of such practices for compliance, and this needs to be conducted through regular dialogue among the stakeholders. Many developing countries have customs-to-business forums that, if they meet regularly, can be used for such education campaigns.

Private sector participation in clearance data submission process

As e-commerce gains traction, a new modality of public and private sector cooperation is emerging. In this modality, the private sector collects information that is critical for customs, such as the type of product, price, destination, cost of transportation, payment information, mode of delivery, package-tracking information, and associated duties, and would allow for speedier risk management and clearance. The private sector would become a provider of such information and services to customs and other border agencies, enhancing intelligence, risk management, and fraud detection and reducing duty evasion and leakage for border agencies. A broader, more in-depth exchange of data would have to be carefully managed, and incentives such as provision of simplified regimes, tax exemptions, and swift clearance procedures would have to be put in place for the private sector to provide such data. Such cooperation and sharing of roles are becoming increasingly more critical for customs and border agencies. However, this data sharing

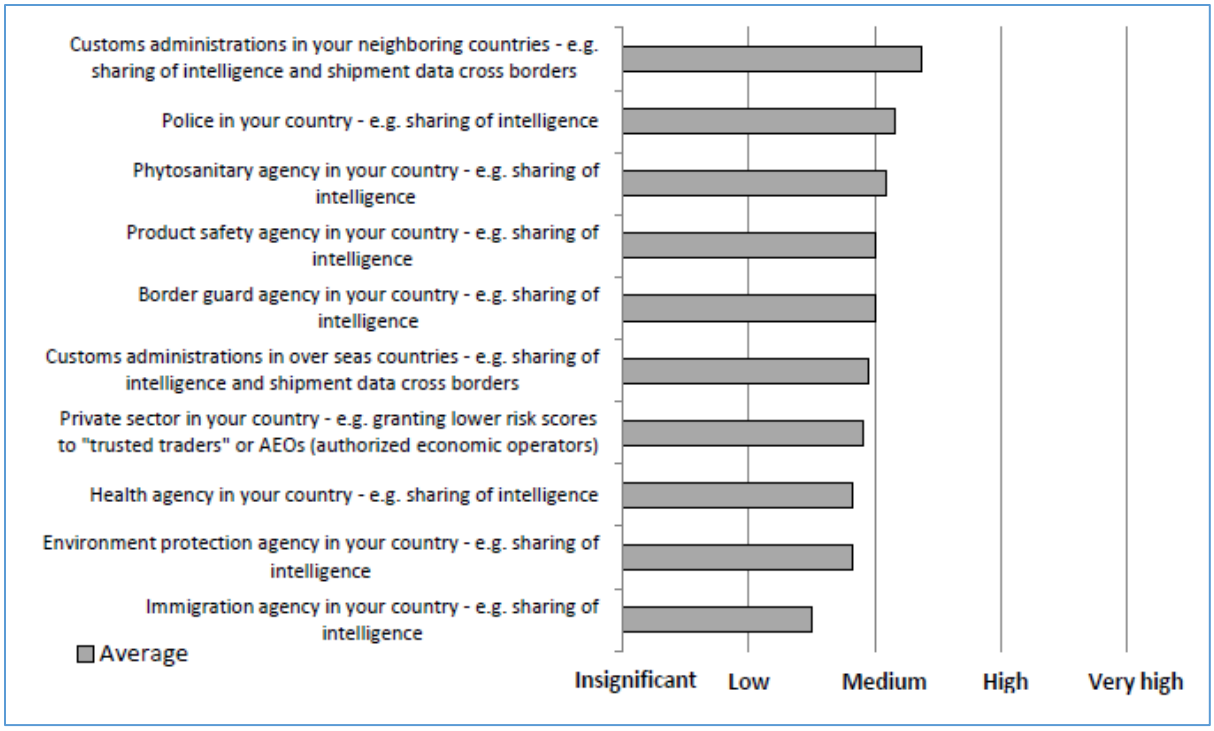
is at an early stage and while data sharing with some express carriers is well-developed in some countries, there is very little with postal authorities or retail platforms or payments companies.

Express delivery companies are also well placed to provide services and information to customs and have developed systems that interface with CBP and other agencies. Because express delivery services manage a large percentage of cross-border e-commerce cargo, they can do the following (GEA 2015):

- Provide electronic shipment information in advance of arrival of the cargo so that risk analysis can be conducted before goods arrive
- Support risk analysis by providing a risk assessment and validation of data provided by the shipper
- Implement track and trace systems so that packages deemed suspicious by customs are sent to customs for further examination
- Provide customs with facilities to review cargo at its warehouses
- Share information on shippers and consignees to identify risk

In many countries, information sharing among partners to enhance risk assessment and intelligence for customs is still evolving. In a study conducted by the WCO and University of Lausanne, 24 customs administrations from different parts of the world reported on their degree of collaboration and information sharing with other parties, particularly on risk-related intelligence. The study found limited openness (figure 8). Information sharing was more prevalent among neighboring customs administrations, and only 13 percent of the administrations had a memorandum of understanding for sharing data with an e-commerce operator. Although customs agencies did report collaboration with other government agencies and private sector entities, such collaboration was not routine or standard practice. The study reported that the poorest information sharing between customs and agencies related to immigration, environmental protection, and health (Cross-Border Research Association, EPFL, and HEC-UNIL (2011). In many of these countries, government agencies do not trust the private sector. In the United States and other developed countries, border agencies have been working in partnership with the private sector through trusted trader programs and other mechanisms of dialogue for years, which has built mutual credibility and trust. This is not the case in many developing countries, where a strong revenue focus and lack of risk management for customs suggest that such programs are absent and difficult to initiate.

Figure 8: Interorganization of Risk Management–Related Information Sharing



Source: Cross-Border Research Association, EPFL, and HEC-UNIL 2011, 33.

Electronic invoicing

E-Invoicing has increasingly picked up traction in the past decade with the growth of e-commerce and market platforms, and many vendors have been creating and supporting robust, reliable e-invoicing systems for some time. The EU has been working on an e-invoicing project since 2010, when it set a goal for e-invoicing to be the primary method of invoicing within the union by 2020. Directive 2014/55/EU on e-invoicing promulgated that both paper and electronic invoices were equivalent and guaranteed the authenticity of origin and date of issue until retention by the recipient. Further, member states have until November 2018 to adopt e-invoicing in public procurement. These directives face challenges to becoming effective because the countries need to review their legal and administrative rules and procedures. Because the directive is technology neutral and different countries may have adopted different standards and formats, format compatibility could be costly, which would reduce benefits and savings of automation at least initially. However, cost savings from e-invoicing include less printing, storing, and mailing; faster invoicing; lower error rates; and better traceability and tax compliance. The benefits of accuracy and completeness must be weighed against the potential for fraud and system security in e-invoicing systems, though online systems are generally more secure if robustly designed and controlled.

Electronic methods of payment

Standard 4.6 of the Revised Kyoto Convention promotes the use of electronic fund transfers to facilitate payment. For trade facilitation, significant benefits from using e-payment systems range

from increased security to reduction in the carrying of significant amounts of cash (e.g., for truck drivers facing significant waits at border checkpoints, especially in landlocked countries) to more transparency in the payment of customs and related fees to reduced informal payments, among numerous others. Allowing around-the-clock payment and permitting importers to pay via the Internet from anywhere limit discretionary practices. From an e-commerce perspective, e-payment is a crucial building block that enables cross-border movement of goods with minimal friction.

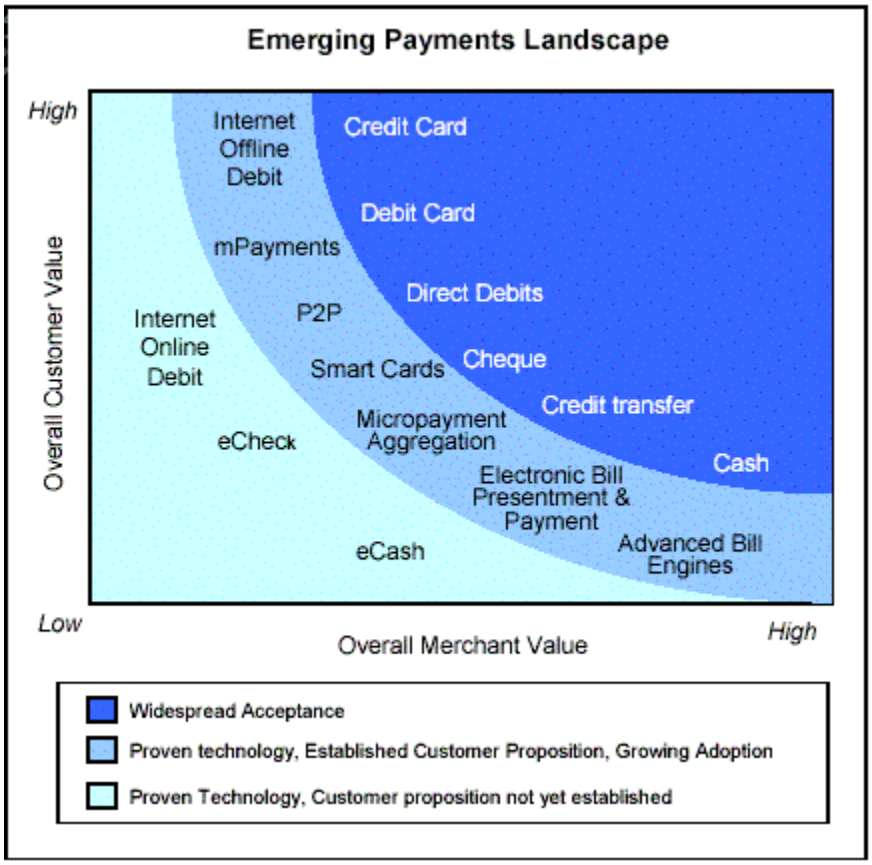
However, in most developing countries, electronic payment for border agency fees and charges is still in infancy. Although most customs agencies have begun accepting electronic payment because of the reform and modernization efforts adopted by them and the support they received from the World Bank Group and other organizations to adopt EDI (UN/EDIFACT or XML messages) to automate the payment process, use electronic receipts, and receive electronic notices of payment, other border agencies still mainly use manual procedures. These government agencies often accept only cash or bank checks for the payment of fees and charges. In several cases, agencies do not have payment facilities available at the point of clearance, and traders must arrange payment at another location.

Private sector stakeholders would like all the various agency fees to be consolidated, preferably as a single e-payment through a single system. Those agencies whose fees go into a national consolidated account are normally open to collection of their fees in this way, but this approach is often problematic for agencies that typically fund their operations through fee collection (such as standards agencies). Implementation of such arrangements would typically require administrative policies concerning credits to the various accounts and should be formalized with memorandums of understanding among the agencies. As such, e-payment solutions have become a core part of electronic single window systems, because they enable the payment of fees and duties for all government-related agencies that play a role in trade facilitation (UNECE 2016). Even with customs administrations, automatic payment limitations exist. For instance, government financial regulations as of late 2016 in Sri Lanka allow payment from only two government banks, People's Bank and Ceylon Bank. Users must pay separately from their respective accounts to one of these banks. At other times, no credit card or debit card payments are accepted by customs for cargo or passenger payments, and no advance payments are allowed.

For trade facilitation, a key player for enabling e-payment is the banking sector, which must agree to participate in e-payment systems and enable transmission of e-receipts. In many small developing countries, banks often do not consider the capital investment in developing e-payment systems needed to connect to government agencies to be worthwhile. In areas where a limited number of banks use the system, it then restricts the number of SMEs and occasional importers who have adopted e-payment. The take-up by SMEs in general is also inhibited by their limited use of information technology in general and the unreliability of the networks available for data transmission. In addition, many traders do not have credit cards and are unable to pay in a noncash format online. Several payment systems include creation of accounts by banks that can be debited against an amount that can be replenished on a frequent basis so that payments can be made online. There is ample room for trade-related administrations and commercial

banks to continue to innovate solutions for payment of taxes, fees, and duties using electronic means. Innovation is particularly needed for the traders without bank accounts who require unique solutions (figure 9).

Figure 9: Emerging Payments Landscape



Source: PwC 2016.

Several electronic methods of payment for e-commerce–related cross-border trade have emerged (table 7). They can be classified into two broad categories: account-based payment mechanisms and electronic currency systems. Account-based systems are payment options linked to a personal account, such as credit cards, debit cards, online banking, electronic money, or e-wallets such as PayPal. Mobile payments fall under this category as well. Other emerging systems are the use of electronic currency systems such as smart cards, prepaid card payments, and online cash. Credit cards still dominate e-commerce, but the use of e-wallets is gaining ground.

Table 7: Value of E-Transactions by Payment Methods
percent

Region	Credit cards	E-Wallets	Direct debit	Cash on delivery	Bank transfer	Other (includes

						mobile payments)
United States and Canada	71	18	2	1	1	7
Europe	59	13	5	5	8	11
Latin America	47	10	4	8	13	18
Africa and Middle East	34	5	0	48	3	10
Asia and Oceana	37	23	1	11	14	14
World	57	17	2	5	7	12

Source: UNCTAD 2015.

In developing countries, cash is still the most prevalent form of payment. Cash on delivery is being used for e-commerce transactions, particularly in Africa, the Middle East, and India. However, producers view cash on delivery as a risk because of potential lack of payment on delivery and the lag time between product delivery and payment. Although still nascent, mobile payment is growing quickly in countries where Internet penetration is low owing to infrastructure problems. An important facilitation alternative for enabling e-commerce is to harmonize e-payment regulations at a regional level and facilitate mutual recognition of digital payment systems. A recommendation made by PayPal has been to create an APEC e-commerce steering group to set up principles for local regulators and provide oversight on regulatory issues around e-payment.

Electronic single window

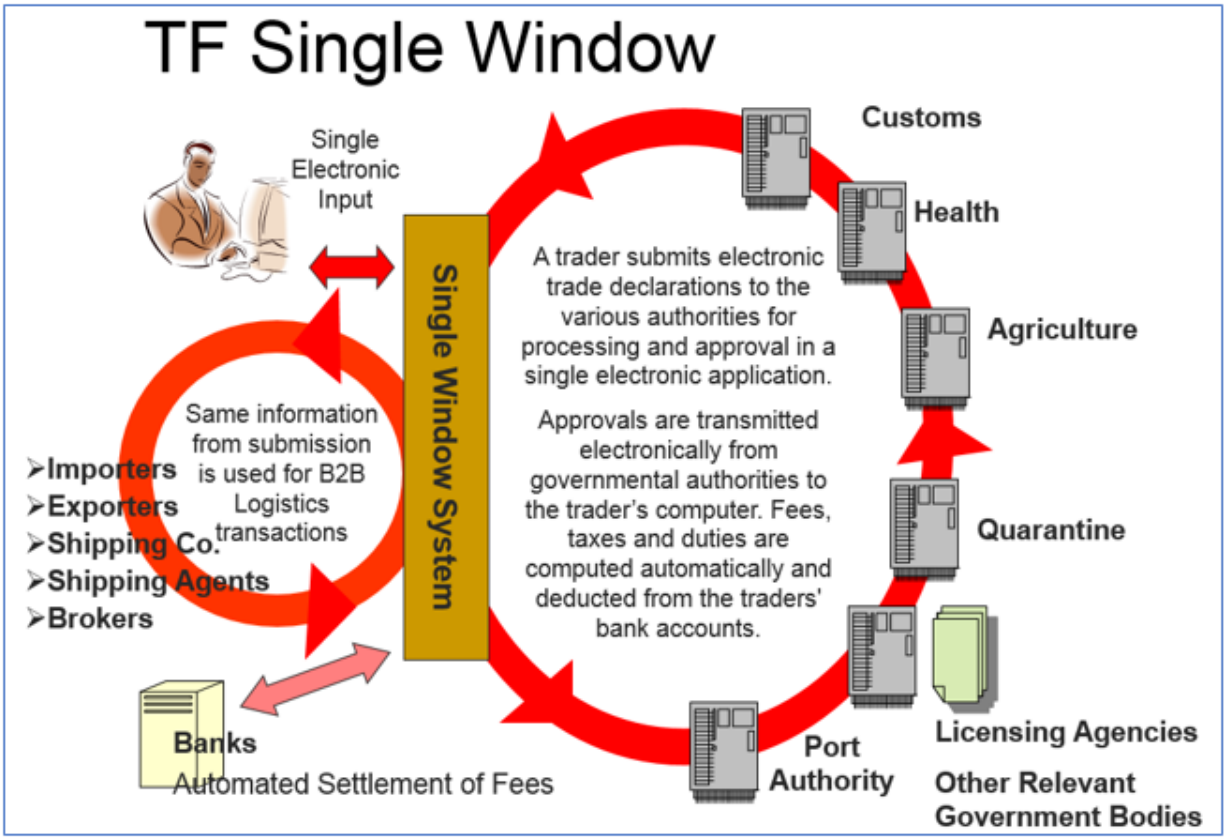
The term *single window* is used to refer to different business environments or facilities where multiple tasks leading to a single outcome may be carried out by different parties based on common information being supplied once. Countries have been eager to adopt electronic single windows for trade to digitize and automate all paper transactions that border-related agencies require for a trade transaction. The weak interconnectivity of regulatory agencies has been a driving force for this automation. Upon a vessel's arrival at port, it is subject to certain formalities that often involve a host of actors, including the coast guard, port authority, customs, immigration, ministry of agriculture, and ministry of health. These agencies require specific information pertaining to time of arrival, vessel, crew, and cargo onboard. Coordination issues often begin at this point and continue with transactions throughout the clearance process, through corridors, borders, and clearance points (Huria and Brenton 2015). E-commerce trade requires a seamless flow of information across actors who make sequenced decisions to ensure the smooth flow of cargo.

In the context of trade facilitation, the single window is usually applied to regulatory authorities (for example, customs, food and drug, quarantine, and ministry of trade) that are involved in the import and export clearance process and border control. This kind of single window helps traders' complete formalities and pay fees related to import or export procedures. For traders, the real benefit of a single window stems from reduction in the time and costs required to undertake bureaucratic procedures. In addition, the ability to pay duties and fees online creates significant

time savings and efficiency gains for traders. By reducing face-to-face interactions with government officials, the single window limits the informal or “extra official” payments traders need to make. The ability to track their paperwork and monitor steps to complete procedures greatly enhances predictability of processes and transparency. All these factors result in faster clearance and release times for cargo to reach its target destination.

All recent projects around the world aimed at implementing a national single window have predicated it on an electronic transactions environment, attempting to achieve both a single-submission process and a paperless environment. This approach is in the spirit of the Revised Kyoto Convention, which urges parties to make “maximum practicable use of information technology” (WCO 1999, appendix I to annex I). Also, Article 10.4.1 of the recent WTO TFA (entered into force February 22, 2017) places a strong obligation on member states to implement an electronic national single window: “Members shall endeavor to establish or maintain a single window, enabling traders to submit documentation and/or data requirements for importation, exportation or transit of goods through a single entry point to the participating authorities or agencies.” Article 10.3.4 notes the technology needed: “Members shall, to the extent possible and practical, use information technology to support the single window.” Recommendation 35, Establishing a Legal Framework for International Trade Single Window, by the United Nations Centre for Trade Facilitation and Electronic Business (UN CEFACT 2010), provides important guidance. It has been used by many countries working to develop their national single windows (figure 10).

Figure 10: The Concept of the Electronic Single Window

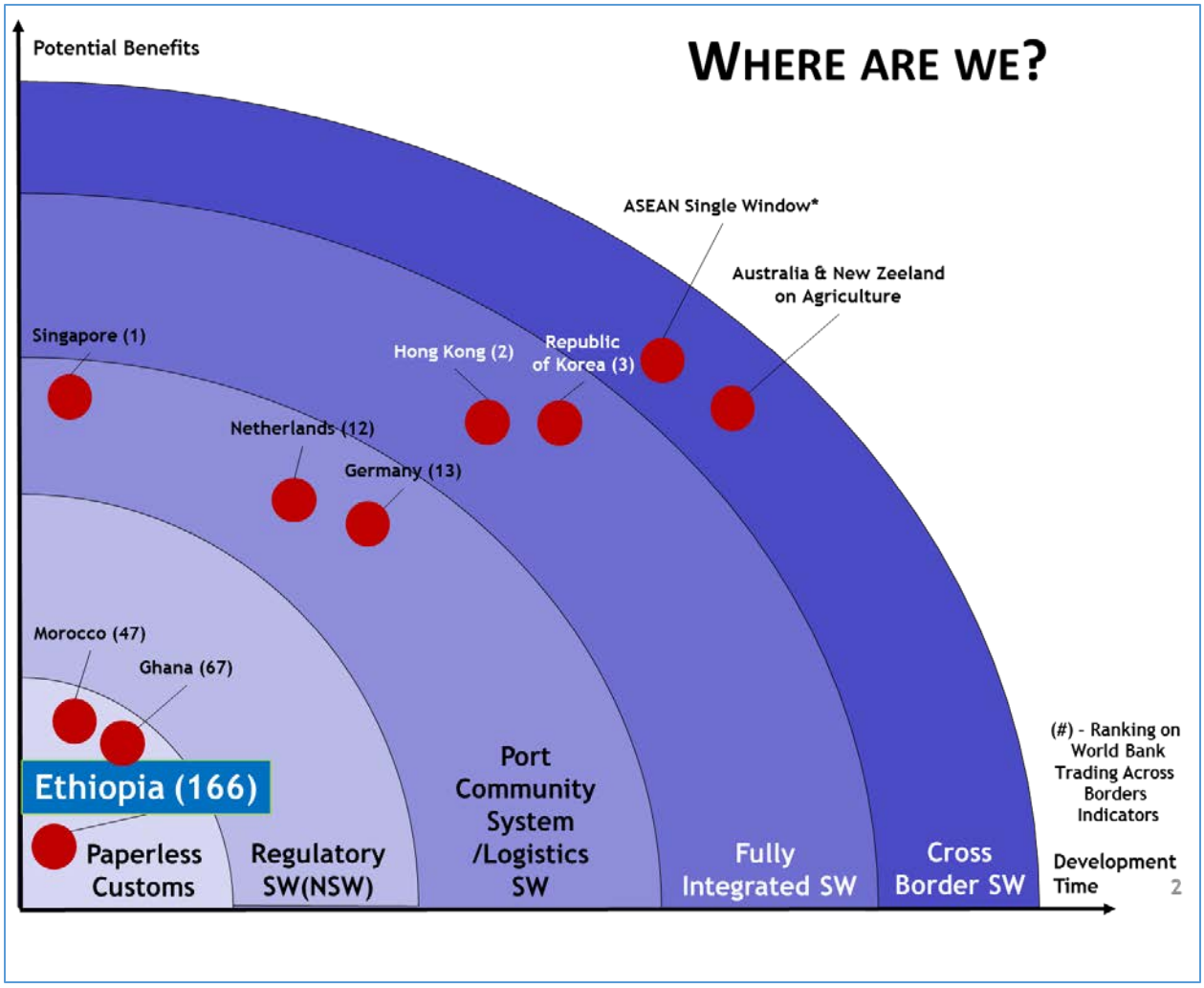


Source: World Bank Group.

Note: ASYCUDA = Automated System for Customs Data; B2B = business-to-business.

The single window system involves varying degrees of sophistication and complexity across the world (figure 11). In some countries, the single window is a portal allowing online application for licenses or permits with each agency. In other countries, it allows online submission and processing, but the only document that carries legal value is a printed paper document with a hand signature or stamp by the trader or the government agency. In still other countries, the single window is a combination of direct trader input for customs declarations and a connection to a logistics network possibly via a port authority. Similarly, what some developed countries call a single window is a database or data mining facilities for shared information that different agencies may use for different risk assessment purposes pertaining to the agencies' specific business (for example, customs, biosecurity, or police). However, this is also a single window for the benefit of the regulatory authorities.

Figure 11: Types of Electronic Single Windows



Source: World Bank Group.
Note: Numbers in parentheses are a country's ranking on the World Bank Trading Across Borders Indicators. ASEAN = Association of Southeast Asian Nations; NSW = national single window; SW = single window.

In a survey of 181 countries, 73 countries have implemented some form of electronic single window (World Bank 2010). Most of the single windows in the survey connect some, but not all agencies. Thus, manual processes and paperwork are still necessary for certain procedures. The single window of the Association of Southeast Asian Nations (ASEAN) is a regional effort that supports electronic transactions and data exchange among customs agencies in ASEAN through single windows of ASEAN member states. It is an initiative to enable regional cross-border trade in the ASEAN community. The ASEAN single window enables data exchange on the intra-ASEAN certificate of origin (ATIGA [ASEAN Trade in Goods Agreement] Form D) and the ASEAN Customs Declaration Document. Other transactions and data exchanges are currently being explored and could have the potential to greatly facilitate e-commerce in ASEAN countries. ASEAN's approach focuses on "your export is my import," while Europe is focused on making the cross-border movement of goods more efficient. (McLinden and others 2011).

The electronic single window offers tremendous cost reduction and efficiency gains for cross-border e-commerce traders by allowing traders to interface with government agencies and complete trade-related paperwork in one virtual space. Single windows reduce the cost of customs and other processes through a virtual environment, particularly for small traders that deal with large volumes of small parcels. Offsetting transaction costs is important for business survival. According to the OECD, "customs barriers can add up to 24 percent premium onto the price of goods sold" (GEA 2014). Through the single window, simplification, standardization, and harmonization of customs procedures allow SMEs to navigate bureaucracy and paperwork across borders easily, which has special implications for e-commerce.

The WTO's Trade Facilitation Agreement

No international agreement focused specific attention on expedited shipments until the WTO's Trade Facilitation Agreement (TFA). Until the entry into force of the WTO TFA, there was no binding agreement on the type of expedited treatment for e-commerce as opposed to general cargo, other than recommended practices like the WCO's Guidelines for the Immediate Release of Consignments by Customs (WCO 2014). The TFA contains specific provisions (Article 7.8 on expedited shipments) to allow for the expedited release of those goods entered through air cargo facilities, including reduced documentary requirements for clearance and implementation of a de minimis threshold or single information submission from traders or their agents (see the section on simplifying trade-related regulations and procedures in e-commerce earlier in this note). The rapid clearance of high-value and time-sensitive goods is also dependent on the ability of Customs to effectively process information submitted ahead of arrival (article 7.1 on submission of pre-arrival information), to determine its risk (article 7.4 on risk management) if further examinations are needed, and to separate the physical release of goods from clearance (article 7.3 separation of release from final determination of customs duties, taxes, and fees).

Although the TFA was agreed upon to speed up and facilitate the trade of goods generally, a number of specific articles have a positive effect on e-commerce. Apart from those above these are the following:

- *Information available through the Internet (Article 1.2).* SMEs share a disproportionate burden in accessing trade-related information, and trade portals can mitigate some of those challenges (see section on automation earlier in the note).
- *Opportunity to comment and consultation for the private sector (Article 2).* This would enable the private sector to be actively engaged in the development of sector policies and rules and regulations.
- *General disciplines on fees and charges (article 6.1).* Streamlined and transparent fee structures are crucial for an e-commerce environment.
- *E-payment (article 7.2).* Burdensome manual processes defeat the purpose of online trade (see section on electronic methods of payment earlier in the note).
- *Authorized operators (AO) (article 7.7).* Providing low-risk marketplaces and shippers with an authorized operator status can greatly benefit e-commerce.
- *Border agency coordination (Article 8).* This is a crucial building block for facilitating cross-border e-commerce trade.

- *Single window (Article 10.4).* The single window system is discussed in detail in the section earlier in this note.

Moreover, the special and differential treatment provided in the TFA enables developing countries to receive financial and technical assistance to meet its obligations—a first for an international agreement. In addition, the WCO's Guidelines for the Immediate Release of Consignments by Customs are very relevant to e-commerce trade given their emphasis on differentiating treatment for correspondence and documents; consignments below a duty, tax, or de minimis threshold; consignments below a formal declaration threshold; and consignments requiring formal entry.

The Role of Postal Services

Postal operators are faced with the dual challenge of competing against and working with logistics providers and parcel delivery companies. Although many postal operators remain government agencies, over the past three decades, several postal operators have been freed somewhat from government constraints; that is, they have been corporatized or privatized, which has helped them better compete with traditional parcel delivery companies. However, in many cases universal service obligations continue to influence the ability of postal operators to be as nimble, agile, and flexible as their private sector competitors. Nevertheless, universal service obligations also lead to a reach advantage. Postal operators have large physical infrastructure and, often, personnel assigned to remote locations. This structure means that often the only delivery provider for these remote areas is often the postal service, leading marketplaces and logistics providers to use them to deliver goods. An example is the Parcel Select program of the U.S. Postal Service (USPS) that FedEx and UPS, traditional competitors, use for delivery.

Postal services can also provide additional services such as advance data online (see box 2), automating systems, and integration with customs and border authorities. Advance data enable not only postal authorities to segment and better serve their customers, but also border agencies to manage risks. For cross-border commerce, data are provided in another country, requiring better coordination and cooperation among postal authorities and often agreements with the UPU or through other regional integration efforts.

Box 2: Postal Services and the Internet of Things

The Inspector General of the U.S. Postal Service commented on the possibility of additional services:

> Postal systems certainly have rich physical networks that can be used in any adaptation, connecting citizens to e-commerce. One potential area is the Internet of Things. The U.S. Postal Service has 211,000 vehicles; 230,000 carriers; 154 million delivery points; and 31,000 post offices. In theory, each component of physical infrastructure—whether a mailbox, a vehicle, a machine, or a letter carrier equipped with sensors—could connect to the Internet of Things. At a minimum, this digitally-enabled network could provide a much more detailed level of notification, alerting customers not only when a package has arrived but when a carrier is nearby, while at the same time providing important operational information such as when it is time for vehicle maintenance. This information-rich system could also provide a platform for automated commerce. Run out of diapers, sensors tell the postal system and it delivers more. This platform could also be useful to local governments, utilities, and smart city initiatives. As postal vehicles pass through each neighborhood, they could read meters automatically, test Wi-Fi and other signal strength, report congestion and road conditions, and measure air quality.

Source: Williams 2015, 4.

There are ongoing efforts in many countries and internationally to better integrate postal services with customs. The WCO has worked with the UPU to create electronic message protocols that allow post offices to exchange data in Customs Declarations CN 22 and 23, the customs declarations for international mail, using EDI. UPU has also created the electronic Customs Declaration System using the joint WCO–UPU customs–to–postal service EDI message. Such interchange of data between the postal service and customs can greatly reduce steps required for e-commerce goods arriving by postal service to clear customs procedures (WCO 2015b).

Postal operators around the world are likely to be key players in e-commerce provided they adapt sufficiently to service the market. Postal operators in most countries are trusted intermediaries with a legal standing and often are required to serve all citizens. They reach remote corners of countries, have experience picking up from the first mile and delivering to the last mile, and are well positioned to connect between senders and receivers both physically and electronically. Postal operators have survived many technological disruptions throughout history, though they have had the backing of governments. Historically, postal operators have obtained the bulk of

their revenues from letters. However, this line of business is now declining in most countries. In the United States, for instance, first class mail has been declining at 4 percent per year (Callan and Reisner 2015).

Postal operators will need to continue to adapt to new developments in logistics (see the section that follows), anticipate market changes and trends, and integrate with and adjust to new technologies to stay relevant as marketplaces and logistics providers fight to deliver packages to consumers. Postal operators need to be able to offer their services electronically and enable e-payment either in house or through tie ups with third-party providers. Many postal providers are choosing to compete directly with logistics providers and provide warehousing, inventory, fulfillment, and other services. However, all these changes will require changes to postal business models. Postal operators will need to be more agile, contain costs, be able to enter into service-level agreements with customers to guarantee quality and reliability, and have technologies that can integrate with vendors and customers. Several postal operators have adapted for the e-commerce age as they seek to modernize, to automate, and to provide value added services. An example is the case of European postal operators. Although some of their modernization has been in response to the market, much of it has also been due to EU directives and strategies to create a common market for postal services (see the section on regional integration later in this note).

In the EU, the process started with the First Postal Services Directive in 1997 that aimed to improve domestic and intra-EU postal services. It was followed by an amendment in 2002 that aimed to reduce the monopoly of national operators. A further amendment in 2008 introduced the legal basis for the accomplishment of the internal market for postal services. In general, the objectives of EU policy in the postal sector are to define a universal postal service as a right of access to postal services for users with a minimum range of services of specified quality to be provided in all EU countries at affordable prices (European Commission 2017a). These developments have led to consolidation among different government operators (formation of PostNord through a merger of Sweden's Posten and Denmark's Post Danmark in 2009) and among government and private operators (Deutsche Post's acquisition of DHL and its privatization).

Postal operator service levels and offerings have also improved. La Poste in France assists SMEs in building websites through Box e-commerce. Britain's Royal Mail offers discounted services to SMEs through the Simple Ways program. Sweden's PostNord has a parcel service, MyPack Collect, that allows SMEs to send parcels to consumers within the entire Nordic region and not just domestically. Germany's DHL is an integrated logistics provider and was also the first parcel delivery operator to launch a secure online shopping portal—MeinPaket.de, a one-stop shop combining shopping and trusted shipping services. The website provides European e-retailers a marketplace in Germany without the necessity of building a local presence (IPC and PostEurop 2012). Aside from European postal operators who offer these services, Australia Post offers the Farmhouse Direct platform that provides farmers and primary producers a website for selling goods and charges a 7.5 percent commission on sales. Goods ship through the postal service.

In some countries, regulations need to be clarified before postal operators can provide value added services. Legislative and regulatory frameworks have affected postal services'

development in relation to pricing, reach and public access, and frequency throughout a country's geography through the requirement to meet community service obligations. In many countries, postal services have been corporatized and even privatized. Operators that have been freed from constraints, despite retaining universal service obligations, tend to have responded better to market signals. In other countries, like the United States, this is not the case. Section 101 of the Postal Accountability and Enhancement Act (H. R. 6407, 109th Congress, 2d Sess., 2006) defines "postal services" as "the delivery of letters, printed matter, or mailable packages, including acceptance, collection, sorting, transportation, or other functions ancillary thereto." Asher, Callan, and Marsh (2011, 13) argue that "the term ancillary has not yet been fully defined through the regulatory filing process so that many … digital products and services may supplement or be a natural extension of current products and services. For other initiatives, new statutory authority may be necessary. Ongoing legislative debates provide the Postal Service with an opportunity to make its case to policymakers to seek the necessary changes."

However, parcel companies have expressed concerns about fair competition with incumbent postal service providers. With the drop-in letters and business mail and the continued need to meet community service obligation requirements in many cases, postal operators have expanded core offerings into the package delivery space to make up for revenue drops. The International Air Transport Association estimates that 72 percent of cross-border parcels are delivered by the postal service (FIATA). This has led to some friction with the private sector that claims that national postal operators have a competitive advantage over private express companies. National postal operators often do not need to pay state and local taxes, are exempt from many local regulations, and may be given preferential access to capital among the other benefits they may receive. Private express companies view the postal operator's role in e-commerce as disruptive to a well-functioning private market, a role that detracts from the core government mission and mandates and drains scarce resources. (FIATA).

In many developing countries, private express companies have not expressed such concerns. Postal development is often key for developing countries because alternatives to the postal services rarely exist and the key opportunity for e-commerce may lie in modernizing and automating national postal delivery systems. In India, Amazon uses India Post's network of over 150,000 post offices. More than 125,000 post offices are in rural areas servicing over 25,000 pin codes, thereby vastly expanding Amazon's delivery reach and reducing its need to create a separate distribution infrastructure, particularly for hard-to-reach areas (Sasi 2016). Makers of handicrafts and artisanal products located in rural areas are increasingly using India Post as the parcel company of choice (or necessity) to deliver to their customers found through the marketplaces. In August 2015, the Reserve Bank of India provided approval to 11 companies, including India Post, to set up payment banks. The India Post Payments Bank was launched in January 2017 and aims to serve every corner of India's geography and be a key part of the plan for improving connectivity for remote communities.

The ability of postal services to negotiate the handling of payments will be crucial in many developing countries. For instance, although India Post has vast experience in delivering cash through money orders, it has little experience in receiving payment for deliveries, a key facet of e-commerce in India and one that is intended to be addressed through the India Post Payments

Bank. As such, regardless of context and environment, the special role of postal operators and their strategic objectives suggest that dialogue and discussion with the private sector are needed to ensure that postal operators can serve a role that meets their objectives (and those of the community service obligations) and enables the private sector to develop and thrive. In most developing countries, postal operators are still government owned or managed. They need to involve the private sector—the key beneficiaries—in obtaining feedback and driving the reform process.

Under UPU regulations, postal agencies across the world coordinate shipments and members pay each other terminal dues, which are fees for carrying packages to their final destinations. These fees are based on a group's level of economic development. A USPS report estimated that China Post Airmail was charging US$2.67 to mail a 200-gram package to the United States while USPS charged US$5.02 to send the same package domestically (USPS OIC 2015). For SMEs in developing countries, using the postal service, if it is efficient domestically, to export to developed economies can often be competitive. However, parties in these developed economies feel that sellers often take advantage of low terminal dues for commercial shipping when these dues were originally negotiated for letters and noncommercial packages. Often, postal shipments have been exempted from rules applied to freight. Other practices offer advantages to postal companies: sometimes they have a higher de minimis threshold; are provided preferential treatment for inspection; or are delegated to collect duties and taxes on behalf of customs, as in South Africa.

Postal operators need to be able to collect and provide advance information to border agencies to improve compliance for risk management. Their competitors, the parcel delivery companies around the world, are technologically savvy firms that have sophisticated operations. Postal operators often use manual and paper-based procedures, particularly in developing countries. Even in developed economies, they are often not required to provide advance information. In the United States, no advance information is available for over 1 million packages imported through the postal service, which affects CBP's risk management (GEA 2016). For instance, test buys were conducted in 2016. Illicit packages were bought from online vendors in other countries, sent through the postal service of those countries, and delivered in the United States via USPS (Herman and Walters 2016). None of these consignments was scrutinized by CBP. Although companies are required to provide information to CBP, many shipments through the postal service do not come with the appropriate forms or advance information.

Mislabeling and under-invoicing are also common for these postal shipments, leading to a lower level of compliance than compared to that of private companies. In the United Kingdom, postal declarations CN 22 and 23 are manual and contain a limited data set not useful for risk management at customs. Given the lack of information, inspection decisions are not data and analysis based. In Canada, postal mail is sent to one of three processing centers where every piece is visually screened by the Canada Border Services Agency, a laborious process given that it reports that courier volumes have increased from 8 million shipments in 1993 to 40 million shipments in 2016, a 253 percent increase in postal volumes alone since 2011 (Canada Border Services Agency 2016). Currently, Canada Post is modernizing its procedures, including building the ability to collect advance information to supply to the Canada Border Services Agency for risk

management. National postal operators face numerous challenges such as the lack of streamlined customs processing; lack of customer service, particularly the failure to meet or inability to commit to service delivery levels; lack of optimized pricing, particularly for larger parcels; and lack of clarity on restricted goods. However, the integration of postal services with border authorities is still a challenge (as was discussed in the section on challenges that impede firms from engaging in e-commerce earlier in this note).

The Logistics of Last Mile Delivery and Remote Connectivity

Last Mile Delivery

Challenges in last mile delivery abound. Quite often, it is the most challenging and expensive leg and is estimated to be up to 50 percent of the delivery cost sometimes (DMCC 2016). Some characterize these last-mile distribution systems as networks: a collection of nodes (that is, distribution centers) and links (that is, roads) over which goods flow using specific vehicle technologies (Merchán and Blanco 2015). Over the years, and before the rise of e-commerce, these delivery networks in urban areas had been designed as part of the traditional approach to distribution management and the larger logistics networks. When changes occurred—new concepts in supply chain management such as just-in-time delivery were introduced, or changes occurred in market structure such as rapid urbanization and/or the growth of suburbs—these logistics networks were adjusted accordingly. These adjustments included technology optimization, infrastructure improvements, and modification to logistics and distribution operations. The networks lowered the cost of delivery and continued to have the most efficient, flexible, and resilient supply chain. This approach is still important today as demonstrated by recent research in China. Lau and Su (2016) noted that making certain improvements—such as more standardized packaging, better route planning, optimization across transportation modes, and tracking of returned products—can lower logistics costs by 30 percent, without significant investments in new technology or business models and government policy.

For discussion, in this note, we adopt a simple stylized network structure of last mile delivery with three key elements: the distribution center, the delivery vehicle, and the receiving point. With the rise of e-commerce, the models of these three elements are being revisited extensively by firms and will have some implications for government policies. These developments and challenges are discussed below.

The distribution center

To deliver goods, companies use various types of distribution centers. In the urban freight literature, the term *urban logistics spaces* encompasses all types of nodes in last mile distribution networks and includes (a) large distribution centers or warehouses generally located in the outskirts of the city; (b) platforms near city centers to enable freight transfer from trucks to light-freight vehicles, often referred to as *urban consolidation centers*; (c) urban freight-dedicated spaces at the neighborhood level, such as the micro-deconsolidation platforms; and (d) solutions

at the block and building levels, such as automatic parcel terminals (for example, the DHL Packstation in Germany) (Merchán and Blanco 2015). Table 8 summarizes the key characteristics of each type of urban logistics space, such as approximate surface area and range of coverage, along with the vehicle and operational technologies generally used (Merchán and Blanco 2015). Given the rise of e-commerce, policy makers need to determine which spaces need to prioritized, developed, and utilized.

Table 8: Urban Logistics Spaces

	Warehouse/DC	Urban Consolidation/ Transfer Center	Micro Consolidation/ Deconsolidation Platform	Loading/ Unloading Bay	Automated Pack Stations	Mailbox
Surface (ft^2)	10,000+	2,000 - 5,000	500 - 1,000	100	50	10
Location	Logistics Industrial Park	Outer City Core	Inner City Core	Street	Retail / Transit Node	Building/Home
Range	Citywide	District	Neighborhood	Block	Flexible / Flow Driven	Dwelling
Inbound Vehicle	Large Truck	Truck	Truck/Van	Truck/Van	Truck/Van/ Bike/Pedestrian	Truck/Van/ Bike/Pedestrian
Outbound Vehicle	Truck/Van	Van	Bike/Pedestrian	Pedestrian	-[2]	-[2]
Material Handling Technology	Fully Equipped	Racks, Forklifts, WMS, Handhelds	Carts, Handhelds	Carts	Lockers	None
Handling Level	Pallet	Pallet/Carton	Carton / Box	Box/Unit	Unit	Unit
Storage	Yes ≥24 hours	Yes ≤ 24 hours	No	No	Yes ≤ 48 hours	Yes ≤ 48 hours

Source: Merchán and Blanco 2015.

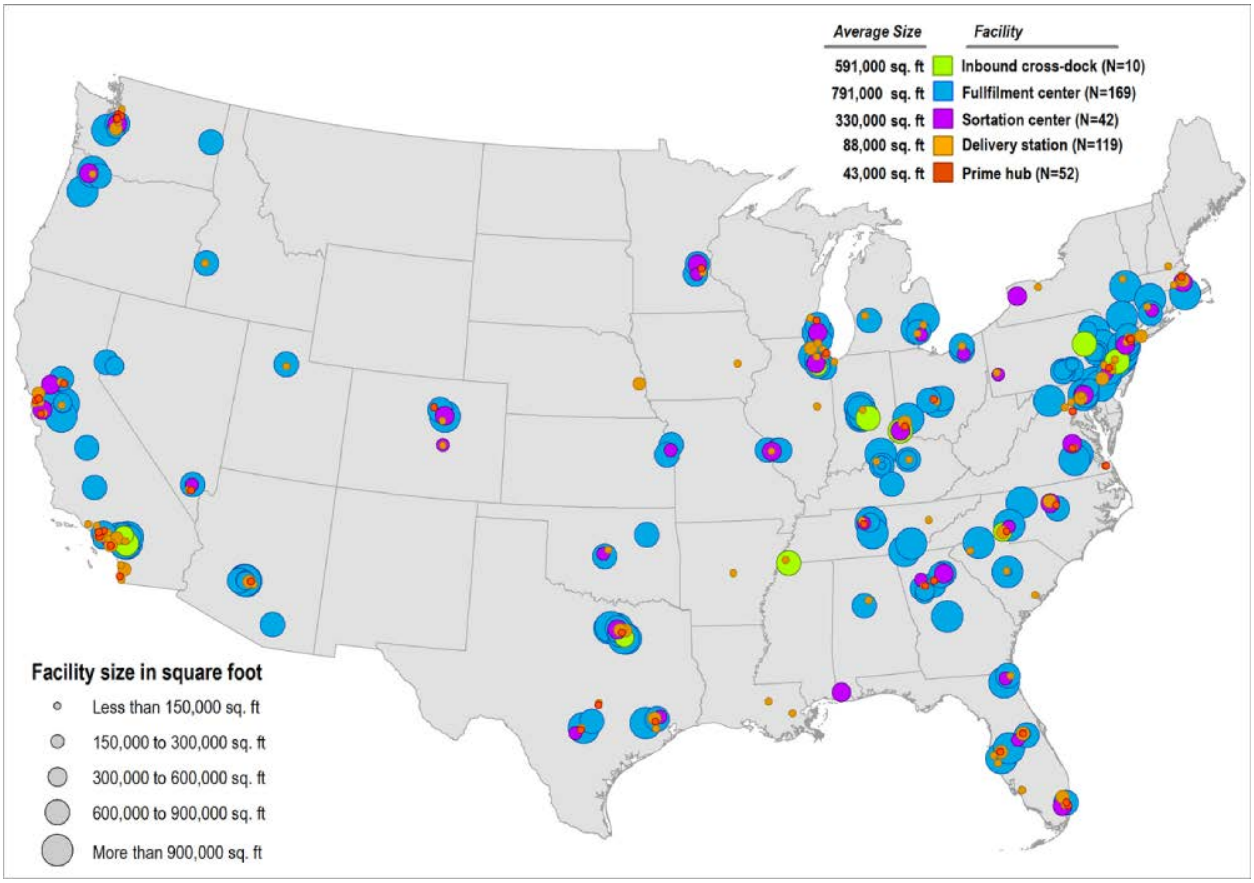
Note: DC = distribution center; WMS = warehouse management system. The use "-[2]" in the table indicates no outbound vehicle or the final delivery point.

E-commerce distribution centers demand more than three times the logistics space when compared to traditional distribution brick and mortar spaces. E-commerce vendors need to stock a wider variety of SKUs (stock keeping units) (product variety); have more buffer stock on hand (inventory levels); have more space for processing returned items (reverse logistics); and have more space for individual order picking, packing, and shipping directly to consumers (B2C shipping) (Prologis 2014). Online apparel purchases have one of the highest return rates at about 30 percent. To compete with physical stores and encourage trial and purchase, etailers offer free returns, and consumers readily buy multiple colors and sizes and send back the unwanted product (Rosenberg 2016). And unlike in long-distance transport, where often there is a market for return loads, the issue of empty returns is more prominent, more difficult to solve, and costlier for e-commerce firms.

Scarcity of land in urban environments affects policy makers' ability to add infrastructure and capacity for increased e-commerce shipments. The reality of today's urban environment is that

many cities lack the ability to add new infrastructure such as new lanes on existing roads or lanes dedicated to freight traffic for e-commerce. In the past, distribution centers or facilities that catered to last mile distribution typically served businesses or parcel companies. This trend is now changing globally. Over the past several years, in the United States, large warehouses have been built outside of major cities but still close to air and sea ports and highways or near parcel delivery hubs to cater to last mile delivery for consumers because of e-commerce. These facilities are much bigger than older warehouses, often measuring more than 1 million square feet (*The Economist* 2014). In some cities, like Chicago, surging demand has helped set off a speculative-building boom, and supply is unable to keep up with demand. There, in July 2016, 28 warehouse users were in the market for 18 million square feet of space, triple the available supply, and e-commerce alone comprised 20 percent of that demand. Space closer to population centers has become an especially demanded commodity as startups compete for space with shippers such as FedEx and traditional retailers like Macy's, which all need to compete with Amazon (Bloomberg 2016; figure 12). For any company offering fast delivery via Amazon, the demand for so-called in-fill properties—spaces designed in part to process individual packages rather than pallets of goods bound for stores—closer to population centers has also increased (Grant 2016). Prologis, which is the world's largest warehouse owner, is building the first multistory warehouse in the United States, a common practice in land-scarce Asia. In September 2016, private equity giant Blackstone paid US$1.5 billion for a portfolio of logistics centers across the United States because of the attractiveness of the sector (Grant 2016).

Figure 12: Amazon's Footprint in the United States



- **Inbound cross-dock centers**. The purpose of these large-sized distribution centers is to sort the inbound flows coming from vendors to regional e-fulfillment centers. Since many suppliers are abroad, a large quantity of cargo arrives in containers through ports. So, these facilities tend to be located close to major container port or intermodal rail facilities as import containers are brought in to be unloaded and their contents stored. The inventory is held until required by e-fulfillment centers, mostly in the form of consolidated loads of various items.
- **E-fulfillment centers**. Accounting for the most significant footprint, the purpose of e-fulfillment centers is to process and fill online orders. E-fulfillment centers are specialized by the type of items they handle, particularly in terms of size. Therefore, small sortable e-fulfillment centers handle items that can be combined into a small box or envelope of less than 18 inches. Large sortable are for items that can be combined into a large box of more than 18 inches and still be able to be handled by standard sortation equipment such as conveyor belts. Large non-sortable are individual items that are too bulky or heavy and that require to be handled separately (e.g. fork lift). There are also e-fulfillment centers specializing in apparel, footwear, jewelry, dry groceries and perishables. The location of the fulfillment centers is related to the distribution of the American population but not necessarily based upon optimal regional market accessibility. Reducing land rent costs and tax expenses, particularly sales taxes, is a core locational driver. The footprint of e-fulfillment centers has become stable at around 1,000,000 square foot per facility. So, as demand increases, Amazon does not expand the size of existing facilities, but build additional ones to expand market coverage and reduce lead time.
- **Sortation centers**. The purpose of these distribution centers is to sort parcels coming from e-fulfillment centers towards smaller destination units such as postal codes. They can either be brought to a local post office or to a delivery station. These facilities are used to allocate which distribution system (United States Postal Services, UPS, FedEx) parcels are going to be sent through for the last mile.
- **Delivery stations**. Facilities often designed for the last step before final delivery and are located within metropolitan areas. They sort parcels according to well defined delivery areas that are serviced by contracted delivery companies. These facilities are also being used for the delivery of fresh goods. A large number are rented distribution centers of small size or reconverted facilities. Amazon is simply seeking to find an available footprint having accessibility to a metropolitan area, or part of a metropolitan area.
- **Prime parcel hubs**. Specialized distribution centers carrying a limited line of items that can quickly be delivered, often in less than two days. Items held in inventory are selected on the basis on their high and relatively predictable demand. They are also known as Amazon Prime facilities and tend to be located in the largest metropolitan areas. Several are co-located with e-fulfillment centers so that they get quickly replenished but are operated independently.

Source: E-Commerce Facilities Operated by Amazon in the United States, late 2018. Source: MWPVL International.

In Europe, density and city structure suggest that firms and local governments prefer smaller urban logistics distribution centers. In some cases, these have even demonstrated success in reducing freight vehicle trips by 30 to 80 percent, distance traveled by 30 to 45 percent, vehicle emissions by 25 to 60 percent, and even vehicle load factors by 15 to 100 percent (Allen and Browne 2010, 291). Some of these models—urban transshipment centers—are developed by cities in partnership with private companies. For example, the Legazpi Transshipment Center in Madrid provides incentives to companies to create environmentally friendly local deliveries using electric vans and even tricycles with cargo baskets. Incentives include easing vehicle-size restrictions on some roads and providing tax breaks (Winkenbach and Merchán 2015). In Tampere, Finland, a small and somewhat ad hoc logistics center for combining municipal service deliveries has proved to be a great success, and the consolidation system has allowed city employees to spend more time on their primary missions (Monami and others, 253).

The implications for firms and policy makers in developing countries is clear: this is an opportunity to shape urban logistics spaces while considering the demands of e-commerce. Location decisions for domestic distribution are just being made as companies and operations begin targeting new markets or become more sophisticated. In India, for instance, an analysis shows that according to current productivity trends and growth estimates (2014–15), an estimated 7.5 million to 15 million square feet of additional fulfillment centers with an average size of 80,000 to 150,000 square feet each will be built in the next three to four years. This volume represents an additional 6 to 12 percent of organized warehousing space in India in the same period (PwC and Assocham India 2014). Where should they be located? How should they be integrated with urban planning? These are some of the pressing questions for policy makers in India and elsewhere. Policy makers influence land use, zoning, urban planning, environmental regulations and such and this influences how companies and markets respond in terms of investments, and business models. These concerns affect urban centers in small developing countries as much as they do large cities in the OECD or the emerging markets.

Some of the challenges in smaller countries are augmented by the need for coordination among border clearance and other government services because the major cities are serviced by single facilities that also serve as customs clearance points. For instance, in Lesotho, a major supermarket highlighted how the lack of around-the-clock operations at the clearance facility cum inland terminal affects its ability to stock shelves with fresh produce before opening time. The lack of this service also has implications for urban congestion during morning rush hour when freight trucks enter the city to deliver their goods while morning commuters begin their journeys. These current practices, which already inhibit retail sales, are unlikely to encourage e-commerce companies if a demand for such services existed.

Eventually, different models of distribution will evolve and develop based on the type of economy, structure of cities, density, and level of development. In developing countries with dense urban congestion, product categories also may play a role in the type of distribution center. For example, books may be distributed through larger central warehouses while consumer electronics and durables, which have lesser proliferation of stock keeping units, higher product

value, and higher security and handling needs, may need a just-in-time and direct fulfillment model to be put in place (PwC and Assocham India 2014). In contrast, grocery delivery would require another type of handling with a cool chain that would need to function despite the lack of adequate power supply in many of these environments.

Governments in developing countries are increasingly realizing the importance of logistics spaces in urban environments and are crafting policies to influence outcomes. China's local governments, which control land use, were once reluctant to authorize new warehouses because they generated little tax revenue. Today, they have begun giving planning permission as they see the new jobs being created (*The Economist* 2015). Similarly, the Indian government's recent sales-tax reform has begun consolidation of national distribution networks for most firms and could produce a new wave of construction (*The Economist* 2016). In other countries, in Ethiopia, Rwanda, and Zambia, for instance, domestic distribution is still largely conducted from inland container depots, warehouses, and logistics platforms and parks that often serve as customs bonded warehouses. The small market size in these countries and the focus on consolidation and deconsolidation for export and import often drive these facility investment decisions.

The delivery vehicle

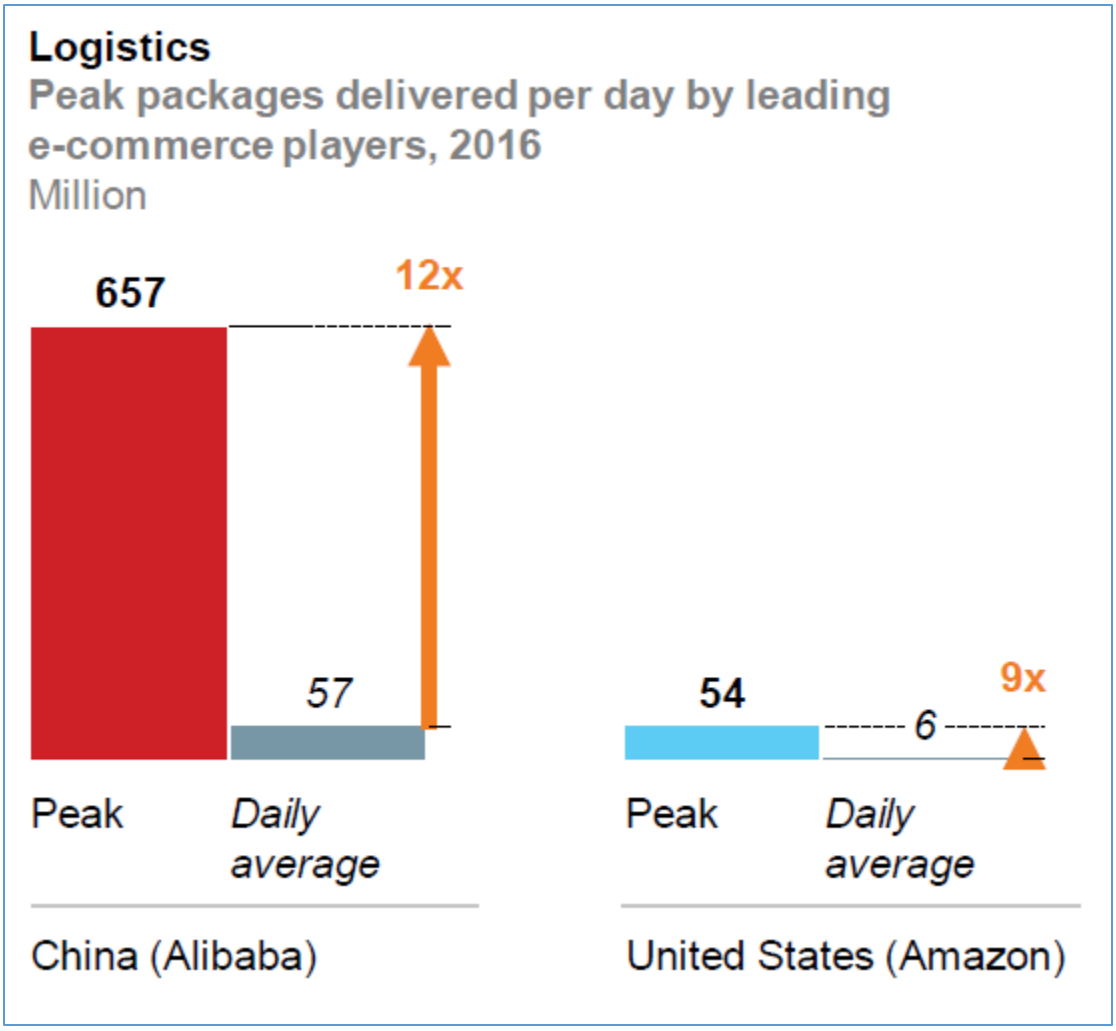
E-commerce companies need robust supply chains and flexible and efficient logistics networks as they compete in their ability to stock, store, ship, and deliver more items than physical stores with minimal friction for consumers. However, as discussed earlier, the previous focus of this freight traffic was on large distribution centers outside of cities for delivering goods to business districts and commercial centers. Today, the need to deliver packages to residential customers is driving businesses and cities to review the old supply chain and logistics configurations, as well as the delivery vehicle. Moreover, this downstream package delivery business is increasingly time sensitive, with consumers demanding quick delivery times. Combined with just-in-time delivery of upstream manufacturing, the logistics system is expected to rely on the ability of trucks (and other competing types of delivery vehicles) to maintain a consistent schedule. To deliver e-commerce products to residential consumers, parcel delivery companies and logistics operators face multiple challenges: smaller shipments, fragmented goods flow, multiple destinations, higher frequency, and consignee delivery issues (such as special delivery time requests, a wait in line to make deliveries/collections, or difficulty in finding the receiver [Allen and Browne 2010, 286; Monami and others 245–46]**.**They also face a lack of coordination among urban freight actors.

Generally, most logistics companies find the last mile to be the most difficult and expensive leg of a package's journey and a key problem for distribution. As mentioned earlier, in developed economies this can often account for up to 50 percent% of the delivery cost (DMCC 2016). Perhaps, because of this, Amazon and other firms focus on using and exploring all possible options to reconfigure last mile delivery. These options range from adopting drone technologies to reconfiguring receiving points (see discussion on receiving point) to eagerly awaiting the revolution in autonomous vehicles, which will have implications for small urban deliveries with the growth of e-commerce. Some of these options are discussed in more detail later in this section.

Urban freight traffic is growing, and in most countries, this has implications for trucks on roads. The share of freight traffic in cities may depend on several factors such as the type, size, and location of city and the time of day, though the average is typically low. A study in Rome conducted before the rise of e-commerce estimated this share at 12 percent (Nuzzolo and Comi 2012), even though up to 80 percent of the freight for a local destination is carried by a truck (Reisman 2011). In the United States, nationally, in 2010, trucking was the largest freight mode by weight (68 percent) and value (65 percent), and the trucked value of goods is expected to more than double by 2040 (Eisele and others 2013). Lack of coordination among urban freight actors in part contributes to declining load factors‖ (that is, more empty trucks on the road), which was observed in a Tokyo freight traffic study and is regarded as a typical problem. Likewise, circulation traffic—meaning round trips, distribution, or pick-up trips—accounts for much of the urban freight movement (Reisman 2011). A study in Germany found that 60 to 65 percent of all freight trips (in this case, about 290,000 of 460,000 daily trips) was due to circulating traffic, which carried only 28 percent of the goods being exchanged (Giuliano xxxx, 72–73). In developing countries, cities are often located near ports, major centers, or borders, and thus, highways often go through cities (such as Nairobi and Mombasa in Kenya and Maseru in Lesotho) and significantly affect logistics, time, and cost, as well as local congestion.

"Home delivery routes of e-commerce shipments typically consist of 50 to 150 stops per day, depending on the type of vehicle," [Matthias Winkenbach, Center for Transportation and Logistics]. With the rapid growth in e-commerce, even more pressure will be exerted on delivery companies to find environmentally friendly solutions as governments respond to the challenges of increased density, pollution, and congestion. In areas where trucks are used, their efficiency and flexibility come with costs as they operate on public infrastructure, compete for space with other road users, move throughout the entire urban area, and generate more pollution and safety concerns than competing modes. Trucks are both the freight transportation mode of greatest concern to most cities and the mode that local governments can most effectively control (Holloway, Spahr, and Rhodes-Conway 2014). Policy makers are often concerned with emissions in urban areas because the health risks reduce as air disperses and the concentration levels are far higher in urban areas than in the countryside. As such, policy makers designate truck routes to reduce negative effects of pollution, noise, and vibration. Moreover, peak delivery traffic around holidays can only add to these woes (see Figure 13 below)

Figure 13: Peak Delivery



Source: China's Global Economy, McKinsey Global Institute

Route planning and optimization lie at the core of effective last mile delivery. For firms, this means getting more deliveries on fewer vehicles that drive fewer miles (SupplyChainBrain 2016). They help drive satisfaction levels up and total cost to service the customer down. Moreover, for last mile delivery, routes can be extremely dynamic, changing day to day (sometimes within the day) as compared with typical service routes that vary little from one week to the next (SupplyChainBrain 2016). With the growth in e-commerce and the increase in parcel delivery to residential neighborhoods, firms optimize freight routes not only need to keep costs low but need to deal with the rules and regulations set by policy makers, which often can throw well-designed logistics distribution systems out of gear. A parking ban in Rio de Janeiro led the local Coca-Cola Company bottler to change its final delivery mode to motorcycle. The large delivery trucks are now parked at designated sites where they transfer product to the motorcycles (Winkenbach and Merchán 2015). These mobile warehouses provide flexibility (peak demand and congestion), speed and transfer capabilities in distribution, and compliance with parking regulations and reduction in emissions (Merchán and Blanco 2015). Others note, that this can also have perverse implications where companies don't think through their distribution models carefully i.e. the

restrictions can lead to an increase in the number of vehicles because companies split the load into smaller vehicles. In San Francisco, Amazon uses hundreds of Amazon-branded white trucks that are dispatched from a large warehouse near the airport to service customers seven days a week (Bensinger and Stevens 2016). Firms often use the option of flexibility at the receiving point (discussed in the next section), which includes off-peak delivery (though often requiring regulatory change), unattended delivery, drop boxes, and designated collection sites.

An additional challenge hampering delivery vehicles is the lack of visibility in the last mile. Traditionally, there was little inventory tracking once products were loaded on the final delivery vehicle, that is, the last mile was invisible. Recently, companies have leveraged technology to extend this visibility to the final destination. However, this visibility is frequently available to only the logistics delivery companies, which are often contracted third parties. Amazon, perhaps recognizing this early, has rolled out various initiatives in this space that seem to suggest a straddling of the logistics provider's space. It has purchased thousands of truck trailers, applied for an ocean freight forwarding license, registered with the Securities and Exchange Commission as a transportation company, and set up its own last mile delivery service in select cities (Ray 2016). Some analysts have speculated that this investment (in last mile delivery) could be available as a third-party delivery service for other companies, improving the viability of those very investments and expanding the scope for making more of them as they become economically feasible. However, other e-commerce firms who may not make similar decisions as Amazon will still need visibility to optimize operations and find innovative solutions. Although last mile deliveries for e-commerce in congested Asian cities have foregone the use of trucks[33] and the consequent problem of underused assets with large upfront investments, visibility is further hampered by payment and security problems and lack of postal addresses (discussed in the next section).

The last leg of the freight system is challenging for both the city, whose concerns include optimizing capacity and safety of streets for all users, and the shippers, who wish to minimize logistics costs (and obtain visibility) without adversely affecting customer service (SDOT 2008). Thus, policy makers should not always focus on large projects such as setting up urban distribution centers. Instead, they should concentrate on location decisions on spacing of warehousing districts and pay attention to the way transportation is likely to be used to distribute goods. These aspects are essential to creating not only successful urban communities but also lower cost, environmentally friendly logistics operations that are likely to be needed with the growth of e-commerce.

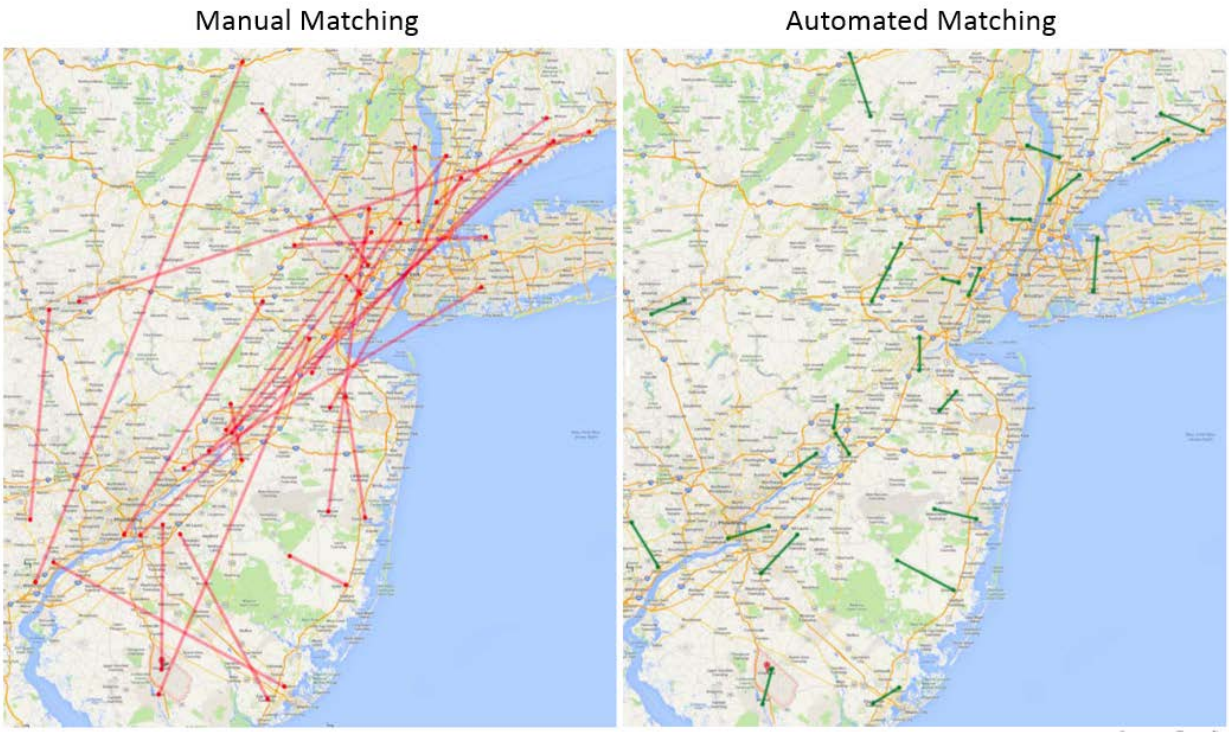
Growth in trade and commerce often makes the freight system inefficient and disruptive. In developing countries, firms and policy makers will need to think of innovative solutions that work for their environments and learn from good practice. Globally, cities have tackled these challenges through a multiplicity of solutions that include adding infrastructure capacity (new roads and rail lines, new lanes on existing roads, lanes dedicated to trucks, and additional lanes and docking facilities at warehouses and distribution centers [Eisele and others 2013]), regulatory

[33] With exceptions, where small commercial vehicles are used for larger electronics, furniture, and other bulky items, two wheelers are typically used to deliver packages and maneuver around narrow roads and alleys.

changes both domestic (access and restrictions related) and cross-border (customs and other border control), and firm-level practices (operating practices or changes in the operating hours of freight facilities, delivery schedules, or manufacturing plants [Eisele and others 2013]). These changes then influence firms and logistics networks.

Companies are continuing to innovate with less or more technology to deal with road space and urban infrastructure and policy constraints. A Boston-area company, Metro Pedal Power, uses pedal trucks (bicycles with trailers attached) to haul up to 500 pounds of localized freight. Metro Pedal Power's eco-friendly solutions for last mile delivery in urban areas fill a not-insignificant niche in the urban freight world, primarily moving small loads from a local origin to a local destination. Businesses and organizations such as bakeries, retail shops, and nonprofits use these human-powered logistics services in place of fossil-fueled services for local hauling, including recycling and compost pick-up (Reisman 2011). E-commerce companies have tried using Uber, newspaper carriers, and citizen couriers for deliveries. These solutions are certainly not new for developing countries, where smaller, more localized delivery vehicles like two wheelers (motorcycles and scooters), three wheelers, and cycle rickshaw carts have been used for decades, much before the advent of e-commerce. Some of these options are obviously slower, limited to small loads, and often labor intensive. Other solutions being employed use a heavy dose of technology to innovatively adapt current delivery modes. An example is the urban logistics location movement matching demand to supply. These new matching models, like Uber for passengers, from companies such as Transfix can help reduce many of the challenges faced by both firms (cost reduction) and policy makers (congestion and pollution). In the hypothetical example from Transfix in figure 14, an automated matching solution would cut delivery from 1,752 miles to 254 miles, benefiting firms, policy makers, and communities (Jaffe 2015). In China, the merger of Huochebang with Yunmanman creates a company with the scale to rationalize an inefficient and often chaotic industry in the country by providing a large, computerized dispatching agency for transformative national transportation (Bloomberg, 2017).

Figure 14: Automated Matching



Source: Jaffe 2015.

New developments like autonomous vehicles highlight how policy makers continue to be challenged when faced with exponentially advancing technologies. Automated delivery tests have also proliferated over the past couple of years. For example, six convoys of platoons without drivers, in groups of two or three trucks—communicating wirelessly and driving closely behind one another—arrived by public road in Rotterdam in April 2016 (Lehmacher 2016). Although autonomous trucking will probably be ready for service before policy and infrastructure catch up, its use on city streets is likely to take quite some time.

The array and complexity of regulatory questions for policy makers range from commercial laws to trucking regulations and from traffic laws to liability laws. Issues of enforcement and physical and cyber safety will also require robust debates. Infrastructure concerns would include redesigning highways, that is, whether dedicated highways or dedicated lanes or other infrastructure elements would be conducive for safer roads. In Singapore, which has plans to become the leading development center for autonomous vehicles (see box 3), plans are underway to develop an autonomous truck platooning system closely following on the heels of the autonomous taxi testing conducted recently. Delivery solutions that include ground robots, drones, and river shuttles are being tested around the world to tackle the very complex task of last mile delivery as supply chains become more fluid and continuous. This note does not seek to discuss these developments in detail but only to highlight that these technologies offer both opportunities and challenges for policy makers and companies alike to rethink last mile logistics and that stakeholders would be needed across the wide spectrum to cooperate and collaborate with one another. Innovation in this space, like elsewhere, is often not slow, linear, or

incremental as technologies advance in an exponential way and governments are often unable to keep up (Overly 2016).

Box 3: Singapore's Autonomous Vehicle Innovation Drive

"The appropriate first-mover unit of innovation is not the car, or even the car company," writes innovation consultant Chunka Mui (2016) in Strategy+Business. "It is the nation." Singapore's government has invited developers of self-driving cars to relocate to the island nation to avoid what he called "the tangled web of competition, policy fights, regulatory hurdles and entrenched interests governing the pace of driverless-car development and deployment in the U.S." (Crovitz 2016).

The receiving point

Today's consumers in the e-commerce world may demand immediate delivery but are not always available to receive their packages. This is of great concern to delivery companies and e-commerce firms because (a) multiple visits to homes and offices have costs; (b) unattended delivery is not always possible, particularly with consumers increasingly purchasing high-value items; and (c) in many developing countries, finding the correct address and appropriate recipient can be a challenge. Although firms are often rolling out innovative solutions in OECD countries (Deutsche Post DHL's automated Packstations in Germany[34]) or partnering with postal services for weekend delivery, firms in developing countries face a different set of challenges. These include mapping addresses and coordinates, confirming delivery, collecting payment and returns, and, in general, organizing the logistics around a set of supply chain issues for which they have little visibility. Some of these challenges are discussed below.

An UNCTAD (2015) study notes that almost 60 countries lack a postcode system. One of the biggest challenges in developing countries is the issue of addresses. In numerous mega cities with dense urban neighborhoods, delivery persons often call the recipient numerous times while wandering narrow alleys and lanes to reconfirm directions. Where governments fail, markets and technology are stepping in and firms are innovating to address these constraints. In India, the startup Delhivery is using machine learning to subdivide India's postcodes to map idiosyncratic descriptions (*The Economist* 2016). In Kenya, OkHi seeks to assign physical addresses to people who do not have one (UNCTAD 2015). In June 2016, Aramex International announced a US$3 million investment in what3words, which assigns a unique series of three words to every 10-foot by 10-foot square of the Earth's surface. Aramex said it plans to use what3words for e-commerce deliveries in the Middle East, Africa, and Asia (Phillips 2016b). Although some of these firms are

[34] In Germany, Deutsche Post DHL operates automated Packstations, which are networks of lockers located for convenient parcel pickup by individuals that offer an alternative to home delivery. They are a variation of the mail dropbox with better use of technology (http://www.wsj.com/articles/guest-voices-delivery-companies-are-redefining-the-last-mile-in-crowded-cities-).

independent of the postal services, others like Aramex have joined up with delivery and postal services in Brazil and Mongolia to reach neighborhoods and regions without address systems.

Even where delivery points have been located, some packages still require signatures and often inspection, and payment needs to be collected from the buyer. In developing countries, proof of delivery is often based on having a signature. Sometimes, even a signature may not be enough, and being able to attribute a time and place, such as using a time and latitude–longitude stamp, offers greater security and proof that a package was delivered (Cohen 2015b). However, even with the identification of the delivery point, the issue of payment has vexed e-commerce companies across the developing world. In India, cash is still popular despite an increase in credit card transactions in recent years. Moreover, e-commerce buyers prefer to inspect the product upon delivery before paying for it with cash. Although different e-commerce companies in the country offer other options—credit card terminals at time of delivery, use of mobile money, and an option to pick up at the local kirana (corner) store—cash transactions still dominate. Thus, delivery persons may often carry large amounts of cash—a risky proposition. Though courier companies have begun upgrading their services in the country to offer a menu of options, often they lack the ability to handle cash on delivery and returns and address other consumer complaints. This has led some etailers to create their own delivery networks similar to Amazon's investments in logistics networks in the United States or to use the postal services as Amazon has done in India.

Consumers in developed economies demand a system whereby they expect to receive whatever they want when they want it. During the busy holiday, this is a challenge. With e-commerce volumes expected to increase, urban planners will need to determine how to manage scarce road and pavement space as a steady increase in trucks occupies space for unloading. Policy makers do not use technology and data to allocate parking, curb space, package delivery times, restrictions on space use, and so on, unlike consumers who can order consumables in a variety of sizes and colors at the click of a button. The complexity of returns and failed deliveries only adds to the challenge.

These current conditions in last mile logistics and the continued growth of e-commerce combined suggest that without changes, the last mile delivery systems will become chokepoints for the growth of e-commerce. Perhaps foreseeing this possibility, companies are testing alternate systems (Amazon with its drone deliveries, Sunday deliveries with the postal service, and so on, and Google and others with their autonomous vehicles), reconfiguring how consignees receive packages, and helping address issues related to last mile delivery. However, these problems also require policy solutions that could help reduce the effect of these problems (discussed in another section).

Remote Connectivity

Digital technologies have spread quickly as the number of Internet users has more than tripled in a decade to an estimated 3.2 billion at the end of 2015. There are compelling examples of how ICTs have benefited firms, people, and governments by significantly reducing the costs of economic and social transactions and yielding real benefits. These technologies can expand the information base, allowing online traders in remote areas to connect to global markets. They also

lower the information cost, because firms can access government services that are being provided at a lower cost and with greater efficiency (World Bank 2016).

Nonetheless, though there are many success stories, the aggregate effect of digital technologies so far has been smaller than expected. The digital divide is still large; nearly 60 percent of the world's people are still offline and cannot fully participate in the digital economy (World Bank 2016). Residents in rural communities continue to face numerous challenges in enjoying the benefits of e-commerce. Often connectivity to the Internet for e-commerce itself is a challenge. Rather than discuss how best to reach these businesses and consumers, this section focuses on those who are connected and covered and the barriers they face in relation to trade logistics and facilitation. The postal operator, a key stakeholder to potentially enable that connectivity, was discussed in an earlier section.

Logistics and distribution infrastructure in remote areas is often unavailable because e-commerce retailers and third-party logistics providers cannot justify investments based on the volumes available to make them sustainable. In many countries, the models employed by e-commerce retailers have focused on being asset light, affecting investment in the sector. Some others, such as Alibaba, realized that China's woefully inefficient logistics network acted as a brake on e-commerce growth and organized Cainiao, a consortium that runs a digital platform linking more than a dozen logistics providers, 1,800 distribution centers, and more than 100,000 dispatch points (The Economist 2015). The implications for rural connectivity—the enabling conditions that include the hard assets, whether these are the roads, ICT, or telecom connectivity—often need to be fixed by someone else. This also applies to distribution and logistics infrastructure. Where these assets exist, they can perhaps be reconfigured or be converted for mixed use, but otherwise, they often need substantial primary investments.

In some countries, e-commerce operators eventually make hard investments because no alternative options exist. JD.com, an Alibaba competitor in China, has spent sizeable sums developing warehouses and logistics networks and taken an asset-heavy approach to e-commerce akin to Amazon's method in the United States. JD.com, Tencent, and Baidu have invested in online-to-offline deals following this model (*The Economist* 2015). Alibaba is now building service centers in remote areas where shoppers can order, pick up, and sell goods, as well as pay their bills. This is a step further in its attempts not merely to benefit from the growth in Chinese consumption, but to shape and accelerate that consumption. The degree to which it has succeeded suggests that the earlier an e-commerce company arrives in a country's development, the wider might be its role (*The Economist* 2016). JD.com meanwhile plans to increase services to rural areas by building 185 drone airports in southwest China by 2020 (Reuters, 2018) and considering buying its own planes (SCMP, 2018).

The effect of sector regulations in logistics and retail on these decisions is sometimes striking. In India, regulations do not allow foreign-backed e-commerce firms to own inventory[35], thus affecting their ability to fulfill orders. As such, the big companies are all first and foremost

[35] E-Commerce companies will not be permitted to have more than 25 percent of their sales come from one vendor, even if that vendor is the company itself, thus affecting the business model.

marketplaces. Not owning inventory has implications for investment in distribution systems in remote areas and therefore rural penetration. Cost control also becomes an issue in a country where supply chain inefficiencies are still high. Although the possibility that this would prevent India's e-commerce companies from creating service centers akin to Alibaba in China is unclear, it certainly makes servicing rural consumers a less attractive proposition. The implications for e-commerce are that although the market may drive development in this sector, if countries are to benefit, then governments have a role in ensuring that sector policies are modern, transparent, and simplified. Logistics sector investment and innovation is often stymied by poor regulation in other countries, too. For example, in Ethiopia, foreign logistics providers are not welcome, but private sector operators cannot effectively participate in e-commerce, even if they wanted to, because of a combination of crucial factors—inability to raise capital, inability to access land, confusion over customs bonded regulations; and inability to set up private customs bonded warehouses.

The different types of marketplaces and e-commerce business models may also affect the ability of rural consumers and producers to participate. In India, for instance, B2C marketplaces (such as Flipkart) allow only registered firms to participate, though this is not often required for C2C firms in the e-commerce world (such as eBay). For rural artisans in remote communities, participation may be hampered because they need first to register through a government process—fulfill an enabling condition—before even getting to the point where they need to organize logistics for delivery. However, participation in a C2C marketplace often means that order fulfillment (holding inventory, packing and shipping, managing customer relationships, and handling returns and exchanges) needs to be done in house, which is often difficult for rural SMEs. In contrast, the challenges facing remote consumers extend beyond receiving goods to paying for them. They are more likely to use cash to pay for goods, which means delivery companies need to develop mechanisms for managing cash in these remote areas. SMEs in rural outposts may face further challenges where third-party private providers do not offer such services.

The kinds of goods produced by rural artisans and SMEs in remote markets also influence their ability to sell online because logistics costs matter even more. If they sell food products that are perishable but fill a niche market (that is, rare or unusual or a geographic specialty or other less perishable goods), their chance of success is more likely. However, distance and low volumes affect costs, and commoditized products will not be competitive. Only the very entrepreneurial producer will connect using a digital platform, while most others will sell locally or to consolidators.

Government's role in enabling e-commerce connectivity for remote communities needs to be determined through careful analysis and consideration. In Thailand, the government established over 1,800 telecenters that provided computers and free Internet access to local communities. Websites were also set up to market products and services. However, usage rates were very low, and the initiative was largely considered a failure. Nevertheless, some rural communities have successfully navigated e-commerce markets. In Suichang, a community of 50,000 people in a mountainous and forested area in Zhejiang Province, China, residents sold bamboo products online and each household earned over 120,000 renminbi. The local government contributed by

building road infrastructure and ICT connectivity (UNCTAD 2015). More generally, local governments in China have often provided tax incentives and preferential loans for construction of logistics infrastructure (for example, warehouses) rather than directly building the second-order infrastructure themselves. These differing examples highlight how the role of the government needs to be carefully crafted and perhaps be one that is more enabling and focused on access provision rather than on activities that are best left to the private sector.

The infrastructure and service provision for rural consumers and producers is developing differently across markets. In certain economies, private providers are enabling the connectivity with or without government help. In others, governments are attempting to bridge the gaps themselves, and in still others, there is no government response. Without regional integration, in many smaller developing countries, the lack of population density, the market size, and the geography will continue to hinder access for consumers and businesses to participate in the e-commerce marketplaces.

Reducing Costs through Regional Integration

For many small markets, the challenges of cross-border commerce and the opportunities it provides can be harnessed through stronger regional integration. The benefits of regional integration are well known, and this note only highlights how those benefits that lead to reduction in costs for traders and consumers are particularly critical for the e-commerce sector. Typically, foreign firms invest, produce, and sell in countries according to a host of calculations, one of which includes market size. Regional integration enables firms, foreign or domestic, to sell to a larger common market and often leads to lower prices and more choice for consumers. For SMEs, as discussed earlier in this note, e-commerce opens markets that otherwise would be difficult to reach. For developing country SMEs, navigating neighboring markets because of better regional integration would greatly enhance their reach and potential.

Regional Integration efforts focused on e-commerce are underway in some regional economic communities (RECs), though most are still at a nascent stage. In 2013, the EU developed a roadmap for (a) completing the single market for parcel delivery with the objectives of increasing transparency and information (by calling for web comparison tools and collection of market data on domestic and cross-border parcel flows and encouraging voluntary codes of conduct or codes of good practice); (b) improving the availability, quality, and affordability of delivery solutions (by developing solutions to better interconnect information systems to allow data exchange, facilitate tracking and tracing and labeling, and provide for effective returns); and (c) enhancing complaint handling and redress mechanisms for consumers (European Commission 2013). Other regions too have identified this as an area of focus. ASEAN has been trying to harmonize legislation, including that for electronic transactions, consumer protection, data protection and privacy, cybercrime, content regulation, and domain names and dispute resolution. In Latin America, many countries have signed trade agreements that include provisions on e-commerce with both regional and extraregional trade partners and include those of the Central American Common Market, Colombia, and the Dominican Republic and, to a lesser extent, Chile, Peru, and

the CARIFORUM (Caribbean Forum of the African, Caribbean and Pacific Group of States) countries (Estevadeordal 2017).

In some cases, RECs have clearly identified the need to focus on facilitation and logistics for e-commerce. The EU's Digital Single Market Strategy published in 2015 listed, among others, parcel delivery and e-commerce as being crucial for the EU economy.[36.] The strategy highlights the importance of fast and efficient parcel delivery service for a competitive e-commerce market and lists high costs, lack of transparency, and inconvenience of cross-border delivery of parcels ordered online as limiting factors. The European Commission outlined action to improve regulatory oversight while supporting innovation; ensuring a level playing field for operators; and addressing the issue of price transparency, including prices of small shipments. In May 2016, the commission adopted a proposal for a regulation on cross-border parcel delivery services that will mitigate the challenges covering price transparency and regulatory oversight of cross-border parcel delivery services so that individual consumers and small etailers can benefit from more affordable deliveries and convenient return options, even to and from peripheral regions (European Commission 2016). The regulation will give national postal regulators the data they need to monitor cross-border markets and check the affordability of prices. It will also encourage competition by requiring transparent and nondiscriminatory third-party access to certain cross-border parcel delivery services and infrastructure. The commission will publish the public list prices of universal service providers to increase peer competition and tariff transparency. The proposal complements self-regulatory initiatives to improve the quality and convenience of cross-border parcel delivery services linked to the roadmap for completing the single market for parcel delivery.

For many developing countries, harmonizing laws and regulations to reduce transaction costs with their neighbors or in the RECs with whom they participate would be an important first step. For instance, e-transaction, e-signature, and data protection laws that are harmonized in a subregion together with common frameworks for e-payment, including mobile banking, would help promote e-commerce like the practices of ASEAN. However, differences in legal approaches, absence of good regulators, resource constraints, and slow legislative processes, among other issues, typically hamper regional harmonization initiatives in general, even in those regional economic communities that are considered more forward looking. A second step related to this is in general to develop common approaches to regulatory issues like the lines of what the EU has done. A third step could be to look at drafting a strategy for the REC on e-commerce that would lay out a roadmap of plans and goals for countries' anticipated achievements.

A fourth step could be to ensure that national efforts, particularly those related to the TFA articles that would enhance e-commerce are fully implemented. For instance, a common de minimis amongst trading partners (discussed earlier), could be amongst such steps. A fifth step could be for trading partners to coordinate responses to last mile connectivity in border regions. While many initiatives in this effort would be mainstream trade facilitation and logistics improvements – the impact they are likely to have on ecommerce where such potential exists is unlikely to be

[36] The digital economy is expected to contribute €415 billion to the EU economy each year and create hundreds of thousands of new jobs.

insignificant. A sixth step would be for trading partners to develop common approaches to air transport that would include a roadmap and provide for market access that would help expand the potential of ecommerce.

Conclusion

E-Commerce is transforming global trade and is growing at a rate of four times faster than the world economy. However, poor trade facilitation and logistics can limit a country, its firms and consumers from reaping the benefits of this economic opportunity.

Drawing from a wide array of developments and literature, and from work done by the WBG more generally in trade facilitation and logistics, this note identifies the various issues and challenges relating to facilitation and logistics for e-commerce and identifies potential solutions, particularly those in which the World Bank Group (WBG) can play a role in helping developing countries.

From a trade facilitation perspective, the note makes the case for establishing the building blocks to enable the necessary improvement to countries' abilities to participate and benefit from e-commerce. Such improvements begin with the need for improvement programs for creating a more conducive legal environment for automation. Trade facilitation reform brings this legal requirement to light and puts it in context aspects of data protection and privacy, validity of electronic transactions and data sharing, particularly during the implementation of automation systems like electronic single windows and port community systems. A further building block is improving automation and interconnectivity between government agencies; examples include the publishing of trade and advance information online, and national single window systems that has brought together many trade-related agencies to process permits, certificates, and electronic payments online through a single system. Combined, these automation initiatives present a unique opportunity to make procedures more transparent and efficient, as well as more connected and predictable through ICT.

Often countries find dealing with small consignments processed through e-commerce transactions challenging for multiple reasons, including the amount of resources required, particularly where automation is not fully deployed. However, some specific facilitation measures that improve the efficiency of trade transactions can significantly affect e-commerce and SMEs that are trying to take advantage of it such as the use of a de minimis threshold, having a simplified declarations regime and pre-arrival processing form further building blocks for enabling an e-commerce environment. In addition to those already mentioned, there are also further initiatives that can improve the e-commerce environment for business and consumers alike, these are more specifically detailed within the WTO's Trade Facilitation Agreement, the implementation of which provides a further block to establishing good facilitation foundations for e-commerce.

From a logistics perspective, the note discusses the importance of the role of postal services in the enabling of e-commerce and their need for postal operators to not only continue to adapt to new developments but also better integrate with Customs operations. Such integration can

reduce the steps involved in cargo clearance procedures and this in turn results in lowers costs and better services to the consumer, allowing postal operators to better compete with private sector logistics firms. The note further recommends that there is a critical need to improve the logistics of last mile delivery and remote connectivity, such improvements such as more standardized packaging, better route planning, optimization across transportation modes, and tracking of returned products can lower logistics costs without significant investments in new technology or business models and government policy.

Additionally, the recommendation is made to also seek stronger regional integration which enables firms to sell to a larger common market and often leads to lower prices and more choice for consumers. For SMEs, e-commerce opens markets that otherwise would be difficult to reach. Allowing SMEs to navigate neighboring markets because of better regional integration would greatly enhance their reach and potential.

The above-mentioned recommendations, on both a facilitation and logistics, are further detailed within a policy action matrix presented in the Appendix. The matrix attaches to each action recommendation a priority, an assessment of its impact and examples of the countries that have or are implementing the action. The intention is that the matrix highlights potential opportunities for WBG support to its clients through identification of any gaps in policy support where they might exist and potential to prioritize that support.

E-commerce offers new challenges and opportunities for governments and firms, but to maximize its benefits requires significant reform. This note has set out a path for countries to continuing the reform and modernization route with recommendations and an action matrix of specific improvements to the trade facilitation and logistics environment that will better position countries and firms to take advantage of the enormous potential that e-commerce offers.

Appendix

Table A: Policy Action

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
Legal enabling environment						
Data Protection laws do not protect data online for transactions (both financial and personal) in most developing countries.	Strengthen or adopt laws on data protection that have the following features: limits on the collection of personal information, rules on disclosure, storage of information, and limits on access to information.	Medium	Medium	High (TA and lending, particularly in projects supporting automation)	MTI, FCI, DD	
No legal validity for electronic transactions means that traders and governments do not have legal certainty and legal validity for e-commerce transactions.	Adopt electronic transactions law using the principles outlined in the UNCITRAL Model law on Electronic Commerce, Model Law on Electronic Signatures, and provisions outlined in the UN Electronic Communications Convention.	High	High	High (TA and lending, particularly in projects supporting automation)	MTI, FCI, DD	MTI (Ethiopia, Lesotho, and Zambia)
Electronic signature has no legal validity, which results in no legal certainty on the validity and binding	Adopt electronic signature laws based on UNCITRAL Model law on Electronic Signatures. Adopt guidance based on UNCITRAL's (2009) Promoting Confidence in Electronic Commerce: Legal Issues on	High	High	High (TA and lending particularly in projects supporting automation)	MTI, FCI, DD	MTI (Ethiopia, Lesotho, and Zambia) Support governmen t of El

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
nature of contracts with such signatures.	International Use of Electronic Authentication and Signature Methods.					Salvador with the design and framework for PKI infrastructure to operationalize e-signatures.
	Set up institutional and regulatory structure that provides for a regulator and issuer of electronic signatures.	Medium	Medium	Low (TA and lending, particularly in projects supporting automation)	DD, Governance	
Data retention and archiving rules are unclear for e-commerce traders and increase in complexity if goods are going to multiple foreign locations.	Establish the regulatory framework or data retention and electronic archiving, including requirements for regulatory filing and requirements for data that have personal identification information.	Medium	Medium	Medium (TA and lending, particularly in projects supporting automation)	MTI, FCI, DD	
Lack of clear rules for access to and sharing of data increases the risk of misuse of confidential	Establish rules about sharing of data between government agencies and countries.	Medium	High	Medium (TA and lending, particularly in projects supporting automation)	MTI, FCI, DD	

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
data (personal identification, market behavior, transaction history)						
An enabling framework for e-commerce is lacking.	Countries that have developed an e-commerce strategy should review their current legislation to ensure support for facilitation of e-commerce.	Medium	Medium	Medium (TA and lending, particularly in projects supporting automation)	MTI, FCI, DD	
Global agreements						
Lack of global data standards inhibits SMEs from participating in e-commerce.	Develop global data standards for e-commerce that could be adopted by companies and governments to enable a more streamlined environment.	Medium	High	None	Potential engagement role for MTI/FCI	Global engagements
Complexity of the Harmonized System deters SMEs from participating in e-commerce and restricts border agencies from profiling risk accurately.	Develop a simplified tariff classification for e-commerce potentially under the Harmonized System chapters for national use (98 and 99).	Medium	Medium	None	Potential engagement role for MTI	Global engagements
Automation and interconnectivity						
Lack of information	Develop trader portals that house information in a	High	High	High	MTI	Nine countries,

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
online increases the hassle factor for traders to acquire information about the rules and regulations to trade.	central location on transactions, laws, and procedures for importing and exporting, including special procedures for e-commerce.			(TA and lending)		including Bangladesh, Botswana, Laos, Lesotho, and Malawi
Traders do not have the means or instruments to submit advanced information online to border agencies, which limits the possibility for risk profiling and targeting by border agencies.	Advance cargo declarations and pre-arrival processing should be introduced and implemented where possible to enhance risk-profiling capabilities. This would allow border agencies to profile e-commerce cargo in an expeditious manner (through immediate release) and reduce delays at the border.	High	High	High (TA)	MTI	
Traditional means of payment (cash, check, bank transactions in person, paper receipts, paper notification of payment) do not support	Introduce payment online and system of electronic notification of payment and receipts.	High	High	High (TA and lending)	MTI, FCI	Albania, e-payment and most projects with single window components
	Ensure banks adjust their requirements and regulations to enable such tools.	High	High	Medium (Lending)	FCI	
	Enable interoperability and harmonization of e-	Medium	Medium	Low	MTI; FCI	

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
basic requirement for e-commerce financial transactions (electronic payment, electronic receipts, and notices of payment)	payment systems at a regional level to enable mutual recognition of e-payment systems.			(Lending could be explored in regional operations?)		
	Work with innovators in e-payment systems to build capacity and potentially co-finance solutions in country environments where broadband is limited by using e-wallets, mobile money, and so on.	Low	Medium	None		
Traders face high costs and lengthy delays to undertake import and export formalities and procedures. Border agencies are often not sure of the accuracy and quality of data supplied by third parties for e-commerce transactions.	Depending on the level of ICT infrastructure, introduce EDI, DTI, or ESW that enables submission and processing of electronic transactions to reduce the time and costs to conduct trade-related formalities. Extend single window functionality availability to postal operators as part of other border agencies' expansion.	High	High	High (TA and lending) MTI, FCI		Single window projects: Bangladesh, Jamaica, Malawi, Nepal, Sri Lanka and Vanuatu and others
	Enable customs agency systems to interface and collect data directly from e-commerce vendors and platforms, thereby enabling direct transaction data to be collected for risk and valuation analysis.					
	Through incentives, encourage foreign vendors					

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
	to register with domestic tax authorities.					
Simplified procedures						
E-commerce shipments are subject to normal documentary requirements, causing unnecessary delays in cost and time to process clearances.	Simplified procedures such as a streamlined clearance process for a list of qualifying goods would expedite ecommerce clearance procedures.	High	High	High (TA)	MTI	
	Apply the WCO (2014) Guidelines for the Immediate Release of Consignments by Customs with thresholds for the different types of goods with a view to encouraging e-commerce.					
	Simplify tariff classification for e-commerce shipments.					
	Enable e-commerce companies to use a simplified certificate of origin.					
	Enable e-commerce companies to use a simplified customs declaration with a reduced number of data elements.					
	Ensure that all government agencies participate in the simplified clearance process.					
	Enable parcel post operators to declare e-commerce goods in bulk,					

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
	particularly if classified as authorized operators.					
	Enabled registered operators to pay periodically rather than per transaction.					
There is no differentiated clearance regime or risk management practice for e-commerce shipments, causing lengthy time in clearance for low-value shipments.	Informal entry provisions can be introduced that allow for immediate clearance upon payment of duties for goods that have low value.	Medium	Medium	High (TA)	MTI	
	Review the appropriate threshold for de minimis value to assess where the cost of collecting duties and VAT exceeds revenue collected. Using this analysis, introduce an appropriate de minimis threshold to allow for an expedited clearance process.	Medium	Medium	Medium (TA)	MTI	
	Develop or expand authorized operator programs geared for e-commerce vendors and shippers.					
Returned shipment procedures are costly and complex, which deters consumers from	Introduce simplified procedures and duty free treatment for returned goods.	Low	Low	Low (TA)	MTI	
	Countries could also apply the temporary import procedures for e-commerce returns.					

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
participating in cross-border e-commerce.	Countries could also remove the need for returns to require a formal declaration, provided they can be matched with outbound invoice details.					
	Enable submission of supplementary documents after returns have been exported (cancellation order, export declaration, and so on).					
	Automate the duty drawback system.					
	Provide a simplified regime for authorized operators.					
Trade in small consignments to many countries makes provision of certificates of origin more expensive for e-traders.	Introduce self-certification and e-certification to dramatically reduce the bureaucratic procedures around rules of origin certification, and support e-commerce traders in their ability to comply with rules of origin.	Medium	High	Low (TA and lending)	MTI	
Cooperation and partnerships						
Customs and border agencies do not have enough staff, intelligence, systems, and physical infrastructure	Establish protocols and procedures between border agencies and the private sector express delivery) that provide electronic shipment information in advance of the arrival of the cargo so that risk analysis can be	Medium	High	High (TA)	MTI	

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
to analyze risk and process the dramatic increase in volume of small parcel shipments that e-commerce generates, thereby compromising security and effective risk management.	conducted before arrival of goods.					
Lack of cooperation and coordination between the parcel companies and postal operators and the border agencies, particularly customs, affects e-commerce.	Build stronger partnerships between the postal operators and parcel companies and the customs and border agencies.	Medium	Medium	Medium	Role for MTI to be explored	
Postal operators						
Lack of postal address systems in many developing countries will continue to hamper postal	Develop postal addressing systems.	High	Medium	None		

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
and package delivery.						
Postal operators for shipments in many countries lack an electronic tracking system used to track cargo internationally.	Implement or extend the cargo tracking system for international shipments, which will require agreements with foreign postal operators.	Medium	Medium	None		
Postal operators for customs and border agencies lack available data.	Postal operators should participate in data collection and submission to border control agencies. Operators are likely to need to automate and streamline procedures.	Medium	High	None	Potential role for MTI	
Last mile delivery						
Data on urban freight movement, particularly on parcel delivery company traffic patterns, volumes, and so on, is lacking.	Develop and conduct surveys with parcel delivery companies and postal operators to better understand the effect of e-commerce growth and last mile delivery. Policy makers would need to partner with key private sector players for this initiative (see below).	High	High	Low	Urban	
Regulations for logistics activity are still based on old patterns of trade and	Review truck and delivery vehicle parking and access regulations. Consider the need for separating and classifying areas for logistic facilities and long-term	Medium	Medium	Low	Urban	

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
business in cities.	truck parking areas given the rise in e-commerce. With an increase in the number of trucks and stops made by parcel post and postal companies for e-commerce shipments, consider the need to review on-street loading and unloading bays, their accessibility, their length and overall design, and restricted time windows.					
Consultations and coordination with freight and e-commerce companies, local businesses, and even neighborhood associations are lacking.	Regular consultations should be initiated by cities with key stakeholders. Ensure discussion of all key proposals and changes to regulations and so on.	Medium	Medium	Medium (TA in selected countries)	Potential role for MTI, Urban	
Information on rules and regulations governing logistics activities is lacking.	Online portals where information on access, parking, and other aspects of urban freight are provided to e-commerce companies, freight operators, and the general public need to be developed and maintained.	Low	Low			
Some cities lack dedicated	Logistics facilities, parks, and zones could provide	Medium	Medium	Low	Urban; MTI;	China, Ethiopia

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
logistics parks, facilities, and zones. With the advent of e-commerce and the associated jobs, these are even more crucial to classify, develop, and promote.	common facilities and services for all participating companies, including overnight parking, collecting, sorting, warehousing, packaging, and so on. Well-located and well-connected facilities will enable e-commerce development.				Transport (lending operation where logistics facilities are being developed)	
Many port cities already suffer from congestion, and e-commerce growth is only likely to aggravate this, particularly where trucks are the primary delivery mode.	Port cities need to ensure that port authorities (often separate entities) are part of the policy-making process for urban freight and last mile delivery. Ensuring that port access regulations reduce peak hour congestion and spread truck traffic across the 24-hour period can mitigate some of the congestion concerns in cities. Implementing gate entry systems can help.	Low	Low			
Policy makers lack knowledge and information about appropriate models of logistics spaces required for development	With many types of logistics spaces that can be developed and located in and around cities, policy makers need to better understand demand, supply, and use and integrate that knowledge into plans, strategies, and incentives, including for e-					

Challenge	Action	Priority level	Effect	WBG operationalization potential	Practice	Current projects
of business (including e-commerce) in cities. This is particularly acute in many developing countries where information, systems, and dialogue with the private sector are lacking.	commerce. Policy makers, in developing countries in particular, have opportunities to reshape urban logistics spaces to meet their goals and objectives, including those of employment creation and increase in tax revenue.					
Remote connectivity						
Sector regulations in logistics and retail can affect growth and development of these industries and therefore e-commerce.	Develop modern, transparent, and streamlined polices and regulations that encourage private investment in logistics and retail, particularly in remote areas, to encourage their connectivity to markets.					
Participation in e-commerce marketplaces often requires burdensome registration and compliance procedures.	Ensure more streamlined and simplified access for producers in remote communities to e-commerce markets by waiving requirements and reducing costs. Ensure access to modern payment infrastructure.					

Note: DTI = direct trader input; EDI = electronic data interchange; ESW = electronic single window; PKI = public key infrastructure; SMEs = small and medium enterprises; TA = technical assistance; T&C = Trade and Competitiveness; T&I = Transport and ICT [information and communications technology]; UN = United Nations; UNCITRAL = United Nations Commission on International Trade Law; VAT = value added tax; WCO = World Customs Organization.

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