THEME CHAPTER Advancing Digital Services Trade in Asia and the Pacific

Introduction

After decades of gradual opening and slow globalization of services sectors, rapid digitalization is generating new business models, which are radically cutting the costs of trade in services and offering new opportunities for international division of labor and wage arbitrage. This phenomenon, also known as the "third unbundling," may have major implications for labor markets globally (Baldwin 2019). White-collar workers in services, so far largely shielded from international competition, increasingly face the risk of job displacement.

Intensification of digitalization following the outbreak of the coronavirus disease (COVID-19) pandemic in 2020 has further accelerated the third unbundling. The pandemic led to the introduction of social distancing measures and restrictions on the movement of people within and across economies. As a result, firms revisited their business models, leveraging digital technologies, and developing new modes to produce and deliver goods and services. On the production side, an unprecedented number of jobs suddenly moved from office to home, and COVID-19 demonstrated that firms can operate in structurally different ways.⁷⁰ On the consumption side, sales shifted to online solutions and e-commerce has boomed. Digital technology has also allowed disadvantaged groups to access a new range of products and services. This process may not be fully reversed after the pandemic and represents a structural shift for the Asia and Pacific region (Anson, Helble, and Rosenkranz 2021).

To fully reap the new potential benefits on offer, the Asia and Pacific region must tackle several challenges. A major obstacle is the limited access to digital technologies and telecommunications. Large parts of the region struggle to provide access to broadband internet and more than half of the region's population remains offline, one reason being the lack of affordability.⁷¹ As a result, a digital divide persists, including by gender and geographic location, potentially exacerbated by the pandemic. A second obstacle for the region is its skills stock, directly linked to the quality of education systems. While attainment and coverage have improved, education quality is mixed and contributes unevenly to workers' skill endowments. Economies often struggle to prepare their workforce for the needs of a digital economy.⁷² The large share of lowskilled workers in informal jobs in some service sectors and difficulties transitioning to formal employment are impediments to some developing economies offering services internationally.

⁷⁰ Across multiple sectors, the pandemic has strengthened the notion that many jobs can be performed remotely. Dingel and Neiman (2020) find that 37% of jobs in the United States can be performed entirely at home, with significant variation across cities and industries. Similarly, firms estimate potential to move 44% of their workforce to remote operation (WEF 2020). The consequent emergence of "digital migrants" or "digital nomads" is symptomatic of the process inherent in the third unbundling, which calls for further research on the implications for wages, productivity, and taxation.

⁷¹ International Telecommunication Union. World Telecommunication/ICT Indicators 2020 Database 24th Edition. https://www.itu.int/en/ITU-D/ Statistics/Pages/publications/wtid.aspx (accessed July 2021).

⁷² The Organisation for Economic Co-operation and Development (OECD) has conducted an adult's information and communication technology (ICT) skills survey to help assess how education and skills systems impact economies' capacity for providing digitally related services. The OECD Programme for International Student Assessment round in 2022 will focus on ICT and learning outcomes.

Regulatory barriers, including an absence of mutual recognition of qualifications, limit opportunities for services trade, as does lack of investment in human capital. While governments in developing Asia have progressively opened their economies through bilateral, regional, and multilateral trade agreements, these mostly focused on goods trade, and only later extended the commitments to services trade (Benz, Ferencz, and Nordas 2020). Sectors such as telecommunications or computer services, which underpin digital services trade, remain subject to restrictive regulatory regimes, and in many jurisdictions are becoming subject to stringent data localization requirements (Ferracane and van der Marel 2020; Ferencz 2019) and other barriers to data flows. Recent questions associated with the allocation of taxing rights in the digital economy and potential adoption of unilateral tax measures by some economies in relation to digital services may also limit their traded potential.

This theme chapter explores the implications for developing Asia of the underlying increase in services trade caused by the accelerated digitalization of the economy coupled with the third unbundling, with a particular focus on those services that can be delivered remotely across borders.⁷³

Digitalization, or the incorporation of data and information and communication technology (ICT) into production and consumption processes, has been a driving force in the rise of digital services. Digital technologies have given firms and individuals the possibility to offer and access a wide range of services thus far only physically available. In this process, the nature of global trade is rapidly changing. As a market segment, digital services, such as publishing, audiovisual, or telecommunications, now have more of a global reach than manufacturing goods. Digital services trade has expanded thanks to the digitization of a wide range of services that can now be traded across borders with the support of ICT applications and data-driven solutions (van der Marel 2021a). The definition of the digital economy has evolved over the years, and subject to different and coexisting approaches. Bukht and Heeks (2017) propose three levels of scope, from core (ICT-production sectors), to narrow (e.g., business process outsourcing services and platform economy services) and broad (e.g., automation, artificial intelligence). More recently, ADB (2021b) has developed a framework for measuring the digital economy that is rooted on a value-added based approach, including goods and services that comply with ADB's definition of digital products (Box 7.1). While there is still no consensus on a conceptual and measurement framework for the digital economy, these approaches provide a clearer picture today on the key features and available data sources for understanding digital services trade.

The rise of digital services trade has also been strongly linked to the growing presence of digital platforms in Asia and the Pacific. Digital platforms have been transformative in challenging established business models (ADB 2021a) and enabling consumers to become goods and service providers. Digital platforms have expanded in multiple sectors, including digital media, AdTech, and e-commerce for a wide range of goods and services. They are often associated with the provision of personal services, and government and social services such as education and health. Their emergence has raised issues around competition policy, data privacy, social protection, and income inequality.

Digital Services Trade

Measurement Framework and Definitions⁷⁴

While international trade statistics are traditionally compiled around "what" is being traded, trends in digitalization are transforming the way both goods and

⁷³ Under the WTO General Agreement on Trade in Services (GATS), this is called mode 1. A more detailed description of definitions and data sources used is contained in the conceptual framework.

⁷⁴ This section is largely based on Liberatore, Avendano, and Cho (2021).

Box 7.1: ADB Measurement of the Digital Economy

The ADB framework for the measurement of the digital economy is rooted on a value-added approach. The digital economy is defined as the contribution of any economic transaction involving digital products and digital industries to gross domestic product (GDP).^a Digital products are defined as goods and services with the main function of generating, processing, and/or storing digitized data, and are grouped in five main groups: (i) hardware, (ii) software publishing, (iii) web publishing, (iv) telecommunications services, and (v) specialized support services.

The distinction between digitally *enabling* and digitally *enabled* products depends on whether such products can generate, process, or store data. Digitally enabling products are captured through backward linkages with core digital products, while digitally enabled products are captured through forward linkages with core digital products. Based on this framework, estimates for the size of the digital economy are provided for 16 economies, ranging from 2% to 10% of GDP.^b

The framework underscores the growing role of digital sectors in international production networks and their potential impact on structural transformation and labor markets. Indeed, global value chain participation of digitaleconomy sectors has increased between 2000 and 2019 for most economies, although differences in composition across economies remain important.^c For Asian economies, employment estimates suggest an increasing share for digital sectors in India (7.6%) and the Republic of Korea (1.7%), and a slight decline for Japan (-0.9%). On average, employment in digitally enabled sectors is equivalent to about one-third of the employment in digital sectors.

ADB's value-added approach to measuring the digital economy provides a new and complementary tool to the framework adopted in this chapter for measuring digital trade which, for want of up-to-date global trade in valueadded statistics, is based on gross balance of payments data. Given that the frameworks differ in definitions, concepts, methodologies, and data sources, a reconciliation is possible to link estimates between the two frameworks.

- ^a Analog and digital products and industries are distinguished in ADB framework as follows: "analog" refers to information expressed using a continuously variable physical quantity, whereas "digital" refers to the use of discrete encoding (e.g., 0 or 1) to generate, process, or store information (ADB 2021b).
- ^b Economies included are Australia; Canada; Denmark; Fiji; Germany; India; Indonesia; Japan; Kazakhstan; Malaysia; the People's Republic of China; the Republic of Korea; Singapore; Taipei, China; Thailand; and the United States.
- ^c In economies such as Singapore; Taipei, China; and Thailand, hardware comprises a sizable share of the digital economy, whereas software publishing is more important in Japan and the Republic of Korea. Telecommunications services account for the largest share of the digital economy in Fiji, Indonesia, and Kazakhstan.

Source: Asian Development Bank (2021b).

services are produced, traded, and delivered. The focus has therefore shifted from "what" is traded to "how."

Different approaches are emerging for improving the measurement of the digital economy as well as international trade in services in the context of digitalization (ADB 2021b; OECD–WTO–IMF 2019; UNCTAD 2019). The OECD–WTO–IMF Handbook on Measuring Digital Trade provides a conceptual framework for digital trade, defined as "all trade that is digitally ordered and/or digitally delivered" (Figure 7.1). In this framework, digitally ordered trade comprises "the international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders."⁷⁵ Digitally delivered trade is defined as "international transactions that are delivered remotely in an electronic format, using computer networks specifically designed for the purpose."

This chapter builds on the WTO-OECD-IMF framework and focuses on services that can be *digitally delivered*. This may involve some underestimation of trade in digital services as, in principle, digital trade in services should encompass also all internationally traded services that are either digitally ordered, or digitally delivered.

⁷⁵ The definition of digitally ordered trade is equivalent to the OECD definition of e-commerce (OECD 2011).



Figure 7.1: Conceptual Framework for Digital Trade

NPISH = nonprofit institutions serving household. Source: OECD–WTO–IMF (2019).

Many, if not necessarily all, digitally delivered services are also digitally ordered.⁷⁶

In the context of trade in services, the "how" was important long before the advent of digitalization. The General Agreement on Trade in Services (GATS) covers both services and services suppliers and identifies four modes of supply, based on jurisdictional residency of the supplier and the consumer when services are provided, and how the service is delivered (United Nations 2011). Mode 1, or cross-border supply, takes place when a service itself is supplied from the territory of one World Trade Organization (WTO) member into the territory of any other member. While the two concepts are not equivalent, mode 1 services greatly overlap with the coverage of digitally delivered services (Figure 7.2). While digital transformation implies that more services become tradable across borders thanks to digital tools, new services business models are also created which are inherently digital (e.g., based on data analytics or cloud computing). Among those, services provided by digital intermediation platforms are particularly relevant. In the current framework, the services digital intermediation platforms provide are defined as "online, fee-based, intermediation services enabling transactions between multiple buyers and multiple sellers, without the intermediation platform taking economic ownership of the goods or rendering services that are being sold (intermediated)." Digital intermediation platforms not charging a fee, involving nonmonetary transactions, are currently out of the scope of this framework for measuring digital trade.⁷⁷ A working template has been

⁷⁶ However, it is also likely that many digitally delivered services transactions are not digitally ordered. For instance, roaming mobile communications charges incurred while abroad are digitally delivered but not digitally ordered; also, most large-scale transactions in services between firms, and especially intra-firm services, may also be digitally delivered but not digitally ordered (OECD-WTO-IMF 2019).

⁷⁷ Some platforms provide "free" (advertising-driven) services to users. For the time being, these are excluded from the measurement framework.

introduced to allow identification and harmonization of statistics on digitally ordered and delivered services including a breakdown by services category.

While some economies have produced early estimates of digitally delivered trade, reliable global estimates are not yet available. Recent initiatives do however shed light on the potential of available official statistics to capture these trends. Notably, the United Nations Conference on Trade and Development (UNCTAD)-led Partnership on Measuring ICT for Development introduced the concepts of *ICT-enabled services and potentially ICTenabled services* in an effort to identify the "digital" component in existing statistics (UNCTAD 2015).⁷⁸ Building on the above definitions, this chapter considers the scope of services that *can* in principle be digitally delivered as largely overlapping with the UNCTADdeveloped list of potentially ICT-enabled services.⁷⁹ The concept of *potentially ICT-enabled services* is therefore broadly equivalent to that of *digitally deliverable services* and can be used as a reasonable proxy for *digitally delivered services* trade.

Table 7.1 identifies in bold an initial list of services categories that are considered digitally deliverable (or potentially ICT-enabled). The list includes not only inherently digital services like telecommunications and computer services, but also services whose ability to

Table 7.1: Digitally	Deliverable	Services
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Code	Service Description	Digitally Deliverable	Parent Category
SA	Manufacturing services on input owned by others		Manufacturing services on input owned by others
SB	Maintenance and repair services n.i.e.		Maintenance and repair services n.i.e.
SC	Transport services		Transport services
SD	Travel		Travel
SE	Construction		Construction
SF	Insurance and pension services	\checkmark	Insurance and pension services
SG	Financial services	\checkmark	Financial services
SH	Charges for the use of intellectual property n.i.e.	\checkmark	Charges for the use of intellectual property n.i.e.
SI1	Telecommunication services	\checkmark	Telecommunication, computer, and information services
SI2	Computer services	\checkmark	Telecommunication, computer, and information services
SI3	Information services	\checkmark	Telecommunication, computer, and information services
SJ1	Research and development services	\checkmark	Other business services
SJ2	Professional and management consulting services	\checkmark	Other business services
SJ3	Technical, trade-related, and other business services	√a	Other business services
SK1	Audiovisual and related services	\checkmark	Personal, cultural, and recreational services
SK2	Other personal, cultural, and recreational services	√ a	Personal, cultural, and recreational services
SL	Government goods and services n.i.e.		Government goods and services n.i.e.

n.i.e. = not identified elsewhere.

^a For technical, trade-related, and other business services, subcomponents such as operational leasing services, waste treatment and depollution and trade-related services are not considered to be digitally deliverable; in other personal cultural and recreational services, other personal services (covering social services, membership dues of business associations, domestic services) are not generally considered to be yet digitally deliverable. In both cases, however, the traded values in those categories are negligible and therefore including them in the aggregate of digitally deliverable services will not affect the observed trends.

Source: Based on OECD-WTO-IMF (2019).

⁷⁸ ICT-enabled services are defined as "services delivered remotely over ICT networks," while potentially ICT-enabled services refer to those that in principle can be delivered remotely over ICT networks, as opposed to those that require face-to-face contact.

⁷⁹ Minor differences in coverage exist: see OECD-WTO-IMF (2019) Chapter 4 for more details. Those differences have marginal weight in total services trade.

be traded internationally is greatly enhanced by digital tools, such as insurance and financial services, services related to intellectual property, and many types of business services.⁸⁰

Existing statistics on international trade in services (on a balance of payments basis) for the service categories outlined above can provide reasonable upper bound estimates of trade in digitally delivered services. When possible, this chapter will present trends and insights on trade in digitally deliverable services for ADB members, following the definition provided in Table 7.1. When the detailed categories are not available, figures will follow a less detailed breakdown, as specified in the "parent category" column of Table 7.1.

Trends in Asia and the Pacific

Global Landscape

The global position of Asian economies' share of digitally deliverable services in total exports and their economic development suggests there is a lot of room for improvement (Figure 7.3). Overall, Figure 7.3 shows a positive relation between gross national income per capita and digitally deliverable services exports share. High-income economies seem to have a competitive advantage on exporting digitally deliverable services, possibly attributable to them being generally endowed with more advanced technologies and better access to technological goods and services compared with lowerincome economies.

The relationship between an economy's size (measured by the gross domestic product [GDP]) and digitally deliverable exports share is less clear and shows a rough positive correlation (Box 7.2 presents the detailed empirical exercise). Most European and North American economies are in the upper right quadrant, while Asian economies are generally positioned poorly in their digitally deliverable services exports share, though better than African and Latin American economies. Even relatively advanced economies in Asia and the Pacific, such as Japan and the Republic of Korea, hover low on the scale compared with European and North American economies. On balance, it seems that economic size does not necessarily determine the competitiveness of an economy in digitally deliverable services. Some large economies such as India have relatively high digitally deliverable services export shares (22%), as do some smaller economies such as Nepal (37%).

Figure 7.2: Measuring Trade in Digital Services: A Schematic View on Possible Proxies



Note: Mode 1, or cross-border trade in services, takes place when a service itself is supplied from the territory of one World Trade Organization member into the territory of any other member.

Source: Asian Development Bank.

⁸⁰ Available results of pilot surveys confirm that digitally deliverable services most of the time are actually digitally delivered. A survey in India, for instance, showed that 81% of exports in digitally deliverable services were actually digitally delivered, and this share climbs to 97% for Costa Rica (UNCTAD 2017a, 2018).



Figure 7.3: Share of Digitally Deliverable Services Exports in Total Goods and Services Exports and Income Per Capita by Region, 2019

BHS = The Bahamas, BRU = Brunei Darussalam, CRI = Costa Rica, CYM = Cayman Islands, DEN = Denmark, DDS = digitally deliverable services, FRA = France, GER = Germany, GDP = gross domestic product, GNI = gross national income, IND = India, IRE = Ireland, ISR = Israel, ITA = Italy, JPN = Japan, KOR = Republic of Korea, KWT = Kuwait, LUX = Luxembourg, MLT = Malta, MUS = Mauritius, NEP = Nepal, NET = Netherlands, NZL = New Zealand, PRC = People's Republic of China, QAT = Qatar, SAU = Saudi Arabia, SPA = Spain, SWE = Sweden, SYC = Seychelles, UKG = United Kingdom, USA = United States.

Notes: The x-axis is gross national income per capita (constant 2010 \$), while along the y-axis is the share of digitally deliverable services exports as percentage of total goods and services exports (log transformed). The size of the circle is determined by the GDP (constant 2010 \$). The figure plots 144 economies. Only those with complete data were included. Economy groupings follow the Asian Economic Integration Report classification.

Sources: ADB calculations using WTO-OECD Balanced Trade in Services Dataset (BaTIS)—BPM6. https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm; and World Bank. World Development Indicators. https://databank.worldbank.org/source/world-development-indicators (both accessed August 2021).

Box 7.2: Digital Services Trade and Income per Capita

The relationship between international trade and economic growth or people's standard of living has been extensively studied in the literature. The analysis here adapts the framework of Frankel and Romer (1999) to investigate the impact of digitally deliverable services on output and income per capita on a longitudinal data set. Following Frankel and Romer (1999), the two-stage approach first calculates an instrument for trade share using purely geographic variables. In the second stage, the constructed trade share is used in place of actual trade share. To examine regional heterogeneity, we also include additional analysis with a regional dummy variable for Asia and the Pacific, interacted with the trade share variable as well as measures of economy size (log population and log area). The bilateral trade equation takes the form as follows.

$$\begin{split} \operatorname{Ln}\left(\frac{\iota_{ij}}{GDP_{i}}\right) &= \beta_{0} + \beta_{1} \ln Dist_{ij} + \beta_{2} \ln Pop_{i} + \beta_{3} \ln Area_{i} + \\ & \beta_{4} \ln Pop_{j} + \beta_{5} \ln Area_{j} + \beta_{6} Land_{ij} + \\ & \beta_{7} Cont_{ij} + \beta_{8} Cont_{ij} * \ln Dist_{ij} + \\ & \beta_{9} \left(Cont_{ij} * \ln Pop_{i}\right) + \beta_{10} \left(Cont_{ij} * \ln Area_{i}\right) + \\ & \beta_{11} \left(Cont_{ij} * \ln Pop_{j}\right) + \beta_{12} \left(Cont_{ij} * \ln Area_{j}\right) + \\ & \beta_{13} \left(Cont_{ij} * Land_{ij}\right) + \epsilon_{ij} \end{split}$$

where τ_{ij} is digitally deliverable services (DDS) exports as a fraction of economy *i*'s gross domestic product (GDP),

lnDist_{ii} is the distance between trading partners,

Box 7.2: continued

 $lnPop_i$ and $lnPop_j$ refer to the population of economy i and j, respectively,

 $lnArea_i$ and $lnArea_j$ are area variables,

 $Land_{ij}$ is an indicator variable for landlocked economies, and

*Cont*_{*ii*} is an indicator variable for contiguity.

The structural equation then takes this constructed trade share, aggregated over all the trading partners of a certain economy by year, as the instrumental variable. The constructed trade share is calculated as follows:

$$\widehat{T}_{i} = \sum_{i \neq j} e^{\widehat{\beta}^{T} X_{ij}}$$
(2)

The output or income of economy *i* then follows the basic Frankel and Romer (1999) specification, which captures both international trade and within-economy transactions. In this case, international trade is measured by the trade share, whereas within-economy transactions are a function of measures of the economy's size—area and population.

Formally:

 $\ln(Y_i) = \beta_0 + \beta_1 T_i + \beta_2 ln Pop_i + \beta_3 ln Area_i + \epsilon_{ij} \quad (3)$

where $\ln(Y_i)$ is the GDP or gross national income (GNI) per capita of economy *i* and T_i is the trade share as calculated in equation (2).

The basic random effects regression reveals a statistically significant association between DDS exports share and GDP per capita and GNI per capita. Moving to the IV estimates of the same equation, where exports share is instrumented by the constructed trade share, the results show a significant increase in the coefficients for DDS exports share for both GDP per capita and GNI per capita.

Estimating the structural equation with a dummy variable for Asia and the Pacific, as well as interactions with said dummy variable, the main effects remain similar. DDS exports share retains its positive association with both GDP per capita and GNI per capita.^a This suggests increasing the bilateral digitally deliverable services exports is associated with a rise in output and income per capita.

^a More detailed regression results are presented in online Annex 1a: Regression Results—Model on Digitally Deliverable Services Exports and Income Per Capita. http://aric.adb.org/pdf/aeir2022_onlineannex1.pdf.

Source: Kang et al. (2021).

Regional Trends

Three main data sources illustrate trends in digitally deliverable services trade: (i) WTO-UNCTAD trade in services database, which provides the most recent overview of services trade trends from 2005 to 2020, allowing to observe the effects of COVID-19,

(ii) Balanced Trade in Services (BaTIS), which provides a comprehensive picture on bilateral trade in services flows from 2005 to 2019, and (iii) the WTO's Trade in Services

by Mode of Supply (TISMOS), which provides information on trade in services by mode of supply. These data sources have been reconciled to ensure consistency.⁸¹

Trends between 2005 and 2019 reveal total services and digitally deliverable services trade in Asia and the Pacific is growing. Globally, the region is the world's second-largest trader of services, after the European Union (EU), and this ranking also holds for digital services. Asia's total services trade almost tripled over 2005–2019 to

⁸¹ The WTO-UNCTAD trade in services data set (released in July 2021) is the most comprehensive set of official economy-based information publicly available via UNCTADStat. It presents exports and imports of commercial services in conformity with the Extended Balance of Payments Services Classification (EBOPS 2010), based on the sixth edition of the International Monetary Fund Balance of Payments and International Investment Position Manual (BPM6). It is also the starting point for the WTO-OECD BaTIS (released in January 2021), an analytical data set providing a complete bilateral matrix of services trade for 2005 to 2019, covering 202 economies and the 12 main EBOPS 2010 service categories. Both WTO-UNCTAD and BaTIS cover data from balance of payments, which includes modes of supply 1, 2, and 4 in the GATS definition. Supplementary data and information—such as on data availability and differences as well as additional charts and tables on trends—for the three data sets on trade in services are presented in online Annex 1b, available at http://aric.adb.org/pdf/aeir2022_onlineannex1.pdf.

nearly 3.3 trillion (Figure 7.4a), bringing its global share in total services exports up from 19% to 25%, and its share in total services imports from 25% to 29%. The region's digitally deliverable services trade increased to \$1.4 trillion in 2019 from \$403.4 billion in 2005 (Figure 7.4b). Other emerging regions, including the Middle East or Latin America, experienced considerably less growth over this period.

The trend growth in global and regional services trade was drastically reversed with the offset of COVID-19 in early 2020. Global trade in total services contracted by 21% year-on-year from 2019 to 2020. Global digitally deliverable services trade was relatively resilient, however, with a -3% year-on-year contraction (Figure 7.4b), while non-digitally deliverable services plunged -39% year-on-year (Figure 7.4c). Asia and the Pacific experienced a small increase (1%) in digitally deliverable services trade in 2020, as did North America (2%), while other regions experienced a slowdown. Consistent with the global decline, trade in non-digitally deliverable services in Asia and the Pacific contracted by 38% in 2020. The region's participation in digitally deliverable services consequently increased during the pandemic.

Asia's participation in digitally deliverable services trade has increased within and outside the region (Table 7.2). From \$120.8 billion worth of digitally deliverable services trade within the region in 2005, it tripled its trade volume, achieving over \$483.5 billion in 2019. The region is also a substantial and growing digital services trade partner with other regions, notably Europe and Northern America, where Asia's share grew to 11.9% and 26.3% in 2019, respectively.

The intraregional services trade story is a strongly positive one. Over 2005 to 2019, intraregional trade increased from just under half to 52% of the region's total services trade (Figure 7.5a).



Notes:

- (i) Digitally deliverable services include insurance and pension services; financial services; charges for the use of intellectual property not identified elsewhere; telecommunications, computer, and information services; other business services; and personal, cultural, and recreational services.
- (ii) Non-digitally deliverable services include manufacturing services on physical inputs owned by others; maintenance and repair services not identified elsewhere; transport; travel; construction; and government goods and services not identified elsewhere.
- (iii) Total services is the sum of digitally deliverable services and non-digitally deliverable services.
- (iv) Economy groupings follow the Asian Economic Integration Report classification. All economies not included in the integration indicators groupings are classified as Rest of the World.
- (v) Figures in conformity with the sixth edition of the International Monetary Fund Balance of Payments and International Investment Position Manual (BPM6) as well as the 2010 edition of the Manual on Statistics of International Trade in Services (MSITS 2010).

Source: United Nations Conference on Trade and Development (UNCTAD). UNCTADStat: WTO-UNCTAD (BPM6) International Trade in Services Annual Dataset. https://unctadstat.unctad.org/ (accessed July 2021).

	PARTNER						
REPORTER	Africa	Asia and the Pacific	Europe	Latin America	Middle East	North America	Rest of the World
Africa	3.3	20.7	45.0	1.8	4.1	19.6	5.6
Asia and the Pacific	1.5	38.8	27.5	2.0	3.3	22.2	4.7
Europe	1.4	11.9	58.2	2.2	2.8	14.2	9.2
Latin America	0.9	13.1	33.5	5.3	1.7	41.0	4.5
Middle East	2.1	22.6	44.9	1.7	5.6	17.2	5.9
North America	1.7	26.3	39.1	7.3	3.0	12.3	10.2
Rest of the World	1.0	11.6	56.4	1.7	2.1	22.6	4.4

Table 7.2: Shares of Digitally Deliverable Services Trade, 2019 (%)

Notes: Orange and red indicate increased and decreased shares from 2005, respectively. The table indicates the share of bilateral trade from one region to another (extraregional) and one region to its own region (intraregional) in 2019. The bilateral trade levels are presented in online Annex 1 (Tables 1b.3 and 1b.4), available at http://aric.adb.org/pdf/aeir2022_onlineannex1.pdf.

Source: ADB calculations using WTO-OECD Balanced Trade in Services Dataset (BaTIS)—BPM6. https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm (accessed May 2021).



Figure 7.5: Intraregional and Extraregional Trade in Services in Asia and the Pacific (\$ billion)

Notes: Digitally deliverable services include insurance and pension services; financial services; charges for the use of intellectual property not identified elsewhere; telecommunications, computer, and information services; other business services; and personal, cultural, and recreational services. Total services is the sum of digitally deliverable services and non-digitally deliverable services.

Source: WTO-OECD Balanced Trade in Services Dataset (BaTIS)—BPM6. https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm (accessed May 2021).

This is similar to the region's intraregional trade in goods the same year, at about 57%. Intraregional trade now accounts for 39% of the region's digitally deliverable services trade, up from 33% in 2005 (Figure 7.5b).

The data confirms a fast-growing share of digital services in Asia's total services export basket from 36% to 48% over the period, and from 34% to 39% for imports (Figure 7.6). Yet, these increments are below the increase in export shares, from 48% to 54%, for the rest of the world, indicating some room for improvement in the region. The increase in the region's share of digitally deliverable services trade in 2020, from 43% to 55%, was larger than the increase observed over the previous decade.



Figure 7.6: Shares and Growth of Digitally and Non-Digitally Deliverable Services Trade (%)

y-o-y = year-on-year.

Notes:

- (i) The values refer to the digitally and non-digitally deliverable services trade (exports plus imports) with the world.
- (ii) The following groupings were used: (a) 43 economies from Asia and the Pacific, (b) 160 economies (all economies in the data set minus Asia and the Pacific), and (c) world aggregate.
- (iii) Digital includes insurance and pension services; financial services; charges for the use of intellectual property not identified elsewhere (n.i.e); telecommunications, computer, and information services; other business services; and personal, cultural, and recreational services. Non-digital includes manufacturing services on physical inputs owned by others; maintenance and repair services not identified elsewhere; transport; travel; construction; and government goods and services not identified elsewhere.
- (iv) The data conform with the sixth edition of the International Monetary Fund Balance of Payments and International Investment Position Manual (BPM6) as well as the 2010 edition of the Manual on Statistics of International Trade in Services (MSITS 2010).

Source: ADB calculations using United Nations Conference on Trade and Development (UNCTAD). UNCTADStat: WTO–UNCTAD (BPM6) International Trade in Services Annual Dataset. https://unctadstat.unctad.org/ (accessed July 2021).

Together with digitally deliverable services, COVID-19 has also been a driver for the significant increase in e-commerce in the region.

Services trade has grown faster in Asia and the Pacific than in other regions. Between 2005 and 2020, total annual services trade in the region increased by 6.0% on average, well above the global average of 4.5%. Digitally deliverable services, on the other hand, expanded at an average 9.0% annually, compared with a 6.8% global average (Figure 7.7). However, the region started from a lower baseline than developed economies (Figure 7.8).

Subregional Trends

Largely due to the People's Republic of China (PRC), East Asia (excluding Japan) is the top exporter (50%) and top importer (55%) of digitally deliverable services in developing Asia (Figure 7.9). Exports grew faster than imports over 2005–2020 in most subregions, led by Southeast Asia (average annual export growth of 11.2%), and South Asia (10.6%) followed by East Asia (9.8%), Central and West Asia (6.0%), and the Pacific (4.7%). In Southeast Asia, the rapid expansion is largely due to the Philippines, while in South Asia it is largely due to India. Digital services are now dominant sectors in both economies.



Figure 7.7: Average Annual Growth in Services Trade, 2005-2020 (%)

Notes:

- (i) The values refer to the digitally and non-digitally deliverable services exports and imports with the world.
- (ii) The following groupings were used: (a) 43 economies from Asia and the Pacific, (b) 160 economies (all economies in the data set minus Asia and the Pacific), and (c) world aggregate.
- (iii) Digital includes insurance and pension services; financial services; charges for the use of intellectual property not identified elsewhere; telecommunications, computer, and information services; other business services; and personal, cultural, and recreational services. Non-digital includes manufacturing services on physical inputs owned by others; maintenance and repair services not identified elsewhere; transport; travel; construction; and government goods and services not identified elsewhere.
- (iv) The data conform with the sixth edition of the International Monetary Fund Balance of Payments and International Investment Position Manual (BPM6) as well as the 2010 edition of the Manual on Statistics of International Trade in Services (MSITS 2010).

Source: ADB calculations using United Nations Conference on Trade and Development (UNCTAD). UNCTADStat: WTO–UNCTAD (BPM6) International Trade in Services Annual Dataset. https://unctadstat.unctad.org/ (accessed July 2021).



Figure 7.8: Trade in Services in Asia and the Pacific (\$ billion)

Notes:

- (i) The values refer to the total services trade (exports plus imports) of Asia and the Pacific to the world.
- (ii) Digital includes insurance and pension services; financial services; charges for the use of intellectual property not identified elsewhere; telecommunications, computer, and information services; other business services; and personal, cultural, and recreational services. Non-digital includes manufacturing services on physical inputs owned by others; maintenance and repair services not identified elsewhere; transport; travel; construction; and government goods and services not identified elsewhere.
- (iii) The data conform with the sixth edition of the International Monetary Fund Balance of Payments and International Investment Position Manual (BPM6) as well as the 2010 edition of the Manual on Statistics of International Trade in Services (MSITS 2010).

Source: ADB calculations using United Nations Conference on Trade and Development (UNCTAD). UNCTADStat: WTO-UNCTAD (BPM6) International Trade in Services Annual Dataset. https://unctadstat.unctad.org/ (accessed July 2021). South Asia and Southeast Asia have similarly experienced the fastest growth in imports, with annual average growth rates of 9.3% and 8.7%, respectively, followed by East Asia (7.8%), Central Asia (5.0%), and the Pacific (3.7%).

Figure 7.10 shows the flow of digitally deliverable services from different regions of the world to Asian subregions. Among all, East Asia accounts the highest volume of digital services imports. It received a volume worth more than \$110.5 billion in 2005, which further increased to \$351.0 billion in 2019. Aside from intraregional trade (30.7%), North America (31.6%) and Europe (29.8%) were top contributors to East Asia. Following East Asia is Southeast Asia, which received \$47.8 billion of digital services in 2005 and \$173.7 billion in 2019. Aside from interregional receipts (37.0%), Europe (33.7%), and North America (21.9%) were top providers of digital services for the subregion.



Figure 7.9: Trade in Digitally Deliverable Services of Developing Asia, by Subregion (\$ billion)

Notes:

(i) Central Asia consists of Armenia, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan. East Asia consists of Hong Kong, China; Mongolia; the People's Republic of China; the Republic of Korea; and Taipei, China. The Pacific consists of the Cook Islands, Fiji, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu. South Asia consists of Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. Southeast Asia consists of Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Timor-Leste, and Viet Nam.

 (ii) Digitally deliverable services include insurance and pension services; financial services; charges for the use of intellectual property not identified elsewhere; telecommunications, computer, and information services; other business services; and personal, cultural, and recreational services.

(iii) The data conform with the sixth edition of the International Monetary Fund Balance of Payments and International Investment Position Manual (BPM6) as well as the 2010 edition of the Manual on Statistics of International Trade in Services (MSITS 2010).

Source: ADB calculations using United Nations Conference on Trade and Development (UNCTAD). UNCTADStat: WTO-UNCTAD (BPM6) International Trade in Services Annual Dataset. https://unctadstat.unctad.org/ (accessed July 2021).



Figure 7.10: Digitally Deliverable Services Exports to Asia and the Pacific (\$ million)

CA = Central Asia, EA = East Asia, SA = South Asia, SEA = Southeast Asia.

Notes: Bilateral trade flows from the different regions of the world to various Asian subregions in 2005 and 2019. Economy groupings follow the Asian Economic Integration Report classification. All economies not included in the integration indicators groupings are classified as Rest of the World. Digitally deliverable services include insurance and pension services; financial services; charges for the use of intellectual property not identified elsewhere; telecommunications, computer, and information services; other business services; and personal, cultural, and recreational services.

Source: WTO-OECD Balanced Trade in Services Dataset (BaTIS)—BPM6. https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm (accessed May 2021).

Asia's top exporters and importers of digitally deliverable services point to the central role of some economies in the region's emergence as a digital services hub. In particular, India, the PRC, Singapore, Japan, and the Republic of Korea are the most dynamic economies exporting and purchasing digitally deliverable services (Figure 7.11). While not the leading economies in volume, some developing Asian economies have experienced substantial growth in digitally deliverable trade. Economies that registered a significant annual average growth in digitally deliverable services exports over 2005-2020 include Bangladesh (13.3%), Cambodia (11.0%), the Lao People's Democratic Republic (20.2%), Nepal (14.0%), and the Philippines (10.9%).

Sector Trends

Data for services trade in Asia and the Pacific shows that overall, services trade displayed steady growth until the arrival of the pandemic. Figure 7.12 underlines the predominance of three main services sectors in the region, travel services (SD), transport (SC), and other business services (SJ).

Figure 7.12: Trade in Services in Asia and the Pacific, by Sector (\$ billion)



SI: Other business services

SK:Personal, cultural, and recreational services

SL: Government goods and

- SB: Maintenance and repair services n.i.e.
- SC: Transport
- SD: Travel
- SE: Construction
- SF: Insurance and pension services
- SG: Financial services
- services n.i.e. SH: Charges for the use of intellectual property n.i.e.
- SI: Telecommunications, computer, and information services

n.i.e.= not identified elsewhere.

Notes: Solid lines are digitally deliverable services, while dotted lines are nondigitally deliverable service items. The data conform with the sixth edition of the International Monetary Fund Balance of Payments and International Investment Position Manual (BPM6) as well as the 2010 edition of the Manual on Statistics of International Trade in Services (MSITS 2010).

Source: ADB calculations using United Nations Conference on Trade and Development (UNCTAD). UNCTADStat: WTO-UNCTAD (BPM6) International Trade in Services Annual Dataset. https://unctadstat.unctad.org/ (accessed July 2021).

Figure 7.11: Top Asian Exporters and Importers of Digitally Deliverable Services, 2020 (\$ billion)



PRC = People's Republic of China.

Notes: Digitally deliverable services include insurance and pension services; financial services; charges for the use of intellectual property not identified elsewhere; telecommunications, computer, and information services; other business services; and personal, cultural, and recreational services. The data conform with the sixth edition of the International Monetary Fund Balance of Payments and International Investment Position Manual (BPM6) and the 2010 edition of the Manual on Statistics of International Trade in Services (MSITS 2010).

Source: ADB calculations using United Nations Conference on Trade and Development (UNCTAD). UNCTADStat: WTO-UNCTAD (BPM6) International Trade in Services Annual Dataset. https://unctadstat.unctad.org/ (accessed July 2021).

Travel and transport (which includes passenger transport) suffered substantial cutbacks given they require consumers' physical presence and were severely affected by tightened cross-border controls and restrictions to international travel. The contraction in other business services was considerably lower as most services grouped in this category can be digitally delivered and do not require physical proximity. Box 7.3 presents some examples of digitally deliverable services.

Figure 7.13 further dissects trends in digitally deliverable services, in particular for telecommunications, computer, and information services (SI), other business services (SJ), and personal, cultural, and recreational services (SK). Trade in computer services, including for example computer software, cloud computing, and data storage services, displayed the steepest and most continuous growth, with an eightfold increase from \$31 billion in 2005 to \$256 billion in 2020 (Figure 7.13a). In the case of trade in other business services, growth since 2005 has been steady for professional and management consulting services, including legal services, accounting, auditing, advertising, and market research services. Finally, the region's trade in personal, cultural, and recreational services, which includes health and education, expanded—though its size remains relatively modest.

These trends attest to the changing composition of the region's services trade toward digitally deliverable services (Figure 7.14). Between 2005 and 2020, digitally deliverable services trade expanded, in particular telecommunications, computer, and information services (growing 13.8% annually on average), followed by financial services (10.6%), other business services (8.2%), insurance and pension services (7.7%), charges for the use of intellectual property not identified elsewhere (7.5%), and personal, cultural, and recreational services (7.4%). The COVID-19 shock exacerbated this trend. Indeed, most digitally deliverable service items thrived and their growth accelerated amid the pandemic. Between 2019 and 2020, the region's trade in telecommunications, computer, and information services grew by 8.1%, followed by financial services (4.3%), and insurance and pension services (3.9%). In contrast, other business services recorded a mild (-1.4%) contraction.

A breakdown into the six digital services subsectors illustrates some variation in digital services trade participation across Asian subregions (Figure 7.15). Other business services and telecommunications, computer, and information services are dominant, both for exports and imports, in most Asian subregions. Other business services account for almost half of digitally deliverable



Figure 7.13: Trade in Services in Asia and the Pacific, by Sector Breakdown (\$ billion)

Notes: The figure shows the breakdown of total services trade (exports plus imports) in three sectors: telecommunications, computer, and information services (SI), other business services (SJ), and personal, cultural, and recreational services (SK). The data conform with the sixth edition of the International Monetary Fund Balance of Payments and International Investment Position Manual (BPM6) as well as the 2010 edition of the Manual on Statistics of International Trade in Services (MSITS 2010).

Source: ADB calculations using United Nations Conference on Trade and Development (UNCTAD). UNCTADStat: WTO-UNCTAD (BPM6) International Trade in Services Annual Dataset. https://unctadstat.unctad.org/ (accessed July 2021).

services in most subregions, and for almost 80% of both digital service exports and imports in the Pacific in 2005. Telecommunications, computer, and information services exports are notably larger for South Asia, an effect mostly driven by India. In general, the COVID-19 pandemic disrupted to some extent the volume if not the composition of digital services trade in most subregions, with the exception of the Pacific.





ICT = information and communication technology; n.i.e = not identified elsewhere; SI3 = Information services; SK1 = Audiovisual and related services; SK2 = Other personal, cultural, and recreational services.

Note: The data conform with the sixth edition of the International Monetary Fund Balance of Payments and International Investment Position Manual (BPM6) as well as the 2010 edition of the Manual on Statistics of International Trade in Services (MSITS 2010).

Source: ADB illustration using United Nations Conference on Trade and Development (UNCTAD). UNCTADStat: WTO-UNCTAD (BPM6) International Trade in Services Annual Dataset. https://unctadstat.unctad.org/ (accessed July 2021).





SK: Personal, cultural, and recreational services
 SI: Telecommunications, computer, and information services
 SG: Financial services

Figure 7.15: Digitally Deliverable Services Trade in Asian Subregions (% share)



n.i.e. = not identified elsewhere.

Notes: The data conform with the sixth edition of the International Monetary Fund Balance of Payments and International Investment Position Manual (BPM6) as well as the 2010 edition of the Manual on Statistics of International Trade in Services (MSITS 2010).

Source: ADB calculations using United Nations Conference on Trade and Development (UNCTAD). UNCTADStat: WTO-UNCTAD (BPM6) International Trade in Services Annual Dataset. https://unctadstat.unctad.org/ (accessed July 2021).

Modes of Supply

To complement the information provided in WTO– UNCTAD and BaTIS on digitally deliverable services, the TISMOS data set provides estimates of trade in services broken down by the four modes of supply as defined in the General Agreement on Trade in Services (GATS).

By including services provided via commercial presence (besides modes 1, 2, and 4), TISMOS helps depict a more comprehensive picture of global trade in services. Indeed, mode 3 (commercial presence) is Asia's predominant mode of services supply, both for exports and for imports, mirroring the global trend. Globally, the mode 3 share decreased from 61% in 2005 to 59% in 2017, while mode 1 remained constant at 10%. Over the same period, the share of mode 1 services in Asia's services imports increased from 13% to 14%, while the share of mode 1 in services exports declined from 14% to 11%. Leaving aside commercial presence, TISMOS data reconfirm the relative importance of mode 1 within the identified cluster of digitally deliverable services and for refining the upper bound estimates of digitally deliverable services presented so far in this chapter.⁸² In some cases, the international supply of digitally deliverable services may still require the physical presence of the service supplier in the territory of the consumer and thus involve a non-negligible mode 4 component. Figure 7.16 highlights for the digitally deliverable services, the actual mode of supply. As expected, mode 1 is the predominant mode of supply in Asia's services exports.⁸³

Figure 7.17 provides a further decomposition of the services grouped under other business services and telecommunications, computer, and information services, again including for each service category the breakdown by mode of supply.



Figure 7.16: Trade in Digitally Deliverable Services in Asia and the Pacific, by Mode of Supply (\$ billion)

M1 (cross-border trade) M2 (consumption abroad) M4 (presence of natural persons)

ICT = information, computer, and telecommunication; n.i.e. = not identified elsewhere; TISMOS = Trade in Services Data by Mode of Supply.

Notes: Other business services exclude trade-related services. The World Trade Organization (WTO) defines the modes of supply as: M1 (cross-border trade)—from the territory of one WTO member into the territory of any other member; M2 (consumption abroad)—in the territory of one member to the service consumer of any other member; and M4 (presence of natural persons)—by a service supplier of one member, through the presence of natural persons of a member in the territory of any other member. Data for 2017, which is the latest available year in TISMOS.

Source: WTO and Directorate-General for Trade of the European Commission. TISMOS. https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm (accessed July 2021).

⁸² Notwithstanding the (minor) differences between digital delivery and mode 1. See the section on the measurement framework and definitions on pages 186–190.

⁸³ It has to be noted, however, that TISMOS includes WTO estimations.



Figure 7.17: Asia's Largest Digitally Deliverable Services Subsectors, by Mode of Supply

ICT = information, computer, and telecommunications; n.i.e. = not identified elsewhere.

Notes: Other business services exclude trade-related services. The World Trade Organization (WTO) defines the modes of supply as: M1 (cross-border trade)—from the territory of one WTO member into the territory of any other member; M2 (consumption abroad)—in the territory of one member to the service consumer of any other member; and M4 (presence of natural persons)—by a service supplier of one member, through the presence of natural persons of a member in the territory of any other member.

Source: WTO and Directorate-General for Trade of the European Commission. Trade in Services Data by Mode of Supply (TISMOS). https://www.wto.org/english/res_e/ statis_e/trade_datasets_e.htm (accessed July 2021).

Box 7.3: Recent Developments in Digitally Deliverable Services in Developing Asia

Asia's expansion in digitally deliverable services exports encompasses a wide range of industries, geographic hubs, and ecosystems. Some examples from the region in the six categories defined in the conceptual framework are presented below.

Insurance and Pension Services (SF). Digital technologies are redefining how insurance services are being accessed and distributed, with big data, data analytics and artificial intelligence (AI) increasingly used for underwriting and the pricing of risk. Other digitally enabled services within the industry include claims management, data management, new insurance service offerings, marketing and distribution, platforms, and partnerships. For example, the People's Republic of China (PRC) online-only Property and Casualty insurance company ZhongAn has automatized more than 95% of claim underwriting and settlement rates, with more than 70% of customer service claims being managed through AI.

The PRC and India dominate the regional insurance markets, housing nearly half of the 335 private InsurTechs operating in the region (Abbas 2021). Malaysia and Indonesia are also becoming prominent markets. Indonesia's e-commerce market leader Tokopedia entered the air travel insurance market in mid-2018. Ride-hailing platform Grab and ZhongAn created an insurance marketplace for Southeast Asia in early 2019.

Financial Services (SG). Financial services driven by digital technologies—or fintech—have evolved quickly, with big data, cloud computing, and distributed ledger technology becoming ubiquitous in the sector. Fintech adoption in Asia and the Pacific has grown substantially over the past 2 years, with digital payments accounting for 86% of Asia's fintech transaction value (ADB 2021a). The increasing use of digital payments by governments to individuals (G2P) or companies (G2B) have contributed to this trend.^a

Card and e-money are dominant and rising cashless payment instruments in Asia and the Pacific. Singapore's Coda Payments helps digital content providers monetize their products and operates as a platform for processing transactions for purchases online and charge them to prepaid accounts. Another payments platform, Nium, focuses on B2B transactions and supports businesses to accept and make online payments. Also, Japan's Crowd

Box 7.3: continued

Credit provides debt capital to peer-to-peer lending platforms, nonbank financial institutions, microfinance institutions, and renewable energy businesses.

Charges for the use of intellectual property not identified elsewhere (SH). Services in this category include payments and receipts between residents and nonresidents for the authorized use of proprietary rights (such as patents, trademarks, copyrights, industrial processes and designs including trade secrets, and franchises), and for the use, through licensing agreements, of produced originals or prototypes and related rights.

Telecommunications, Computer, and Information Services (SI). Information and communication technology (ICT) services are the fastest growing component of the global trade in services. Services including the internet, mobile telephone, and data transmission provide the basic infrastructure for other services to be provided digitally. The provision of high-speed connectivity, 5G, and the development of industry-specific software has accelerated this expansion. India has consolidated its position as a major exporter of information technology (IT) and computer services worldwide, only second to the European Union. India's leading IT services companies include Tata Consultancy Services (TSC), Wipro, and Tech Mahindra. Together with IT support, they provide computer services including software development, data processing, cloud computing, and data storage services, and database management.

Other Business Services (SJ). Increasing multinational activity and outsourcing has led to a considerable rise in exports of other business services, including research and development services, professional and management consulting services (such as legal, accounting, advertising, and management consulting services), architectural, engineering, scientific, and other technical services.

In professional services, India's HCL Technologies is one of the largest providers worldwide, providing services to sectors including aerospace and defense, automotive, chemicals, energy, health care, mining, and natural resources. TSC has also expanded from IT to management consulting and business process services (BPS). The Philippines is also a major hub for the services exports through business process operations (BPO) such as call centers and high-end outsourcing or knowledge process outsourcing (KPO) and business process management (BPM). Around 788 companies in the economy provide IT-BPO services to domestic and international firms including Accenture, Citi, Convergys, HSBC, and JPMorgan. In legal services, PRC law firms are pursuing international strategies. FenXun Partners provides legal counseling to investors doing business in the PRC, and advises PRC firms expanding overseas.

Personal, Cultural, and Recreational Services (SK).

Services included in this group include audiovisual and creative industries (audiovisual production, movies, and television programming rights to use audiovisual products), health services, education services, heritage, and recreational services. While trade in some of these sectors is still relatively small, it is growing rapidly.

Digital health services thrived during the COVID-19 pandemic to reduce patients' exposure and avoid overburdening of national health systems. Cross-border health services include shipment of laboratory samples, screening, diagnosis, and teleconsultations. In several economies, including the PRC, India, and Indonesia, digital health services grew during the pandemic. Education services were already on the rise before COVID-19, with school and university closures exacerbating this trend. While many of the virtual education initiatives during the pandemic targeted domestic demand, some economies expanded their foreign operations. The expansion of massive open online courses has opened opportunities in this regard. Malaysia, Singapore, and other economies have pursued an internationalization strategy through online learning services to become global education hubs.

^a In the context of services trade, EBOPS 2010's definition of financial services include, among others, brokerage and market-seeking services, underwriting and private placement services, credit card and other related services, financial management services, and electronic funds transfers. Sources: ADB staff based on Baur, Yew, and Xin (2021); and Osborne Clarke (2020).

Although the assumption that digitally deliverable services are indeed remotely delivered still holds in most cases, the figures suggest that for services such as computer, legal, accounting, management consulting, and research and development services, the physical presence of the supplier is still important for the service delivery. Box 7.4 presents further examples on the role of digitalization for the shift in the delivery mode of services and implications for the region.

Box 7.4: Key Features of Digital Services Trade in Developing Asia

Digital services have been the fastest growing area of trade in recent years. The contribution of digital services within manufacturing and non-information and communication technology (ICT) services exports has grown globally and in Asia and the Pacific, underscoring their indirect (embedded) contribution to exports. Using mode 1 data as a proxy for digital services trade, trade (exports and imports) for these economies is dominated by business, professional, and computer, and information services, followed by financial and insurance services. There is a significant shift from mode 4 toward mode 1, indicating the growing role of digital as opposed to people mobility-based services trade.

Three economy profiles among the selected economies can be identified. The first group consists of large and established exporters like India and the Philippines which are competitive in digital services exports with consistently strong performance in this area, depend on such exports, and are engaged in direct exports to varied export markets. The second group includes other middle- and upper-middle income economies. Their exports of digital services are large, growth is strong, and significance in overall services exports is high and growing. However, competitiveness essentially still lies in manufacturing and not in digital services, and performance in digital services exports seems to be linked to other parts of the economy (like manufacturing and e-commerce). The third group includes economies which have potential but are showing varied performance. They tend to have high growth in digital services exports but at a nascent stage, with limited basket and export markets. They have potential, but growth remains weak.

The economies also show characteristics distinctive of their stage as digital services exporters. They differ greatly in the scale and diversity of their export segments, from conventional call center and business process operations (BPO)-type services, to domain and skillspecific outsourcing, to higher value-added segments such as solutions based on artificial intelligence (AI) and predictive analytics.^a There is also a distinct difference between economies with global presence (e.g., India, the Philippines) with offshore delivery centers worldwide, and regional exporters (e.g., Fiji, Indonesia, Mongolia). Economies are different in the extent and nature of integration of digital services exports with the rest of their economies.^b

An examination of the digital readiness and regulatory environment for the selected economies reveals differences and help identify the scope for improvement. What emerges is an evident gap in technological infrastructure and the startup environment, followed by inadequacies in human capital and the ease of doing business. There are restrictions to trade arising from infrastructure and connectivity issues, as well as conditions on electronic transactions, data protection, and other regulatory requirements.

India

India is a leading exporter of information technology (IT) and IT-enabled services (IT-ITeS) and has seen a shift from mode 4 toward mode 1. It is recognized as a prominent offshore outsourcing destination, accounting for 38% of global business processing outsourcing in 2018. Digital services have been a driver of these exports, accounting for an increasing share of India's global outsourcing contracts and doubling their share in total IT-ITeS exports between 2014 and 2017. According to a a survey by the Directorate General of Commercial Intelligence and Statistics of India's Ministry of Commerce and Industry and United Nations Conference on Trade and Development, an estimated 81% of the economy's services exports were exported through ICT networks.

In terms of their composition, India's digital services exports largely comprise business-to-business (B2B) delivery of computer and telecommunications services (computer programming, data processing, consulting, database management, and so on) spanning a spectrum of skills, a wide range of professional and business support services (management, financial, engineering, research and development [R&D], market research, design, legal process, analytics, and so on), which often require specialized and domain knowledge skills, and call centers and back-office services that are less skill and domain knowledge-intensive.

While computer and telecom services are the dominant segments, the fastest growing segment is engineering R&D services, driven by growing global R&D spend, digital innovations, and the emergence of startups. The shift toward startup-based exports is taking place in areas such as EdTech services, with homegrown digital enterprises acquiring overseas entities to diversify and expand their subscriber base in overseas markets. Management and back-office services in industry verticals such as banking and financial services also constitute a significant share of digital services exports. Health, retail, and utility services are the most prominent emerging verticals in the future, according to an industrial association.

Overall, there is a clear shift from call center and routine BPO services toward more applied and knowledgeintensive applications of digital services across a range of industry verticals. New technologies such as big data, Al, the Internet of Things, and machine learning and reskilling initiatives are expected to drive the further growth of digital services exports of India, with new service offerings such as predictive analytics, and digital consulting and solutions, coming to market soon. India is also witnessing growing imports of digital services such as e-mail,

Box 7.4: continued

videoconferencing, VOIP, digital file sharing, and data processing, which are further enabling increased exports in both digital and non-digital sectors.

Philippines

The Philippines has a large and globally competitive IT-BPO industry. The economy currently accounts for over 12% of the global IT-BPO market and is expected to cover 15% of the global outsourcing market by 2022 (Everest Group 2020). As in India, exports are diversified spanning subsectors: contact centers, knowledge process outsourcing (KPO) and back offices, software development, animation, game development, medical transcription, and engineering design.

Contact center services are the most important segment. The industry generated \$24.7 billion in revenue in 2018, with call centers accounting for about half of the total. Contact center services are provided to companies such as Accenture, Transcom, and Concentrix. The economy is the secondlargest offshore location for global shared services, driven by high growth areas such as data analytics, automation, and security. The Philippines is also an important player in business segments such as transcription, engineering services outsourcing, high value services for specific industry verticals, and animation and game development. According to industry experts, potential also exists in indirect digitally enabled services, AI-based KPO, construction design, and platformenabled trade. Key industry verticals and applications include financial, accounting, travel and hospitality, health care, content moderation, network services, cybersecurity, and digital customer experience management (CXM).

The Philippines shows a broad diversity in services provided and its client base. The online advertising segment, which has grown due to online video platforms, is expected to grow to \$79 million by 2030 (Hinrich Foundation 2020a). In the animation and games development segment, the Philippines provides services to international game developers and producers such as France's Ubisoft. Other clients include Walt Disney, Cartoon Network, DreamWorks, Nintendo, and Warner Brothers. The Philippines is a leading offshore–nearshore location for health services delivery in care management, medical coding, transcriptions, claims processing, telemedicine, and health analytics, given the presence of many US-registered nurses and its mix of medical knowhow and customer-servicing skills.

Several salient features emerge for developing Asia's digital services trade:

- Economies are distinctive of their stage as digital services exporters. They differ greatly in export scale and diversity, from conventional call center and BPO type services, to domain and skill-specific outsourcing, to higher value-added segments such as AI-based solutions and predictive analytics.
- Market size emerges as both an opportunity and a constraint. While large markets can support digital services solutions that are exportable or can provide the human resources needed to export a wide range of digital services, small markets can provide a laboratory to experiment with niche solutions and applications.
- Digital literacy and adoption are important. Digital transformation in key sectors such as education, banking and finance, B2B trade, and commerce has been important, and the growth of online financial transactions in particular appears an important facilitator of digital services trade.
- The role of investment (foreign direct investment and venture capital funding in unicorns) emerges as important for growth prospects in digital services exports for most economies. Thus, modalities of digital services exports may be bundled to include different modes of delivery.
- Several factors that can be leveraged to help economies export digital services include well-recognized costbased arbitrage, availability of skills, location, language, digital infrastructure, and less recognized factors such as "servicification" (increasing use, production, and supply of services by manufacturers), e-commerce, digital innovation, and domestic market-led scale economies. Several economies have potential for indirect exports of digital services in certain products (automotive, health devices).
- All the economies reflect the importance and complementarities of digital services imports alongside exports, indicating the importance of supporting twoway trade and cross-border data flows. Trade openness has a bearing on economies' ability to export.

^a Some economies such as India are present in all parts of the digital services export value chain, whereas others are present in specific segments. More mature economies want to move toward higher value digital services, based on innovation and in specific domains or verticals.

^b In the case of the People's Republic of China, digital services exports are linked to strengths in manufacturing, e-commerce, and the wider digital economy. For India and the Philippines, digital services exports are related to overseas demand with potential export-related spinoffs. In Indonesia, it is largely the domestic market that creates opportunities for expanding digital services exports. For Mongolia, the emergence of technology-based startups with innovative solutions is a potential source for future digital services exports.

Digital Services Trade: Drivers and Impact

Asia and the Pacific Leads the Progress

Over the last 15 years, growth of trade in digital services has exceeded that of non-digitally deliverable services and total services.⁸⁴ It has grown faster in Asia and the Pacific than in the rest of the world (Figure 7.18).

Asia's lead in digital services trade growth may not necessarily indicate increasing regional competitiveness.

Figure 7.19a reveals that the Asia and Pacific region along with Latin America, Africa, and the Middle East does not have revealed comparative advantage (RCA) in digital services trade.⁸⁵ Europe and North America display RCA in digitally deliverable services, with RCA indexes greater than 1 for 2005 to 2019. The Middle East had the lowest RCA across all regions from 2005 to 2014 but in subsequent years overtook Asia and the Pacific, Latin America, and Africa to approach the world average. Given that the development of digital technologies and complexity of production are also correlated with an economy's development, a higher RCA for richer economies seems natural.



Figure 7.18: Average Annual Growth of Services Trade by Region, 2005–2020 (%)

Source: ADB calculations using United Nations Conference on Trade and Development (UNCTAD). UNCTADStat: WTO-UNCTAD (BPM6) International Trade in Services Annual Dataset. https://unctadstat.unctad.org/ (accessed July 2021).

⁸⁴ Insofar as sector-based analyses and descriptions are concerned, digital services trade in this part of the chapter refers to digitally deliverable services trade as defined in this chapter.

RCA, although having drawbacks in accurately assessing an economy's status of competitiveness, can provide a snapshot of an economy and region's trade performance relative to the world. RCA is based on the share of an economy's digitally deliverable services exports out of its total goods and services exports with respect to the share of digitally deliverable services exports out of total exports for the world. Formally, it is defined by:

$$RCA_{it}^{DST} = \frac{\frac{X_{iwt}^{DST}}{X_{iwt}}}{X_{wwt}^{DST}}$$

where X_{iwt}^{DST} is economy i's digitally deliverable services exports to the world at time t,

 X_{iwt} is economy is total good and services exports to the world at time t,

 X_{wwt} is the world's total goods and services exports at time t.

An economy's share of digitally deliverable services exports is greater than the global share if its RCA index is greater than one.

 X_{ww}^{DST} is the world's digitally deliverable services exports at time *t*, and

Within Asia and the Pacific, developed economies have a somewhat higher RCA than developing economies, at 0.65 compared with 0.59 (Figure 7.19b). Among the Asian subregions, South Asia emerges as the sole subregion with an RCA greater than 1 at 1.06 over the 15-year period (Figure 7.19c). As shown in Figure 7.19d, South Asian economies, such as India, Nepal, and Sri Lanka, along with Southeast Asian economy, the Philippines, lead the entire region. Of these, Nepal consistently held the highest RCA of digitally deliverable services exports. The economy specializes in services exports, which contributed 60% of the nation's GDP in 2019 (ADB 2021c), and it is very competitive in telecommunications exports (Sáez et al. 2015).

Factors Affecting Competitiveness

One metric to assess the competitiveness of digital services is their export performance, given that an economy's competitiveness is reflected into high productivity could translate into larger outputs, and further into high export performances. In explaining trade flows based on comparative advantage, literature have identified factor endowments such as human and physical capital, and institutions and policies (Chor 2011). Among the main factors affecting the competitiveness, traditional factors of production, digital infrastructure and policy environment are considered, i.e., (i) human capital, (ii) digital connectivity, (iii) ICT investment, and (iv) the policy and regulatory environment.





Sources: ADB calculations using WTO-OECD Balanced Trade in Services Dataset (BaTIS)—BPM6. https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm (accessed May 2021); and World Bank. World Development Indicators. https://databank.worldbank.org/source/world-development-indicators (both accessed July 2021).

Human Capital. Digital services production requires human capital equipped with technical skills including for human-machine interaction (Grigorescu et al. 2021). Enhancing education for development of new and relevant competencies contributes to improved productivity in digital services. Educational attainment still fundamentally underpins human capital. A considerable body of literature links human capital and digital adoption. Caselli and Coleman (2001) include educational attainment as a determinant of personal computer adoption. Chinn and Fairlie (2007) find that differences in years of education explain more than a tenth of the gap in computer literacy among economies.

The availability of human capital in scale, costs, or specific expertise has been identified as important for digital services competitiveness in many economies in Asia and the Pacific. Digital services exports in India and the Philippines have been largely driven by their large, young, English-speaking population, and competitive wages. Fiji's young, literate, English-speaking labor force and Mongolia's strength in science, technology, engineering, and mathematics make them attractive destinations for developing digital applications and solutions and enabling regional exports. International Labour Organization surveys of crowd workers in 2015 and 2017 also find that more educated people are more likely to participate in digital contract work (Berg et al. 2018). Expected years of schooling has been steadily increasing overtime in all regions of the world, posting an annual average growth rate of 0.7%. For Asia and the Pacific, the annual average growth rate was 0.9%, with expected years of schooling increasing from 11.8 in 2005 to 13.3 in 2019. There are large differences within the region; Australia and New Zealand are obvious outliers as global leaders with 20.4 expected years of schooling. East Asia follows with 15.4 years in 2019. South Asia records the lowest schooling years but the biggest improvement in 15 years with an annual average growth rate of 1.6%, well above the 0.9% growth rate for the region as a whole. This is attributable to Pakistan, where schooling years increased from 5.7 in 2005 to 8.3 in 2019.

Figure 7.20 plots binned scatterplots for the expected years of schooling for the reporter and partner. For both entities, longer schooling years are associated with an increase of digital services exports.

It has become more important than ever to integrate digital literacy programs in the educational curriculum. Beginning digital literacy programs in grades K-12 is considered essential, so that children can learn to use



Figure 7.20: Binned Scatterplots for Expected Years of Schooling, 2019

Sources: ADB calculations using WTO-OECD Balanced Trade in Services Dataset (BaTIS)—BPM6. https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm; and United Nations Development Programme. Human Development Index. http://hdr.undp.org/en/content/human-development-index-hdi (both accessed July 2021).

GDP = gross domestic product.

technology responsibly and master the tools needed to thrive in an ever-changing digital world (Loveless n.d.). However, a study conducted by learning.com reveals that 75% of fifth and eighth grade students lack proficiency in technological skills (Robacker 2017).

Investing in digital skill enhancement is now a key policy tool for economic growth and competitiveness (Froy, Giguère, and Meghnagi 2012; Spante et al. 2018). A recent Asia-Pacific Economic Cooperation (APEC) report shows that in the past 3 years, Asia and the Pacific saw substantial growth in hiring of workers with digital skills. Highlighting the gap between workforce supply and demand, the report emphasizes the urgent need for economies in the region to invest in digital upskilling and reskilling of their workforces (APEC 2021).

Digital Connectivity. Enabling firms to bring services to a large number of connected customers across the globe is a prerequisite for increasing the scale, scope, and speed of digital services trade. The availability, quality, and cost of telecommunications infrastructure, internet and mobile penetration and accessibility, along with adoption of digital and mobile technologies play major roles in determining patterns of digital services trade. In some developing economies, lack of availability, high cost, and uneven quality of broadband and internet services remain significant challenges. Internet penetration. The literature links broadband and internet adoption to increased productivity, as the internet provides a tool that can support businesses to flourish and hire employees (OECD 2012, 2016). Haltenhof (2019) shows internet connectivity is positively correlated with services exports; improving bilateral internet connections promotes bilateral service trade in data-intensive sectors with the greatest effects seen in financial services, computer, and information services, and other business services. Broadband subscriptions, especially for mobile broadband have been increasing steadily in recent years. The International Telecommunication Union shows fixed broadband subscriptions increased from 5.2% in 2007 to 14.% in 2019, while mobile broadband subscriptions grew from 4% to 74.2%.

Despite this growth in subscriptions, digital divide is evident between economies (Figure 7.21). Higher levels of internet penetration are positively associated with digital services trade (Figure 7.22).

Internet speed. A reliable and higher internet speed increases firm productivity, as well as labor productivity (Dalgic and Fazlioglu 2020; Grimes, Ren, and Stevens 2012). High-speed connection is essential for business using technologies such as videoconferencing, online payments, and other e-commerce functions (DataKom 2016).



Figure 7.21: Broadband Subscriptions (per 100 inhabitants)

Source: International Telecommunication Unit. ICT Statistics. https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx (accessed July 2021).



Figure 7.22: Binned Scatterplots for Mobile Broadband Subscriptions, 2019

GDP = gross domestic product.

Sources: ADB calculations using WTO-OECD Balanced Trade in Services Dataset (BaTIS)—BPM6. https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm; and International Telecommunication Unit. ICT Statistics. https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx (both accessed July 2021).

This is even more so for firms that depend on inputs of data flows for which a larger bandwidth is required to support productivity.

Actual internet speed and usage are also important. Some may have access to the internet but not at a usable speed. Figure 7.23 illustrates the positive relationship between digital services exports and the digital services trade and international internet bandwidth per user. It is also of note that international bandwidth capacity is more strongly related with digital services exports than with the mobile broadband subscription level. This suggests that internet speed and quality should be more important as a factor in the expansion of digital services trade than simple internet access or availability.

Investments. Firms that invest in ICT and adopt specialized digital solutions are generally in a better position to become more productive, competitive, and profitable (UNCTAD 2011).⁸⁶ New digital solutions are opening doors for companies of all sizes to engage in domestic and international trade (UNCTAD 2019).

Investments in telecommunications, ICT infrastructure, and digital payments enable digitally deliverable businesses to thrive. Figure 7.24 shows that investments in telecommunications infrastructure are positively associated with digital services trade.

Policy and Regulatory Environment. The ecosystem for digital services trade requires a conducive overall business and regulatory environment.⁸⁷ Stakeholders typically highlight the importance of transparency in regulations, the ease of data transfers, an open trade and investment regime, and supporting incentives for innovation. Many economies are also making efforts to build trust in supporting data flows. Creating trust should come with cross-border regulatory cooperation, developing trade agreements or other arrangements that bolster privacy and consumer protection.

In classic services trade literature, Hindley and Smith (1984) propose that services trade is constrained by government control over communications, media, and broadcasting. In the digital sphere, Topornin, Pyatkina,

⁸⁶ Digital solutions are defined as "other internet-based players and digital enablers, such as electronic and digital payment operators, cloud players and other service providers" (UNCTAD 2017b).

An important factor relevant to an enabling policy environment is *entrepreneurial innovation*, consisting of incubation support, funding, tax incentives, encouragement of startup clusters, promotion of higher value-added digital services, including specific segments such as e-commerce and fintech. Regulatory sandboxes are important in enabling experimentation by startups. Collaborative partnerships between industry and the academic research community are important in establishing innovation labs and mentorships.

and Bokov (2021) characterize barriers to international data transfers, restrictions on digital payment systems, and many unique and opaque standards of filtering and blocking digital traffic as potential tools of protectionism.

Using the CATO Institute's measure of "state control over internet access," which is a component from the

Institutional Profiles Database question: "Freedom of information: Freedom of access, navigation, and publication on the internet (0 = no freedom of internet access; 10 = complete freedom of navigation and publication.)." Figure 7.25 shows how freedom of information positively influences digital services trade outcomes for both reporter and partner.





bit/s = bits per second, GDP = gross domestic product.

Sources: ADB calculations using WTO-OECD Balanced Trade in Services Dataset (BaTIS)—BPM6. https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm; and International Telecommunication Unit. ICT Statistics. https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx (both accessed July 2021).





GDP = gross domestic product.

Sources: ADB calculations using WTO-OECD Balanced Trade in Services Dataset (BaTIS)—BPM6. https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm; and International Telecommunication Unit. ICT Statistics. https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx (both accessed July 2021).



Figure 7.25: Binned Scatterplots for State Control Over Internet Access, 2019

GDP = gross domestic product.

Sources: ADB calculations based on WTO-OECD Balanced Trade in Services Dataset (BaTIS)—BPM6. https://www.wto.org/english/res_e/statis_e/trade_datasets_e. htm; and CATO Institute. Human Freedom Index. https://www.cato.org/human-freedom-index/2020 (both accessed July 2021).

Economic Impact of Trade Liberalization and Deregulation

Measuring the Impact through Global Value Chains

Conceptually, digital technology seems likely to play a major role in linking the large numbers of firms that participate in global value chains (GVCs). Lead firms need to rely heavily on digital means to monitor production by suppliers and movement of goods within networked production structures. Similarly, digital payments make it possible for firms at different points in the chain to negotiate contracts and secure payments across borders, potentially at great distance.

An important policy issue is therefore the degree of linkages between the performance of goods market GVCs in sectors like electronics or apparel, as well as GVCs in services, and the policy environment governing digital services trade. If restrictive policies increase price and decrease availability for services that are provided digitally, then those services will be correspondingly less used as inputs into the production of manufactured goods and other services—potentially at a cost in trade performance and production efficiency. This raises the question of the extent to which services provided digitally can be used as inputs for the production of exports in other sectors. These two perspectives backward and forward—can be employed in different contexts to better understand the role of input–output linkages, including those relating to services delivered digitally, in driving GVC performance and expansion.

To tackle these questions, digital services categories are identified based on the conceptual framework presented earlier for digitally deliverable services and ADB's Multi-Regional Input-Output Tables (MRIOT) to produce consistent measures of digital services use within GVCs. The interlinkages are tracked across economies and through time, focusing on Asia and the Pacific. Second, analysis is undertaken of recently collected data on policy measures affecting digital services trade. Finally, a quantitative general equilibrium model of world trade is built, based on ADB's MRIOT for 2019. This is used to conduct counterfactual simulations based on plausible goals for policy liberalization and deregulation across economies affecting digitally delivered sectors. The model shows not only how policy changes affect trade flows and aggregate real income, but also how they influence the extent of GVC linkages. In addition, the ways in which this liberalization can promote structural change are examined through the distribution of impact by economy across primary, secondary, and tertiary sectors.

Identifying Digitally Delivered Services Trade

The approach is to use information from surveys and external sources to construct first estimates of trade by mode. The WTO Trade in Services data by Mode of Supply (TISMOS) data currently provide the best available information.

TISMOS data make it possible to rank services sectors according to the percentage of exports delivered through GATS mode 1, which except in transportation services essentially captures service provision by digital means. A high proportion of mode 1 relative to other modes suggests a significant proportion of a sector's trade is delivered digitally, and so the sector as a whole can be regarded as "digitally delivered."

Mapping these aggregates to sectors in national accounts is not straightforward, as the classifications involved are slightly different. The following ADB's MRIOT sectors can nevertheless be considered as digitally delivered,⁸⁸ on a broad reading:

- Post and telecommunications
- Financial intermediation
- Real estate activities
- Renting of machinery and equipment, and other business activities
- Other community, social, and personal services

While the analysis is necessarily approximate, given the extent of data available, this list gives us a selection of sectors where digitally delivered trade is expected to account for an important share of total trade, and where, therefore, policy reforms could be expected to have the most significant impact on digital services trade flows and input sourcing.

Measuring GVC Linkages

Wang, Wei, and Zhu (2013) provide a consistent methodology for decomposing gross value trade data into value-added components by combining them with information from input-output tables. Foreign value added as a proportion of gross exports gives a backward measure of GVC integration: the proportion of exports accounted for by imports of intermediate goods and services. To provide a measure of forward linkages, domestic value added (DVA), which Wang, Wei, and Zhu (2013) term DVA_INTRex, is used: it equates to production by domestic industries that is exported and used by other economies in the production of their own exports. Figure 7.26 shows results by sector, aggregating over all Asian economies in the database. For four of the five sectors, GVC forward linkages account for reasonably similar proportions of gross exports, around 15% to 20%. The exception is other community, social, and personal services, which is considerably lower, at about 10%.



Figure 7.26: GVC Forward Linkages as a Percentage of Gross Exports for Digitally Delivered Services Sectors—Asian Economies (%)

GVC = global value chain.

Source: Asian Development Bank. Multi-Regional Input-Output Tables.

⁸⁸ ADB's MRIOT sectors do not correspond exactly to TISMOS aggregates. Concordance is based on visual inspection, and matching to nearest categories, as well as information provided by the OECD Secretariat.

Figure 7.27 shows that there is much greater growth in backward linkages than forward linkages over the sample period in post and telecommunications and for financial services. These sectors developed substantial overseas sourcing arrangements over this period, while the other sectors saw remote imports of inputs diminish or remain fairly steady. There is a clear contrast with forward linkages, where changes across all sectors were relatively small.

Figure 7.27: GVC Backward Linkages as a Percentage of Gross Exports for Digitally Delivered Services Sectors—Asian Economies (%)



GVC = global value chain.

Source: Asian Development Bank. Multi-Regional Input-Output Tables.

Overall, the picture that emerges is that digitally delivered services sectors are an important part of the GVC landscape in Asia and the Pacific. This point is important from a policy perspective because development policy in Asia and the Pacific often focuses on manufacturing as the engine of growth, even as evidence is compelling that the economies that have seen rapid growth in recent decades have developed not only their manufacturing base but have also their services production and trade (Shepherd 2019).

Quantifying Policies Affecting Digitally Delivered Trade

Whereas tariffs in goods markets are stated in ad valorem terms, policy restrictions in services sectors—

including digital services—are typically regulatory measures that affect either the ability to contest markets access or the cost of doing business once in a market and need to be quantified in a fundamentally different way from tariffs. The first step is to develop a regulatory questionnaire, typically based on consultations with experts and the private sector to identify policy measures that affect firms engaging in trade, in this case digitally. The next stage is to code restrictions quantitatively by assessing national regulations relevant to each question along a sliding scale from completely open (coded as the minimum value) to completely closed (coded as the maximum value). The third stage is to weight and aggregate the individual data points for each question in the questionnaire to produce a single summary index of economy restrictiveness. A fourth stage is to model the relationship between the restrictiveness index with some measure of economic performance, such as trade values or trade costs, generally with the objective of producing ad valorem equivalents of the bundle of policies captured by the index. The European Centre for International Political Economy (Ferracane, Makiyama, and van der Marel 2018) and the Organisation for Economic Co-operation and Development (OECD) apply variations on this general approach to produce trade restrictiveness indexes for digitally delivered trade.

The OECD Digital Services Trade Restrictiveness Index (DSTRI) is publicly available and covers all OECD members and a selection of nonmembers. For 17 Asian economies with available DSTRI data, the total number of restrictions increased from 138 in 2015 to 153 in 2020, with barriers related to cross-border data flows accounting, on average, for around 20% over the period. The patterns of restrictiveness among Asian economies vary substantially (Figure 7.28). Based on 2020 DSTRI results, Kazakhstan is the most restrictive economy in the data set. Others are typically substantially less restrictive, with the lowest scores recorded in Australia, Japan, and Vanuatu. Compared with 2015, 5 out of 17 economies saw some improvement in reducing digital services trade restrictiveness: Cambodia, Indonesia, the Lao People's Democratic Republic, Nepal, and Vanuatu. Several economies moved in the more restrictive direction.



Figure 7.28: Digital Services Trade Restrictiveness Index—Selected Asia and Pacific Economies

2020 2015

AUS = Australia; BRU = Brunei Darussalam; CAM = Cambodia; HKG = Hong Kong, China; IND = India; INO = Indonesia; JPN = Japan; KAZ = Kazakhstan; KOR = Republic of Korea; LAO = Lao People's Democratic Republic; MAL = Malaysia; NEP = Nepal; NZL = New Zealand; PAK = Pakistan; PRC = People's Republic of China; THA = Thailand; VAN = Vanuatu.

Notes: Given that the Digital Services Trade Restrictiveness Index is an index number, the interpretation is ordinal only, not cardinal. That is, a score of 0.2 is more restrictive than a score of 0.1 (on a range of zero to one), but it is not "twice as restrictive."

Source: Organisation for Economic Co-operation and Development (OECD). Digital Services Trade Restrictiveness Index. https://stats.oecd.org/Index. aspx?DataSetCode=STRI_DIGITAL (accessed October 2021). From a trade and economic integration perspective, it is not only the restrictiveness of an economy's policies that matter for trade costs, but also how similar or different its policies are from those of trading partners. Data are perhaps an area, like services trade more broadly, where regulatory heterogeneity plays a significant part in determining the pattern of flows (Nordas 2016). For example, besides overall data flow restrictiveness if one economy in a trading pair has strong rules relating to data privacy and the other does not, it may be difficult or impossible to move data across the border in that direction as part of a broader economic transaction (Box 7.5).

A Quantitative Trade Model with Global Value Chain Linkages

Trade policy analysis has traditionally used computable general equilibrium (CGE) models to examine the economy-wide impacts of reform. This section takes a different approach, drawing on the literature on "new quantitative trade models" (Ottaviano 2015).

Box 7.5: Impact of Data-Related Restrictions on Digital Services Trade

Data-related policies can be categorized into (i) data localization policies, (ii) local storage requirements, and (iii) conditional flow regimes. As these policies inhibit the free flow of data across borders, they affect trade in digital services, which are reliant on transmission of data across economies. Previous research has established both theoretically and empirically the triangular relationship between cross-border data flows, international trade in digital services, and data-related policies. Manyika et al. (2016) claim that the contribution of cross-border data flows to GDP has overtaken that of flows in goods during the current wave of globalization. Goldfarb and Trefler (2018) discuss the potential theoretical implications of data-related policies, such as data localization, on international trade and how that connects to existing trade models. This analysis follows up the empirical work by Ferracane and van der Marel (2021), which studies the proportionate trade impact of data-related policies across digital services. These authors construct a composite indicator in which an index of restrictiveness in data regulation is interacted with a measure of the digital or data intensity of a sector. Asia's share of the total global number

of data-related restrictions is presented in the box figure. For data localization, Asian economies account for a share of around 70% of measures.

Number of Data Localization Policies, Local Storage Requirements, and Conditional Flow Regimes Imposed by Asian and Other Economies, 2019 (number of measures)



Note: Categorization of economies is performed on the basis of values assigned with an initial 0.5, meaning that economies also apply a partial restriction in regard to the three types of data-related restrictions.

Source: van der Marel (2021b).

Box 7.5: continued

The empirical strategy adopts a difference-in-differences (DID) approach in which the outcome variable is regressed against a set of dummies that separates two groups for two time periods: one group is the treatment group, the other is the control group, both before and after the time period. As is standard, the treatment group is exposed to a "treatment" in the second period, whereas the control group is not subjected to the treatment throughout the entire period of analysis. In a later stage, the treatment is applied to a third group of Asian economies.

A dummy variable is assigned to software-intense sectors starting from the year economies impose one of the three data restrictions as presented in box table 1. The control group, the non-software-intense sectors, are not exposed to this treatment and therefore given a zero during the entire period of our regressions. The DID approach is therefore composed of two levels of "differences," namely one that distinguishes between software-intense (or digital services) and non-software intense services sectors; and another one that differentiates between pre- and post-year of implementation (YIMP) in economies.

The following baseline specification is regressed:

$$ln(SM)_{cst} = \Phi + \theta D_{cst} \bullet Software intense_s \ge$$

YIMPL_{ct-1} + $\delta_{st} + \gamma_{ct} + \varepsilon_{cst}$ (1)

In equation (1), the response variable is the logarithm (In) of cross-border imports of services (SM) in economy c, for services sector s in time t. Data is taken from both WTO-UNCTAD-ITC annual trade in services data set and the WTO-OECD BaTiS data sets for robustness checks. The term D_{cst} denotes the dummy variable that is of interest. It captures any difference in services imports between software-intense (box table 1) and non-software-intense services before and after the year of implementation of an economy's data restriction denoted with YIMP_{ct}.

Fixed effects are applied, which capture all other aggregate factors that otherwise cause shifts in services trade, even in the presence of other regulatory changes. They are specified at sector-year, δ_{st} , and economy-year, γ_{ct} . The former group of fixed effects controls for sector-specific conditions, such as other sector intensities besides software. Examples are skill- and capital-intensities that affect production structures. They also cover services policy changes over the years specific to sectors. The latter set of fixed effects controls for economy-wide trends that are specific to an economy, such as macroeconomic conditions. Sector fixed effects are applied at the 2-digit aggregate given that the trade data are reported at this level. Finally, \mathcal{E}_{cst} is the residual term. Regressions are estimated with robust standard errors clustered by economy sector-year and performed over 2006-2019, for which policy data are available after taking a 1-year lag.

The baseline specification is extended to consider additional effects for the Asian region. The extended baseline is applied to interact the variable of interest D_{cst} with another dummy called ASIA_c which assigns unity for each of the Asia and Pacific economies. It means that these economies are interacted with the difference-in-difference dummy that signifies the group of digital sectors, starting from the policies' year of implementation. The baseline specification is augmented with a triple interaction term as follows:

 $ln(SM)_{cst} = \Phi + \theta D_{cst} \bullet Software intense_s \ge$

$$YIMP_{ct-1} * ASIA_c + \delta_{st} + \gamma_{ct} + \varepsilon_{cst}$$
(2)

Given the interaction variable with Asian economies, a significant result on this triple interaction term confirms whether there is any differential effect for the Asian region compared with the baseline interaction term for all economy.

The coefficient results from the baseline regression presented in column (1) of box table 2 confirms that overall, any of the data-related restrictions economies have implemented are associated with lower levels of digital services imports. It implies an average negative trade effect in digital services of around 14% more for economies implementing any of these restrictions compared with non-implementing economies. In the extended regression in column (2), the differential impact for Asia and the Pacific becomes highly significant with a negative coefficient sign, whereas the control variable for the average effect remains only weakly significant, though still negative. Note that for columns (1) and (2) in box table 2 we put a score of 0 for those economies that have implemented data restrictions initially assigned 0.5, whereas in columns (3) and (4) we give these partial restrictions a full score of 1 to check results. The size of the coefficient results could be interpreted as Asian economies exhibiting a higher-than-average effect compared with the rest of the world, given its higher value compared with column (1) and (2). Results for Asia and the Pacific retain their negative significance when fully incorporating the partial scores for the data restrictions, as reported in the last column. The average effect for the rest of the world loses its significance entirely in both columns (3) and (4). The regression results were tested with the addition of sector SK, and the results largely remain the same.

Box table 3 reports the separate results for the three specific data restrictions. They are labeled in both tables as data localization DL, local storage requirement LS, and conditional flow regimes CF. The average effect for data localization policies disappears but becomes highly significant for the Asian region, both when entered alone and when entered together with all the other variables in column (4).

Box 7.5: continued

1: Sectors Classified as Software Intensive (Over Labor)

Code	Sector Description	Digital	Digitally Enabled
SI1	Telecommunications	٠	•
SI2	Computer	•	•
SI3	Information	•	•
SF	Insurance	•	•
SG	Financial	•	•
SH	Intellectual property		•
SJ1	Research and development		•
SJ2	Professional and management		•
SJ3	Technology, trade-related, and other		•
SB	Maintenance and repair		
SD	Travel		
SE	Construction		
SC1	Sea transport		
SC2	Air transport		
SC3	Other transport		
SC4	Postal and courier		
SK1	Audiovisual and related		
SK2	Personal, cultural, and recreation		

Source: van der Marel (2021b).

2: Baseline and Extended Difference-in-Difference Regression for Any Data-Related Restrictions

	(1)	(2)	(3)	(4)
	lr O	n(SM) . 5 > 0	ln(5 0.5	5M) > 1
CB * DS	-0.138*** (0.003)	-0.090* (0.050)	-0.097 (0.115)	-0.044 (0.478)
CB * DS * Asia and the Pacific		-0.614*** (0.000)		-0.325*** (0.000)
FE economy-year	Yes	Yes	Yes	Yes
FE sector-year	Yes	Yes	Yes	Yes
Number of observations	11,454	11,454	11,454	11,454
Adjusted R-squared	0.774	0.775	0.774	0.775
p-values F-stat		0.000		0.000

CB = cross-border data restrictions, DS = digital services sector, FE = fixed effects, SM = cross-border imports of services.

Notes: * p<0.10; ** p<0.05; *** p<0.01. p-values in parentheses.

Source: van der Marel (2021b).

In addition, the reverse seems to apply in the results for local storage requirements in column (2). This variable remains significant for the average effect across all economies but becomes insignificant when interacting with the Asia and Pacific dummy. Note that the joint significance is nearly rejected. This suggests that the trade-reducing impact of economies imposing local storage requirements may be smaller in the Asian region than elsewhere in the world. This, however, is not the case for the restrictions related to conditional flow regimes, which show negative coefficient results for the triple interaction term for Asia when entered alone and when putting together with the

Box 7.5: continued

other restrictions in column (4). The average effect for conditional flow regimes stays significant, although weak, in the last column.

The last set of regressions was repeated by expanding the list of sectors with digitally enabled services. These include intellectual property, R&D services, professional and management activities, as well as other business services. These sectors are found to have relatively high softwareover-labor ratios and are to a great extent also reliant on the cross-border flows of data. The results show that again the variable measuring data localization comes out as strongly negative and significant for the Asian interaction term. This variable stays significant when entered together with all other policy measures. However, the results for both data storage requirement and conditional flow restrictions remain largely insignificant for the Asian economies.

3: Extended Difference-in-Difference Regression for the Three Data-Related Restrictions Separately

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		ln(SM) 0.5 > 0			ln(SM) 0.5 > 1			
DL * DS	-0.069 (0.704)			-0.006 (0.978)	0.128 (0.115)			0.104 (0.202)
DL * DS * Asia	-0.873*** (0.000)			-0.931*** (0.000)	-0.580*** (0.000)			-0.578*** (0.000)
LS * DS		-0.213** (0.013)		-0.239** (0.015)		-0.099** (0.024)		-0.157*** (0.001)
LS * DS * Asia		0.061 (0.883)		-0.050 (0.905)		0.047 (0.704)		0.136 (0.302)
CF * DS			-0.022 (0.618)	-0.082* (0.075)			-0.019 (0.708)	-0.080 (0.148)
CF * DS * Asia			-0.480*** (0.000)	-0.369*** (0.000)			-0.352*** (0.000)	-0.072 (0.400)
FE country-year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE sector-year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	11,454	11,454	11,454	11,454	11,454	11,454	11,454	11,454
Adjusted R-squared	0.775	0.774	0.775	0.776	0.775	0.774	0.775	0.775
p-values F-stat	0.000	0.042	0.000	0.000	0.000	0.076	0.000	0.000

CF = conditional flow regimes, DL = data localization, DS = digital services sector, FE = fixed effects, LS = local storage requirements, SM = cross-border imports of services. Notes: * p<0.10; ** p<0.05; *** p<0.01. p-values in parentheses.

Source: van der Marel (2021b).

Source: van der Marel (2021b).

The new generation of models incorporates insights from standard trade theory, such as Ricardian technology differences and trade flows governed by structural gravity equations. But it incorporates the full general equilibrium approach of the earlier CGE literature, in the sense that macroeconomic constraints are respected, relative prices matter, and sectors exhibit input-output relationships. Model outputs are familiar from the CGE literature, but a key contribution of the model in this section is that it makes it possible to identify GVC linkages at a disaggregated level, using the same Wang, Wei, and Zhu (2013) approach as above.⁸⁹

When an economy reduces its trade costs in a particular way relative to other economies, its internal trade costs remain constant. This distinction allows for a contrast between trade liberalization and deregulation, in which domestic trade costs also fall.

Taking this approach, we define two counterfactual simulations:

- Scenario 1 (Trade Liberalization): All economies reduce international iceberg trade costs in digitally delivered services by 10% but leave intranational trade costs unchanged.
- Scenario 2 (Deregulation): All economies reduce international and intranational iceberg trade costs in digitally delivered services by 10%.

Using ADB's MRIOT, digitally delivered services are divided into the following: telecommunications; finance; real estate; other business services; and other community services. Table 7.3 shows how intra-Asian trade flows change by sector under the two scenarios. The impact on goods is heterogeneous. Many goods sectors contract slightly under Scenario 1: the cost-decreasing effect of liberalization of digitally delivered services, which promotes trade by reducing the cost of an input bundle, is dominated by a substitution effect that draws resources into the digitally delivered services. This intuition is confirmed by the figures for the digitally delivered sectors, which rise significantly. Nevertheless, such goods and services sectors as pulp, paper, paper products, printing, and publishing; rubber and plastics; machinery, not elsewhere classified; transport equipment; and retail trade, except of motor vehicles and motorcycles, and repair of household goods see a slight increase in their intraregional exports. The sale, maintenance, and repair of motor vehicles and motorcycles, and retail sale of fuel is expected to see the largest gains besides digital services themselves.

Table 7.3: Counterfactual Changes in Total Intra-Asian Exports, by Sector (% over baseline)

	Intra-Asia		Extra	-Asia
Sector	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Agriculture, hunting, forestry, and fishing	-1.131	-4.301	-0.127	-3.627
Mining and quarrying	-0.045	-3.644	0.453	-3.627
Food, beverages, and tobacco	-0.480	-4.752	-0.813	-6.627
Textiles and textile products	-0.335	-5.454	-0.178	-6.074
Leather, leather products, and footwear	-0.523	-5.715	-0.255	-6.621
Wood and products of wood and cork	-0.305	-3.995	0.739	-4.664
Pulp, paper, paper products, printing, and publishing	0.319	-1.394	1.817	0.770
Coke, refined petroleum, and nuclear fuel	-0.513	-2.824	-0.495	-3.760
Chemicals and chemical products	-0.243	-3.001	0.043	-2.569
Rubber and plastics	0.657	-3.197	0.588	-3.050
Other nonmetallic minerals	-0.507	-3.817	0.075	-3.454
Basic metals and fabricated metal	0.009	-3.767	0.136	-3.562
Machinery, not elsewhere classified	0.335	-4.187	0.608	-3.486
Electrical and optical equipment	-0.130	-3.164	0.706	-0.573
Transport equipment	0.266	-4.800	0.009	-5.346

continued on next page

⁸⁹ Full details of the model are in Shepherd (2021a).

Table 7.3 continued

	Intra-Asia		Extra	-Asia
Sector	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Manufacturing, not elsewhere classified; recycling	0.192	-4.205	0.451	-5.500
Electricity, gas, and water supply	-0.084	-1.559	-0.205	-3.422
Construction	-1.877	-4.266	0.744	-2.055
Sale, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel	0.627	-0.661	0.531	-2.234
Wholesale trade and commission trade, except of motor vehicles and motorcycles	-0.656	-3.189	0.095	-1.584
Retail trade, except of motor vehicles and motorcycles; repair of household goods	0.188	-2.163	-0.249	-2.448
Hotels and restaurants	-2.179	-4.226	0.439	-2.843
Inland transport	-0.883	-2.012	0.838	-3.153
Water transport	-0.523	-2.873	-0.460	-4.374
Air transport	-0.342	-4.085	0.575	-2.005
Other supporting and auxiliary transport activities; activities of travel agencies	-1.585	-3.769	-0.798	-3.942
Post and telecommunications	63.769	9.299	57.027	17.190
Financial intermediation	60.782	8.300	32.554	-0.432
Real estate activities	54.791	9.948	53.870	11.147
Renting of machinery and equipment and other business activities	48.385	9.872	42.012	8.676
Public administration and defense; compulsory social security	-2.114	-2.490	1.031	-1.912
Education	3.734	-1.602	-0.565	-6.157
Health and social work	-0.271	-4.428	-0.196	-3.578
Other community, social, and personal services	57.360	5.644	67.188	7.056
Private households with employed persons	1.786	8.328	2.696	12.862

Notes: Boldface indicates the digitally delivered sectors, which were subject to a change in trade costs. In Scenario 1 (Trade Liberalization), all economies reduce international iceberg trade costs in digitally delivered services by 10% but leave intranational trade costs unchanged. In Scenario 2 (Deregulation), all economies reduce international and intranational iceberg trade costs in digitally delivered services by 10%. Sector definitions are based on ADB Multi-Regional Input-Output Tables.

Source: Shepherd (2021b).

In Scenario 2, by contrast, trade contracts more substantially in all goods sectors, and rises more modestly in the digitally delivered sectors. The intuition is that deregulation lowers internal and external trade costs, so given the size of the internal market, a substantial amount of sourcing switches as a consequence: the substitution effect is stronger, as the domestic market in digitally delivered sectors expand substantially. Asia's exports to markets outside the region are also affected in the same way as with the intraregional trade. Many services that are not digitally

delivered generally suffer more under Scenario 2. For most of digitally delivered services sectors, Asia's extraregional trade is less positively affected than intraregional trade under Scenario 1.90

Table 7.4 shows changes in real income. They are typically positive but modest in both scenarios; however, the real income changes are much larger in Scenario 2 than in Scenario 1, which is a standard result in the trade literature: lowering intranational trade costs creates more "trade" because of the larger internal market, and therefore results

For counterfactual changes in Asia's exports by economy under scenarios 1 and 2, refer to Table 1c.1 in online Annex 1c. http://aric.adb.org/pdf/ aeir2022_onlineannex1.pdf.
in increased consumption possibilities due to stronger price falls consequent on reducing trade costs.

Except for Singapore, most Asian economies are estimated to gain less than 1% increase in real income under the trade liberalization scenario, while gaining significantly larger real income increase from the deregulation scenario. Although not presented in the table, globally European economies such as Luxembourg and Ireland are expected to gain the largest real income increase from scenarios 1 and 2 (Box 7.6 discusses the impacts on household welfare).

Figure 7.29 sets out the findings on GVC integration. As above, we first focus on forward linkages (DVA_INTRex).

Both scenarios see increases in GVC forward integration as a percentage of gross exports, but the effect is typically more pronounced in Scenario 1 than Scenario 2. The reason is that forward linkages are measured on an international basis, so the emphasis is on the effects in traded markets, not the domestic market. The five digitally delivered sectors see substantial increases in their GVC forward linkages, which means that other sectors are using them more intensively in the production of their own traded output. Even the deregulation scenario shows an increase in forward GVC integration for sectors of interest relative to the baseline, due to the changed incentives to engage in international sourcing.

Table 7.4: Counterfactual Changes in Real Income by Economy (% change over baseline)

Economy	Scenario 1	Scenario 2
Bangladesh	0.07	2.71
Bhutan	0.22	2.04
Brunei Darussalam	0.34	2.30
Cambodia	0.28	2.68
China, People's Republic of	0.11	4.64
Hong Kong, China	1.07	8.23
India	0.31	2.04
Indonesia	0.09	2.44
Japan	0.04	5.22
Kazakhstan	0.21	4.12
Kyrgyz Republic	0.40	3.27
Korea, Republic of	0.32	5.81
Lao People's Democratic Republic	0.23	2.32
Malaysia	0.51	5.25
Maldives	0.74	2.54
Mongolia	0.65	3.45
Nepal	0.18	3.37
Pakistan	0.15	2.77
Philippines	0.63	3.69
Singapore	4.09	6.59
Sri Lanka	0.17	4.63
Taipei,China	0.25	4.33
Thailand	0.40	3.07
Viet Nam	0.57	2.70

Notes: In Scenario 1 (Trade Liberalization), all economies reduce international iceberg trade costs in digitally delivered services by 10% but leave intranational trade costs unchanged. In Scenario 2 (Deregulation), all economies reduce international and intranational iceberg trade costs in digitally delivered services by 10%.

Source: Shepherd (2021b).

Box 7.6: Impacts of Digital Services Trade on Household Welfare

There are many channels via which trade in digital services can affect household welfare. These services have potential impacts on consumer prices, wages, and on technologies and productivity. Exports and imports of digital services can have more widespread impacts on wages, not only in services but also on manufacturing wages. This can happen if digital services are used as intermediate inputs in production.

Note that, with imperfections in labor mobility, there can be wage differentials across sectors. In particular, there is an export-service premium, which in principle can benefit both skilled and unskilled labor—even though the export sector is skill intensive. But this requires a gradual process of adjustment. Expansion of the export sector raises demand for skilled labor, increasing the skilled wage in the export sector and decreasing it in the import sector. If the digital service is imported, then lower protection and more trade may imply lower wages. The final case to consider is when digital services are not produced domestically.

However, because of the nature of the labor input required, this service may create a demand for the labor factor in the home economy. To illustrate, the service could be a digital conferencing software developed or produced abroad, which utilizes labor from different economies in, for example, writing computer codes, rendering graphics, and so on. Trade in digital services can have impacts on consumer prices. For example, enhanced trade can bring services and manufacturing prices down, directly via access to lower international prices or also indirectly via reduction in the costs of producing goods locally. Based on the household survey data, which captures expenditure share of manufacturing goods and services as well as wages and labor incomes across different income groups, we find that increase in trade in digital services is likely to help in reducing absolute poverty in most Asian economies. This can operate both via higher wages and lower prices, though the latter mechanism is probably stronger. However, this poverty-reducing effect could also come at the cost of higher inequality. This is because digital services are more likely to generate increases in wages of urban and skilled workers, and these workers reside in initially better-off households. In addition, the prices of the goods that are likely to decline due to access to cheaper digital services inputs are goods that consumed relatively more by the richer households.

Much depends on how well governments can spread digital awareness and provide access to digital infrastructure across both urban and rural areas, income and age groups, gender and social strata and all sizes of businesses, including through public-private partnerships. For example, regulations which enable access to lower cost overseas cloud servers and cross-border data transfers can enable local enterprises to provide data-driven, affordable solutions to the poorer sections of the home market. The extent to which development benefits will be dispersed and digital divide related challenges overcome will be largely a function of how well governments understand and address the factors affecting the competitiveness of digital services trade and the enabling framework set out above in an equitable manner.

Source: Porto (2021).

From the perspective of value chains in the region, Figure 7.29 suggests that liberalizing digitally delivered services sectors can increase their breadth and depth, both in the affected sectors and elsewhere in the economy. The effect is to deepen value chain trade not only in digitally delivered services, but in goods sectors and other services sectors.⁹¹ Overall, the directional changes over baseline are the same, but the magnitudes are generally larger, particularly under Scenario 1. Moving to backward linkages in Figure 7.30, both scenarios deliver modest increases in backward GVC integration across the board. The increases are largest for the five digital services sectors, consistent with the fact that the two scenarios only shock trade costs in those sectors. The greater impact from Scenario 1 compared with 2 is more prominent in the backward linkages. Given that backward GVC integration, like forward integration, changes only relatively slowly in

⁹¹ Table 1c.2 in online Annex 1c (http://aric.adb.org/pdf/aeir2022_onlineannex1.pdf) also illustrates the impact on Asia's forward GVC participation with extra Asian economies.

proportional terms, the sector results are significant in shocked sectors as well as in some other services sectors such as the sale, maintenance, and repair of motor vehicle and motorcycles; retail sale of fuel, and retail trade, except of motor vehicles and motorcycles; repair of household goods. The general picture that emerges is similar to the one for forward linkages, in the sense that value chains generally deepen in the region, and this effect extends not only to the shocked sectors but also to other parts of the economy (services value chains as well as goods).

Asia's backward GVC participation with extraregional economies are expected to be affected in a similar way under both scenarios. However, the impact will likely be smaller than for intraregional backward GVC participation, reflecting Asia's closer intraregional backward GVC linkage than extraregional.⁹²

Figure 7.29: Forward GVC Participation as a Percentage of Gross Exports by Sector—Intra-Asia and the Pacific



GVC = global value chain, M&E = machine and equipment, n.e.c. = not elsewhere classified.

Notes: In Scenario 1 (Trade Liberalization), all economies reduce international iceberg trade costs in digitally delivered services by 10% but leave intranational trade costs unchanged. In Scenario 2 (Deregulation), all economies reduce international and intranational iceberg trade costs in digitally delivered services by 10%. Sector definitions are based on ADB Multi-Regional Input-Output Tables. Sectors within the dotted outline are the digitally delivered sectors used in the analysis.

Source: Configurated based on Shepherd (2021b).

⁹² Table 1c.3 in online Annex 1c (http://aric.adb.org/pdf/aeir2022_onlineannex1.pdf) also illustrates the impact on Asia's forward GVC participation with extra Asian economies.

Figure 7.30: Backward GVC Participation as a Percentage of Gross Exports by Sector-Intra-Asia and the Pacific

(% change over baseline)



GVC = global value chain, M&E = machine and equipment, n.e.c. = not elsewhere classified.

Notes: In Scenario 1 (Trade Liberalization), all economies reduce international iceberg trade costs in digitally delivered services by 10% but leave intranational trade costs unchanged. In Scenario 2 (Deregulation), all economies reduce international and intranational iceberg trade costs in digitally delivered services by 10%. Sector definitions are based on ADB Multi-Regional Input-Output Tables. Sectors within the dotted outline are the digitally delivered sectors used in the analysis.

Source: Configurated based on Shepherd (2021b).

Policy Recommendations

Digitally delivered services are an important part of the trade landscape in Asia and the Pacific, and the evidence presented in this section suggests that trade costs, including those due to regulatory heterogeneity, are a significant determinant of the observed pattern of trade and GVC integration across economies. In light of these realities, it is not surprising that a "thought experiment" in which trade costs are reduced for digitally delivered

services—either through trade liberalization (foreign partners only) or deregulation (all partners, including domestic trade)—typically impact the regional economy significantly. Domestic regulatory reform generally has the larger impact on real incomes while trade effects are stronger for trade liberalization.

In addition, the simulation exercise shows that a reduction in trade costs in digitally delivered services can have spillover effects to other sectors. There is clear potential for trade liberalization and deregulation to promote increased use of digitally delivered services as inputs for the production and export of other goods and services, which cements the already important role they play in regional GVCs.

These findings suggest three major conclusions. First, from a welfare perspective, it is important to consider nondiscriminatory policy changes in addition to trade policy reforms. While both are important from a purely trade flow perspective, changes in real income tend to be dominated by reforms that also influence domestic market conditions. This result is highly intuitive: many economies tend to source bulk of their inputs domestically and sell their outputs there, in sectors identified as digitally enabled. As a result, the price implications of policy reform are maximized when reforms are implemented in the domestic market, not just internationally. So, efforts to liberalize the policy environment should ensure that non-discriminatory measures are also addressed. Enhancing services domestic regulations should be geared toward enhancing transparency and strengthening non-discriminatory nature of qualification requirements and procedures, technical standards, and licensing requirements to the extent possible (Box 7.7).

Second, Asian economies have clear scope to conduct policy reforms from the perspective of promoting regional and international transactions. The data show substantial variation in policy stances within the region, ranging from relatively liberal to relatively restricted. Reducing trade costs can therefore help focus on moving toward policy regimes that are less restrictive and support the freer transmission of digitally deliverable services.

Box 7.7: Domestic Regulations in Asia-Pacific Economic Cooperation Economies

Services are key economic drivers in the Asia-Pacific Economic Cooperation (APEC) region. In a majority of APEC member economies, services make up more than half of their gross domestic product. However, services still have room to contribute to growth and export performance. The APEC region could do better on the export front by addressing behind-the-border regulations and barriers. The benefits for firms are manifold. It allows service provider firms to be more competitive in offering services across borders and to leverage wider markets. For service user firms, it gives them access to better services as inputs or final consumption. In the context of digital services, these include for instance, the ability to access cloud computing and data analytics services. Improving domestic regulations could reduce services trade costs in the APEC region by 7%, which translates to savings in total trade cost of about \$75 billion (Benz 2021).

Recognizing the role of domestic regulations in services trade, the APEC Services Competitiveness Roadmap endorsed by APEC Leaders in 2016—identified a set of good practice principles on domestic regulations in the services sector. These are reflected in the APEC Nonbinding Principles for Domestic Regulation of the Services Sector, adopted in 2018 (APEC 2018). The principles offer best practices covering provisions such as administration of measures (including application submission and processing), independence, transparency (including information publication and enquiry points), and technical standards. Since its adoption, APEC economies have taken steps to enhance the understanding and operationalization of the principles. A recent study examined the development of domestic regulations with a focus on transparency provisions (APEC and USAID 2020a). Another showcased innovative, next-generation approaches to domestic regulation to reduce compliance costs and improve regulatory outcomes (APEC and USAID 2020b). Also, a survey was conducted to understand APEC economies' regulations of online shopping platform services and their consistency with the nonbinding principles.^a Workshops have also been organized to share best practices in applying the principles on sector-specific and crosscutting issues and to discuss ways to harmonize the principles with economies' right to regulate.

As negotiations on domestic regulations in services trade move forward, the APEC nonbinding principles could contribute to these deliberations and provide lessons for Asia and the Pacific on the most adequate design and implementation of liberalization measures.

^a See Survey on Domestic Regulations in APEC Concerning Online Shopping Platform Service Providers in APEC Project Database. https://aimp2.apec.org/sites/ PDB/Lists/Proposals/DispForm.aspx?ID=2567 (accessed November 2021).

Sources: Asia-Pacific Economic Cooperation Policy Support Unit based on Benz (2020); APEC (2018, 2019); and APEC and USAID (2020a, 2020b).

environment for digitally delivered services can have spillover effects to other sectors, including through GVC linkages. As a result, ongoing policy discussions on GVC deepening in the region, as well as trade policy linkages more broadly, need to consider the digital dimension. Trade agreements are increasingly devoting specific text to digital issues, but a case can also be made for ensuring that schedules of specific commitments are similarly ambitious in the sectors identified as digitally delivered. New generation trade agreements involving Asian economies, such as the 11-nation Comprehensive and Progressive Agreement of Trans-Pacific Partnership (CPTPP) and the 15-nation Regional Comprehensive Economic Partnership (RCEP), will be evaluated in part based on their ability to extend GVC linkages, including through supporting the use of digital technologies. Using trade agreements to reduce regulatory heterogeneity as well as liberalizing underlying policies could be a fruitful avenue to explore for regional integration efforts.

Trade Rules, Regulations, and Regional Cooperation

Regulation of Digital Services in the WTO⁹³

Pending eventual negotiations of new disciplines in the WTO, the main obligations for the regulation of digital trade or e-commerce under the existing WTO legal framework can be found in the General Agreement on Trade in Services (GATS) and in the GATS Reference Paper on Telecommunications.⁹⁴ The reference paper sets out the basic rights of access to and use of public telecommunications transport networks and services

by services suppliers, including e-commerce suppliers (WTO 1994). The general principle is that such services suppliers shall be given access to and use of public telecommunications, transport networks, and services on reasonable and non-discriminatory terms and conditions. This principle strikes a delicate balance between users' rights (para. 5 lit. b and c) and regulators' rights (para. 5 lit. e-g).⁹⁵ Another key discipline has been the WTO Moratorium on Customs Duties on Electronic Transmissions (Box 7.8).

Beyond the rules in the telecom reference paper, the issues involved in the regulation of digital trade in the WTO fall largely into the following three areas.

The first is the classification issue. As stated earlier, internet activities can be classified as goods or services (Wunsch-Vincent and Hold 2012). The distinction is not merely theoretical but has profound practical implications. If they are treated as goods, they could be subject first and foremost to customs duties, as well as most favored nation (MFN), national treatment, and an entire set of nontariff disciplines such as those on rules of origin, import licensing, customs valuation, and so on. On the other hand, if they are treated as services, the members will be unable to regulate them through border measures such as tariffs, but they would have significant leeway in imposing domestic regulations. While some activities such as the online delivery of books and audiovisual products could arguably be classified as goods according to the technology-neutrality principle,⁹⁶ most activities carried through the internet share more similarities with services trade. For example, many e-commerce activities such as online shopping and gaming are intangible and non-storable like services. Similarly, many e-commerce activities such as online search and e-mail involve joint inputs from suppliers and consumers-and so, as for other services, are tailored to the needs of specific consumers.

⁹³ This section is largely based on Gao (2021b) and Chaisse, Gao, and Lo (2017).

⁹⁴ E-commerce and digital trade are often used interchangeably but as noted at the outset of this chapter the OECD definition of e-commerce (which covers only digitally ordered trade) differs from the WTO definition which also covers digital delivery of services. The term e-commerce is sometimes used therefore to refer in this chapter only to e-commerce for goods. The chapter otherwise refers to e-commerce for services (e-services) or more often to digital services trade including data flows.

⁹⁵ Gao (2008) presents a detailed discussion on this principle.

⁹⁶ As noted by the WTO Secretariat, "the GATS is technologically neutral in the sense that it does not contain any provisions that distinguish between the different technological means through which a service may be supplied" (WTO 1999).

Box 7.8: The Evolution of Digital Services in the World Trade Organization

At the 2nd World Trade Organization (WTO) Ministerial Conference in May 1998, WTO members adopted a Declaration on Global Electronic Commerce focusing on the establishment of a comprehensive work program on "all trade-related issues relating to global electronic commerce" and a WTO moratorium on customs duties on electronic transmissions (WTO 1998).

WTO Work Programme on Electronic Commerce (WPEC)

Under the WPEC adopted by the General Council in September 1998, "electronic commerce" covers "the production, distribution, marketing, sale or delivery of goods and services by electronic means (WTO 1998). It also includes within its scope "issues relating to the development of the infrastructure for electronic commerce." Responsibilities are divided among different WTO bodies required to report progress to the General Council regularly:

- The Council for Trade in Services is responsible for examining the treatment of e-commerce in the General Agreement on Trade in Services (GATS) legal framework, including horizontal issues such as the scope and classification of sectors, access to and use of public telecommunications transport networks and services, and the application of both core unconditional obligations (most favored nation, transparency) and discretionary negotiated commitments (market access, national treatment, domestic regulations);
- The Council for Trade in Goods is tasked with examining aspects of e-commerce relevant to the provisions of GATT 1994, the agreements covered under Annex 1A of the WTO Agreement, and the approved work program, which include tariff-related issues, and nontariff issues such as rules of origin, customs valuation, import licensing and standards;
- The Council for Trade-Related Aspects of Intellectual Property Rights deals with issues arising in connection with e-commerce (protection and enforcement of copyright and trademarks, access to technology);
- The Committee on Trade and Development reviews and reports on the development implications of e-commerce, taking into account the economic,

Sources: Gao (2021b) and Chaisse, Gao, and Lo (2017).

financial, and development needs of developing economies; and

• **The General Council** is responsible for the review of any crosscutting trade-related issues and all aspects of the work program concerning the imposition of customs duties on electronic transmissions.

Moratorium on Customs Duties

The "practice of not imposing customs duties on electronic transmissions" has been extended repeatedly since 1998 and is due for renewal (at the time of writing) in December 2021 (WTO 2019). This moratorium nevertheless left some questions unanswered.

- 1. Does the term "electronic transmissions" refer only to the medium of e-commerce, or to the content of the transmission as well, i.e., the underlying product or service being transmitted?
- 2. If it refers to the medium of transmission only, could other digital products that are supplied via traditional mediums, such as books, music, or videos on CDs, be subject to customs duties?
- 3. Does the prohibition apply only to customs duties, or does it extend to other fees or charges imposed on the digital products?
- 4. Does the moratorium apply only to imports or to exports as well?

Although contested, the moratorium is widely cited by the global services business community as having played a fundamental role in support of innovation and growth in digital services, and some WTO members have made commitments in regional trade agreements to permanent bans on customs duties on e-transmissions.

Notwithstanding the work program's ambitious agenda, WTO members have not been able to reach any decisions on new substantive disciplines on e-commerce (WTO 2013). This changed at the 11th Ministerial Conference in December 2017, when 71 members led by three coconveners—Australia, Japan, and Singapore—issued a joint statement to "initiate exploratory work together toward future WTO negotiations" on e-commerce. The plurilateral negotiations were formally launched in January 2019 and at the time of writing, 86 members are now participating.

GATS, with its focus on services, adopts a different regulatory approach to the General Agreement on Tariffs and Trade (GATT), which applies a uniform set of rules to most products. According to the "positive listing" approach, WTO members only assume obligations with respect to sectors included in their schedule of specific commitments (GATS Article XVI: Market Access). Thus, to determine whether a given e-commerce activity is covered, one has to determine which sector or subsector it falls under and then examine the respective schedules.

Second, even for services covered in its schedule, a WTO member may choose among different levels of liberalization by inscribing commitments ranging from "none" (which means "no limitation" or "fully liberalized") to "unbound" (which means "no commitment") in the market access and national treatment columns (WTO 2001). Thus, determining a member's specific obligations regarding e-commerce activities requires examining the specific wording of that member's schedule.

Third, legitimate policy reasons may lead WTO members to deviate from their trade obligations. Such deviations are permitted by both GATT and GATS through the "General Exceptions" clauses (GATT 1994 Article XX and GATS Article XIV). However, as illustrated by the record of WTO disputes, the preferred exceptions under each agreement are rather different. Under GATT, the most commonly cited exceptions are the ones to protect public health and the environment.⁹⁷ In contrast, the most frequently invoked GATS clause has been the public morals exception.⁹⁸

Due to its unique nature, e-commerce activities pose special challenges to the GATS regulatory framework on all three issues. While GATS, in its current form, is not well suited to the regulation of e-commerce, it can keep up with the regulatory task. However, to make this happen, appropriate solutions should be sought to deal with e-commerce activities, especially on key issues such as classifications, obligations, and exceptions. While a number of issues involved in the regulation of digital trade in WTO are currently being addressed in the plurilateral negotiations under way through the Joint Initiative on Trade Related Aspects of E-Commerce (Box 7.9), much can be learned from the approaches taken by key players in various regional trade agreements (RTAs).

International Governance99

Any framework for digital trade regulation would need to cover cross-border data flows and hence to involve *the individual*, who provides the raw data and uses the processed data; *the firm*, which processes raw data inputs from the consumer, but may or may not control such data; and *the state*, which might monitor and regulate the data used by the first two groups. The different interests of these three types of players can result in conflicting priorities, with the individual advocating privacy protection, the firm promoting freedom of cross-border data flows, and the state focusing on trust and security aspects.

While all regulators would agree on the need to strike a balance between the different and possibly diverging interests of each group of stakeholders, their approaches often differ in practice. Some jurisdictions prioritize the need to safeguard the privacy of users. One example is the General Data Protection Regulation (GDPR) of the European Union (EU), which recognizes "[t]he protection of natural persons in relation to the processing of personal data" as "a fundamental right" (European Parliament and Council 2016). Other jurisdictions put commercial interests first. In the United States, this is reflected in the 1996 Telecommunication Act, which notes that it is "the policy of the United

⁹⁹ This section is largely based on Gao (2021a, 2021b).

⁹⁷ GATT 1994 Article XX (b) was invoked in disputes such as the European Communities—Measures Affecting Asbestos and Asbestos-Containing Products (DS135); Brazil—Measures Affecting Imports of Retreaded Tyres (DS332); European Communities—Measures Prohibiting the Importation and Marketing of Seal Products (DS400, DS401); the United States—Measures Affecting the Production and Sale of Clove Cigarettes (DS406); Indonesia—Importation of Horticultural Products, Animals and Animal Products (DS477, DS 478). GATT 1994 Article XX(g) was invoked in disputes such as the United States—Standards for Reformulated and Conventional Gasoline (DS2); the People's Republic of China—Measures Related to the Exportation of Various Raw Materials (DS394, DS395, DS398); and the People's Republic of China—Measures Related to the Exportation of Rare Earths, Tungsten and Molybdenum (DS431, DS432, DS433).

⁹⁸ GATS Article XIV(a) has been invoked in disputes such as the United States—Measures Affecting the Cross-Border Supply of Gambling and Betting Services (DS285); and the People's Republic of China—Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products (DS363).

States ... to preserve ... free market ... unfettered by Federal or State regulation."¹⁰⁰ National security concerns are often cited to justify restrictions on cross-border data flows, though in varying degrees in different economies. A recent example is the PRC's 2017 Cybersecurity Law, which imposed several restrictions aiming to "safeguard cyber security, protect cyberspace sovereignty and national security."¹⁰¹ These divergent but not necessarily entirely incompatible approaches to building trust in the online environment are reflected in the RTAs concluded by the three main players.¹⁰²

United States

The United States (US) trade agreements are pioneering the inclusion of digital trade issues with an expansive set of obligations. In particular, two provisions are now essential (sine qua non) in the digital trade chapters of US trade agreements, with the recently concluded United States-Mexico-Canada Agreement (USMCA) as the leading example: the first is the guarantee on free cross-border flow of data by stating that "no Party shall prohibit or restrict the cross-border transfer of information, including personal information, by electronic means"; and the second is the prohibition of data localization requirements by stipulating that "no Party shall require a covered person to use or locate computing facilities in that Party's territory as a condition for conducting business in that territory."¹⁰³ These two provisions provide strong protection of the interests of the firm, which deem restrictions on cross-border flow of data and various localization requirements as obstacles to conducting businesses across national boundaries. The US approach essentially enables firms to have strong control on both border measures and domestic regulations.

Many other provisions in the USMCA are also designed to pave the way for the development of digital trade,

either by removing regulatory barriers (e.g., the provision non-discriminatory treatment of digital products) or by providing an enabling framework (e.g., provisions covering the domestic legal framework for e-transactions, recognition of legal validity of e-signatures or e-authentication methods, acceptance of e-documents as legal equivalents of their paper versions, and open government data). One significant provision is the clause providing consumers (including business users) with freedom of access to and use of the internet for e-commerce, subject only to network management and network safety restrictions (Article 19.10 of USMCA). This provision grew out of the net neutrality principle from the domestic telecommunications' regulatory framework within the US. It is mainly designed to limit risks from market players that own or control key telecommunications infrastructure and internet services providers that could abuse their power by unreasonably denying their business users access to their infrastructure.

People's Republic of China

For the PRC, the key to data regulation is data security, which also affects national security and national sovereignty (Gao 2019). The PRC has traditionally taken a cautious approach to provisions on digital trade in trade agreements. Until recently, it did not include e-commerce chapters in its RTAs. This changed with its free trade agreements (FTAs) with the Republic of Korea and Australia, both signed in 2015. The provisions in both are modest, however, and mainly address trade facilitation issues. A major breakthrough was made in RCEP, which the PRC signed along with 14 other economies in the region in November 2020. In the chapter on e-commerce, the PRC like all other RCEP parties¹⁰⁴ agreed to not "require a covered person to use or locate computing facilities in that Party's

¹⁰⁰ Telecommunication Act of 1996. 47 U.S.C. 230(b)(2). See Cornell Law School. Legal Information Institute. 47 U.S.C. 230 - Protection for private blocking and screening of offensive material. https://www.law.cornell.edu/uscode/text/47/230.

¹⁰¹ Cybersecurity Law of the People's Republic of China [Zhonghua Renmin Gongheguo Wangluo Anquan Fa], as adopted at the 24th Session of the Standing Committee of the 12th National People's Congress of the People's Republic of China on 7 November 2016, Article 1 (Gao 2021b).

¹⁰² Kerneis (2021) provides a recent European perspective on these three main approaches.

¹⁰³ Articles 19.11 and 19.12 of the Government of the United States, Office of the United States Trade Representative. United States-Mexico-Canada Agreement (USMCA) Legal Text. USMCA 7/1/20. https://ustr.gov/trade-agreements/free-trade-agreements/united-states-mexico-canada-agreement/ agreement-between.

¹⁰⁴ While RCEP has made a significant breakthrough in governing cross-border data flows, there remain constraints from the perspectives of essential security interests and necessity test criteria.

territory as a condition for conducting business in that Party's territory," or "prevent cross-border transfer of information by electronic means where such activity is for the conduct of the business of a covered person."¹⁰⁵

Privacy protection is a relatively new concept in the PRC law. Privacy was first recognized as a civil right under the Tort Liability Law in 2009. This was incorporated into the PRC's new Civil Code in 2020, which has a separate chapter on privacy and personal information protection as part of the volume on personality rights.¹⁰⁶ Under Art 1035 of the Civil Code, processing of personal information shall be based on the consent of the data subject, "except if there are different requirements under laws or administrative regulations." This approach is also adopted in the PRC's new Personal Information Protection Law (Article 13.3), which confirms that data processors do not need to obtain the consent of the data subject when necessary for discharging official duties and responsibilities. Some of these features are not unique to the PRC and can be found in other privacy laws such as the GDPR.¹⁰⁷

European Union

The EU has an overriding concern for the privacy of the individual. This started with the Data Protection Directive in 1995, which prohibits the transfer of personal data to economies outside the EU unless their privacy protection standards are deemed adequate (European Parliament and Council 1995). The directive was replaced by the GDPR in 2018 (Aaronson and Leblond 2018). Despite having a name that suggests a broader reach, the GDPR applies only to personal data, which is defined as "any information relating to an identified or identifiable natural person ('data subject')" (Article 4.1). It regulates the behavior of the data controller, defined as the one who "determines the purposes and means of the processing of personal data," (Article 4.7) and the processor, who "processes personal data on behalf of the controller" (Article 4.8). Under the GDPR, processing of personal data is only allowed under certain conditions, including with the "explicit" consent of the data subject under a set of principles specifying the scope and manner of such processing (Articles 5.1 and 6.1).¹⁰⁸ Transfer of personal data to third economies is allowed only on the basis of an adequacy decision or appropriate safeguards (Articles 45 and 46).

Following introduction of the GDPR, European Commission officials have advocated "technological sovereignty" for the EU (Burwell and Propp 2020).¹⁰⁹ "Technological sovereignty" is a concept closely linked with "digital sovereignty," which was elaborated in the European Commission's Communication on a European Strategy for Data, unveiled in February 2020.¹¹⁰ Many commentators have suggested that the EU's new data strategy is designed to "counter the strong position of US and Chinese digital companies in the European market" and remedy "the key European disadvantage" of "the lack of significant European digital corporations with global influence" (Burwell and Propp 2020; Shapiro 2020). The new data strategy aims to create "a single European data space" so that "by 2030, the EU's share of the data economy-data stored, processed and put to valuable use in Europe-at least corresponds to its economic weight, not by *fiat* [ruling] but by choice" (European Commission 2020a).

On data flow, the EU takes a bifurcated approach. Nonpersonal data are supposed to flow freely under the EU's Framework for the Free Flow of Non-Personal Data (European Parliament and Council 1998). Crossborder flow of personal data subject to the stringent requirements of the GDPR, despite the explicit recognition under the GDPR that "[f]lows of personal data to and

¹⁰⁵ Articles 12.14 and 12.15 of the ASEAN Secretariat. RCEP Agreement Legal Text. https://rcepsec.org/legal-text/.

¹⁰⁶ Chapter 6, Volume 4 of The State Council of the PRC. See Civil Code of the People's Republic of China. http://english.www.gov.cn/archive/ lawsregulations/202012/31/content_WS5fedad98c6d0f72576943005.html.

¹⁰⁷ For example, Article 6 of the GDPR.

¹⁰⁸ See also Mattoo and Meltzer (2018).

¹⁰⁹ Scott (2019) provides the statement by EU President Ursula von der Leyen. European Commission (2019) includes the statement by incoming EU commissioner for the internal market, Thierry Breton.

¹¹⁰ Burwell and Propp (2020) discusses the distinction between technological sovereignty and digital sovereignty.

from economies outside the Union and international organizations are necessary for the expansion of international trade and international cooperation." Due to its unilateral nature and high compliance costs, the GDPR is generally considered to be "challenging especially for the small and medium-sized enterprises" (Irwin 2021; European Commission 2020b).

"Digital Provisions" of Trade Agreements in Developing Asia

The three models discussed here are not limited to the three jurisdictions. As illustrated by Ferracane and van der Marel (2021), these three models cover most economies around the world, including in Asia and the Pacific.

To assess the state of play in Asia and the Pacific, this section provides a mapping of the main RTAs in the region with chapters on e-commerce or digital trade which have been entered into by the main players since 2000, i.e., the PRC; the Republic of Korea; Japan; India; Australia; New Zealand; ASEAN; and individual ASEAN members Singapore, Viet Nam, and Malaysia. The mapping also covers the mega RTAs in the region—i.e., RCEP, CPTPP, USMCA, and the EU-Canada Comprehensive Economic and Trade Agreement—as well as the two stand-alone digital trade agreements: the Digital Economy Partnership Agreement (DEPA) between Singapore, New Zealand, and Chile, and the Digital Economy Agreement (DEA) between Singapore and Australia. Using the CPTPP and USMCA as benchmarks, the mapping groups digital trade provisions into the four categories shown in Table 7.5.111

Table 7.5: Categories of Digital Trade Provisions in Trade Agreements

Trade facilitationBan on customs duties on e-transmissionProvisions designed to create a facilitating environment for digital trade. These provisions provie the necessary regulatory and technological environment to enable the smooth functioning of digital trade, which also forms the bedrock on which digital services trade can be conducted.Non-discriminatory treatment of digital products Domestic electronic transactions framework Electronic authenticationEnabling businessElectronic authenticationElectronic signatures Paperless tradingProvisions to reduce the commercial and regulatory burden for digital services trade provises to a minimum. These provisions focus on the most common regulatory and commercial obstacles facing digital services trade firms. By removing these obstacles, digital services will flow more freely across economies, creating massive economies of scale with the data they amass across different markets.Access to and use of the internet for electronic commerceForsuisons to protection Provisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers in digital services trade and the indirectly boost the take-up rate of digital services among consumers.Online consumer protection Privacy and personal information protection Unsolicited commercial electronic messagesRegulatory autonomyCheserement, the space necessary to address various social policy objectives even though the might ostensibly be inconsistent with various obligations under the digital trade chapter.CybersecurityElectronic autonCooperationCybersecurityElectronic autonDisolicited commercial and regulatory and consumers of consumers, these provisions enhanc	Category	Provisions
Provisions designed to create a facilitating environment for digital trade. These provisions provide the necessary regulatory and technological environment to enable the smooth functioning of digital trade, which also forms the bedrock on which digital services trade can be conducted. Non-discriminatory treatment of digital products Domestic electronic transactions framework Electronic authentication Enabling business Paperless trading Provisions to reduce the commercial and regulatory burden for digital services trade providers to a minimum. These provisions focus on the most common regulatory and commercial obstacles facing digital services trade firms. By removing these obstacles, digital services will flow more freely across economies, creating massive economies of scale with the data they amass across different markets. Access to and use of the internet for electronic commerce Consumer protection Provisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers in digital services trade and thus indirectly boost the take-up rate of digital services among consumers. Online consumer protection Preserve the regulatory autonomy Fkegulatory autonomy of the government. These provisions help the governments to reserve the space necessary to address various social policy objectives even though they might ostensibly be inconsistent with various obligations under the digital trade chapter. Cybersecurity	Trade facilitation	Ban on customs duties on e-transmission
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Electronic authenticationElectronic signaturesProvisions to reduce the commercial and regulatory burden for digital services trade provisions to a minimum. These provisions focus on the most common regulatory and commercial obstacles facing digital services trade firms. By removing these obstacles, digital services will flow more freely across economies, creating massive economies of scale with the data they amass across different markets.Access to and use of the internet for electronic commerceForsumer protection Provisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers in digital services trade and thus indirectly boost the take-up rate of digital services among consumers.Online consumer protection Privacy and personal information protection Privacy and personal i	digital trade, which also forms the bedrock on which digital services trade can be conducted.	Domestic electronic transactions framework
Electronic signaturesPaperless tradingProvisions to reduce the commercial and regulatory burden for digital services trade proviters to a minimum. These provisions focus on the most common regulatory and commercial obstacles facing digital services trade firms. By removing these obstacles, digital services will flow more freely across economies, creating massive economies of scale with the data they amass across different markets.Access to and use of the internet for electronic commerceProvisions to protection Provisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers.Online consumer protection Privacy and personal information protection Privacy and personal information protection Unsolicited commercial electronic messagesRegulatory autonomy Preserve the regulatory autonomy of the government. These provisions help the governments to reserve the space necessary to address various social policy objectives even though they might ostensibly be inconsistent with various obligations under the digital trade chapter.Cybersecurity Exceptions Cooperation		Electronic authentication
Enabling business Provisions to reduce the commercial and regulatory burden for digital services trade providers to a minimum. These provisions focus on the most common regulatory and commercial obstacles facing digital services trade firms. By removing these obstacles, digital services will flow more freely across economies, creating massive economies of scale with the data they amass across different markets.Access to and use of the internet for electronic commerceProvisions to protection Provisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers in digital services trade and thus indirectly boost the take-up rate of digital services among consumers.Online consumer protection Privacy and personal information protection Unsolicited commercial electronic messagesRegulatory autonomy Preserve the space necessary to address various social policy objectives even though they might ostensibly be inconsistent with various obligations under the digital trade chapter.CybersecurityResultors autonomy might ostensibly be inconsistent with various obligations under the digital trade chapter.Cooperation		Electronic signatures
Enabling businessAccess to and use of the internet for electronic commerceProvisions to reduce the commercial and regulatory burden for digital services trade providers to a minimum. These provisions focus on the most common regulatory and commercial obstacles facing digital services trade firms. By removing these obstacles, digital services will flow more freely across economies, creating massive economies of scale with the data they amass across different markets.Free flow of dataProhibition on forced transfer of source code Open government dataOpen government dataProvisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers in digital services trade and thus indirectly boost the take-up rate of digital services among consumers.Online consumer protection Privacy and personal information protection Privacy and personal information protection Unsolicited commercial electronic messagesRegulatory autonomy might ostensibly be inconsistent with various obligations under the digital trade chapter.Coperation		Paperless trading
to a minimum. These provisions focus on the most common regulatory and commercial obstacles facing digital services trade firms. By removing these obstacles, digital services will flow more freely across economies, creating massive economies of scale with the data they amass across different markets. Consumer protection Provisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers in digital services trade and thus indirectly boost the take-up rate of digital services among consumers. Regulatory autonomy Preserve the regulatory autonomy of the government. These provisions help the governments to reserve the space necessary to address various social policy objectives even though they might ostensibly be inconsistent with various obligations under the digital trade chapter. Regulatory Result true digital trade chapter . Result true digital trade chapter .	Enabling business Provisions to reduce the commercial and regulatory burden for digital services trade providers	Access to and use of the internet for electronic commerce
Bostacles facing digital services face finities by ferrioring these obstacles, digital services with Prohibition of data localization flow more freely across economies, creating massive economies of scale with the data they Prohibition of data localization amass across different markets. Prohibition on forced transfer of source code Open government data Online consumer protection Provisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers in digital services trade and thus indirectly boost the take-up rate of digital services among consumers. Online consumer protection Regulatory autonomy Preserve the regulatory autonomy of the government. These provisions help the governments to reserve the space necessary to address various social policy objectives even though they might ostensibly be inconsistent with various obligations under the digital trade chapter. Cybersecurity	to a minimum. These provisions focus on the most common regulatory and commercial	Free flow of data
amass across different markets.Prohibition on forced transfer of source code Open government dataConsumer protection Provisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers in digital services trade and thus indirectly boost the take-up rate of digital services among consumers.Online consumer protection Privacy and personal information protection Unsolicited commercial electronic messagesRegulatory autonomy Preserve the regulatory autonomy of the government. These provisions help the governments to reserve the space necessary to address various social policy objectives even though they might ostensibly be inconsistent with various obligations under the digital trade chapter.Cybersecurity Exceptions	flow more freely across economies, creating massive economies of scale with the data they	Prohibition of data localization
Consumer protectionOnline consumer protectionProvisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers in digital services trade and thus indirectly boost the take-up rate of digital services among consumers.Online consumer protection Privacy and personal information protection Unsolicited commercial electronic messagesRegulatory autonomy Preserve the regulatory autonomy of the government. These provisions help the governments to reserve the space necessary to address various social policy objectives even though they might ostensibly be inconsistent with various obligations under the digital trade chapter.Cybersecurity Exceptions	amass across different markets.	Prohibition on forced transfer of source code
Consumer protectionOnline consumer protectionProvisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers in digital services trade and thus indirectly boost the take-up rate of digital services among consumers.Online consumer protection Privacy and personal information protection Unsolicited commercial electronic messagesRegulatory autonomy Preserve the regulatory autonomy of the government. These provisions help the governments to reserve the space necessary to address various social policy objectives even though they might ostensibly be inconsistent with various obligations under the digital trade chapter.Online consumer protection Privacy and personal information protection Unsolicited commercial electronic messages		Open government data
Provisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers in digital services trade and thus indirectly boost the take-up rate of digital services among consumers. Regulatory autonomy Preserve the regulatory autonomy of the government. These provisions help the governments to reserve the space necessary to address various social policy objectives even though they might ostensibly be inconsistent with various obligations under the digital trade chapter. Provisions to protect the interests of consumers. Privacy and personal information protection Unsolicited commercial electronic messages Cybersecurity Exceptions Cooperation	Consumer protection	Online consumer protection
Regulatory autonomy Preserve the regulatory autonomy of the government. These provisions help the governments to reserve the space necessary to address various social policy objectives even though they might ostensibly be inconsistent with various obligations under the digital trade chapter. Cybersecurity	Provisions to protect the interests of consumers. By addressing the main concerns of consumers, these provisions enhance the trust of consumers in digital services trade and thus	Privacy and personal information protection
Regulatory autonomyCybersecurityPreserve the regulatory autonomy of the government. These provisions help the governments to reserve the space necessary to address various social policy objectives even though they might ostensibly be inconsistent with various obligations under the digital trade chapter.CybersecurityCooperation	indirectly boost the take-up rate of digital services among consumers.	Unsolicited commercial electronic messages
Preserve the regulatory autonomy of the government. These provisions help the governments to reserve the space necessary to address various social policy objectives even though they might ostensibly be inconsistent with various obligations under the digital trade chapter.	Regulatory autonomy	Cybersecurity
might ostensibly be inconsistent with various obligations under the digital trade chapter. Cooperation	Preserve the regulatory autonomy of the government. These provisions help the governments	Exceptions
	might ostensibly be inconsistent with various obligations under the digital trade chapter.	Cooperation
Dispute settlement		Dispute settlement

Source: Gao (2021b).

 $^{\mbox{\tiny III}}$ See also the annex summary table in Drake-Brockman et al. (2021).

Agreements and digital provisions have been increasing in number (Figure 7.31). The peak in 2001 relates to the New Zealand–Singapore on Closer Economic Partnership which covers 14 kinds of digital provisions. While the two RTAs concluded in 2002 covered on average 4.5 kinds of digital provisions, the seven RTAs concluded in 2020 covered an average of 11.7 kinds.¹¹²

Figure 7.31: Average Number of Digital Provisions Covered in New RTAs



RTA = regional trade agreement.

Source: Asian Development Bank.

Among the four categories of provisions, the first is the most common, with more than three-quarters of the RTAs surveyed including at least two provisions in this category (Figure 7.32). Many of these obligations repeat existing obligations in other international agreements, such as the United Nations Commission on International Trade Law (UNCITRAL) Model Law on Electronic Commerce 1996, the United Nations Convention on the Use of Electronic Communications in International Contracts, and the WTO Trade Facilitation Agreement. These provisions lay down the infrastructure necessary to facilitate digital trade and tend not to prescribe a specific regulatory approach on sensitive issues. Implementation of some might nevertheless require additional digital infrastructure investment, which can be a challenge for some developing economies. Moreover,

putting the facilities into place might not be sufficient. Statutory requirements for documentary formalities might also need to be modified to account for new ways of contracting and approval. Many developing economies will need technical assistance for this purpose.



Figure 7.32: FTAs with at Least One Provision in Each Category (%)

% of FTAs that have at least one provision in the category
% of FTAs that have at least two provisions in the category

FTA = free trade agreement.

Source: Asian Development Bank.



Figure 7.33: FTAs with Provisions in at Least One to All Categories (%)

FTA = free trade agreement.

Source: Asian Development Bank.

¹¹² The detailed results of the mapping are reported in online Annex 1d (Digital Trade Provisions in Trade Agreements—Coverage by Category). http://aric. adb.org/pdf/aeir2022_onlineannex1.pdf. The second category of provisions focuses on reducing regulatory barriers that block or impede digital services trade flows. As the primary beneficiaries of such measures tend to be overseas suppliers using the crossborder supply mode, these provisions can potentially affect jobs, government revenues, and development of local suppliers, and raise the hurdles for regulatory enforcement actions. As a result, many developing economies have been reluctant to adopt such provisions, and they are included in only a quarter of surveyed FTAs. Lack of regulatory capacity is one contributing factor beyond economic considerations. Many developing economies also understand the need for these provisions, if only to send a welcome signal to foreign digital firms. Without these policies, digital giants are hesitant to enter the local market because of cybersecurity risks (when data cannot flow freely) and additional costs (for building local servers).

Provisions in the third category contribute to development of digital services trade by fostering a trustworthy environment for consumers and firms. Half of the surveyed FTAs include at least two provisions in this category (Figure 7.32). Again, as many developing economies lack domestic laws and regulations covering many of these issues, this sometimes leads to laws and regulations that affect digital suppliers more severely than traditional domestic suppliers, and so could raise national treatment issues. Technical assistance is needed to help developing economies update their regulatory regimes.

The fourth category of provisions identified is designed to provide governments with discretionary policy space. The provisions do not appear to be facilitative in nature but are necessary and particularly important for developing economies where the bulk of digital services trade are provided by foreign suppliers. These provisions are relatively common. More than 70% of the surveyed RTAs adopt at least one provision of this type (Figure 7.32) and even more if the general exceptions clauses in the other chapters are included. Overall, 26% of the surveyed FTAs include provisions in each of the four categories (Figure 7.33).

The Future of Digital Trade Rules—Digital Economy Agreements

Significant advances in digital trade rules are observed in the recent DEPA between Singapore, New Zealand, and Chile, and the DEA between Singapore and Australia that entered into force, respectively, in January 2021 and December 2020. These DEAs include comprehensive upto-date provisions aimed at promoting data flow, enabling e-businesses, and ensuring confidence in the digital economy. While they generally confirm the application of e-commerce rules and principles contained in existing RTAs, some provisions go much further on digital trade facilitation issues such as e-payments, e-invoicing, e-signature, and data exchange systems.

Both of these agreements also take a soft law approach to encourage regulatory cooperation at multiple levels and across a variety of forums, in emerging areas such as artificial intelligence (AI) governance, digital identities, and financial technology (fintech).

The forms of cooperation typically involve information exchange, sharing of best practices, and digital standards development. Bilateral or international regulatory cooperation and technical cooperation are called for as regards to the many issues that both agreements cover. Transparency is stressed as a key obligation to be applied to adopting or administering domestic measures affecting digital trade. The agreements do not cover services market access issues.¹¹³

Looking back over the evolution of trade law, digital trade rulemaking has clearly intensified and become more comprehensive. At present, more concrete outcomes are being observed from regional negotiations than from multilateral discussions. Adoption of DEPA and the Singapore–Australia DEA perhaps highlight a potential regional trend toward establishing a self-contained system for the regulatory development of digital trade.

¹¹³ Honey (2021) includes a recent discussion on DEPA, including an explanation of the absence of market access outcomes. Drake-Brockman (2020) provides a summary of DEA.

Box 7.9: The Case of the Republic of Korea

Having promoted e-commerce through over a dozen regional trade agreement (RTA) negotiations, the Republic of Korea (ROK) now seeks to go further on digital trade by concluding a digital partnership agreement with Singapore and joining the Digital Economy Partnership Agreement between Singapore, New Zealand, and Chile. This case study presents both the ROK's experience in gradually strengthening digital trade relations through free trade agreements (FTAs) and the challenges lying ahead given the gap between the conventional issue-specific e-commerce provisions in older RTAs and the crosscutting standards established in digital economy agreements.

Scope of E-commerce Provisions in ROK FTAs

Digital trade-related provisions in ROK FTAs are generally geared toward facilitating e-commerce including by avoiding unnecessary barriers. The scope and content of e-commerce chapters or provisions vary across the FTAs but most of them include a bilateral ban on customs duties on e-transmissions, personal information protection, online consumer protection, and paperless trading. In addition, promotion of e-authentication, e-signature, protection from spam messages, cooperation on cybersecurity, promotion of small and medium-sized enterprises, and transparency of domestic regulations have become increasingly prominent issues in recent FTAs.

In contrast, services delivered electronically are excluded from the legal scope of ROK FTAs' e-commerce chapters. Some of the agreements clearly state that measures affecting the supply of a service delivered or performed electronically are subject to the rules and obligations for investment and cross-border trade in services and financial services contained in other chapters of the agreements.

On the other hand, some other agreements seem to deal with the problem of regulatory overlaps more broadly, considering the overall relations between the e-commerce rules and the provisions of the other chapters. The ROK-Canada FTA, for example, explicitly recognizes that "trade conducted by electronic means" is also covered by many provisions other than for e-commerce, including those relating to national treatment and market access for goods, cross-border trade in services, financial services, telecommunications, and government procurement.^a This FTA also explicitly ensures that the e-commerce provisions do not impose obligations to allow "electronic delivery of digital products" unless other relevant chapters require so.^b In other cases, such as the ROK-the People's Republic of China (PRC) FTA and ROK-Colombia FTA, similar provisions serve to clarify the boundary of the e-commerce chapter in relation to other chapters. Of note, these agreements specify that if any discrepancy between the e-commerce chapter and other chapters becomes controversial, then the latter would prevail.^c This provision fundamentally shields against excessively wide application of the e-commerce rules that might intrude into domains covered by other chapters.

Furthermore, the ROK-European Union (EU) FTA adopts e-commerce provisions not in an independent chapter but under a subsection of the chapter for Trade in Services, Establishment and Electronic Commerce. This may reflect the parties' view that trade opportunities as well as barriers and regulatory issues for e-commerce are part of the issues pertaining to cross-border trade in services.^d In that regard, the EU has long maintained in negotiations that electronic supply of digital contents and information should not be considered as new forms of services.^e

Therefore, in principle, the ROK's bilateral agreements have taken an approach covering importantly what is supplied or delivered rather than how it is supplied or delivered. This means that, if it is certain that a matter is related to supply or delivery of a service, regardless of whether by electronic means, that matter is regulated by rules and commitments in services trade provisions.

A Taxonomy of e-Commerce Provisions in ROK FTAs

The ROK has concluded 17 regional agreements covering over 50 trading partners, including the Association of Southeast Asian Nations, Australia, Canada, the PRC, the EU, and the United States. Most of the agreements deal with a broad range of trade issues, including trade remedies, technical barriers to trade, sanitary and phytosanitary measures, cross-border supply of services, investment, and intellectual property protection, and have growingly embraced new issues like environmental and labor protections. These RTAs commonly include provisions to facilitate e-transmissions and to protect online users and consumers. They fall into three categories:

- (i) Data flows and customs duties on e-transmissions;
- (ii) Protection of personal information and consumers; and
- (iii) Facilitation of e-commerce, digitalization, and cooperation.

continued on next page

Box 7.9: continued

The Regional Comprehensive Economic Partnership (RCEP) provides for a digital trade framework that covers all the provisions ROK has adopted in other FTAs. In addition, RCEP contains an article that prohibits localization requirement on data and computing facilities. This is the first time the ROK has undertaken FTA disciplines on this issue. In essence, not only are the e-commerce provisions in RCEP the latest but they are also considered more comprehensive than obligations in prior ROK RTAs.^f

• For example, in EU–Singapore FTA, Art 8.59 for electronic supply of services stipulates, "[f]or greater certainty, the Parties affirm that measure related to the supply of a service using electronic means falls within the scope of the obligations contained in services trade chapters." For a discussion on the EU position on digital products and new services, as well as EU carve outs of services (specifically audiovisual services) from chapters/provisions on e-commerce, see Kerneis (2021).

Source: Kim (2021).

Deeper commitments and expanded coverage of RTA provisions can be crucial for fostering the development of digital trade in services. In particular, developing Asia will need to beef up such provisions focusing on enabling online business and consumer protection. To be credible and enforceable, it is recommended that these provisions be made subject to a dispute settlement procedure and with a limited number of exceptions. Of course, given the complexity of digital services trade, it would be unrealistic to assume that the mere inclusion of these provisions will boost regional trade levels. Expanded commitments in RTAs need to be accompanied by other efforts, such as building up the necessary infrastructure for digital trade and putting in place the appropriate regulatory environment striking the right balance between risk control and market liberalization. Given the low levels of services trade in many economies in developing Asia, it may be appropriate to start with market liberalization at the regional level through RTAs and/or DEAs. This could be made possible by mutual recognition agreements on services, which so far have mainly been among developed economies. For instance, economies with similar regulatory frameworks can develop recognition

arrangements at the bilateral and regional levels before expanding them to a wider level.

In parallel, participation in the WTO plurilateral negotiations taking place through joint initiatives should be explored, especially on the Trade-Related Aspects of e-Commerce and Services Domestic Regulation.¹¹⁴

Cybersecurity: Ensuring Safety of Digital Services Trade Transactions

A Regulatory Concern

Cybercrime is a worldwide concern (Box 7.10 provides the definitions of cybersecurity and cybercrime). Cybercriminals are not only chasing money but also data. Criminologists used to say, "where there is money, there is crime" but now add "where there is data, there is crime" as cybercriminals are collecting data online for diverse purposes, including monetary gain, revenge, and political purposes. The insecurity of global

^a ROK-Canada FTA, Article 13.1.

^b The agreement defines "digital product" as computer programs, text, video, images, sound recordings, or other products that are digitally encoded and produced for commercial sale or distribution.

^c ROK-PRC FTA, Article 13.2; ROK-Colombia FTA, Article 12.7.

^d ROK-EU FTA, Article 7.48.

^f A detailed analysis based on this taxonomy is in online Annex 1e (A Taxonomy of E-commerce Provisions in the Free Trade Agreements of the Republic of Korea). http://aric.adb.org/pdf/aeir2022_onlineannex1.pdf.

¹¹⁴ The Joint Initiative on Services Domestic Regulation was issued at the 11th WTO Ministerial Conference in Buenos Aires in 2017, initiated by 59 WTO members. On 2 December 2021 in Geneva, 67 members successfully concluded negotiations on new disciplines covering licensing and qualification requirements and procedures for services suppliers despite the postponement of the 12th WTO Ministerial Conference (WTO 2021a).

cyberspace receives a lot of attention. In June 2021, Colonial Pipeline, the largest pipeline operator in the US, providing roughly 45% of the fuel supply of the nation's east coast was forced to close down its business due to cyberattacks (BBC News 2021). That same month JBS, the world's largest meat processor, paid \$11 million ransom to resolve a cyberattack (Bunge and Newman 2021). Economies in Asia and the Pacific are also suffering from serious cyberattacks. For example, AXA, one of the world's biggest cyber insurers, suffered a serious ransomware attack at its Asian offices in May 2021 when 3 terabytes of data were stolen. Kaspersky, an information security service provider, observed more than 2.7 million ransomware activities in ASEAN in the first three-quarters of 2020 (Ikeda 2021; Interpol 2021). In recent years, ransomware attacks have crippled critical infrastructure in the US and Asian economies

and disrupted global supply chains. It shows that no firm is safe from insidious cyberattacks, and this is especially so for least developed economies, which do not have adequate cyber capacity and awareness.

With the broader adoption of ICT—including various emerging technologies such as AI, big data, cloud computing, and the Internet of Things—cyberattacks are a credible challenge facing policy makers. The risks of cyberattacks trigger different regulatory responses (or lack thereof) due to limited capacity. Insofar as regulatory intervention affects imports, exports, and foreign investment, they can raise concerns from the perspective of international trade law. Cybersecurity has emerged as a source of commercial, legal, and geopolitical conflict. It has therefore been put on the agenda of trade policy makers.

Box 7.10: Defining Cybersecurity and Cybercrime

While there is no universally agreed definition of this term, from a technical, and data-driven perspective, cybersecurity is often linked to the "CIA Triad" confidentiality, integrity, and availability of information.^a In this regard, a well-known definition comes from the International Telecommunication Union (ITU), which refers to cybersecurity as

"[a] collection of tools, policies, security concepts, security safeguards, guidelines, risk management approaches, actions, training, best practices, assurance and technologies that can be used to protect the cyber environment and organization and user's assets "Cybersecurity strives to ensure the attainment and maintenance of the security properties of the organization and user's assets against relevant security risks in the cyber environment."^b

The National Institute of Standards and Technology of the United States further elaborates on each of these dimensions:

 (i) Confidentiality—refers to "[p]reserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information."

- (ii) Integrity—means "[g]uarding against improper information modification or destruction and includes ensuring information nonrepudiation and authenticity. Data integrity covers data in storage, during processing, and while in transit. Typical measures include file permissions and user access controls."
- (iii) Availability means "[e]nsuring timely and reliable access to and use of information. It is ensured by hardware maintenance, regular, and timely system upgrades, but also disaster recovery plans" (Kissel 2013).

Similar to cybersecurity, academics have classified cybercrime into three general forms (Grabosky 2016), noting some overlap:

- Crimes where the computer is used as the *instrument* of crime, such as phishing, or producing and disseminating child pornography;
- (ii) Crimes where the computer is the *target* of crime, such as denial of service attack; and
- (iii) Crimes where the computer is *incidental* to the offense, such as maintaining records of criminal transactions, such as money laundering and drug dealing.

^a International Organization for Standardization. Standard ISO/IEC 27032:2012.

^b ITU. Definition of Cyberspace. https://www.itu.int/en/ITU-T/studygroups/com17/Pages/cybersecurity.aspx.

International and National Responses

In order to tackle cybercrime and cybersecurity concerns, measures are taken nationally and internationally. Due to the "borderless" nature of cybercrime, the Council of Europe drafted the Convention on Cybercrime (the Budapest Convention) in 1989. Although this was drafted through the council, it was opened for signature by both member and nonmember states. It entered into force on 1 July 2004 after ratification by five members of the council.¹¹⁵ The Budapest Convention is viewed as the first international treaty focusing on combating cybercrime and has been noted by the UN General Assembly (resolution 56/121), inviting member states to become signatories (Chang 2017).

The Budapest Convention aims to pave the way for the adoption of adequate international legal instruments against cybercrime. It includes computer-related offenses relating to the confidentiality, integrity, and availability of computer data. These include (i) illegal access to a computer system; (ii) interception of nonpublic transmissions of computer data to, from, or within a computer system; (iii) interference with computer data; (iv) interference with computer systems, such as computer sabotage; and (v) the misuse of computer-related devices (e.g., "hacker tools"), including the production, sale, procurement for use, import, or distribution of such devices. It also covers cyber-enabled crimes such as traditional fraud and forgery offenses when carried out through a computer system, child sexual exploitation using the internet, and offenses relating to copyright infringement. On the procedural part, it regulated real-time data sharing and asked its signatories to create 24/7 contact points for an international computer crime assistance network. A total of 66 economies, including Australia, Japan, the Philippines, and the US, have ratified or acceded to the Budapest Convention. The Russian Federation supported by the PRC is proposing a separate treaty at the UN level (Chang 2017) sharing similarities

with the Budapest Convention while presenting significant differences in enforcement with more autonomy given for states to start their own investigations (ADB 2021d).

Australia has promoted the Budapest Convention. In its International Cyber and Critical Technology Engagement Strategy, the government supports countries in the Indo-Pacific region to build cyber resilience and promote the convention.¹¹⁶ It has also become an essential component of Australia's development cooperation program, supporting developing and least developed countries in Asia and the Pacific to improve their regulations and capacity on cybersecurity.

In the past few years, while cybersecurity and cybercrime laws have been developed in Asia and the Pacific, not all are aligned with the Budapest Convention. While most countries in the region are strongly aligned with the convention, some developing economies are weakly aligned and would benefit from further developing their legal system to improve cybersecurity and combat cybercrime (Chang 2020).

Cyberattacks can cause chain reactions (Chang 2017). Although it is hard to stop an attack from happening, it is crucial to reduce the harm that an attack could cause to society. Therefore, besides the harmonization of laws on cybercrime and cybersecurity, many economies have adopted a risk-based approach to reduce the harm caused by cyberattacks, especially cyberattacks targeting critical infrastructure. For example, the US introduced the Federal Information Security Management Act, regulating computer incident information sharing in the critical infrastructure industry. Asian governments have adopted similar approaches to encourage the critical infrastructure industry to share computer incidents so that other firms might take measures in advance. In order to protect national security and prevent cyber espionage, economies also require software firms and service providers to make source codes available for review (Dou 2015).

¹¹⁵ Albania, Croatia, Estonia, Hungary, and Lithuania were the first five states to ratify the convention.

¹¹⁶ Government of Australia, International Cyber and Critical Technology Engagement Strategy. https://www.internationalcybertech.gov.au.

Research has shown the need to help economies strengthen laws and regulations to combat cybercrime and maintain cybersecurity. Building cyber capacity and raising cybersecurity awareness are now essential aspects of development cooperation programs and trade negotiations. For example, the Australian government recently launched the International Cyber and Critical Technology Engagement Strategy. The key for this is to support economies in the Indo-Pacific region, especially least developed economies, to draft laws that meet the international standard, such as the Budapest Convention, and equip them with better cyber environments by building a risk-based approach to ensure cybersecurity.

The lack of cybersecurity is costly and can undermine the trust of consumers and businesses in engaging in the digital context. Protecting confidence in an online world involves cross-border collaboration between the public and private sectors, as individuals, businesses, and governments that operate through the global networks can face the same threats (Meltzer and Kerry 2019).

While Australia, the PRC, and the US take risk-based approaches by identifying "critical infrastructure" and imposing strict obligations on the relevant operators, the PRC and others have gone further by mandating local storage of data and obtaining source codes. Some developing economies, including least developed economies in ASEAN, do not yet maintain adequate schemes.

A common approach can help enhance cybersecurity and enable digital trade. Divergent, potentially protectionist approaches, can create obstacles to digital trade. Without a clear understanding of cybersecurity laws and policies, industry stakeholders can struggle to adapt to evolving restrictions. Governments need to engage each other inside of trade negotiations or otherwise manage the ramifications of restrictions. Similarly, trade policy makers need to map the issues and reconfigure the global trading system.

WTO exemptions are far from satisfactory mechanisms for managing trade conflicts arising from cybersecurity.

For one, these rules are subject to judicial interpretation case by case and there is room for WTO members to maneuver. Another, and a more crucial reason is that where a member defends itself under the security exception, WTO adjudicators may find it politically sensitive to review the disputed measures. There is significant uncertainty, as Voon (2019) remarks, around the security exception. Hence, some economies attempt to reconfigure the rules to provide greater certainty and clarity for businesses and policy makers-both within and outside the WTO context. Within the WTO, for instance, the consolidated negotiating text on e-commerce recently at least signaled the willingness of some members to tackle these recurring issues of the digital age (WTO 2020). While it remains to be seen how WTO members come up with new solutions, recent developments in RTAs serve as a good reference point for identifying the key instruments for trade policy makers to harness trade concerns around cybersecurity.

There is a consensus that cybersecurity presents significant issues across the global supply chain. However, different laws and policies introduced in the name of cybersecurity-which sometimes is framed and elevated as a national security issue—have raised trade barrier concerns in recent years. Such policies not only influence cyberspace within economies but increase transaction and communication costs for all economies by fragmenting the internet. While some of these regulatory responses may be overreacting and unnecessary to achieve their legitimate policy purposes, one should not overlook the issues around underreaction. For developing and least developed economies, it is a daunting task to grapple with the mixed opportunities of ICT. While digital technologies help accelerate social and economic development, they come with costs. Cybercrimes are borderless, as noted above. Developing economies—particularly the least developed ones lacking adequate regulatory framework and limited human capacity and financial resourcesfind it challenging to react to these threats effectively.¹¹⁷ It is problematic for economies to tap into the booming internet and maximize socioeconomic benefits unless there is a secure infrastructure to protect organizations' assets and resources at different levels, organizational,

¹¹⁷ International Telecommunication Union. Enhancing Cybersecurity in Least Developed Countries. https://www.itu.int/en/ITU-D/Cybersecurity/Pages/ CYBLDC.aspx.

human, financial, and technical. It is also vital to prevent the clients of the digital service and digital trade from becoming victims.

To tackle the ramifications for digital trade of regulatory reactions (or lack thereof) to cybersecurity threats, a new set of rules is needed which will require cooperation among like-minded economies. It could occur within the existing multilateral trading system—as in the WTO's e-commerce negotiations or new preferential trade agreements. This new generation of trade agreements, in particular, has begun to reinvent the rules-from cybersecurity cooperation and cross-border information flow-to source code and encryption. Some new rules are "harder" than others: particularly when it comes to cybersecurity cooperation. Moreover, some offer a grace period to ease developing or least developed economies into the new setting. Such arrangements are welcome as properly acknowledging that economies have different capacities to handle cybersecurity matters. More action is needed, including through informal arrangements such as a memorandum of understanding. The gap could also be narrowed by international organizations taking a more active role in building the capacities of developing and least developed economies. Proper cooperation within and outside the WTO can therefore rebuild the trust in the online environment and facilitate the sustainable growth of global digital trade in the long term.

Digital Services Trade and Taxation¹¹⁸

The rise of the digital economy has offered Asia and the Pacific opportunities for expanding trade in digital services. Leading this expansion are homegrown technology firms and digital intermediation platforms that have strengthened their capacity to deliver traditional services through digital tools and to provide a new range of digitally intensive services. Because digital service providers can operate in markets without need for a physical presence, their expansion has created scope for them to artificially lower taxable income, with significant losses of revenue in the jurisdiction where profits are generated. With the rapid emergence of technology firms in Asia and the Pacific, these losses could be more important than in other developing regions.

The reforms of international tax rules under discussion will be important for Asia's prospects on digital services trade. New nexus and profit allocation rules for taxing rights beyond physical presence directly target automated digital service providers.¹¹⁹ As the region hosts some of the world's largest providers of digital services, a global minimum tax may likely impact the sector. Pending implementation of the multilateral tax agreement reached in October 2021, Asian economies have introduced measures to levy indirect taxes on imported digitally delivered services. Some economies have also adopted unilateral tax measures on digital services. Understanding their impact and ensuring consistency with trade rules and regional agreements is essential.

Digital Services Tax Models in Asia and the Pacific

Concerns over multinationals tax avoidance practices have been discussed in the context of the OECD/ G20 Base Erosion and Profit Shifting (BEPS) initiative since 2013, with the increasing role of digitalization underscoring the need to adapt the international tax framework. Digital services have been part of the discussion as they rely on the features bringing challenges to national tax systems: reduced need for physical presence, reliance on data and other intangible assets, and growing mobility of business processes and users.

¹¹⁸ This section is largely based on Da Silva and Avendano (2021). ADB (forthcoming) provides further analysis on strengthening taxes for sustainable development.

¹¹⁹ No consensus has been reached on what constitutes a digital service, adding complexity for implementation of tax measures. In some proposals, the definition of automated digital services is grounded on two elements: it is automated, (i.e., the provision requires minimal human involvement on the part of the service provider) and it is digital (i.e., provided over the internet or an electronic network). Efforts to identify digital and non-digital products or their digital component underline the difficulty to ringfence the digital economy for tax purposes.

In response to these challenges, several economies have adopted unilateral measures targeting digital services to enhance tax revenues (Noonan and Plekhanova 2020, Avendano and Rosenkranz 2021). Most unilateral measures taken by Asian economies in the area of digital services can be classified into five main categories:

Digital permanent establishment. Measures to introduce amendments to domestic nexus rules to accommodate the concept of permanent establishment have been adopted in the region. These measures aim at expanding the definition of nexus by accounting for significant economic presence and allowing for the taxation of profits of a nonresident corporation regardless of the physical presence in the taxing jurisdiction. Changes to the permanent establishment model include, for example, basing economic presence on local revenue or number of users.

Indirect taxes on imported digital services. States can impose value-added taxes (VAT) or goods and services taxes (GST) on goods and services that are supplied in their territory, impacting services sectors such as internet advertising and digital intermediation services. Several Asian economies have made progress in adopting nondiscriminatory VAT/GST rules in relation to crossborder transactions (ADB-OECD-WB forthcoming).

Withholding taxes. Some economies have expanded the scope of withholding taxes and the use of sector turnover taxes. A state can use a withholding tax by classifying business profits as royalties, or by introducing a fee for online digital services. The Philippines and Malaysia, for example, have included payments for the right to use software, visual images, or sound transmissions under the scope of royalties. Nonresidents providing digital services in the local market can be required to establish a local office and be subject to income tax. This often falls outside trade agreements and double taxation agreements.

Digital services taxes. These are taxes levied on the supply of a category of e-services, charged at a fixed rate, and generally applied at the place where the services are supplied. They have gained traction among economies as they are not covered by double taxation agreements.

Digital services taxes (DSTs) can vary in scope of activities, revenue thresholds, and tax rates.

Table 7.6 provides a summary of recent unilateral measures covering digital services taken by Asian economies. Measures diverge in scope, mechanism, and sector, with some targeting e-commerce as well as a variety of digital services.

Main Reforms of the International Tax Framework: Implications for Digital Services Trade

A new taxing right without physical presence. An important component of the agreement reached by members of the OECD/G20 Inclusive Framework in October 2021 is the creation of a new taxing right to market economies which is independent from physical presence. The new taxing right allows to overcome the limitations of the permanent establishment concept and to prevent double taxation. As part of this Pillar, the multilateral solution includes three main components. First, a new taxing right on the residual profit of multinational enterprises when they meet a threshold in size and profitability. Second, a fixed return for standard marketing and distribution activities taking place physically in a market jurisdiction and following the existing arm's length principle. Third, an overall enforcement of tax certainty through innovative and effective dispute prevention and resolution mechanisms. While aspects of the agreement need to be completed, multinationals headquartered in Asia and the Pacific will likely generate a significant share of the residual profit to be reallocated among jurisdictions, with a disproportional contribution from ICT and technology firms (IMF 2021).

A global minimum corporate tax for multinational enterprises. A second key component of the multilateral agreement endorsed by 137 jurisdictions is that large multinationals, regardless of their sector and economy of operation, will pay 15% of corporate income tax. It gives economies the right to "tax back" profit that is currently taxed below the minimum agreed rate. Together with achieving a minimum taxation on income,

Economy	Status	Effectivity Date	Туре	Description
India	Enacted	1 April 2022	Digital PE	Revenue related to the digital PE
	Enacted	1 October 2020	WHT	Gross amount of sale of goods or provision of service facilitated through digital or electronic facility or platform
	Enacted	1 June 2016	Equalization levy	Gross amount of online advertising payments
	Enacted	1 April 2020	Equalization levy	Online sale of goods, provision of services or services facilitation (when operator provides platform for others to supply service)
Indonesia	Enacted	31 March 2020	Digital PE	Revenue related to the digital PE
	Enacted	31 March 2020	Electronic transaction tax	Imposed on e-commerce sales when the digital PE cannot be applied due to the provision of a tax treaty
Japan	Announced	23 August 2021	DST	Currently in discussion. Tax measures the allocation of tax rights to market economies (Pillar 1) for digital companies, etc. and evaluation of a DST based on case studies in other economies. To be considered only if Pillar 1 is delayed
Malaysia	Enacted	7 April 2021	WHT	Withholding tax for digital advertising if nonresidents do not have a PE or business presence in Malaysia
Pakistan	Enacted	1 July 2018	WHT	Payments for offshore digital services (online advertising, designing, creating, hosting or maintenance of websites, uploading, storing or distributing digital content, etc.) performed by nonresident persons
Taipei,China	Enacted	24 July 2019	WHT	Payments for online advertisement for e-services (online games, videos, audio broadcast, movie, music platform services, etc.) supplied to Taipei,China customers by foreign service providers without fixed place of business or business agent in Taipei,China (electronically supplied services providers)
Thailand	Proposed	7 May 2019	WHT	Income from e-commerce supplies of goods and services in the economy, including online advertising, gaming, shopping, and others
Viet Nam	Enacted	1 January 2021	WHT	Income derived by nonresidents from digital and e-commerce operations in Viet Nam

Table 7.6: Recent Digital Services Tax Measures in Selected Asian Economies

DST = digital services trade, PE = permanent establishment, WHT = withholding tax.

Note: Pillar 1 of the Organisation for Economic Co-operation and Development /G20 Inclusive Framework's multilateral tax agreement entails the removal and standstill of DST and other relevant, similar measures, and the commitment to not introduce such measures in the future.

Sources: International Monetary Fund (2021); KPMG (2022); and national tax administrations.

the agreement will considerably reduce incentives of multinational enterprises to shift profits to low-tax jurisdictions and strengthen the transparency and predictability for both tax administrations and firms.¹²⁰

A new provision for double taxation treaties. In parallel to the multilateral solution, a new article in double tax treaties was approved in April 2021 under the framework

of the UN Model Tax Convention as a solution to tax income from digital services. The approach aims to take into account concerns of feasibility, administrability, and distribution of taxing rights expressed by developing economies.¹²¹ The new Article 12B allocates taxing rights to the source economy, which is entitled to levy tax on gross income—typically via a withholding tax mechanism—on payments from automated digital

¹²⁰ These goals are achieved with two sets of rules. The subject to tax rule will provide a treaty-based rule designed to protect source economies against base-eroding payments, while the global minimum tax regime (GloBE) provides a systematic solution to ensure that all internationally operating businesses pay a minimum level of tax on the income in each jurisdiction in which they operate. The coordinated application of these rules is also expected to minimize risks of double taxation.

¹²¹ The UN Committee of Experts on International Cooperation in Tax Matters (UN Tax Committee) started this process in 2017 with the formation of the Subcommittee on Tax Challenges related with the Taxation of Digitalized Economy. The subcommittee considered several approaches to tax digitalized transactions from the perspective of developing economies.

services.¹²² The right to tax income of digital services is granted to a contracting state from which payment originates even if the service is provided in another jurisdiction. In contrast to the OECD/G20 Inclusive Framework Agreement, it does not require a new nexus rule nor alternative to the definition of permanent establishment.¹²³ Economies may introduce the new provision in the renegotiation of or signature of future double taxation treaties, which will need to be complemented by domestic legislation. The potential of this instrument will depend on the widespread inclusion of the provision in the existing network of double taxation treaties.

Extending value-added tax to digital services. While developing a multilateral solution, economies have made efforts toward the implementation of a framework to introduce VAT on the import of digitally delivered services and goods. An advantage of this approach is the consensus that the rules establishing the allocation of VAT taxing rights are determined by the destination principle. Under this principle, the taxing right is located at the place of consumption. Tax administrations in the region have made progress in this direction, allowing for compliance and revenue collection. Governments have also recognized that the VAT challenges of the digital economy require a globally coordinated response to ensure minimal cost and effective cooperation. International guidelines have been developed for making digital platforms liable for assessing, collecting, and remitting the VAT/GST due on the online sales they facilitate. Firm survey data also suggest VAT/GST rules for digital goods and services as their preferred alternative (WEF 2021).

As of 2021, more than 60 economies have adapted domestic legislation and undertaken reforms to capture VAT tax in digital services and low-value imported goods. Most of these have implemented the vendor collection model, in which liability for tax payment rests with the nonresident services provider.

Policy Considerations

Gains from increasing tax revenues may be modest.

With implementation of the multilateral agreement starting in 2023, estimations suggest that the proposed reforms could increase global corporate income tax revenues by 6% or about \$150 billion a year (OECD 2021).¹²⁴ Estimated gains from profit reallocation would be relatively modest (0.5% of global corporate income tax revenues) and larger among low- and middle-income economies. Revenues from a global minimum tax are estimated around 2% to 4% of global corporate income tax, with larger gains for high-income economies. Recent estimates by the IMF (2021) for Asia and the Pacific suggest a modest gain for economies in the region, with investment hubs and some economies (e.g., India; Indonesia; Hong Kong, China; Malaysia; Singapore; and Viet Nam) potentially losing some tax revenue. Considering the heterogenous type of jurisdictions in Asia and the Pacific, the revenue impact of the multilateral solution may be wide-ranging.

Unilateral tax measures find favor but prompt retaliation and impact trade rules. While a multilateral solution is adopted, unilateral tax measures involving digital services have been on the rise. These measures, however legitimate for raising tax revenue, have shown to be costly and potentially trigger retaliatory trade measures. From the perspective of businesses, they can also increase prices for consumers or result in suppliers not serving markets where measures are implemented. Estimations on the effects of trade retaliation measures to DSTs suggest a possible fall of global trade by 1% (OECD 2021). The most notable example of trade retaliation to unilateral tax measures probably comes from the US. Following the adoption of DSTs by some economies (Austria, France, India, Italy, Spain, and Turkey), the US started a Section 301 of Trade Act investigations considering that such measures would be potentially discriminatory and inconsistent. As a result, tariffs were imposed by

¹²² Examples of automated digital services include online advertising, supply of user data, social media platforms, cloud computing, online search engines, and online gaming.

¹²³ The new provision does not introduce any quantitative thresholds and also applies to B2C services. While the applicable tax rate on digital services is to be negotiated bilaterally by the contracting parties in their respective double taxation treaties, a modest rate of 3%-4% is recommended.

¹²⁴ These estimates assume that the US global intangible low-taxed income regime is replaced with a per-economy minimum tax at a higher rate, leading to a considerably higher increase in revenues.

the US on goods imports from these economies. The measure was suspended while multilateral negotiations on international taxation at the OECD/G20 level and implementation are finalized.¹²⁵

The surge in unilateral measures stresses the importance of consistency between WTO trade rules and the new international tax framework in the future. While key provisions in the General Agreement on Trade in Services (GATS) relate to nondiscrimination, international trade rules do not comprehensively encompass taxation issues (Low 2020). From the WTO perspective, most concerns on DSTs are associated with ensuring nondiscrimination, which is based on MFN and national treatment principles (Mavroidis 2020). As is the case for goods, MFN rules under GATS requires all WTO members receive the same treatment. The national treatment principle requires that service suppliers of other members are treated no less favorably than domestic suppliers. However, in contrast to goods, national treatment in services is negotiated on a sector-by-sector basis, and not all obligations apply for all services (Low 2020). GATS also includes provisions allowing exceptions to the MFN and national treatment principles.¹²⁶ While DSTs differ in their scope of mechanism, they will need to be analyzed under the GATS framework to establish whether they can lead to de jure or de facto discriminatory treatment.

As RTAs gradually include more elaborate provisions for digital services trade, they will require further alignment with current proposals for international tax policy.¹²⁷

A global minimum tax brings investment and

competition challenges. While the adoption of a global minimum tax may overall improve tax revenue, it could also bring challenges for existing investment policy frameworks in the region. The global minimum tax may impact policies in developing Asia for attracting foreign direct investment

through special investment regimes as the tax advantage provided to multinational enterprises for investing may be neutralized—at least up to the minimum agreed tax rate—in the economy where the ultimate parent of the multinational is based. To what extent tax incentives for attracting investment can be implementable or effective under the new international tax framework will require consideration by policy makers in the coming years.

Reforms in the international tax framework may also have implications for competition in digital services sectors. As cross-border digital services expand, the compliance of foreign digital service providers to register and remit VAT/GST taxes may become a precondition for their operation. A tax framework including foreign suppliers of digital services may ensure they have the same opportunities as domestic suppliers.

Compliance and implementation measures will need to be developed. From the perspective of both governments and firms, the implementation of the OECD/G20 Inclusive Framework multilateral solution will increase compliance costs while at the same time providing tax certainty. To ensure proper implementation, efforts to upgrade the current tax framework and tax practices will be needed. Jurisdictions will need to develop domestic legislation implemented in association with a multilateral review process of the rules to be implemented. International law will need to be developed to overcome obstacles in tax treaties, in particular the development of a new multilateral convention that addresses existing treaty barriers such as Article 7 (Business Profits) of double taxation treaties. For tax administrations, an important design tool for the appropriate application of the agreement relies on the existence of a shared filing mechanism as to ensure an effective exchange of information on multinational enterprises and appropriate mechanism for dispute prevention and resolution.

¹²⁵ US authorities found the introduction of a DST to be discriminatory in intent and effect. As a result, the US could levy duties up to 25% on imports from France. This measure could probably lead to more retaliatory measures.

¹²⁶ These are related to the existence of a double taxation agreement in the case of MFN, or to ensure "the equitable or effective" imposition of direct taxes.

¹²⁷ As of 2017, nearly 9% of the 275 existing RTAs notified to the WTO specified a right to impose an internal tax or charge on digital products.

Policy Implications and Recommendations

- Economies in the region need to consider the benefits and risks of digital services taxes and other unilateral measures. While these measures can moderately increase tax revenue, economies should assess the possible effects of their implementation. DSTs could generate trade disputes with partner economies, impose compensatory measures and cause multinational enterprises to reconsider their prospective investments. Looking forward, consistency between existing WTO rules and the international tax framework will be important. While WTO rules are not fully adaptable to the tax challenges of digital services, future negotiations on market access and national treatment commitments under GATS could contribute to a more structured approach to taxation of digital services.
- Consensus has emerged on the adequacy and feasibility of complementary measures, in particular the implementation of rules to ensure effective VAT/GST collection on imported digital services. Economies in developing Asia should continue to expand VAT to cross-border digital transactions to enhance tax revenue. Economies in the region can build on these examples to reduce administrative costs and improve compliance.
- Pending implementation of the OECD/G20 Inclusive Framework Agreement, future double tax treaties may provide a possible mechanism for granting taxing rights to digital services through the recently introduced Article 12B of the Model Tax Convention.
- Regional and international cooperation will be essential to ensure the implementation of the multilateral tax agreement. Notwithstanding the agreement, consistent efforts in developing Asia will be needed to adapt and design new domestic legislation, upgrade double tax treaties, and account for other international law amendments. Developing economies are encouraged to join the Inclusive Framework on Base Erosion and Profit Shifting (BEPS IF) and the Global Forum on Transparency and

Exchange of Information for Tax Purposes. Regional cooperation can contribute to ensuring effective exchange of information for tax purposes, developing appropriate mechanisms for dispute prevention and resolution on taxation, and technical assistance for modernization of tax administrations.¹²⁸

• Should the new tax framework target specific sectors, a standardized definition and nomenclature of digital services should be agreed.¹²⁹ Complementary efforts to improve the measurement of digital services trade will be welcome. The use of administrative data of digital services for tax purposes may be considered in the future.

Way Forward

Policy Measures to Foster Digital Services Trade

The Evolving Landscape of Digital Services Trade in Asia and the Pacific

Much has been discussed about international trade and investment in services in the 30 years since GATS came into force in 1995, at the end of the Uruguay round of multilateral trade negotiations. Yet services trade remains poorly understood compared with "traditional" trade in merchandise goods. A central explanation lies in the fact that many services industries—long considered "nontradable"—proved slower to globalize, and trade in services was slower to unbundle into GVCs than was the case for trade in goods. More recently, the uptake of digital technologies is launching all regions of the world into the Fourth Industrial Revolution and digital enablement has ushered in a powerful new phase of services unbundling.

The literature on GVCs had previously focused on trade in merchandise goods. Services had figured in the earlier GVC story in critical ways, but generally as support to trade in goods and rarely in their own right. Cuts in trade costs associated with telecommunications and transportation

¹²⁸ In 2021, ADB launched the Asia Pacific Tax Hub as a platform to promote strategic policy dialogue, improve knowledge sharing, and coordinate action on domestic resource mobilization and international tax cooperation. The tax hub assists economies in developing medium-term revenue strategies, defining a road map for digital transformation of tax administrations and providing technical assistance for members to participate in international tax initiatives.

¹²⁹ Extractive and Regulated Financial Services are currently excluded from Pillar One in the OECD/G20 tax agreement.

services were regularly cited as contributors to the initial wave of global outsourcing of manufacturing production. And a wide variety of services, such as financial services, professional services, and logistics were regularly cited as providing the essential enabling "glue" in all merchandise goods GVCs. Rarely however has the literature or policy conversation focused on the fragmentation taking place in global services value chains (such as services outsourcing) or the ultimately digital nature of this phenomenon or its significant implications for developing economies (Drake-Brockman 2012; Drake-Brockman and Stephenson 2014).

Services trade is growing fast, not only because consumer preferences are changing as incomes rise, but also due to the "servicification" of manufacturing. While economies are endeavoring to develop domestic service industries, cross-border service transactions are growing exponentially. Digitalization is reinforcing this rapid transformation toward a services economy, by fostering easier, faster, and cheaper transaction of services for the convenience of both suppliers and consumers, lowering the intermediary costs. This "third unbundling" is likely to prevail across the world, enabling the fragmentation of jobs into individual more specialized tasks-for example, separating software engineering, data analytics, remote high-tech service providers, knowledge product providers, or web designers among others, enabling separate tasks to be performed remotely but to interact in real time. Those who are embracing this evolutionary transformation will thrive, whereas those who are clumsy will lag behind.

Key Findings on Issues Underpinning Digital Services Trade

This theme chapter is designed to shed light on the latest episode in the services globalization story; the story of transition from trade in services, through digital enablement, to trade in "digitally delivered" services or more simply trade in digital services. As such it is likely to be a first of its kind in its explicit focus on digital services trade in an integrated and holistic manner—a concept which also encapsulates cross-border commercial exchange of digitized information (more simply described as "data"). One big challenge in discussing digital services trade is its conceptual vagueness and the pursuant, blurry boundary of its current scope. This chapter attempts to provide clearer delineation based on OECD-WTO and UNCTAD frameworks, and describe the regional and sector performances of digitally deliverable services trade based on the framework.

The analysis shows that Asia and the Pacific is at the forefront of digital services trade, having demonstrated the fastest rate of growth in this sector over recent decades. The region is also showing rapid growth in the relative share of digital services trade in total services trade, although it has yet to narrow the gap in regard to the global average. Cross-economy analysis has shown that the region is far behind economies such as in the EU and North America in the share of digital services exports in total goods and services exports, which leads the region to having a lower revealed comparative advantage.

In closing the gap with advanced economies in international competitiveness of digital services, the region needs to focus particularly on (i) human capital development, (ii) digital connectivity, (iii) ICT investment, and (iv) an enabling policy and regulatory environment.

As demonstrated by the analysis in the section on what is driving change, the length and quality of education is associated with greater trade in digital services. The importance of upskilling and reskilling the workforce cannot be overstated, especially considering existing skill-based barriers to the uptake of digital technology. Digital technologies are also the bedrock of fostering small and medium-sized enterprises to innovate and become competitive providers of digital services. Developing digital services exports in Asia and the Pacific therefore hinges on the availability, accessibility, and affordability of broadband services. The region's rapid growth of mobile penetration bodes well. Supportive internet regulations could enable even economies with low levels of digitalization to better reap the benefits of digital services trade.

Computable general equilibrium modeling using ADB's Multi-Regional Input-Output Tables data points to clear positive impacts on digital services trade from both trade liberalization and deregulation of digital services sectors, with mixed impacts on other sectors. Lowering trade barriers and reforming domestic regulation both led to, however, clear gains in both backward and forward GVC participation regionally and globally across manufacturing and services sectors. Importantly, both policy shocks could garner real income impact for regional economies, with the deregulation scenario generating larger gains by far. From a welfare perspective, this reinforces the importance of implementing nondiscriminatory regulatory cost reduction measures besides trade policy reforms at the border.

Many apparent synergies exist between digital services trade and other sectors of the economy. Growth in e-commerce for merchandise goods, itself enabled by digital services platforms, creates opportunities for digital services exports such as financial services and logistics. Manufacturing growth provides opportunities for embedding digital services and applications in manufacturing exports, enabling indirect exports of digital services.

Restrictive data-related policies, on the other hand, could have significant downward impact on digital services trade. Using a unique data set that traces the development of these measures for 64 economies globally, this chapter assesses which of the restrictions on (i) data localization policies, (ii) local storage requirements, and (iii) conditional flow regimes are driving the negative result of trade in digital services for Asia and the Pacific, and the rest of the world. The baseline results show that globally, in particular, data localization and local storage requirements cause the negative trade results in digital services but that the role of conditional flow regimes is more complex. While many data flow restrictions are adopted and implemented from various legitimate policy perspectives such as protection of privacy and personal data, and protection against the threat to cybersecurity, economies need to weigh the positive effects of such restrictions against negative impact on digital trade flows.

Assessing the social and welfare impact of digital services trade requires examining household wage income and price change impact. While the overall positive labor income increases and price lowering impact of expansion in digital services trade could help poverty reduction and welfare improvement, worsening income inequality among those with different skill sets, in particular, technological and potentially yawning divergence between urban and rural households remains concern, requiring policy makers' attention.

WTO trade rules and provisions in bilateral RTAs provide an emerging international regulatory framework governing the playing field for digital services production, marketing, dissemination, and sales. While the scope of digital services is fast expanding, the governing principles and mechanisms are spread across the articles and provisions of different legal frameworks. Although more and more digital-trade-specific trade agreements are expected to emerge, heightened effort is needed to create clearer guidelines for digital services trade and digital trade at large. After 20 years of preparation through the WTO Work Programme on Electronic Commerce, members are now negotiating in the context of a plurilateral WTO Joint Initiative on Trade-Related Aspects of e-Commerce. A successful outcome to these plurilateral negotiations would constitute a significant step forward in filling some gaps in international digital services trade governance. The negotiations also offer an opportunity for progress to be made on digital services market access. WTO members in Asia and the Pacific should also consider joining the WTO's Joint Statement Initiative on Services Domestic Regulation, since a commitment to principles for good regulatory practice will help to cut trade costs including for digital services. Recent OECD estimates suggest that implementation of this agreement by the 14 regional economies in its data set would cut trade costs across all services sectors by 7% on average.

Beyond trade negotiation, it is clearly in the interests of digital services competitiveness for regional governments to participate in opportunities for digital regulatory cooperation. This can encourage interoperability of divergent digital regulatory approaches and reference to international standards. Widespread adoption of international standards in ICT has already demonstrably increased interoperability and security across technology platforms, decreased barriers to trade, ensured quality, and built greater trust in digital services. By adopting common standards, economies can avoid redundant efforts and technical duplication, achieve better interoperability, and reduce trade costs.

Box 7.11: Mutual Recognition Agreements

Traditionally, mutual recognition agreements (MRAs) have been the key mechanism by which economies recognize each other's regulatory regimes for professional services providers as being equivalent, and so enabling market access on a reciprocal basis. Without an MRA in place, professional services providers have not been able to travel temporarily to other jurisdictions (mode 4) or establish independent commercial presence (mode 3).

Negotiation and implementation of MRAs is typically slow, including when undertaken in a plurilateral context. Unless accompanied by domestic reforms across all parties' typically closed professional services markets, the outcomes, moreover, have not necessarily facilitated growth in international trade. The Association of Southeast Asian Nations MRAs covering nurses, doctors, dentists, accountants, surveyors, architects, and engineers are big steps forward, for example, but remain a work in progress with some way to go to deliver market access gains.

Professional services have been among the slowest of the services sectors to globalize. This is partly the result of traditional client preferences for face-to-face interaction with local services providers, especially in the medical field. It is also a result of the oligopolistic nature of the professions themselves. Professional services have been among the more relatively closed sectors even to domestic competition, chiefly because of professional qualification requirements and certification processes backed by monitoring and accreditation, by the professions themselves, of tertiary education curriculums and rigorous quotas on institutions' student intake. Like most regulations, a legitimate public policy objective is involved, namely consumer protection, and in this case with good economic justification: asymmetry of information between services providers and clients. When clients are unable to check on quality before consumption of services, regulation is required for quality assurance purposes. Dental patients, for example, want to know in advance of the procedure that the dentist is both qualified and licensed to provide quality service.

Digital enablement of professional services is now profoundly changing the business environment and can be expected to push up hard against existing regulatory systems, to the point where a global rethink may be required to facilitate recognition of offshore professional services qualifications embedded in professional services software and intellectual property. Even during the pandemic, in many jurisdictions, access to remote health consultations has been the result of temporary, not yet permanent, easing of regulatory restrictions. However, it is already clear that professional services value chains are fragmenting fairly quickly. Architecture and landscape architecture are standout examples in which both B2B and B2C professional services design software is now readily available online.

Meanwhile, long before the pandemic brought this to more widespread public attention, the arrival of backoffice robots in health-care diagnostics or legal services prediction and the extensive application of 3D imaging software in architectural and landscape architectural services—or remote monitoring and 3D printing in construction services—was already transformative for services providers. Digital enablement now allows anyone to design their own home using online architectural services software.

These questions go to the heart of Richard Baldwin's hypothesis. Baldwin envisages an emerging future for wage arbitrage in all kinds of personal and professional services that have traditionally been delivered face-to-face but will increasingly be deliverable online, not only through streaming of professional services software but, in time, by telepresence and hologram. The problem remains that customers will still require assurances that come at the present moment, through professional certification and accreditation in domestic jurisdictions. New challenges arise in Baldwin's scenarios about recognition of qualifications embedded in professional services software (intellectual property) and in due course, for telepresence and hologram, from the jurisdictions where individual services providers are accredited.

There are therefore concerns, given the ongoing relative closedness of most of these markets, that domestic professional services regulation could constitute an overwhelming barrier to mode 1 as it has been for mode 4. In any case, the policy conclusion remains unchanged. As professional services providers shift from mode 4 to mode 1, domestic regulators that impede client access to world's best practice expertise will come under increasing pressure to improve regulatory efficiency.

For professional services, the Organisation for Economic Co-operation and Development's Digital Services Trade Restrictiveness Index generally identifies that the biggest contributors to trade restrictiveness originate in opaqueness and duplication in cumbersome domestic regulatory frameworks (Nordas 2016). Improved efficiency in services domestic regulation consequently delivers greater than average cuts in trade costs for professional services (APEC 2021; OECD 2021).

To reduce trade costs, many regional trade agreements have included provisions designed to facilitate MRAs. More

Box 7.11: continued

recent ones include provisions on regulatory cooperation more broadly, including in the digital sphere. There is a discernible shift from a focus on regulatory coherence and best regulatory practice to attempts to build more deliberate mechanisms to achieve regulatory equivalence and to collaborate on development of international digital standards. For all digital services, the focus is on determinations of "adequacy," that is, whether regulations in other parties' jurisdictions are adequate enough to meet domestic public policy objectives. The key objective for the professions will be to ensure that determinations of adequacy continue to be arrived at on a mutual not a unilateral basis. For all digital services, a higher degree of regulatory convergence is becoming essential. This calls for designing MRAs in an open and transparent manner, on a potentially plurilateral basis, offering due process guarantees to any party wishing to apply to join.

New technologies are already heavily present in engineering. When the services are not seen as "like"^a in the eye of the regulator, regulatory discretion may continue to lead to discriminatory barriers to international trade. Future uncertainties aside, it seems clear that domestic regulatory regimes governing qualifications and licensing will have the potential to stymie the take up and use of professional services automation software—and cross-border online trade in professional services. It is important that efforts to improve professional recognition adapt rapidly to online realities. A very first step is to promote the adoption of digital credentialing for professionals.

^a "In the sectors inscribed in its Schedule, and subject to any conditions and qualifications set out therein, each Member shall accord to services and service suppliers of any other Member, in respect of all measures affecting the supply of services, treatment no less favourable than that it accords to its own like services and service suppliers" (GATS Article XVII on National Treatment).

Source: Drake-Brockman (2021).

It is vital for the region that regional governments support the multilateral standardization systems rather than purely focusing their efforts on indigenous approaches. Recognition of regulatory outcomes, whether autonomous or by mutual arrangement, and preferably minimizing the risk of discrimination by designing mutual recognition agreements in an open and transparent manner, provides guarantees to any party wishing to join (Box 7.11 presents more details).

Developing economies will need capacity-building assistance to enhance awareness and understanding of the importance of ensuring that digital regulatory regimes satisfy international standards, principles, and guidelines, as well as support to introduce reforms aimed at developing or aligning their regulations. Technical assistance is, therefore, urgently needed for developing economies that wish to improve and upgrade data protection laws and regulations in the context of greater digitalization.

Digitalization brings in more convenience but at the same time could entail greater vulnerabilities in security and pursuant enormous costs. The importance of putting in place appropriate risk management tools against cybersecurity crimes cannot be overemphasized. As cybersecurity increasingly becomes a precondition for cross-border data flows, economies aspiring to competitiveness in digital services exports will need to strive for greater international regulatory cooperation on cybersecurity. Governments in the region should encourage the use of transparent, globally competitive and market-driven cybersecurity standards and practices and avoid adoption of domestic measures that constrain competition and innovation. The objective should be to ensure interoperability of cybersecurity frameworks while reducing the costs of regulatory friction.

Digital services are an important area in the current discussions on international tax policy. Digitization means that mode 1 is trending in the direction of taking over as the current dominant mode for services trade. The decreasing need for physical presence in the export market means the scope is increasing for service providers to implement sophisticated tax planning on tax jurisdiction nexus rules and deliberately export services from low-tax jurisdictions—entailing revenue losses on potentially taxable income in jurisdiction where profits are generated. In the absence of common frameworks for taxation of cross-border digital services, unilateral measures to capture tax revenue associated with cross-border delivery of digital services have proliferated in the region. Meanwhile, an international push is under way to resolve the underlying issues through international agreement on new taxation frameworks for digital services trade. Ongoing international tax cooperation could ensure fair taxation authorities across the borders.

How to Promote Digital Services Trade

The prospects for developing economies in Asia and the Pacific to take part in digital services trade are promising. In the post-pandemic period, the opportunities are likely to intensify as consumers and producers continue to embrace online purchasing, digital transactions, and remote delivery of services. These long-term shifts in behavior, production structure, and labor market needs offer all economies new opportunities to develop competitive advantages in digital services sectors.

Economies in the region are at different stages of development of digital services export—from nascent through emerging to strong players. The range of digital services traded in the region reflects this diversity. It includes traditional call-center-type services based on cost as well as location and time zone advantages; advanced AI and cloud-based services based on skills and domain competence; services linked to goods trade and manufacturing competitiveness; embedded services; and services supporting e-commerce such as fintech.

Governments can pave the way for digital services exports by adopting policies and programs that improve the economy's performance in one or more of four key dimensions discussed in this chapter as drivers of digital services competitiveness. Further efforts could include investing in digital infrastructure and skills, supporting startups by providing funding, tax incentives, and piloting opportunities, while also enacting supporting legislation on cross-border data transfers and data protection, among other measures.

Many governments already have national strategies or road maps to develop the digital economy and to

expand telecom infrastructure and connectivity. Some have programs directed at developing skills for the digital economy. Some have introduced policies to support the incubation of startups and promote venture capital financing.

Below are some recommendations for supplementary policies and strategies to promote digital services trade:

- With the bulk of digital services trade currently taking place in telecommunications, computer, and information services—as well as professional and other business services, liberalizing restrictions in these services sectors will be important for driving the region's export growth prospects. The potential for digital services exports, ultimately extends, however, across all services sectors with growth already being experienced during the pandemic in health and education services as well as audiovisual and animation services.
 - » Economy case studies highlight the scope for digital services trade to facilitate the integration of economies into global and regional markets and to lessen the divide among them. Bilateral and regional agreements need to focus more on creating enabling conditions for digital services trade in their chapters and provisions on economic and regulatory cooperation, e-commerce, investment, and mobility of persons, as well as in their mode 1 commitments, including in sectors such as financial services.
 - » Governments need to weigh the pros and cons of data transfer and localization restrictions carefully. Greater international cooperation is called for on digital standards development and mechanisms for mutual recognition and interoperability. Intensified dialogue with businesses and industry associations is needed to design policies to balance national security and sovereignty concerns without undermining commercial opportunities.
 - » Openness to digital services imports, such as promoting the utilization of cloud services is important in enabling domestic efficiency gains, reaping socioeconomic development benefits and supporting digital services exports.

- As the range of tradable digital services grows, there
 is scope to pursue cultivating digital services export
 markets. Niche export opportunities are on offer for a
 wide spectrum of economies that differ in their mix
 of endowments and conditions. The ability to tap
 digital services export opportunities depends on
 the capacity to leverage specific strengths and
 conditions, including in partnership between
 government and industry.
 - » Governments need to keep pace with emerging needs in digital services sectors, investing in ICT infrastructure and specialized skills and updating their regulatory regimes for the digital economy, including to nurture an enabling environment for businesses to have ready access to the crossborder digital services trade.
 - Apart from infrastructural constraints, shortage » of skills, and absence of a conducive ecosystem for digital enterprises and development of new technology-based applications and solutions, the biggest challenge for digital services trade is achieving transparency, predictability, and appropriateness of the evolving digital regulatory environment. Governments need to undertake regular regulatory review, including in consultation with services industry stakeholders, and reform domestic regulatory practices consistent with international benchmarks, principles, and frameworks. All WTO members are encouraged to join the WTO Joint Statement Initiative on Services Domestic Regulation.
 - » Greater preparedness for experimentation, the embrace of opportunities to pilot and test applications, and adoption of a regulatory approach that encourages risk-taking can help economies to develop digital services exports.
 - Even if economies fall short in some areas of digital readiness, they can still be successful digital services exporters if they leverage their strengths, including first mover advantage in IT-BPO services, and fast-growing domestic demand for digital applications and solutions to develop digital services exports.

- » Economies can convert disadvantages, such as geographic remoteness and a small domestic market into an opportunity, by targeting niche markets and industry segments and serving as an experimentation ground.
- To foster the development of digital trade in services, deeper commitments and expanded coverage of relevant provisions in RTAs can be crucial. In particular, developing Asia will need to strengthen such provisions, focusing on enabling business opportunities and consumer protection. Economy efforts could also be supplemented by mutual recognition agreements on services, which so far have been forged mainly among developed economies. For instance, economies with similar regulatory frameworks can develop recognition arrangements at the bilateral and regional levels first, before expanding them to a wider level.
- While unilateral measures to capture tax revenue associated with cross-border delivery of digital services have been proliferating, an international push now taking place to resolve underlying issues through international agreement on new taxation frameworks should pave the way for fair taxation on cross-border digital services transactions and associated business profits. In the meantime, governments should ensure that any tax-related measures are implemented in a nondiscriminatory manner to avoid bilateral trade friction and WTO dispute.
- Participation in digital services trade can enable social and economic convergence within and across economies by creating jobs and increasing incomes, empowering less advantaged sections of society; by supporting financial inclusion, increasing access to health and education; by improving productivity; and by lowering trade costs. To ensure that digital services trade makes such benefits possible, while avoiding aggravation of inequities as economies undergo digital transformation, it is vital that government approaches include a focus dedicated to digital access and inclusiveness.

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