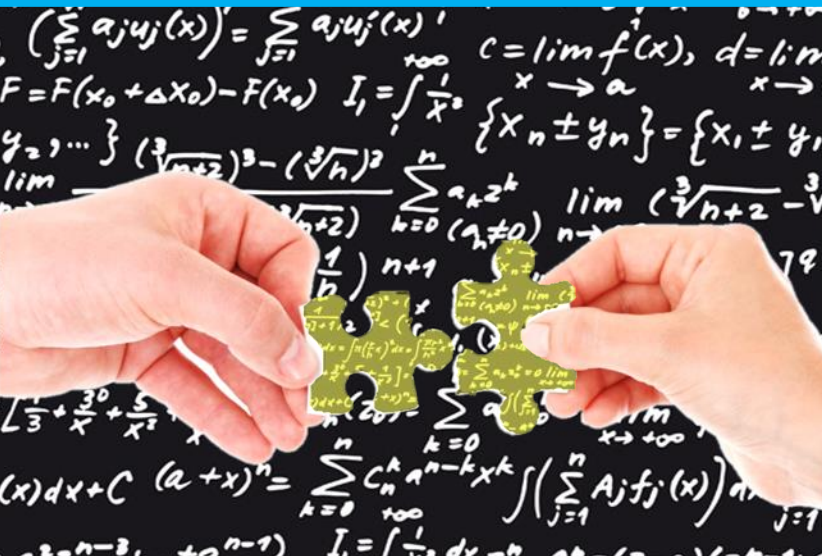




Bolstering East Asian-Latin American value chains through digitally deliverable services



Kati Suominen

ASIA-PACIFIC RESEARCH AND TRAINING NETWORK ON TRADE

Working Paper

NO. 207 | 2021

The Asia-Pacific Research and Training Network on Trade (ARTNeT) is an open regional network of research and academic institutions specializing in international trade policy and facilitation issues. ESCAP, WTO and UNCTAD, as key core network partners, and a number of bilateral development partners, provide substantive and/or financial support to the network. The Trade, Investment and Innovation Division of ESCAP, the regional branch of the United Nations for Asia and the Pacific, provides the Secretariat of the network and a direct regional link to trade policymakers and other international organizations.

The ARTNeT Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about trade issues. An objective of the series is to publish the findings quickly, even if the presentations are less than fully polished. ARTNeT Working Papers are available online at <https://artnet.unescap.org>. All material in the Working Papers may be freely quoted or reprinted, but acknowledgment is requested together with a copy of the publication containing the quotation or reprint. The use of the Working Papers for any commercial purpose, including resale, is prohibited.

Disclaimer:

The designations employed and the presentation of the material in this Working Paper do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries. Where the designation “country or area” appears, it covers countries, territories, cities or areas. Bibliographical and other references have, wherever possible, been verified. The United Nations bears no responsibility for the availability or functioning of URLs. The views expressed in this publication are those of the author(s) and do not necessarily reflect the views of the United Nations. The opinions, figures and estimates set forth in this publication are the responsibility of the author(s) and should not necessarily be considered as reflecting the views or carrying the endorsement of the United Nations. Any errors are the responsibility of the author(s). The mention of firm names and commercial products does not imply the endorsement of the United Nations.



**Bolstering East Asian-Latin American value chains
through digitally deliverable services¹**

Kati Suominen²

Please cite this paper as: .

Suominen, Kati, (2021), “Bolstering East Asian-Latin American value chains through digitally deliverable services”, **ARTNeT Working Paper Series**, No. 207, April 2021, Bangkok, ESCAP.

Available at: <http://artnet.unescap.org>

¹ This paper is a policy brief version of the report prepared for ESCAP under the same title. The report is available at <https://www.unescap.org/kp/2021/bolstering-east-asian-latin-american-value-chains-through-digitally-deliverable-services>

² Founder and CEO, Nextrade Group, e-mail: kati@nextradegroupllc.com. The author would like to acknowledge useful suggestions and comments from the Trade, Investment and Innovation Division of ESCAP, in particular Witada Anukoonwattaka and her team. The author is grateful to the ARTNeT secretariat for the technical support in preparing this paper for dissemination.

Abstract

Digitally deliverable services play a growing role in export-driven production in the FEALAC region, but digitally deliverable services from Latin America are used only to a limited extent by producers in Asia, and vice versa. However, this disguises the fast growth in Latin American-Asian digitally deliverable services trade in the past 15 years. Asian manufacturing, agricultural and services exporters have significantly expanded their sourcing from providers in Costa Rica, Chile and Colombia, while Latin American producers have increased sourcing from China, the Philippines and Japan. There are some “hidden complementarities” in digitally deliverable services between Latin America and Asia. The Latin American manufacturing, mining and services sectors are drawing on sophisticated IT services and services using disruptive technologies such as blockchain and AI from Japan, the Republic of Korea, Singapore and the Philippines, while Latin American manufacturers and agricultural firms are increasingly using Chinese financial services. The Chinese manufacturing sector is using Brazilian suppliers, and companies in Singapore, China, the Republic of Korea and Japan look to Brazil, Chile, Costa Rica and Colombia for emerging digitally deliverable services such as gaming, animation and e-commerce. The agricultural sector in Thailand and Viet Nam leverage Brazilian digitally deliverable services, potentially Agtech applications.

Keywords: international trade, value chains, trade in services, digitization, ecommerce

JEL Codes: F02, F13, F23

Table of contents

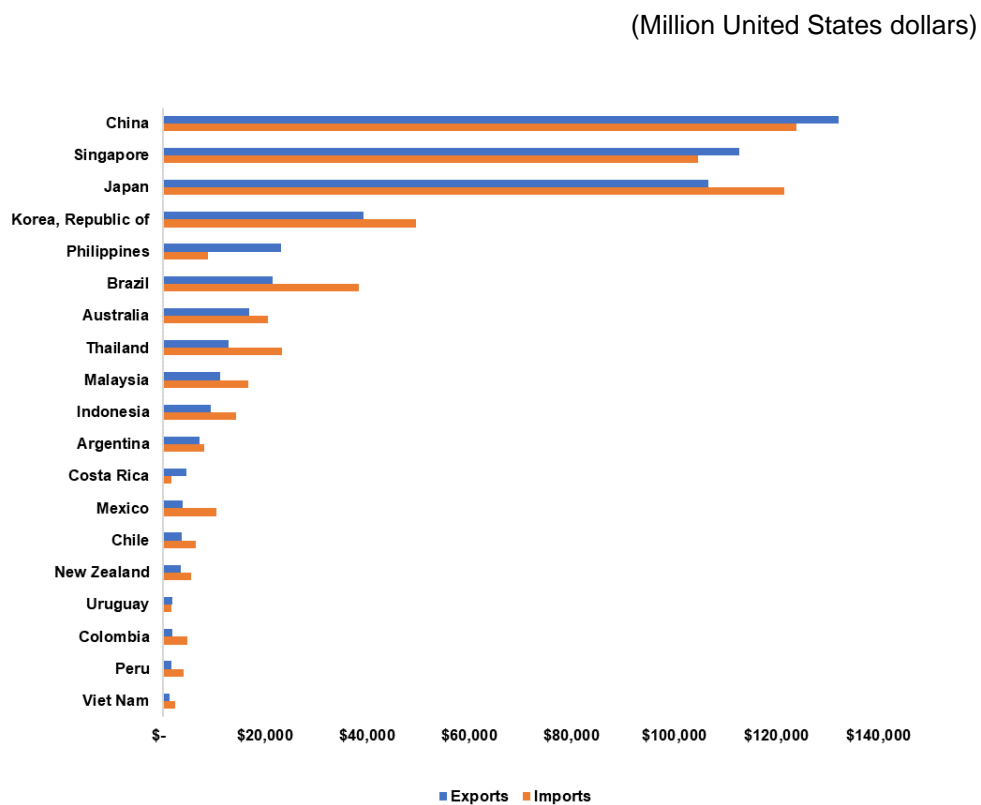
I. Digitally deliverable services in Latin American and East Asian value chains	4
II. Friction in Asia-Latin America interregional trade in digitally deliverable services	12
III. Harnessing emerging opportunities for digitally deliverable services in Asian-Latin American value chains.....	15
IV. Conclusion.....	18
List of references	20

I. Digitally deliverable services in Latin American and East Asian value chains

“Digitally deliverable services” are defined as information and communication, financial and insurance, and other business services. The contribution of the digitally deliverable services between Latin America and Asia will be explored. The role of digitally deliverable services has grown in East Asian and Latin American countries’ services trade in the past 15 years. Nevertheless, the role of digitally deliverable services in Latin American and Asian firms’ value chains in sectors such as agriculture, manufacturing and services is still limited, compared to the value-added offered by other services.

In 2018, China, Singapore, Japan, the Republic of Korea, the Philippines and Brazil were the leading exporters and importers of digitally deliverable services in the two regions (figure 2). China cemented its position as the region's leading digitally delivering service exporter during the past decades, surpassing both Japan and Singapore.

Figure 2. Digitally deliverable services exports and imports in selected Asian and Latin American Economies, 2018

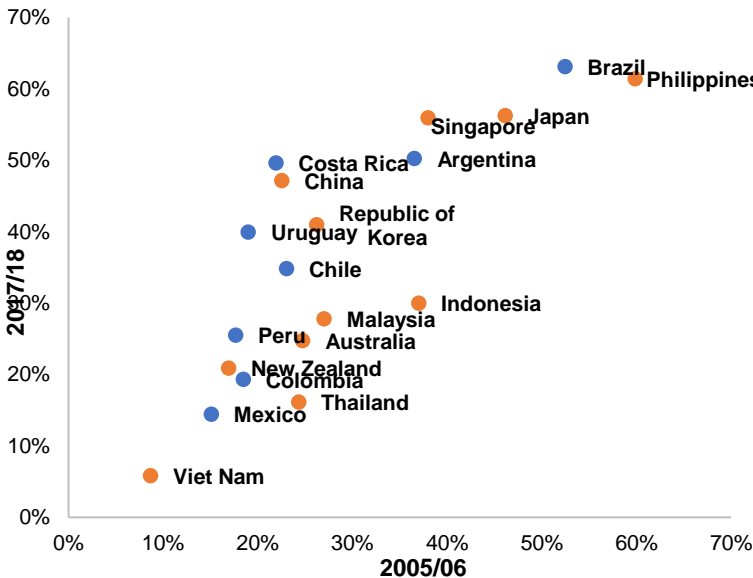


Source: Author’s calculations, based on WTO data.

The share of digitally deliverable services exports of both Asia and Latin America has grown, outpaced the growth of total service exports. In Asia, the digitally deliverable service exports grew from 32 per cent of all service export in 2005/06 to 44 per cent in 2017/18, and in Latin America, from 25 per cent to 33 per cent in the same periods. The notable growth in the share of digitally deliverable services exports of all services exports was Argentina, Brazil, Chile, Costa Rica, China, Japan, Singapore and Uruguay (figure 3). Latin America's robust digitally deliverable services exporters, Argentina and Brazil, doubled their digitally delivery services exports.

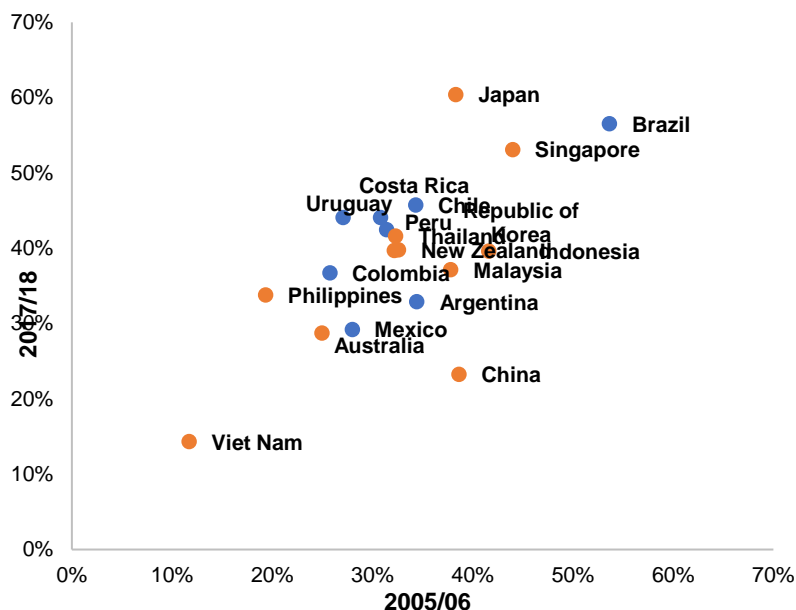
Comparably, most major FEALAC countries have recorded an increased share of digitally deliverable services in their service imports, especially Japan, Costa Rica, the Philippines, Singapore, Peru, Uruguay and Viet Nam (figure 4). The exception is China, whose imports of digitally deliverable services as a share of all services imports dropped drastically from nearly 40 per cent in 2005/06 to 23 per cent in 2017/18, indicating that China has rapidly expanded its overall commercial services imports at a rate of 35 per year. In other words, China has accomplished in cultivating a robust domestic market and internalizing its service value chains (Suominen, 2019).

Figure 3: Share of digitally deliverable services exports in selected Asian and Latin American economies' services exports, 2005/06 and 2017/18



Source: Author's calculation, based on WTO data.

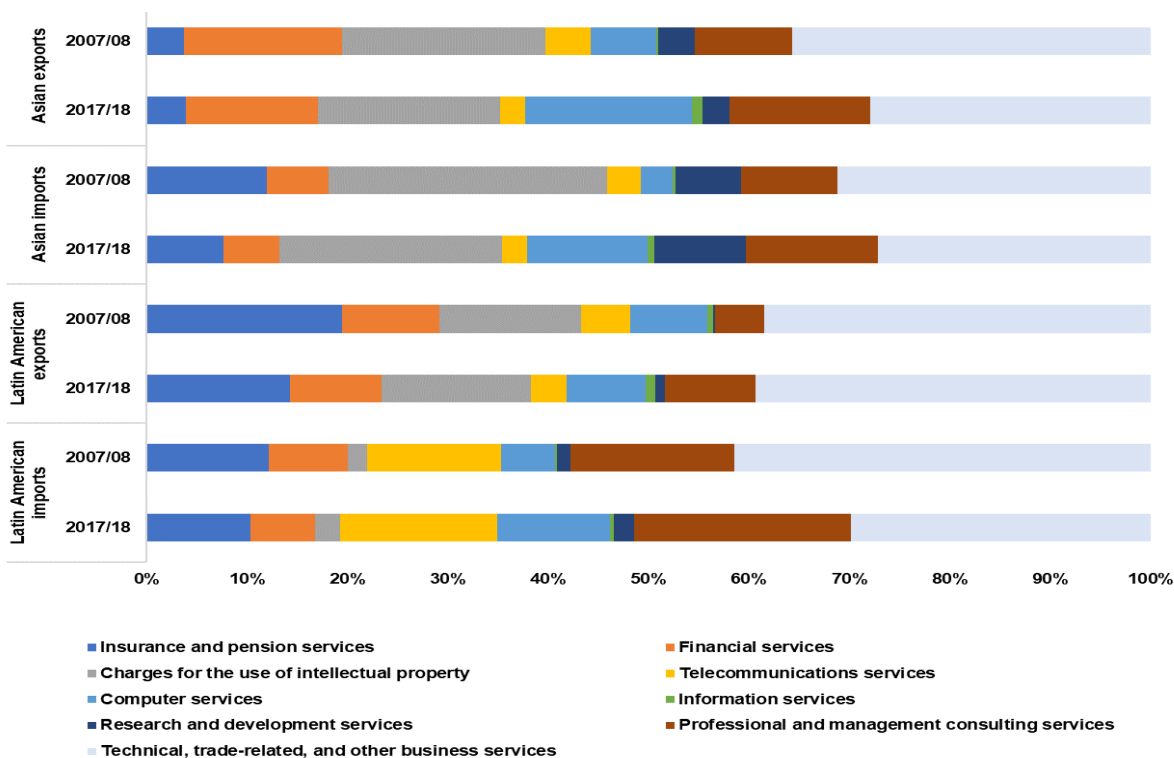
Figure 4: Share of digitally deliverable services imports in selected Asian and Latin American economies' services exports, 2005/06 and 2017/18



Source: Author's calculation, based on WTO data.

As for the composition of digitally deliverable services trade, computing and professional services are the most growing sectors in Asia and Latin America economies during 2007/08 and 2017/18 (figure 5). China, the Philippines, and Viet Nam notably increased their share of computing services exports and imports, while Thailand increased its financial services exports. In Latin America, the share of computing services grew significantly among Argentine, Brazilian and Costa Rican digitally deliverable services exports. This reflects the growth of IT and software development services in certain countries. On the import side, the composition of Asian and Latin American digitally deliverable services baskets has remained unchanged. The share of management consulting services and telecommunication services has grown steadily in Latin America's digitally delivery services import baskets.

Figure 5: Composition of digitally deliverable services exports and imports in selected Asian and Latin American economies, 2007/08 and 2017/18

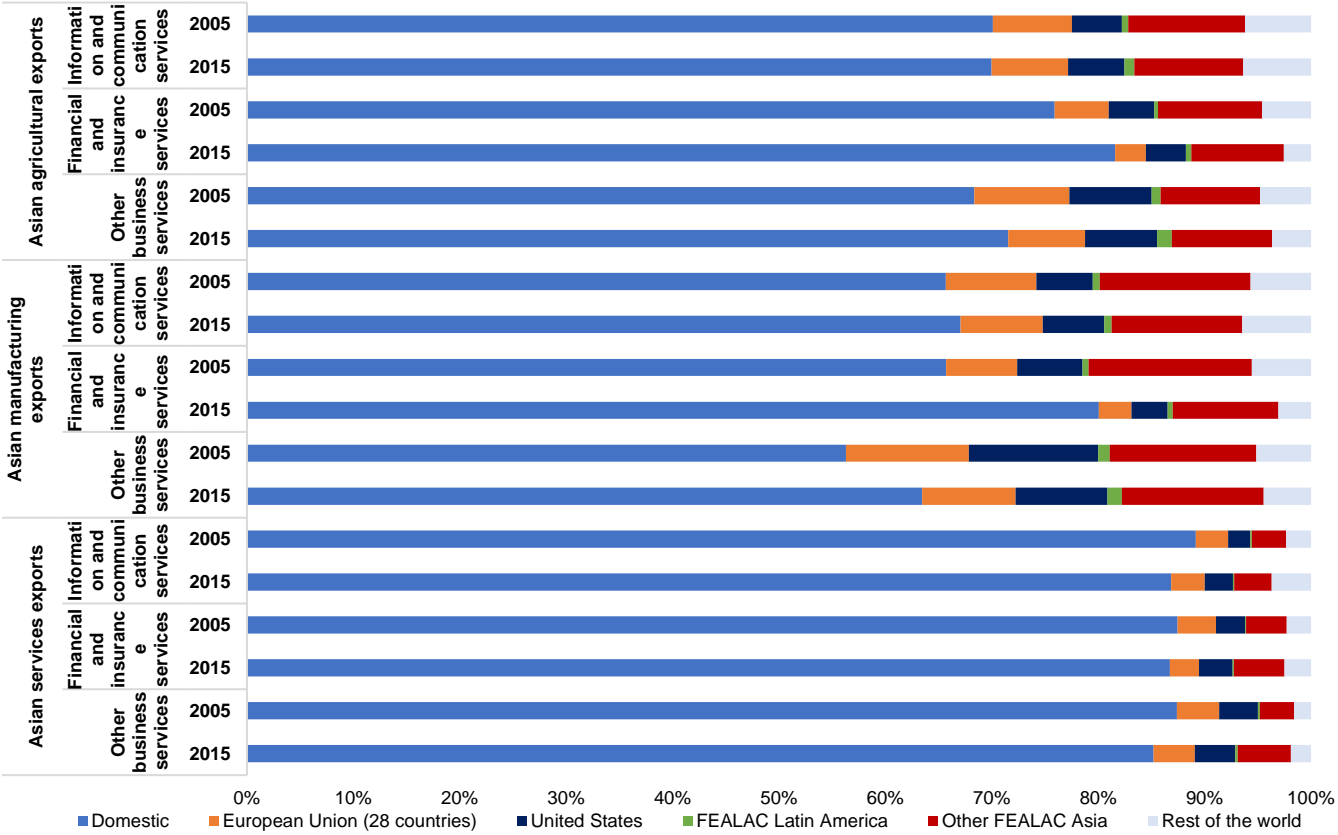


Source: Authors, based on WTO data.

Sources and types of digitally deliverable services in Asian and Latin American services exports and imports

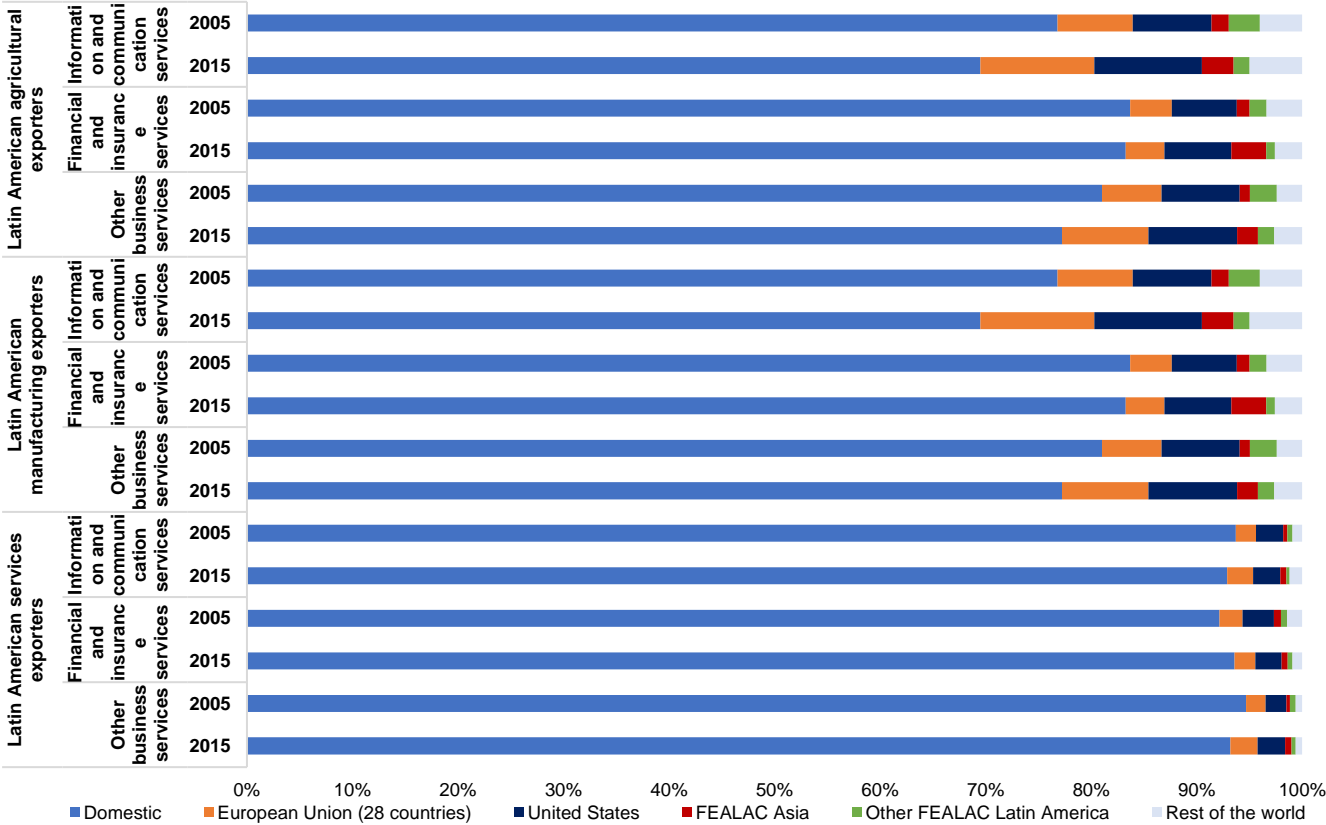
Both region exports continue to rely heavily on their domestic markets for their sourcing of digitally deliverable services even manufacturers are using imported digitally deliverable in their exports (figures 6 and 7). Latin American digitally deliverable services account for a very small share of Asian exporters' value chain as the region's agricultural, manufacturing, and services exporters procure digitally deliverable services primarily from their home markets. Domestic digitally deliverable services make up about three-quarters of all the deliverable services used in Latin American agricultural and manufacturing exports, and exceed 90 per cent of services export. Thereby, from the service provider's vantage point, Latin America is a minor market for Asian digitally deliverable service providers and, in reciprocal, Asia is a rather small market for Latin American service providers.

Figure 6. Main sources of digitally deliverable information and communications, financial and other business services incorporated into Asian agricultural, manufacturing and services exports in Asian, 2005 and 2015



Source: Author's calculation, based on OECD Tiva database.

Figure 7. Main sources of digitally deliverable information and communications, financial and other business services incorporated into Asian agricultural, manufacturing and services exports in Latin American, 2005 and 2015



Source: Author’s calculation, based on OECD Tiva database.

Despite the limited use of the sourcing from the two regions’ value chain, bi-regional digitally deliverable services flow between Asian and Latin American FEALAC members have grown dramatically since 2005. The sourcing of digitally deliverable services has been considerably increased across the two regions exports. Asian procurement of digitally deliverable services soared from Latin American countries such as Chile, Colombia and Costa Rica in 2005-15. In turn, Latin American firms’ procurement of digitally deliverable services from China, Japan, and the Philippines has grown markedly. Asian and Latin American providers have also shifted to increase their sourcing of services from Eastern European and Nordic providers, after facing competition from smaller European countries.

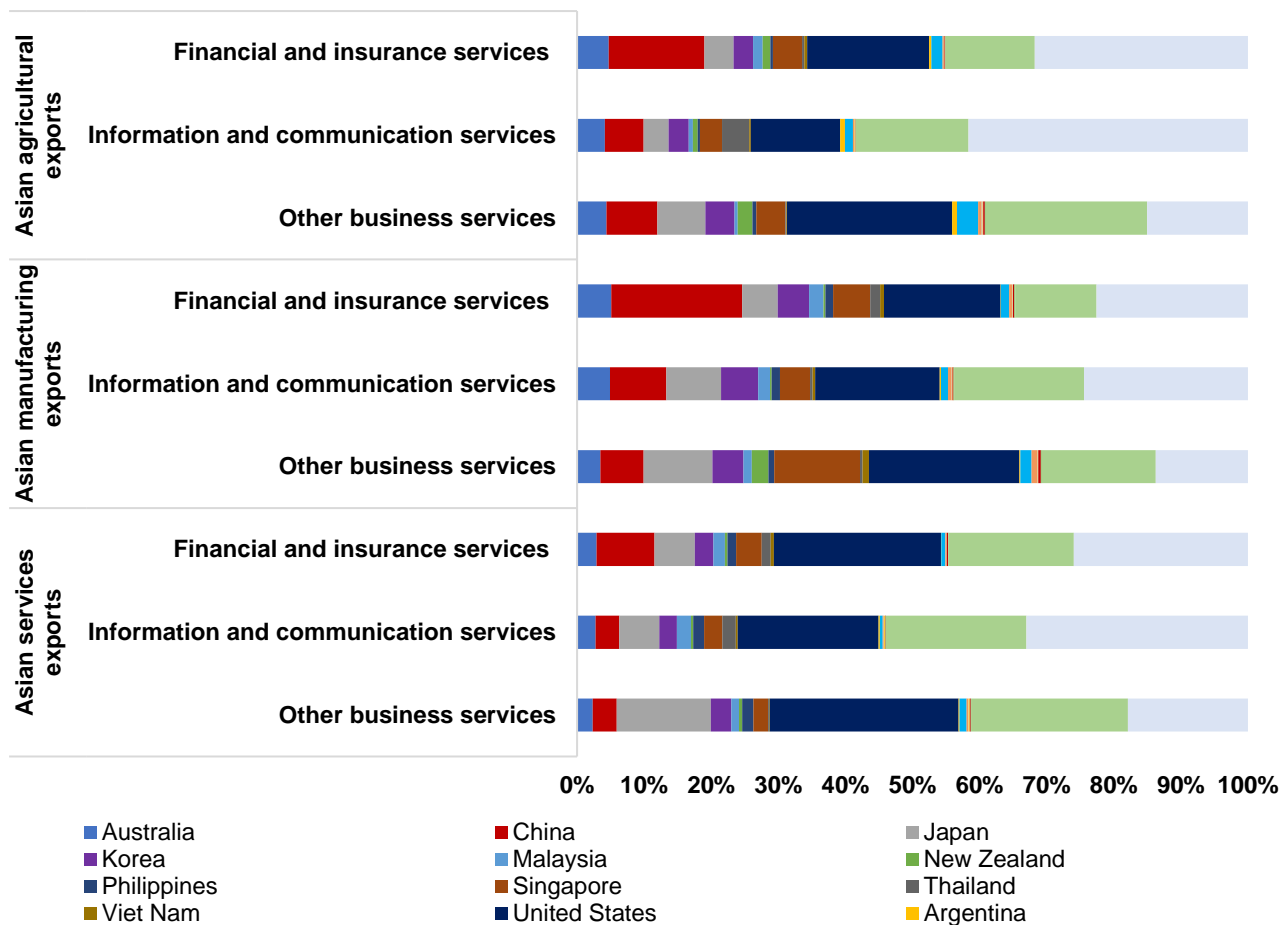
Regarding the specific digitally services imports used in specific industries, the United States, Europe and China are significant sources of financial and insurance services

in Asian manufacturing and agriculture (figure 8). On the other hands, regarding exports, Brazil is the main source of digitally deliverable services incorporated into Asian exports, followed by Chile and Argentina. Brazilian digitally deliverable services are used by China-based manufacturers, Singaporean services sectors, and for Chinese, Thai and Viet Nam agricultural exports. Indeed, the flows from Latin America to Asia have risen in the past five years. Asian companies are procuring digitally deliverable services in such growth sectors as gaming and audio-visual production and e-commerce. Japanese and Chinese manufacturing and services exporters are the leading Asian buyers of digitally deliverable services from Latin America, while Singapore-based exporters also procure digitally deliverable services from Brazil in particular.

For Latin American exporters, a notable pattern is the prominence of the Chinese' source of financial services value-added incorporated into Latin American agriculture and manufacturing exports. This reflects forceful internationalization of Chinese banks over the past decades and the collaboration in Asian and Latin American fintech sectors in recent years. For example, China's AliPay has successfully partnered with Mexican digital payment platform Openpay, while Huawei (2017) has integrated the core components for the Brazilian bank, Caixa (BBVA, 2018). In particular, Brazil is Latin America's leading user of Asian digitally deliverable services in agricultural exports, while Mexico is the most prominent user of manufacturing exports in Asian.

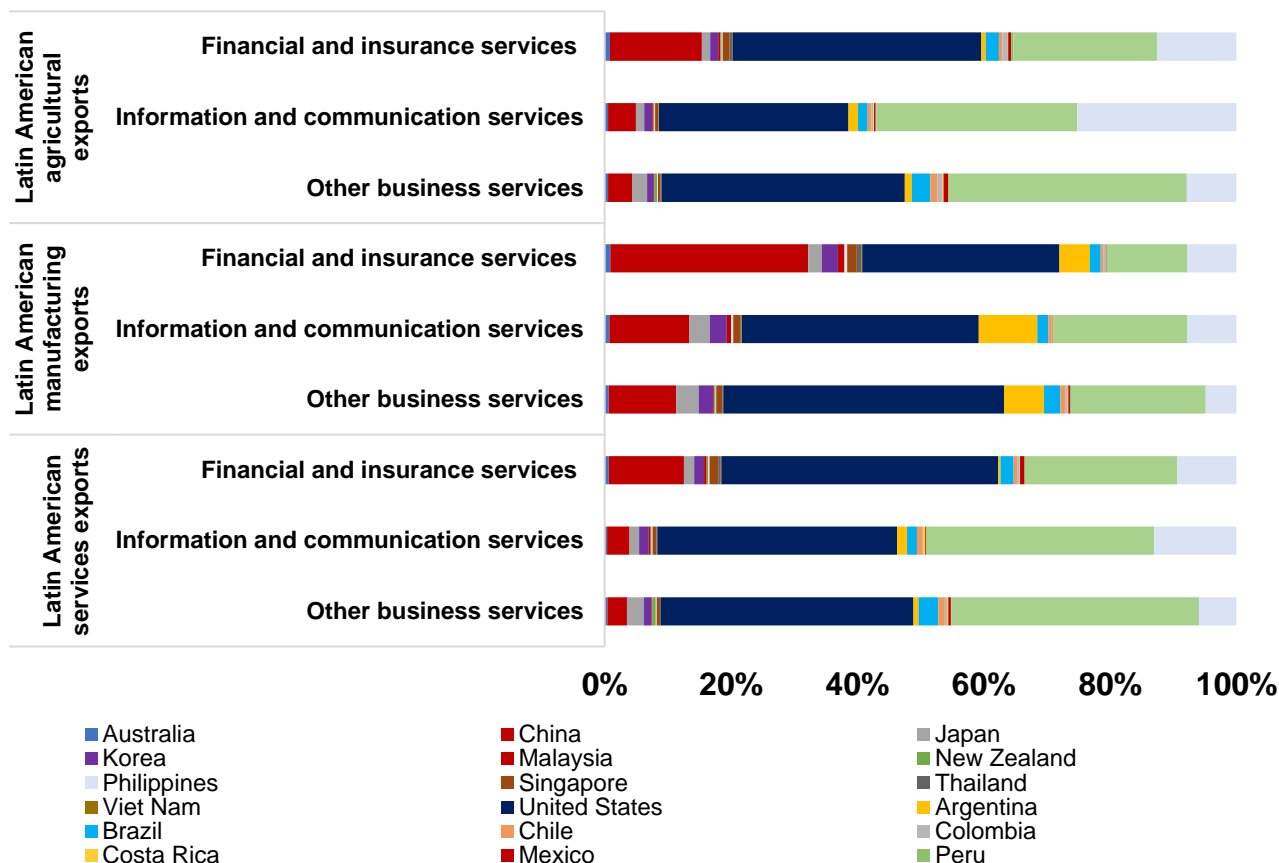
Overall, China plays the most significant role of all analysed Asian countries. Still, Japan maintains its position as an important source of digitally deliverable services for Latin American industries. Japanese providers of blockchain, Internet of Things (IoT) and artificial intelligence (AI) applications have played a key role in bolstering the productivity of the Latin American mining sector.

Figure 8. Main sources of digitally deliverable imports incorporated into Asian agricultural, manufacturing and services export in 2015, by type of digitally deliverable services and source economy



Source: Author's calculation, based on the OECD TiVA database.

Figure 9. Main sources of digitally deliverable imports incorporated into Latin American agricultural, manufacturing and services export in 2015, by type of digitally deliverable service and source economy



Source: Author's calculation, based on the OECD TiVA database.

II. Friction in Asia-Latin America interregional trade in digitally deliverable services

The limitation of the bilateral trade flows in digitally deliverable services between Latin America and Asia can be explained by the geographic distance and language barriers. Most countries in both regions do not have major comparative advantages in services. While, some countries, such as Costa Rica and the Philippines, have attained significant growth as suppliers of digitally deliverable services in value chains of FEALAC members. As a result, most digitally deliverable services used in the two regions' value chains originate either from providers' regions or from the United States or Europe.

The policy may be a source of friction in the flow of digitally deliverable services. Divergent national digital regulations which do not harmonize through trade agreements may complicate services providers' ability to service the various markets and create burdens to service providers, linking to new compliance costs and complicate cross-border deliveries. Another type of friction is limited awareness of the potential supply of services and the lack of interoperable standards for the deployment of sophisticated services in some areas. Few companies in Asia recognize Latin America as a source of digitally deliverable services. Likewise, few Latin American companies even well aware of the calibre of Asian companies, would choose emerging economies of South-East Asia as suppliers or incur the search cost to identify providers in such region.

Meanwhile, there are new opportunities for expanding Asia-Latin America digitally deliverable services. Free trade agreements (FTAs) and good policies such as free flow of data and duty-free transmission of electronic goods matter. In particular, preferential trade agreements may attenuate policy friction. During the past 15 years, Latin American and Asian countries have reached 19 Trans-Pacific Free Trade Agreements, most with services chapters and some with e-commerce chapters. Among the notable agreements are the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)³ and the free trade agreements (FTAs) of Chile-Republic of Korea (2004) and the Japan-Mexico (2005). These bilateral agreements have started the wave of FTAs between Asia and Latin America (ESCAP, 2020). Regardless of the trade agreements, new business opportunities are coming into sight for growing bi-regional Asia-Latin America digitally deliverable services.

³ CPTPP is concluded among Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Viet Nam, enforced and notified to the WTO in 2018. 10 out of 11 CPTPP members are FEALAC membership, except Canada which is not located in the FEALAC region.

Table 1. Differences across digital trade regulations among Asian and Latin American economies*

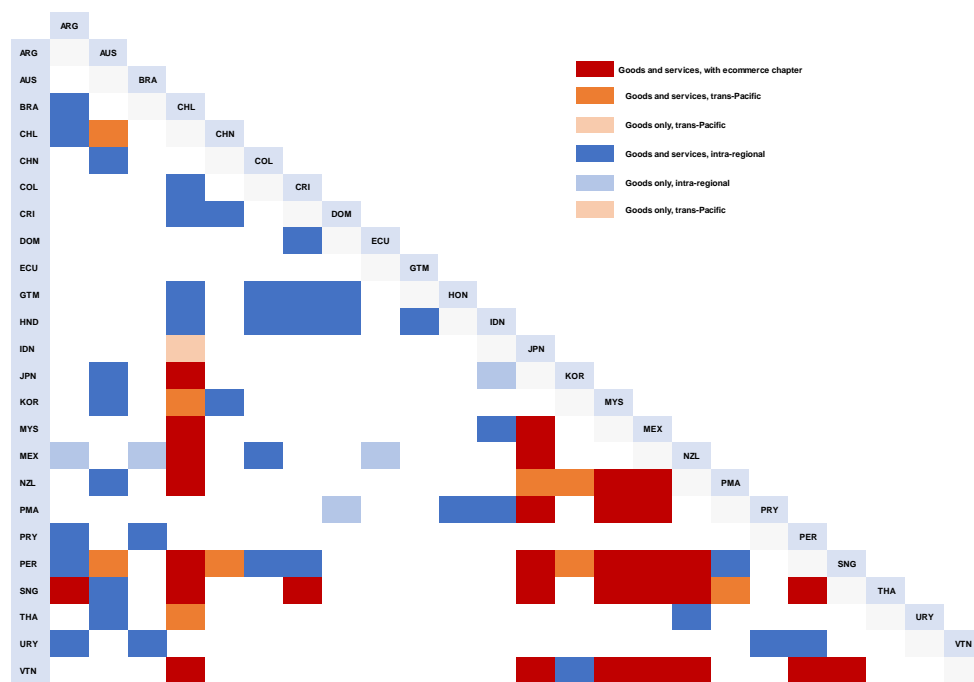
<i>Partner</i>	Argentina	Brazil	Chile	Colombia	Costa Rica	Mexico	China	Indonesia	Japan	ROK**	Australia	New Zealand	United States
Argentina		0.43	0.29	0.16	0.26	0.32	0.73	0.56	0.24	0.28	0.22	0.32	0.18
Brazil	0.43		0.34	0.31	0.21	0.14	0.34	0.27	0.26	0.14	0.29	0.15	0.32
Chile	0.29	0.34		0.28	0.18	0.32	0.44	0.37	0.20	0.29	0.22	0.36	0.18
Colombia	0.16	0.31	0.28		0.10	0.20	0.56	0.44	0.12	0.16	0.10	0.16	0.30
Costa Rica	0.26	0.21	0.18	0.10		0.14	0.46	0.34	0.10	0.11	0.12	0.18	0.24
Mexico	0.32	0.14	0.32	0.20	0.14		0.41	0.28	0.20	0.08	0.18	0.12	0.22
China	0.73	0.34	0.44	0.56	0.46	0.41		0.21	0.49	0.45	0.51	0.41	0.55
Indonesia	0.56	0.27	0.37	0.44	0.34	0.28	0.21		0.32	0.33	0.34	0.29	0.38
Japan	0.24	0.26	0.20	0.12	0.10	0.20	0.49	0.32		0.16	0.02	0.20	0.22
Republic of Korea	0.28	0.14	0.29	0.16	0.11	0.08	0.45	0.33	0.16		0.14	0.16	0.26
Australia	0.22	0.29	0.22	0.10	0.12	0.18	0.51	0.34	0.02	0.14		0.18	0.20
New Zealand	0.32	0.15	0.36	0.16	0.18	0.12	0.41	0.29	0.20	0.16	0.18		0.30
United States	0.18	0.32	0.18	0.30	0.24	0.22	0.55	0.38	0.22	0.26	0.20	0.30	

Source: Author's calculation, based on the OECD Digital Services Trade Restrictiveness Index (2020).

* Dark blue = more divergent regulations.

** ROK = Republic of Korea

Table 2. Bi- and plurilateral Trade Agreements among selected Asian and Latin American economies (agreements notified to the WTO)



Source: Author's calculation, based on information on various government websites.

III. Harnessing emerging opportunities for digitally deliverable services in Asian-Latin American value chains

In recent years, specific opportunities have emerged that Asia and Latin American are leveraging and can develop further, for expanding the use of each other's services in their respective value chains.

First, as a result of COVID-19, firms across sectors have accelerated their digital transformation, and vast majorities of IT decision makers in both Asia and Latin America are likely to step up their ongoing migration in the cloud (ISG, 2020; Burden and others, 2020). This can create new flows of digitally deliverable services provided, especially by large cloud computing firms.

Second, Asia and Latin America have both nurtured the rise of innovative technology companies that can add value in B2B supply chains. One example is agriculture. In recent years, Brazil has spawned hundreds of prominent data-driven Agtech startups that are providing digital services to the country's massive farming sector. For example, Agtechs are helping to streamline processes and deliver inputs "before the farm",

provide precision farming, imagery diagnosis, remote sensing and telemetry to improve production “at the farm”, and manage logistics, marketing and distribution “after the farm” (Azevedo, 2019). Similarly, Chile has innovative technology companies in the salmon industry. What could be called “Salmontech” innovations, such as blockchain used for salmon traceability, could be used in Asian countries such as in Japan where consumers value high-quality fish and that has, since the 1980s, collaborated with Chile on salmon production techniques and technologies (Japan International Cooperation Agency, 2014).

Third, access to efficient financial and logistics services is key to the growth of Latin American and Asian businesses. Singapore has emerged as a leading Fintech and Regtech hub with such prominent players as Funding Societies, Validus Capital, Aspire and Datarama; some Singaporean Fintechs have already ventured into Latin America. For example, in 2020, Singaporean payments Fintech Nium announced a partnership with Teledolar in Costa Rica, the first step in Nium’s quest to help Latin American Fintechs, banks and financial institutions digitize (Alois, 2020). Similar synergies exist in Logtechs – logistics technology companies that provide uberized freight services, tracking of shipments, cargo consolidation services and other data-driven services. Logtechs enable traditional logistics providers to provide services at a lower cost and reach new customer segments, and cargo owners to efficiently access services that lower their shipping costs and time, and enable them to track their shipments. Brazil, where high logistics costs have for years arrested firms’ competitiveness, is home to almost 300 Logtechs that could also benefit Asian customers, for example, in such markets as the Philippines where firms also face relatively high logistics costs (Distrito, 2020).

Fourth, Asian and Latin American national and city Governments are digitizing rapidly enabling, for example, the expansion of e-government services, and more digitized and streamlined provision of public services across areas such as transport, health care, energy, safety and education. Technology providers in Japan and the Republic of Korea, among others, are the global vanguard in public sector digital transformation. A region with sprawling cities that struggle to meet burgeoning demand for efficient transportation, housing and access to basic services, Latin America could also benefit from working with Asian companies that provide digitally deliverable smart city technologies in such areas as urban transport and mobility, public safety and connectivity.

Fifth, the blue economy – exploitation and preservation of the marine environment – is another exciting future opportunity for Latin American and Asian economies. Digitally deliverable services or services that rely heavily on digital technologies such as

imaging and physical sensors, satellite technologies, Big Data analytics, autonomous systems, biotechnology, sub-sea engineering and autonomous systems help to improve aquaculture site selection, exploitation of minerals and oil from ocean floors, monitoring fish stock movements and maritime ecosystems, managing oil spills and conserving coastal areas (OECD, 2019; and Ebarvia, 2018). This could be an emerging area of collaboration and services trade between Asia and Latin America.

To encourage the development of synergies in digitally deliverable services, Asia and Latin America can usefully pursue concrete initiatives, such as:

- **The creation of a FEALAC Task Force for Supply Chain Resilience through Technology.** New supply chain models and responses, such as distributed manufacturing, provide entirely new opportunities to build resilience and flexibility in supply chains; however, they will likely also have significant impacts on firms' business models as well as economic, trade and tax policies. Latin American and Asian firms that are testing and enabling distributed manufacturing approaches could work to create and pilot approaches in Latin America, and discuss with policymakers the regulations and capabilities needed for such networks to work efficiently;
- **The pursuit of matchmaking in fintechs, logtechs and agtechs.** Both Asia and Latin America are amid a “tech” boom, seeing the rise of well-funded startups intent on transforming and streamlining traditional industries such as lending, logistics and farming. These firms could have an important impact across FEALAC markets and could catalyse further value chain linkages in digitally deliverable services between Latin America and Asia. However, they often lack contacts and capital to scale quickly. FEALAC member governments and private sector partners have an excellent opportunity to organize forums and virtual showcases for startups in Asia and Latin America to display and demonstrate their solutions to potential partners across the FEALAC region. This would include, for example, leading banks, transport operators and agricultural businesses. Large companies' corporate venture funds would also be interested in startup solutions. FEALAC has already made efforts in this direction, such as an “Exploring Economic Complementarity in the Agro-industrial sector” project sponsored by Argentina (FEALAC, 2019). Entrepreneurs from Asia and Latin America could also use such a forum to establish new business relationships;
- **The establishment of smart manufacturing test beds.** Latin American and Asian companies have adopted smart manufacturing and farming techniques and technologies, and share a common interest in testing and scaling new smart

manufacturing models. Businesses from the FEALAC region could develop new smart manufacturing pilots as well as scale existing ones with co-investments from governments and development banks. Further opportunities might be provided by startup competitions for startups conceived in Asia and Latin America that enable smart manufacturing technologies and techniques. The best solutions could be piloted, with donor support, by the firms that participate. The forum could also generate policy dialogues on national smart manufacturing strategies and proposals on the trade dimensions of smart manufacturing and servification, such as customs treatment of electronic transmissions;

- **The creation of an Asia-Latin America Smart City Forum.** Sprawling cities in Asia and Latin America have a growing need for smart city solutions, many of which are digitally deliverable. Both regions also share important expertise in ways to smarten cities and grapple with specific urban challenges, such as safety, transport and housing. FEALAC member countries could form a smart city forum where Asian and Latin American local government leaders could discuss their experiences and share best practices, learn about leading-edge technology solutions developed in Asia and Latin America, and access support for piloting and scaling smart city solutions. This could be done, for example, with the support of regional development banks;
- **The development of Asia-Latin America Blue Economy Fund and Partnership.** The ocean is a huge and shared resource of energy and nutrition for Asian and Latin American countries. Asia and Latin America could jointly develop digital technologies that enable them to nurture and cultivate the ocean. Both regions could benefit from pooling resources for developing common technologies. FEALAC members could, for example, launch a FEALAC Blue Economy Fund that would catalyse public and private sector funding for potentially promising technology solutions from across Asia and Latin America in preserving and cultivating the Pacific Ocean.

IV. Conclusion

The low integration of Latin America's digitally deliverable services into Asian production and vice versa reflects largely their traditional comparative advantages. However, there are some "hidden complementarities" in digitally deliverable services between Latin America and Asia. The Latin American manufacturing, mining and services sectors are drawing on sophisticated IT services and services using disruptive technologies such as blockchain and AI from Japan, the Republic of Korea, Singapore

and the Philippines, while Latin American manufacturers and agricultural firms are increasingly using Chinese financial services. The Chinese manufacturing sector is using Brazilian suppliers, and companies in Singapore, China, the Republic of Korea and Japan look to Brazil, Chile, Costa Rica and Colombia for emerging digitally deliverable services such as gaming, animation and e-commerce. The agricultural sector in Thailand and Viet Nam leverage Brazilian digitally deliverable services, potentially Agtech applications.

As the business ecosystems in Asia and Latin America become more digitized and produce new digital services, there will be greater opportunities to also expand bilateral digitally deliverable services trade. For example, there are excellent opportunities for promoting cooperation and forums for Asian and Latin American companies to learn more about Latin American and Asian fintechs, logtechs, agtechs and creative industries such as animation, and vice versa. FEALAC members can also develop new initiatives that catalyse productivity and digitally deliverable services trade, such as smart manufacturing test beds, smart city forums as well as a FEALAC blue economy initiative and fund. To further incorporate high-value-adding, digitally deliverable services into their manufacturing, agriculture and other sectors, Asia and Latin America must uphold commitments to duty-free electronic transmissions and the free transfer of data across borders.

There is also a need for more research in digital trade between Asia and Latin America, in at least three areas. First, data on value chains have become significantly more sophisticated in the past decade; however, there is a need for timelier data at a finer resolution on the use of different types of high-value services in value chains, including in the poorer countries that are seeking to integrate into global value chains. Second, the analysis of the impact of digitally deliverable services on firms' exports, productivity and development of new, innovative products and services is still nascent, as is the understanding of which types of firms best absorb and utilize digitally deliverable services for productivity gains. Third, much more research is needed on assessing the impact of the rapidly transforming digital policy landscape as well as the increasingly encompassing e-commerce chapters in FTAs on digitally deliverable services trade and the use of digitally deliverable services in value chains.

List of references

- Alois, J. D. (2020). "Singapore based payments platform Nium expands into Latin America via partnership with Teledolar", *Crowdfund Insider*, August 24, 2020. Available at <https://www.crowdfundinsider.com/2020/08/165659-singapore-based-payments-platform-nium-expands-into-latin-america-with-via-partnership-with-teledolar/>
- Azevedo, D. (2019). "Brazilian agtech boom produces 1,125 start-ups", *Future Farming*, 9 October 2019. Available at <https://www.futurefarming.com/Smart-farmers/Articles/2019/10/Brazilian-agtech-boom-produces-1125-start-ups-481829E/>
- Burden, A., R. Groleau, V. Savic and K. Ivaturi (2020). *The Future of your APAC Business in the Cloud*. Accenture. Available at <https://www.accenture.com/acnmedia/PDF-132/Accenture-The-Future-of-Your-APAC-Business-in-the-Cloud.pdf>
- BBVA (2018). "BBVA's Openpay strikes deal with China's Alipay in Mexico", 22 March 2018. Available at <https://www.bbva.com/en/bbvvas-openpay-strikes-deal-chinas-alipay-mexico/>
- Distrito (2020). *Logtech Report 2020*, Accessed December 2020. Available at <https://conteudo.distrito.me/dataminer-logtech>
- Ebarvia, M. C. (2018). "Blue economy: initiatives in the East Asian seas", *Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)*. Available at https://www.unescap.org/sites/default/files/02_04_G_Blue_economy_PEMSEA_1-3Aug2018.pdf
- ESCAP (2020). *Preferential Trade Agreements in Asia and the Pacific 2020/2021*. United Nations Publication. Available at <https://www.unescap.org/kp/2020/preferential-trade-agreements-asia-and-pacific-20202021>.
- FEALAC (2019). "Network for Exploring Economic Complementarity in the Agro-industrial sector", Forum for East Asia-Latin America Cooperation Regional Project, Available at http://www.fealac.org/new/document/board_view.do?idx=1471&sboard_id=national_project&sboard_category=&page=4&onpage=10&orderby=A&sort=desc&sboard_01=&sboard_02=&sboard_19=RP&sboard_20=N&stext=&startdatelike=

- Huawei (2017). “Brazil’s Caixa transformed into digital bank”, *Huawei Case Studies*, 25 May 2017. Available at <https://e.huawei.com/en-US/case-studies/global/2017/201705251402>
- ISG (2020). “Public Cloud providers see growth potential in Latin America”, *Globenewswire*, 7 February 2020. Available at <https://www.globenewswire.com/news-release/2020/02/27/1991942/0/en/public-cloud-providers-see-growth-potential-in-latin-america.html>
- Japan International Cooperation Agency (2014). “Chile’s road to becoming a top salmon exporter”, *JICA’s World*, January 2014. Available at https://www.jica.go.jp/english/publications/j-world/c8h0vm00008mqace-att/1401_04.pdf
- OECD (2020). Digital Services Trade Restrictiveness Index Regulatory Database, accessed December 2020. Available at https://qdd.oecd.org/subject.aspx?Subject=STRI_DIGITAL
- _____ (2019). “Rethinking innovation for a sustainable ocean economy”. Available at <http://www.fao.org/fi/static-media/MeetingDocuments/BlueHope/secondmeeting/Blue%20Economy%20blue%20growth/Rethinking%20Innovation%20for%20a%20Sustainable%20Ocean%20Economy.pdf>
- Suominen, K. (2019). *Revolutionizing World Trade: How Disruptive Technologies Open Opportunities for All*. Palo Alto, Stanford University Press.

Online databases

OECD Trade in Value Added (TiVA) database. Available at <http://www.oecd.org/sti/>

OECD Digital Services Trade Restrictiveness Index. Available at https://stats.oecd.org/Index.aspx?DataSetCode=STRI_DIGITAL

World Trade Organization database. Available at <https://data.wto.org/>



The Asia-Pacific Research and Training Network on Trade - ARTNeT - is an open network of research and academic institutions and think-tanks in the Asia-Pacific region. Since its inception, ARTNeT aims to increase the amount of high quality, topical and applied research in the region by harnessing existent research capacity and developing new capacities. ARTNeT also focuses on communicating these research outputs for policymaking in the region including through the ARTNeT Working Paper Series which provide new and policy-relevant research on topics related to trade, investment and development. The views expressed in this publication are those of the authors and do not necessarily reflect the views of the United Nations and ARTNeT secretariat or ARTNeT members.

Readers are encouraged to quote or reproduce material from ARTNeT Working Papers for their own publications, but as the copyright holder, ARTNeT requests due acknowledgement and a copy of the publication.

This and other ARTNeT publications are available from artnet.unescap.org.



ARTNeTontrade



@ARTNeTontrade



ARTNeT Group



artnetontrade@un.org

ARTNeT Secretariat, United Nations ESCAP

Rajadamnern Nok Avenue

Bangkok 10200, Thailand

Tel: +66(0) 22881410

Fax: +66(0) 22881027