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Digital Trade Brings the World to Your Fingertips

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EXECUTIVE SUMMARY

Digital trade allows more goods and services to be traded internationally. For years, digital trade was not formally defined, but its increasing importance led to an established definition in 2019. *The Handbook on Measuring Digital Trade* defines digital trade as "all international trade that is digitally ordered and/or digitally delivered." This definition demonstrates that rather than being a sector of its own, digital trade describes the nature of certain transactions. Since digital trade is about the mode of particular international trade transactions, the complete value of digital trade is not captured in official trade statistics.

Nonetheless, the benefits of digital trade are abundant. Indeed, the COVID-19 pandemic provided a real-world example of the critical value of digital trade. Digitalization allowed people to order goods and services online and helped people retain their employment.

Unfortunately, some countries are at various stages of implementing barriers to digital trade through taxation and regulations requiring businesses to store data within those countries' borders. Such measures threaten the global economy's integration and raise costs for businesses—and, by extension, likely raise prices for consumers. These barriers also increase the costs of entry to new markets that could spur technological spillovers that help spread innovation and competition, providing increased variety to consumers.

Given the centuries of evidence that trade raises living standards, maintaining the freedom of data flows that underpin digital trade is crucial for promoting continued human flourishing.

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INTRODUCTION

In a world beset by increasingly pessimistic news, digital trade provides an important feel-good story about the value of free enterprise.[1] Defined in *The Handbook on Measuring Digital Trade* as "international trade that is digitally ordered and/or digitally delivered," digital trade would be much harder without a free and open internet.[2] Before the internet became available to the public in the 1990s, teleshopping was the closest activity that could be encompassed in digital trade. Today, e-commerce platforms provide convenience and variety across a wide range of online offerings; we regularly "stream" music and shows, and many of us conduct business through LCD screens. These and all other digital trade activities would not be possible without free cross-border data flows.

Indeed, the COVID-19 pandemic provided a real-world example of the critical value of digital trade. As governments constrained people's physical contact and movement, digitalization was not only a lifeline for delivering goods and services but also for retaining work and maintaining human connection with friends and family.

Fortunately, public policy to date—more often than not—has played a constructive role by allowing digitalization to flourish largely unimpeded. While the pandemic amplified the exchange of information, the foresight of the World Trade Organization (WTO) to maintain open trade in electronic transmissions and information technology goods has helped facilitate rapid technological advances that underpin supply chains today. In fact, most businesses in almost all industries are at least partially digitally enabled and use digital platforms across borders to enhance efficiencies and compete globally.[3]

This paper explores how digital trade is defined and captured in statistics, lays out the benefits of digital trade using case studies, presents the barriers and threats to digital trade and the current rules governing digital transactions, and offers policy recommendations to maintain a commitment to free digital trade that advances innovation and enhances the benefits traditional trade has already brought to billions of people worldwide.

DEFINING DIGITAL TRADE

For years, while there was no standard definition of digital trade, people agreed that it captured the online sale of goods and services, data flows that facilitate global supply chains, services that power smart manufacturing, and other digital platforms and applications.[4] The first formal definition of digital trade was presented in 2019 in *The Handbook on Measuring Digital Trade*, published by the Organisation for Economic Co-operation and Development (OECD), the World Trade Organization, and the International Monetary Fund. Digital trade is often discussed in terms of being its own sector, but it actually describes the nature of certain transactions—"all international trade that is digitally ordered and/or digitally delivered."[5] In this vein, digital trade covers multiple categories. *The Handbook on Measuring Digital Trade* uses a framework to split digital trade flows into three dimensions: digitally ordered physical goods, digitally ordered and delivered services, and digital intermediation services (Table 1).

In recent decades, technological innovation has blurred the line between businesses that produce goods and businesses that produce services, giving rise to firms that produce and supply a combination of both.[6] This phenomenon illustrates how the different digital trade dimensions often overlap. For example, physical goods can only be ordered digitally, but those transactions rely on digital intermediation services, including platforms that connect buyers and sellers. Therefore, e-commerce—buying and selling online—is covered across digital trade in goods but powered by digital intermediation services. Amazon, for example, is an online marketplace offering numerous goods, but it is also a platform where buyers search for products and connect with sellers. However, Amazon also provides services that fall into the "digitally ordered and delivered services" dimension, such as its Prime Video and Amazon Music streaming services.[7]

Standard information and communication technology (ICT) services and potentially ICT-enabled (PICTE) services (remotely traded services using the internet or other digital networks)—such as telecommunications, computer, and information services, and traditional services such as insurance and financial services—are included in digitally ordered and delivered services. Though, again, the traditional services would also be powered by digital intermediation platforms.[8] Similarly, virtual transactions, including in the metaverse (i.e., virtual, shared spaces in which humans interact via digital

Table 1

Summary of the types of digital trade

Category	Definition
Digitally ordered (goods only)	The online international purchase (or sale) of a good using sites specifically designed for the purpose of receiving or placing orders (e.g., e-commerce).
Digitally ordered/ delivered services	International transactions remotely ordered and delivered in an electronic format (e.g., online accounting services or renting a movie). Digitally ordering and delivering are not mutually exclusive. Many digitally delivered services are also delivered but not always (e.g., booking a moving service online). If services are not provided or ordered over the phone, by fax, or by other means online, they would not be included as part of digital trade.
Digital intermediation services	The online interfaces that facilitate the direct transactions between buyers and sellers.

Source: World Trade Organization et al., *Handbook on Measuring Digital Trade*, 2nd ed. (World Trade Organization, 2023), pp. 22–27.

identities and assets) and in video games are powered by digital platforms but would be considered digitally ordered and delivered services. The nonmonetary transactions in video games, however, could be considered digitally ordered and delivered, but nonmonetary transactions are not counted in trade statistics.

Underlying digital trade are data flows, which businesses need to make informed decisions. Businesses have always collected data, but technology helps them collect, store, and analyze it more efficiently.

Data are a tradable product. Businesses buy and sell data to improve efficiencies—trading data this way organizes important information needed by each link in the supply chain to make better planning and investment decisions. For example, customer reviews and surveys can help firms determine purchasing trends and can provide helpful information, such as whether to increase the production of a product or discontinue it.[9]

Data's extensive applications demonstrate how maintaining the freedom of data flows is vital for businesses' competitiveness and resiliency. However, it is difficult to fully capture data flows and accurate statistics on digital trade.

NOT ALL DIGITAL TRADE IS CAPTURED IN STATISTICS

Since digital trade describes the mode of particular international transactions, the complete value of digital trade is not captured in official trade statistics. Data on e-commerce, trade in services, and estimates on ICT services and PICTE services are available but only cover a portion of digital trade and the economic activity it generates.[10] Nonetheless, this available data can help provide some insight into digital trade flows.

E-Commerce

Most e-commerce data are proprietary and not publicly available. However, Juniper Research forecasts that cross-border e-commerce directly from business to consumer will reach $3.3 trillion by 2028, slightly more than double its 2023 forecast of $1.6 trillion (Figure 1).[11]

The Hinrich Foundation, a nonprofit research organization, estimates that the global e-commerce market is worth more than $6 trillion, with fashion as the highest-grossing e-commerce sector (Figure 2). E-commerce estimates, particularly estimates for specific sectors, provide helpful information about what consumers are buying online. These trends, along with data on which types of devices consumers use and how often, can help businesses make better investment decisions.[12]

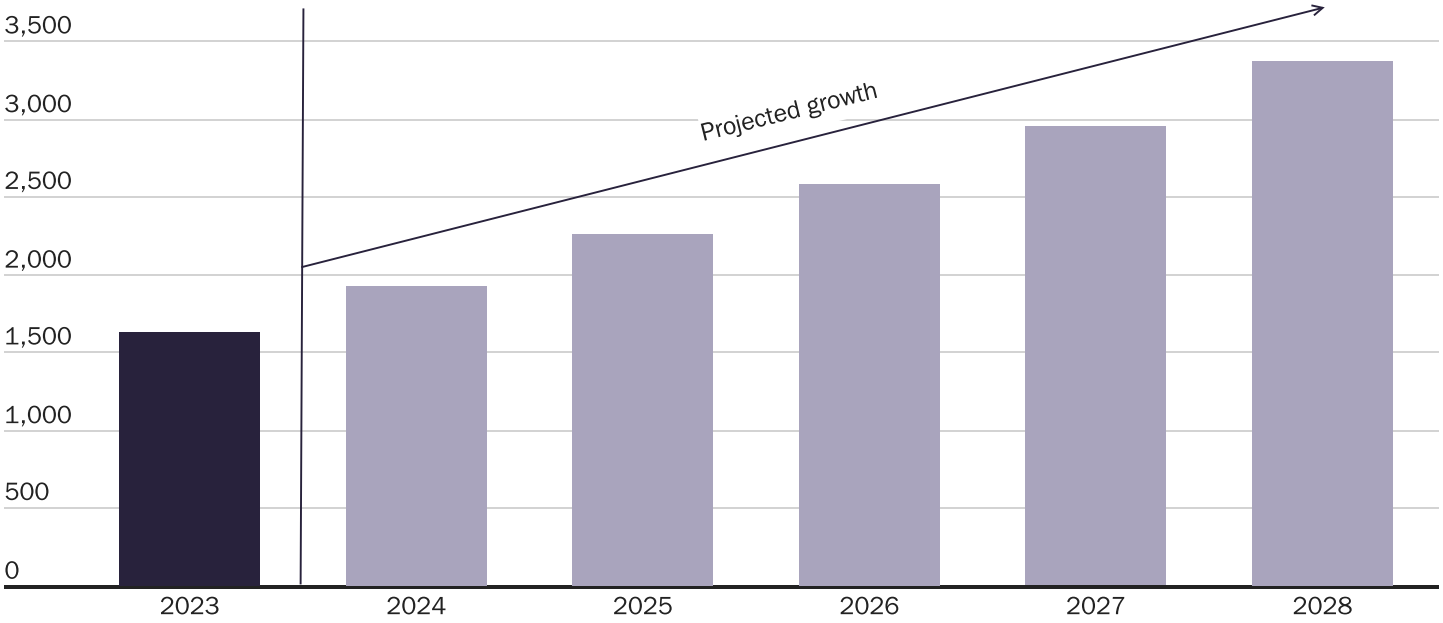
Digitally Delivered Services

According to a 2022 World Trade Organization (WTO) report, worldwide exports of digitally delivered services have grown almost fourfold since 2005, with a substantial acceleration during the COVID-19 pandemic (Figure 3). As the pandemic circumscribed people's physical contact and movement and prevented them from consuming

Figure 1

Business to consumer cross-border e-commerce is projected to more than double by 2028

Billions of nominal US dollars

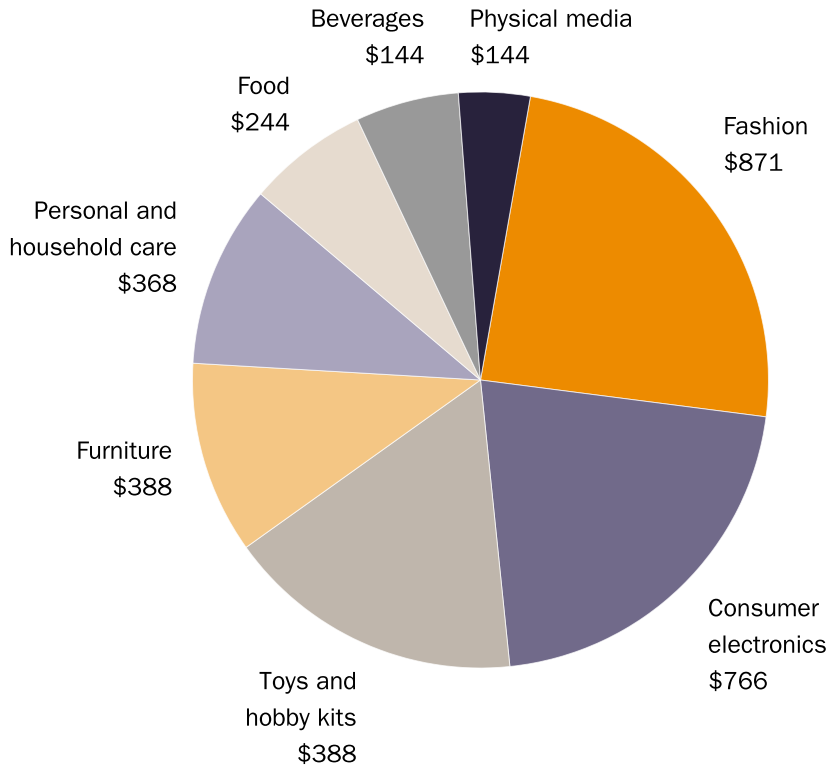


Source: Matthew Purnell, "Cross-Border eCommerce Market Statistics 2023–2028," Juniper Research, August 2, 2023.
Note: Data are forecasted.

Figure 2

The global e-commerce market is estimated to be worth more than $6 trillion

Value of e-commerce sectors, billions of nominal US dollars

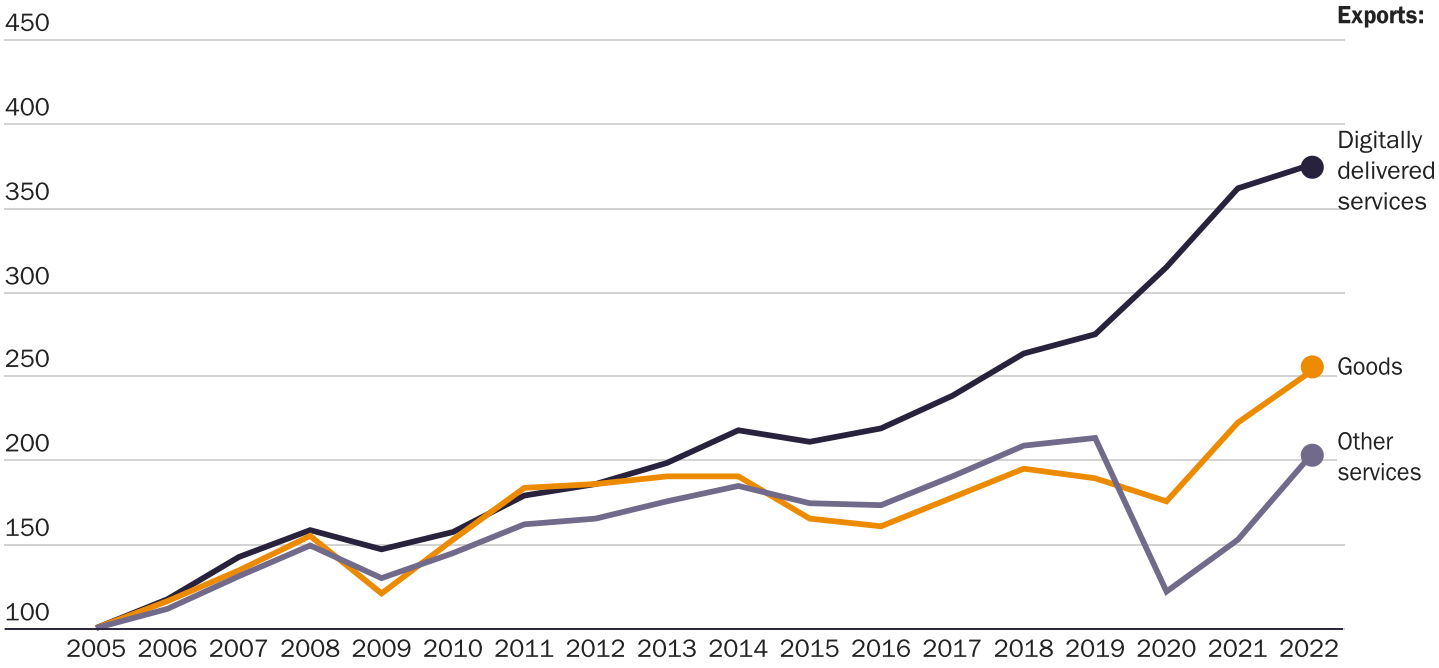


Source: Daniel Chan and Emerson Liu, "Sizing the Prize: The Global E-Commerce Market," Hinrich Foundation, January 9, 2024.

Figure 3

Exports of digitally delivered services have grown faster than other exports in recent years

Export growth, index (2005=100)



Source: "Global Trade Outlook and Statistics," World Trade Organization, April 5, 2023.

traditional services such as travel, the share of digitally delivered services exports increased globally. Some of this shift was simply an expansion of services—law, tech support, entertainment, etc.—that people were already accessing digitally, but much of it was new and different: people substituted traditional, in-person services consumption with digital services. For example, as schools moved to online learning, many parents supplemented their children's education with online tutoring via Zoom and other video conferencing applications.[13] Gary Winslett of Middlebury College coined the term "Peloton Globalization"—as gyms and studios had to close during the pandemic, exercise equipment companies, including Peloton, began selling their spin bikes with a built-in online app. People did not have to give up their exercise routines as they could take their classes at home and be exposed to new instructors who could be anywhere, including in other countries.[14]

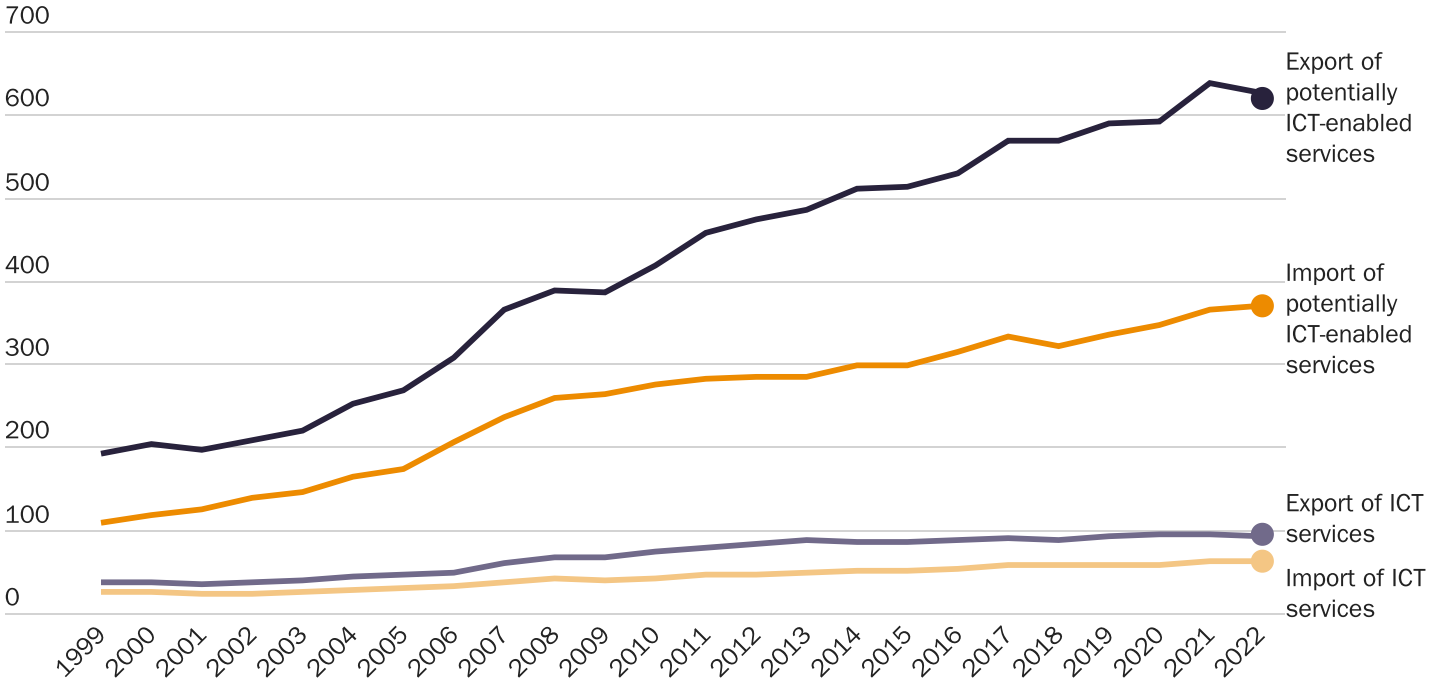
While international transactions in goods create extensive administrative records as they pass through customs, similar records do not exist for services trade. Nonetheless, the US Commerce Department's Bureau of Economic Analysis (BEA) is working to increase the collection of services trade data from businesses through surveys. That data do not include how the service was delivered—whether in person or digitally. The BEA also only captures services trade associated with monetary exchange, so cross-border zero-dollar data transactions do not show up in estimates.[15]

Although the BEA cannot capture the most precise estimation of the value of US digital trade using services trade data, it can precisely measure ICT services, which are defined by type of service rather than mode of delivery.[16] The BEA also estimates the value of PICTE services trade, including insurance, financial services, and telecommunications, computer, and information services. These services do not require the provider and the customer to be in the same location and can be delivered over a digital network; thus, these services are defined as "potentially ICT-enabled." These estimates help shed light on the magnitude of digital trade between the United States and its trading partners.[17] For example, Figure 4 shows total US trade in ICT and PICTE services from 1999 to 2022. Interestingly, the real values of imports have not changed much since 1999. This is not entirely surprising since the United States is a net exporter of services overall.[18]

Figure 4

US trade in ICT and PICTE services increased from 1999 to 2022

Constant 2017 US billion dollars



Sources: "Table 3.1, US Trade in ICT and Potentially ICT-Enabled Services, by Type of Service," Bureau of Economic Analysis, updated July 6, 2023; adjusted to constant US dollars; and Bureau of Economic Analysis, "Personal Consumption Expenditures: Chain-Type Price Index," Federal Reserve Economic Data, Federal Reserve Bank of St. Louis, updated March 28, 2024.
Notes: ICT = information and telecommunications technology; and PICTE: potentially ICT-enabled.

Cross-Border Data Flows

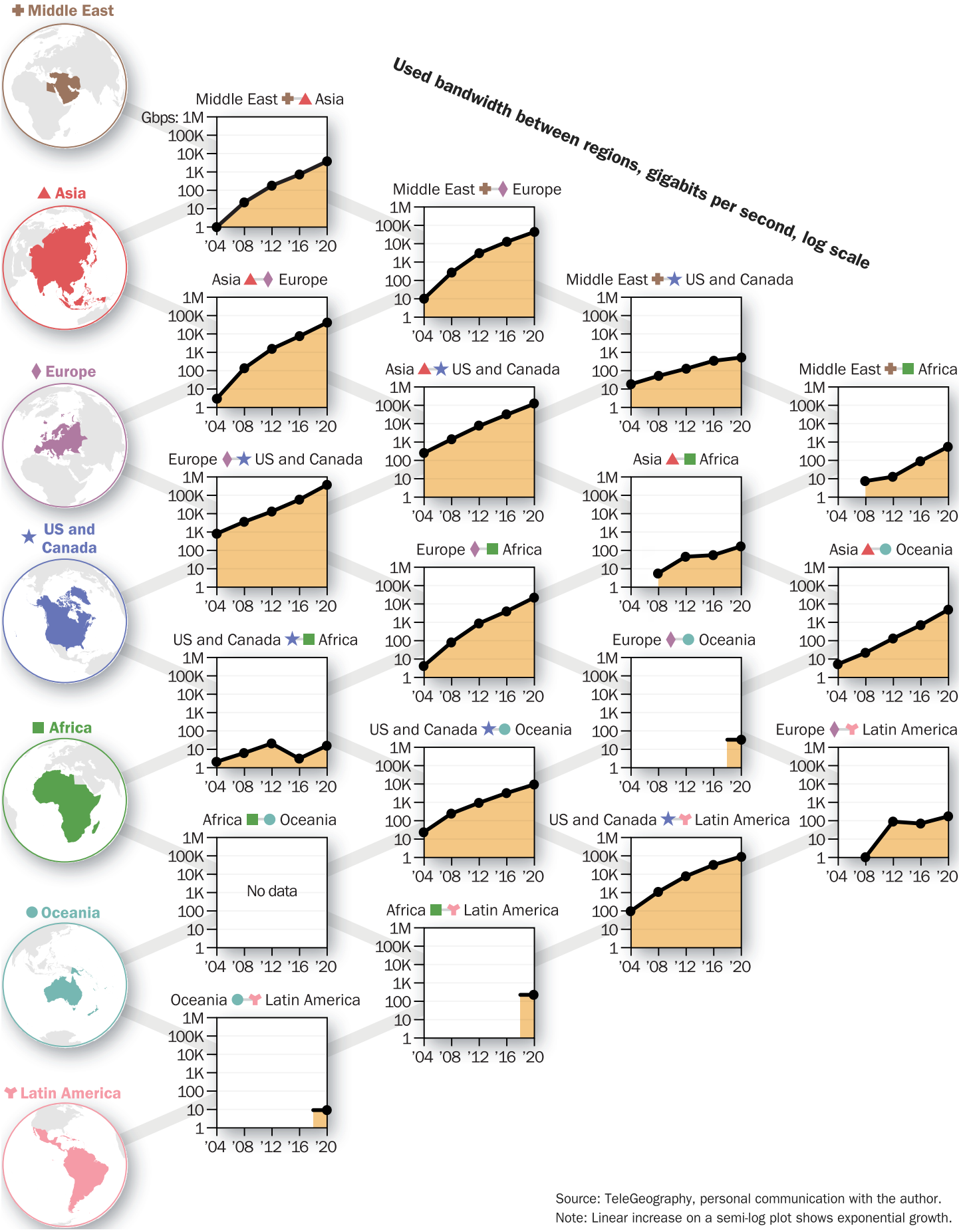
Measuring cross-border data flows is difficult. The most common metric to provide insight into them is total international internet bandwidth usage. The pandemic drove up demand for international data and bandwidth usage, but even as life settled post-pandemic during 2022, bandwidth usage continued to increase, though at a slightly slower rate. In 2021, total international usage increased by 36 percent over 2020, while usage increased by around 25 percent in 2022 over 2021.[19] The United Nations Conference on Trade and Development found that cross-border internet traffic is concentrated along two main routes—North America and Europe and North America and Asia (Figure 5). These routes are also the busiest for shipping.[20]

Nonmonetary Digital Flows

Many digital transactions do not include monetary exchange and, therefore, are not captured by trade statistics. These transactions include digital transfers of information and may support monetary exchange and thus can be considered part of digital trade. Examples include the cross-border data flows that support the services underlying international banking and email communications between a multinational enterprise's headquarters and one of its affiliates overseas.[21] While the purchase of a video game would be captured in trade statistics, activity on gaming platforms (e.g., users purchasing, trading, and selling "virtual goods" in certain online games[22]) and in-app purchases with game currencies may not be. Thus, international service transactions—such as in banking services—are captured in trade statistics, but the data flows that these services rely on are not.[23]

Some policymakers, for example in Europe and Asia, have capitalized on digital trade not being captured in overall trade statistics to oppose free data flows and support digital protectionism.[24] These policymakers often support broad local data storage requirements, not for national security reasons or against foreign malefactors but based on general data privacy and protection concerns related to cross-border data flows. However, freedom in cross-border data flows and privacy laws are not mutually exclusive.[25] In reality, these

Figure 5 **Total used internet bandwidth increased exponentially between most global regions in the last two decades**



Source: TeleGeography, personal communication with the author.
Note: Linear increase on a semi-log plot shows exponential growth.

policymakers use these tools in an attempt to shift high-tech economic activity to their own countries by forcing these firms to open local data centers.[26]

Nonetheless, the available data show a remarkable increase in cross-border internet traffic, digitally delivered services, and e-commerce and thus underscore the importance of maintaining digital freedom. Only by understanding what is not captured by trade statistics can one fully grasp that global digital trade activity is large and quickly growing.[27]

THE BENEFITS OF UNFETTERED DIGITAL TRADE

While the estimates of worldwide digital trade are understated, the benefits are seemingly endless—including consumers with more and better choices, workers with more opportunities and flexibility, and improved international relations.

Estimated Macroeconomic Measures Illustrate Positive Trends in Digital Trade

In the absence of comprehensive and comparable digital trade statistics, proxy measures provide helpful insight into the magnitude and benefits of digital trade. Global digital trade is growing faster than trade in physical goods, and a 2019 Boston Consulting Group report estimated that digitally enabled trade was worth between $800 billion and $1.5 trillion, or 3.5 percent and 6 percent of global trade, in 2019.[28] Given the pandemic-era boom in digital trade, these numbers are likely much larger today—the value of global trade in digitally delivered products alone reached $3.82 trillion in 2022, accounting for more than half of services trade.[29]

Data compiled by the OECD suggest that the structure and geography of digital trade have changed over time. For example, increases in ICT services have grown from 1995 to 2018 to represent almost double the estimated value of digital trade. While OECD member countries represented 82 percent of global estimated digital trade exports in 1995, the share fell to 73 percent in 2018, suggesting that countries at all stages of development are engaging in digital trade.[30]

Nevertheless, the United States remains the global leader in digital trade and accounts for the largest share of estimated global digital trade exports, which increased by 42 percent between 2010 and 2022.[31] According to the Department of Commerce, the digital economy accounted for 9.6 percent of US gross domestic product (GDP) and supported 5 percent of total US employment in 2019.[32] A 2014 US International Trade Commission (ITC) report estimated that US GDP increased by 3.4 percent to 4.8 percent thanks to the increased productivity and lower trade costs associated with digital trade. Furthermore, the ITC estimated that if foreign trade barriers, such as data localization mandates and state censorship, were removed, US GDP could increase by up to an additional $41 billion.[33] While businesses surveyed by the ITC cited traditional trade barriers such as customs measures as obstacles, a 2019 McKinsey Global Institute report estimated that the Internet of Things (IoT)—devices connected to the internet—and artificial intelligence (AI) are improving logistics and optimization technologies that could reduce shipping and customs processing times by between 16 percent and 28 percent, which could boost global trade by up to 11 percent by 2030.[34]

Digital Trade Increases Competitiveness for Companies of All Sizes

The above macroeconomic estimates paint a clear picture of the growing importance of digital trade to overall global trade. Digitalization is a crucial feature of competitiveness in international markets. As demonstrated by the enormous levels of international bandwidth, data and the IoT are vital for trade, as they connect billions of objects from vehicles to buildings.[35] This interconnectivity supports the scale and scope of global digital trade.

Moreover, while data flows are the foundation of trade in services, they also increasingly support trade in goods.[36] For example, the manufacturing sector creates more data at each stage of the supply chain than any other sector of the US economy. These data are necessary for factory operations and to evaluate productivity and cost efficiency, among other things. Steelmakers use data and the IoT to analyze the physical properties of raw materials and production facilities'

ability to make improvements, such as increasing energy efficiency.[37]

Furthermore, digitalization provides more opportunities for small- and medium-sized enterprises (SMEs).[38] Without the internet, these businesses would face much higher barriers to entering the global economy. Not only does the internet provide easier access to customers globally, but websites and digital processing tools make business services affordable for SMEs, as they provide greater access to information that businesses can use for market research. SMEs in both the manufacturing and services sectors are projected to save the most in export-related costs in a digital environment. Meanwhile, financing tools can help businesses find alternative funding mechanisms, such as crowdfunding, and help these companies build a credit history.[39]

The WTO found that 97 percent of digitally enabled small firms (which can simply mean they have a website) export, which allows them to play an active role in global value chains.[40] SMEs can engage in global value chains directly and indirectly. For example, they can export inputs or supply intermediate goods to a multinational company or a local firm that exports. They can also participate in global value chains by importing goods as inputs into their own production processes or purchasing from local firms using imported inputs. Economic research shows that the impact of digitalization is significantly greater for smaller firms than larger ones, but the opportunity for SMEs to integrate themselves into global value chains by specializing in segments of the production process benefits larger firms as well.[41]

Digital Trade Supports Entrepreneurship, Innovation, and Knowledge-Sharing

Digital platforms help entrepreneurs and startups break into new markets. For example, Etsy, the online marketplace for handmade and vintage goods, provides opportunities to millions of entrepreneurs worldwide. In 2017, most of its sellers were individuals, of whom 86 percent were women.[42]

While platforms like Etsy facilitate the sale of goods, the distinction between goods and services is becoming increasingly blurred, as many goods and services become two parts of a whole, contributing to more choice and booming innovation. For example, the fashion brand Tommy Hilfiger in 2019 founded a tech incubator to help it deploy a full digitization of its in-house designs. This move is transforming the company's traditional design and sample production process by allowing its designers to create, store, share, and reuse designs while speeding up timelines, diversifying offerings, and reducing production costs.[43] Therefore, the brand is digitalizing its services-based work—design—to improve the delivery of its physical goods—apparel.

Digital tools also facilitate knowledge-sharing and technological advancements.[44] For example, during the COVID-19 pandemic, digital tools provided medical researchers with opportunities to collaborate and share knowledge. This collaboration accelerated the creation and provision of the COVID-19 vaccines that helped reduce the spread and fatality of the disease.[45] Similarly, cloud computing provides powerful processing, storage, accessibility, scalability, and cost-effective computational resources for managing big data used in cancer research.[46] Biopharmaceuticals and medical technologies also broadly benefit from cross-border data flows, which are vital for development, testing, safety analysis, and more. Even before pre-clinical studies and clinical trials are completed, businesses, scientists, and regulators depend on international information technology networks to communicate medical research and support collaborative efforts.[47]

Digital trade can also benefit public health and safety. Open software and free cross-border data flows underpin global logistics networks that support the development and delivery of cutting-edge medicines and the adoption of new medical technologies in hospitals.[48] Financing alternatives such as crowdsourcing help entrepreneurs and spur medical innovation, contributing to faster development of new and safe medical products. During the COVID-19 pandemic, digital technologies were used for contact tracing and to create large datasets for epidemiological and mobility data. These digital strategies can provide information for helping to tackle future epidemics, including early disease detection to reduce transmission.[49]

Digital Trade Supports Workers

The expansion of digital trade also provides opportunities for workers around the world. Job websites connect

businesses with workers, or consumers with workers, or workers with workers. For example, a 2024 survey by human resources platform Deel found that international companies had increased their hiring of American remote workers by 62 percent in 2023.[50] Freelance platform Upwork, meanwhile, allowed an American father to hire a PhD mathematician to tutor his son.[51] This mathematician is based in Pakistan and asked for $4 an hour—a deal for the American (the average US-based tutor runs $24 an hour) and a well-paid opportunity for the mathematician (Pakistan's minimum wage is less than $1 an hour).[52]

Digital services–based work, within and across borders, also raises living standards by increasing job retention. For example, US labor force participation for women with children under the age of five leapfrogged its pre-pandemic rate, and the flexibility that remote work offers, particularly to caregivers, is a compelling factor behind the trend.[53] This flexibility also has pro-social benefits—for example, by making it easier to become parents or have more children.[54]

Digital Trade Provides Consumers with More Choices and Convenience

While the global digital economy has grown significantly, Americans especially value the proliferation of digitally tradeable services. For example, in 2022, 91 percent of American households had internet subscriptions.[55] This not only allows Americans to remain connected and enjoy nearly endless media content, but it also provides convenience. Consumers not only have more options but also have instant access to many services and faster access to goods. For instance, access to e-commerce platforms such as Amazon allows consumers to order practically anything at the click of a button with fast delivery right to their doors. Such platforms also provide pages of choices at different price points from sellers worldwide.[56]

Another key benefit of digital trade is communication, both direct and indirect. The COVID-19 pandemic exemplified how digital trade supported direct communication as it circumscribed peoples' physical movement. Communications applications such as Zoom, Teams, Skype, and FaceTime created some semblance of normalcy, as people could stay in touch with friends and family and continue working and communicating with coworkers online.[57] Digital trade also promotes communication indirectly by making data on consumer preferences more accessible, which in turn improves businesses with the ability to meet consumer demands. For example, online reviews help consumers better understand if and how well specific products or services suit their needs and help businesses gather information to improve their offerings.

Digital Trade Reinforces Peace and Cooperation Borne from Traditional Trade

International trade, particularly liberalized trade, is critical for promoting peace and cooperation. As trade liberalizes and people begin trading more with one another, communication and understanding increases, and suspicion toward foreigners decreases.[58] Organizations like the WTO and international trade agreements have also helped create economic interdependence and reduce the likelihood of bilateral disputes.[59] Empirical studies further show that removing trade barriers can reduce the chances of armed conflict.[60]

Digital trade, which is relatively free, can extend these positive dynamics. Global value chains mostly comprise large firms that can scale up innovations. Unsurprisingly, the US technology sector, including the tech giants Google, Microsoft, and Apple, scores the highest on the McKinsey Global Institute's Industry Digitization Index, which combines dozens of indicators to provide a comprehensive picture of where and how companies are building digital assets, expanding digital usage, and creating a more digital workforce."[61] The most digitally advanced sectors listed in the McKinsey index were media, finance, and professional services.[62] However, many goods and services are bundled, so committing to liberalized trade in all forms—goods, services, people, capital—is critical to bolstering economic interdependence and tempering geopolitical tensions.

Moreover, digital trade presents an opportunity to reinforce peace and cooperation created from traditional trade relations and highlights the importance of committing to liberal digital trade rules. Another McKinsey report found that "trade between geopolitically distant economies accounts for nearly 20 percent of global goods trade but close to 40 percent of trade in globally

concentrated products—products such as laptops and iron ore for which three or fewer economies provide at least 90 percent of global exports."[63]

CASE STUDIES OF DIGITAL TRADE UNLEASHED

The Korean Wave

Trade in cultural goods is not new; people often buy books, art, music, films, and food from other nations and cultures. The Korean wave—the increasing popularity of South Korean culture—is an excellent example of not only the benefits of free trade but also of free digital trade. South Korean culture has been gaining international traction since the 1990s. However, in 2012, Korean pop music, known as "K-pop," attracted a large new following in the United States—Psy's "Gangnam Style" was the first video to top a billion streams on YouTube. Indeed, K-pop is known for being "very visual," helping generate demand for other types of Korean media.[64] The film *Parasite*, released in 2019, and the television show *Squid Game*, which debuted in 2021, gained an early cult following but then became big hits among Western audiences. As the *New York Times* reported, the world "didn't know about [*Parasite* or *Squid Game*] until streaming platforms like Netflix and YouTube helped it discover them."[65]

Streaming platforms such as Netflix demonstrate the benefits of digital trade by giving consumers a variety of choices of movies and TV shows from around the world. In fact, 45 percent of Netflix's library is made up of foreign-language titles.[66] The COVID-19 pandemic accelerated the export of Korean media, as consumers watched more on streaming services and took more time to consider international options. Streaming platforms, capitalizing on this demand, provided consumers with different and new content that helped turn huge profits. *Squid Game* is estimated to have generated $900 million for Netflix.[67] It became the most-watched show in 2021 and maintains that record. *Parasite* won the 2020 Oscar for best picture—the first foreign language film to do so—and earned $35 billion at the US box office.[68] Both are a testament to Americans' enjoyment of foreign entertainment and the benefits of trade in services and digital goods.[69]

The Korean wave is not limited to media but washes over all Korean exports. A 2021 study of Korean cultural goods exports from 2001 to 2017 found that an increase in the exportation of such goods led to a significant increase in Korean consumer goods exports.[70] Therefore, the benefits of US–South Korea trade multiply, allowing Americans to consume more varieties of Korean products; the same goes for foreigners' consumption of American services.[71]

Untethering Transactions: Cryptocurrency and Blockchain in the Global Economy

Cryptocurrencies (peer-to-peer electronic cash systems) allow people to digitally store and transfer value that is secured by cryptography instead of by governments or third parties.[72] Cryptocurrencies are supported by blockchain technology, a virtual distributed ledger that records transactions held by multiple distinct parties.[73] By removing third parties, cryptocurrencies offer people more choice and control over how they transact—including across borders, since a cryptocurrency's value does not change as it crosses borders. This insulation from exchange rates is particularly valuable for remittances. However, until cryptocurrencies become more widely adopted in commercial transactions, this insulation from exchange rates is likely most valuable for savings purposes, especially in countries where inflation has wrecked the value of the national currency, such as in Turkey and Argentina.[74]

Regulatory requirements cost money and time. Nonetheless, cryptocurrencies provide other benefits for remittances. The average remittance is between $200 and $300.[75] Using a traditional financial service such as Western Union, the average remittance fee is about 6 percent. Thus, it costs about $12 to send a $200 remittance.[76] Further, remittance payments are plagued by lengthy transmission times. Legal requirements on financial institutions to check for the possibility of fraud, money laundering, or other suspicious activity can also cause delays.

Most importantly, making it easier and cheaper to send remittances using cryptocurrencies could have an even greater impact on poverty reduction. Cryptocurrencies have much lower fees and experience fewer delays in transmission (Table 2). As a result, people sending money

Table 2
Cryptocurrency reduces the costs and delays of sending $200 anywhere

Cryptocurrency	Transfer form	Fee	Delay
Bitcoin	Self-hosted wallet to self-hosted wallet	$2.00	10 minutes
Bitcoin	Lightning network	Less than $0.01	30 minutes
Litecoin	Self-hosted wallet to self-hosted wallet	Less than $0.01	2.5 minutes
USDC	Self-hosted wallet via Ethereum blockchain	$0.89	3 minutes
USDC	Self-hosted wallet via Solana blockchain	Less than $0.01	About 0.5 seconds
Tether	Self-hosted wallet via Ethereum blockchain	$0.89	3 minutes
Tether	Self-hosted wallet via Polygon blockchain	Less than $0.01	About 0.5 seconds

Sources: Data collected by Nicholas Anthony with assistance from Andrew den Boggende and Nicholas Thielman. "Bitcoin Median Transaction Confirmation in Minutes," Nasdaq Data Link, Nasdaq; "Fees per Transaction (USD)," Blockchain; "State of the USDC Economy: Welcome to the Utility Value Phase of Digital Currency," Circle, January 2023; "ETH Gas Price Last (Gwei)," Coin Tool; Ted Late, "How Much Is Solana Gas Fee?," Coin Codex, updated May 15, 2024; "Polygon PoS Chain Gas Tracker," Polygonscan; "Bitcoin Fee Estimates," Bitcoiner; "Real-Time Lightning Network Statistics," 1ML; and "Litecoin," Blockchair.
Note: USDC = US Dollar Coin.

abroad can either send more money or save more for themselves, and those receiving the money do not need to wait, a particular benefit in times of crisis, such as during a natural disaster or political upheaval.[77] Allowing people the freedom to use cryptocurrencies for remittances lowers costs, avoids potential interference by corrupt or repressive governments, and better guarantees transmission, which in turn contributes to lowering poverty levels. According to the United Nations Conference on Trade and Development, "studies show that a 10% increase in international remittances as a share of a country's GDP can lead to a 1.6% drop in poverty rates."[78]

Although cryptocurrencies' decentralized nature has some politicians, such as Sens. Elizabeth Warner (D-MA) and Mark Warner (D-VA), claiming that their main use is to facilitate crime, the blockchain technology that facilitates and records cryptocurrency transactions tends to benefit, not evade, law enforcement.[79] In fact, the blockchain's transparency is one major reason criminal activity represents only an estimated 0.24 percent of cryptocurrency activity.[80]

The transparency provided by blockchain technology has similarly been proposed for customs facilitation purposes. Within the United States, it is very difficult for ports to communicate with one another, particularly in real time. The distributed ledger could help inspectors verify that a shipment has already been inspected and is compliant with regulations, thus streamlining customs and law enforcement procedures while improving capabilities to detect illicit trade, thereby mitigating risks. Blockchain technology can also serve freight carriers by providing receipt of cargo, logging temperature, and tracking GPS data while a shipment is in transit.[81] Overall, this technology could help reduce the bureaucratic burden imposed on traders by making the customs process faster and more efficient and help free up resources for alternative uses.

The Metaverse: A Virtual World Trading Digitally

The metaverse has several competing definitions, which has led to some confusion. However, tech entrepreneur Matthew Ball, author of the book, *The Metaverse and How It Will Revolutionize Everything*, uses an all-encompassing definition that highlights key features of digital trade. Ball defines the metaverse as a "massively scaled and interoperable network of real-time rendered 3D virtual

worlds that can be experienced synchronously and persistently by an effectively unlimited number of users with an individual sense of presence, and with continuity of data, such as identity, history, entitlements, objects, communications, and payments."[82] The metaverse uses blockchain, AI, the IoT, extended reality, gamification, and decentralized finance, among other technological products and services.[83] A McKinsey report notes that 2021 investment in the various metaverse worlds reached $13 billion and projects that the metaverse could generate up to $5 trillion by 2030.[84]

The metaverse gives people the opportunity to simulate real situations before implementing them in the real world. Developers, such as Decentraland, are creating real estate in the metaverse, allowing people to purchase and customize property.[85] Farmers can use the metaverse to set up simulations to test ideas before investing in a project, thereby minimizing costs and potentially saving farmers from disastrous mistakes. For example, a farmer who wants to test a new machine before purchasing it can use the metaverse to complete a virtual trial run of the machine.[86] Farmers can also use the metaverse to experiment with different cropping practices, as crop physiology, growth processes, water quality, soil health, and other factors are digitized and monitored. This also helps make time less of a concern. Farmers can test new practices in a matter of days or months instead of years. These time savings could be particularly important for farming innovation, since farmers, on average, can only expect to have 40 growing seasons (and thus only 40 chances) to try new technologies in their lifetime, limiting their opportunities to improve harvests.[87]

The metaverse can also be used for health and wellness. One study from 2022 explores the "potential to deploy the metaverse using gamification and incentives, as well as for education and care [for obesity and noncommunicable diseases]."[88] For example, people can use the metaverse to play games that nudge them to make different choices in their day-to-day lives and earn rewards such as virtual goods and collectibles. People can challenge themselves and collaborate on health and wellness with others anywhere in the world, giving rise to a virtual economy based on people's incentives to lead healthier lifestyles. Health and fitness workers— again, based anywhere—can also participate as avatar AI instructors. They can provide diet plans and even create immersive experiences for cooking healthy meals. Furthermore, as data ownership becomes a more salient issue, the metaverse could provide opportunities for people to monetize their health data collected by wearable technology as they complete fitness challenges or reach weight goals. This data could conversely be sold to researchers to advance scientific discovery and health care.[89]

Finally, the metaverse transcends borders and creates a digital social networking platform for globalized events and celebrations. It can even provide people with opportunities for virtual tourism. For example, people can attend virtual concerts and festivals, go shopping in a virtual souk, or take a digital cruise on the Nile.[90] People can also use the metaverse and virtual reality to immerse themselves in a virtual language experience that is much more affordable and physically accessible than a vacation or even an in-person language course.[91] The opportunities for learning and connecting in the metaverse are seemingly endless and can give profound opportunities to everyone and provide bucket-list experiences for those with limited time, mobility, and money.

BARRIES AND THREATS TO RELATIVELY UNFETTERED DIGITAL TRADE

Despite these benefits, digital trade is increasingly becoming subject to digital services taxes and regulatory (nontariff) barriers that make trading more complex and costly.[92] Cloud computing and cloud-based services are particularly harmed by restrictions on cross-border data flows.[93] Businesses and global supply chains rely on cloud computing and services because they increase the access to and delivery speed of the information necessary for production.[94]

Existing barriers discourage trade in both services and goods. Economists use "tariff equivalents" to estimate the cost of a regulation by turning it into a tax rate. They have found that barriers to services trade are high and significantly exceed tariff equivalents of barriers to trade in goods.[95]

As services are traded both directly and indirectly—through other services and goods—they are paramount

to digital trade. In fact, there is strong evidence that open services markets positively impact manufacturing productivity, particularly in manufacturing sectors that intensely use services inputs.[96] Unfortunately, digital transactions are currently threatened by proposals to impose tariffs and regulatory barriers, such as online labeling requirements, on top of existing tax and nontariff barriers. Since the relationship between goods trade and services is strongly interlinked, restrictions on services trade, particularly barriers to computer services, also negatively impact trade in goods. Therefore, it is imperative to support efforts to maintain freedom in services markets, particularly digital services markets.[97]

Digital Services Taxes

Typically, taxation of business profits is based on physical location, but the internet can make the location of profits ambiguous, which has led many policymakers to claim that physical location is no longer an appropriate standard for taxation.[98] As a result, numerous countries have imposed digital services taxes (DSTs) on gross revenues based on user location.[99] DSTs are extraterritorial taxes that enable governments to collect revenue on profits earned outside their countries' borders. Countries levy DSTs differently (see Table A1 in the Appendix), and the scope of DSTs can be very broad, covering online sales, digital advertising, data usage, streaming and downloads, and more.[100]

Growing contention around unilateral DSTs pushed negotiations at the OECD on the Base Erosion and Profit Shifting (BEPS) project.[101] Pillar One of the project attempts to address the concerns about unilateral DSTs but maintains that international taxation should be based on the customer's location.[102] While the negotiations continue, most countries with adopted or proposed DSTs have agreed to freeze or wait on applying the taxes until 2025.[103]

American businesses have been unsubtly targeted by DSTs, with the taxing countries setting the minimum revenue thresholds high enough for only the largest—mostly American—multinational corporations to be subject to the taxes.[104] These same companies will be disproportionately harmed by Pillar One.[105] Both are punitive based on size thresholds that are arbitrary and unfair.[106] For example, as illustrated in Table A1, France enacted a 3 percent DST on revenue from sales of user data, digital advertisements, and online platforms run by companies with more than €750 million ($799 million) in global revenues while Nigeria's DST targets nonresident businesses with revenue over N25 million (around €17,500 or $18,650) from sales of digital content, user data, etc.[107] Because DSTs apply to revenues and not profits, a firm might need to pay taxes in a jurisdiction where it doesn't earn any income. As a result, consumers will likely pay the price or see reduced variety in the market.

In the French DST case, a study from Deloitte estimated that over half of the tax would be paid by French consumers directly and 40 percent by local French businesses that use the taxed digital platforms.[108] The Montreal Economic Institute estimates that Canada's DST will cost Canadian consumers between $1.1 billion and $3.3 billion annually.[109] These higher taxes and corresponding higher prices add more uncertainty, expense, and administrative burden to doing business in a foreign market, reducing freedom and competition in the digital sector and reducing overall global digital innovation.[110]

Extraterritorial taxation, including BEPS Pillar One and DSTs, gives distant politicians the power to involve themselves in other countries' affairs.[111] Thus, while digital trade and trade liberalization create an increasingly borderless world, it is important for tax competition to exist among countries through sovereignty over trade and tax policy.[112]

Data Localization and Restrictions to Cross-Border Data Flows

Data localization is a regulatory requirement for data collected by a business operating in a territory to be stored in a computing facility in the same territory.[113] Restrictions on cross-border data flows are less stringent than data localization but involve an array of rules restricting, and in some cases even prohibiting, cross-border transfers of information. There were 144 data localization measures in 62 countries in force worldwide as of 2021.[114] Policymakers defend these regulations for various reasons, but they primarily cite cybersecurity and privacy.

The economic case against data localization measures

is strong and multifaceted. At the very least, data localization mandates force incumbent businesses into difficult choices and erect barriers for new entrants.[115] Data localization rules prevent businesses from freely transferring data needed for day-to-day activities and increase their costs as they must pay for the necessary infrastructure in the territory imposing the mandate. Firms may also end up paying for duplicative services or increased expenditures on compliance, such as hiring data protection officers or implementing software or systems to get approval from either individuals or governments to transfer data.[116] As a result, some multinational corporations have chosen to leave certain markets rather than bear the cost of complying with data localization mandates.[117] This results in losses for the business and for the consumers in that territory.

Furthermore, data localization mandates can undermine, rather than protect, human rights, privacy, and national security. As governments attempt to territorialize data, that can enable them to assert more control over citizens that can be used to violate rights, including cracking down on free expression.[118] Local storage is also ineffective at improving security, which can be jeopardized by a lack of reliable infrastructure. "Onshoring" of data also increases vulnerability if facilities are affected by shocks such as natural disasters, so cloud storage that distributes data between multiple systems, rather than store it in a single location, provides better security.[119]

Cross-border data flows are especially important for financial transfers and communications. However, certain countries are at various stages of implementing restrictions on data flows for a broad range of data that fall into an ill-defined "important" category. A recent Information Technology and Innovation Foundation study found that restricting data flows reduces total trade volumes, lowers productivity, and increases prices for downstream industries. Specifically, the study found that "a 1-point increase in a nation's data restrictiveness cuts its gross trade output 7 percent, slows its productivity 2.9 percent, and hikes downstream prices 1.5 percent over five years."[120] Another study found that service imports would rise on average by 5 percent across all countries if restrictions on cross-border data flows were lifted, providing businesses and consumers with more choice and opportunity.[121]

Country of Origin Labeling

Some US policymakers have proposed extending labeling requirements from certain foods to all imported goods sold, advertised, or offered for sale online. Proponents of this type of labeling assert that it helps inform consumers and that people are willing to pay more for this information.[122] However, if people are willing to pay more for labeled products, then producers and sellers have a strong incentive to label their products voluntarily. Furthermore, country of origin labeling (COOL) rules function as nontariff barriers that could be difficult to justify under WTO rules if they clearly discriminate against imports (e.g., by requiring only imports be labeled).[123] In fact, in 2015, the WTO affirmed that US COOL requirements on beef and pork violated WTO national treatment rules that require imported goods to be treated the same as domestic goods.[124]

E-commerce platforms host millions of businesses and independent sellers whose products are sourced globally, which can make it difficult to ascertain origin. Mandating sellers on online platforms to track and comply with COOL requirements for all the products they market threatens to raise costs for those businesses and their customers.[125] The COOL rule for beef and pork products provides a helpful example of the costs of these kinds of regulations: In 2015, the US Department of Agriculture estimated that COOL compliance cost more than $9 billion over 10 years, with US consumers' purchasing power in the 10th year declining by $212 million.[126] If COOL requirements were applied to all imported online goods—a much broader range of products—compliance and consumer costs would be much greater.[127]

Retailers and sellers are conscious of consumers' demands, including any desire to know information about origin, and many websites already provide this information.[128] For example, Amazon has required sellers on its platform to provide country of origin information since 2021.[129] Other businesses use "Made in America" or "responsibly sourced" labels to market their products. It is easier for retailers and sellers to determine how best to include such information in their product descriptions and advertisements on the platforms on which they sell rather than for the government to impose blanket requirements for conveying such information.

ARE PRESENT GLOBAL TRADE RULES EQUIPPED TO DEAL WITH DIGITAL TRADE?

Part of digital trade's success is due to transactions being largely unencumbered by national restrictions. The WTO had the foresight to maintain open trade for budding sectors that digital trade supports (i.e., financial services and telecommunications) and to introduce rules preserving that freedom.[130] Despite the successes borne of a relatively free digital market, however, a growing number of countries continue to support enacting the types of laws and regulations (discussed in the previous section) that disadvantage and discriminate against digital products made by foreign firms.[131] This clear digital protectionism is the reason why some rules are necessary. Furthermore, opportunities remain to expand and create global trade rules to ensure the protection of a free and open internet that limit the impact of geography on trade and support the data flows that underpin digital trade. It is vital that countries continue to seize the multilateral approach to digital trade freedom to provide a global marketplace for goods, services, and connectivity.

WTO Moratorium on Customs Duties on Electronic Transmissions

Every two years since 1998, WTO members have voted to maintain the moratorium on customs duties on electronic transmissions.[132] These transmissions are not defined by the WTO but are commonly understood to include things such as digital music, video games, movies, software, text messages, emails, etc.[133] Figure 6 illustrates the boom in global digital data flows and global services, particularly data-driven services, since 1990. While there is a short lag, it is no coincidence that these data flows and services grew substantially after the introduction of the moratorium, which provided freedom and flexibility for new and innovative industries.

Customs duties levied on electronic transmissions are different from DSTs. They are essentially tariffs, as they apply to electronic transmission imports, while DSTs are technically domestic taxes that could apply to both domestic and foreign businesses. DSTs are also a tax on business revenues, whereas tariffs are usually applied as a fixed fee or ad valorem—as a percentage of the product's price.[134]

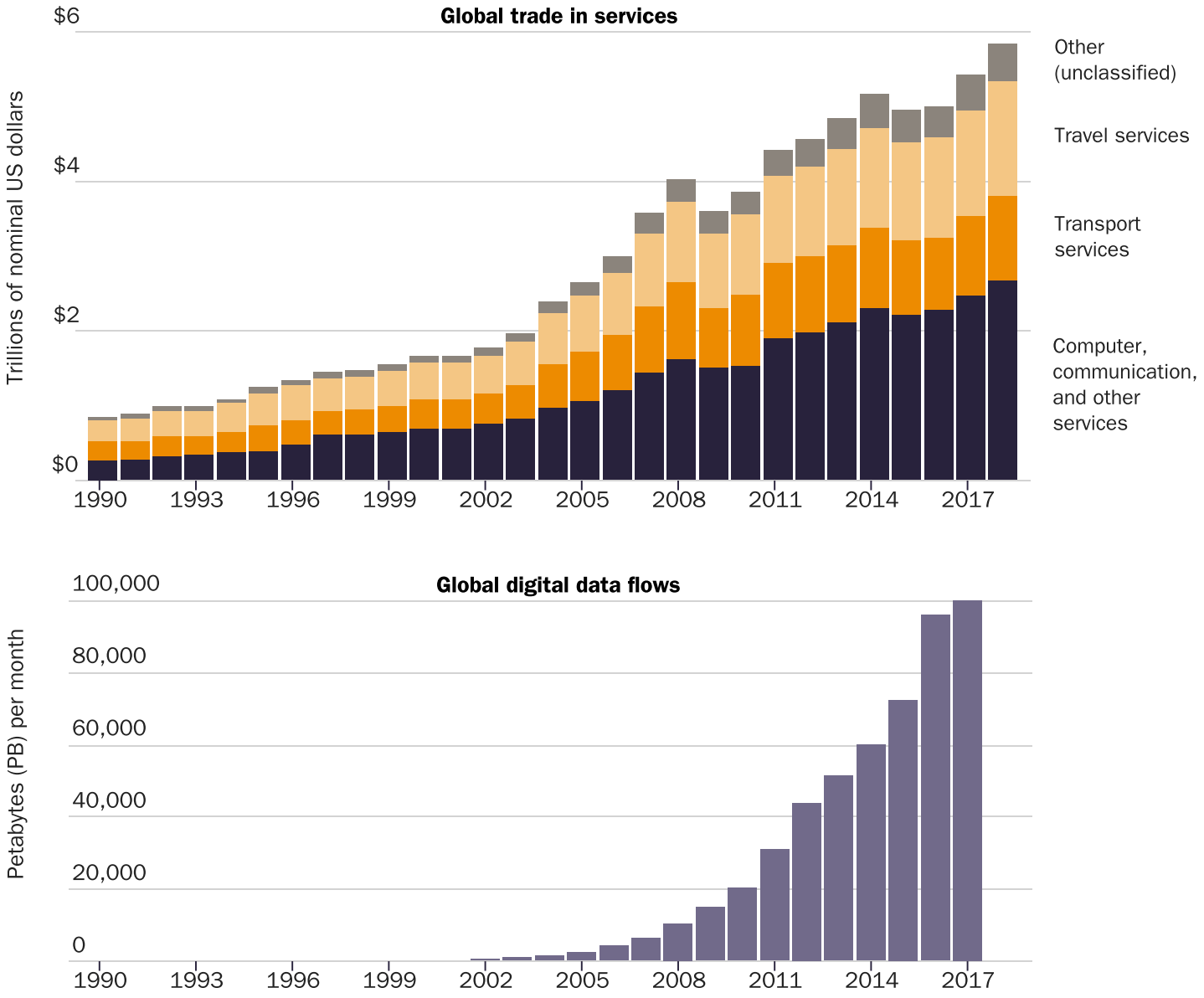
Unfortunately, the increasing importance of digitalization, and with it opportunities for governments to raise more tax revenue, is having repercussions for the WTO moratorium. Using tariffs to raise revenue is a particularly common strategy by developing countries, some of whom increasingly oppose the moratorium because it prevents them from collecting tax revenue on digitizable goods.[135] Even the United States used this strategy from 1763 to 1865, before an income tax became the federal government's primary tool for raising revenue.[136] Since developing countries tend to impose higher tariffs on digital goods, the potential revenue losses could be sizable as a percentage of government revenue.[137] For example, Indonesia implemented a regulation to establish tariff lines for digital goods transmitted electronically, such as software, apps, videos, and music. While those tariffs are currently set at zero, as the moratorium remains in place until 2026, Indonesia, and any other country that wishes to do so, could impose duties on electronic transmissions if the moratorium is not renewed or made permanent.[138]

As is the case with most protectionist measures, applying tariffs to digital goods is likely to do more harm than good. A 2019 OECD study estimates that the forgone revenue as a result of the moratorium is small and concentrated. The study estimates that the upper bounds for potential forgone revenue amount to a mere 0.08 percent to 0.23 percent reduction in total government revenue.[139] Another study finds that if India, Indonesia, South Africa, and China imposed duties if the moratorium is not renewed, all developing countries would lose $6.5 billion in GDP and almost 1.8 million jobs.[140] For the US economy, developing countries' imposition of tariffs on digital goods would cause US exports to fall by $2.3 billion and eliminate 30,000 American jobs.[141]

Just as important, customs duties on electronic transmissions are almost impossible to implement and enforce.[142] First, calculating tariffs on these transmissions is unworkable because assigning a value to a single electronic transaction—the content of which can vary widely depending on numerous factors—is impossible in almost all instances.[143] An ad valorem duty is calculated

Figure 6

As global digital data flows rise, so does global trade in data-driven services



Sources: "Cross Border Data and Digital Trade: Impact and Policy Approaches for Better Lives," World Bank Group; and "World Development Report 2021—Figures 0.5 and 7.4," World Bank Data Catalog, updated March 26, 2021.

proportionately to the value of the good or service. Without the ability to assign such a value, it would be extremely difficult to calculate a tax rate. Theoretically, a "non–ad valorem" duty could be calculated by applying a rate to the number of bytes or bits, but this would almost certainly encourage businesses to reduce file sizes. A duty could also theoretically be based on a single unit, such as a song or video, but this approach would inevitably raise problems too (e.g., efforts to game the system by releasing an album as one long song).[144]

Regardless of enforcement issues, these duties would highly distort the digital economy, adversely affecting industries ranging from manufacturing to creative because of how difficult—technically, legally, and operationally—it would be to levy duties on electronic transmissions.

WTO Joint Statement Initiative on E-Commerce

The Joint Statement Initiative on E-Commerce (JSI) is not an agreement with rules but an agreement to negotiate rules, and an important one at that. In 2017, at the WTO's

11th Ministerial Conference, 71 WTO member countries agreed to start exploring ways to begin multilateral negotiations on trade-related aspects of e-commerce.[145] In a 2019 joint statement, 76 WTO members confirmed intentions to begin these negotiations, agreeing to try and "achieve a high standard outcome that builds on existing WTO agreements and frameworks with the participation of as many WTO members as possible."[146] In 2022, at the 12th Ministerial Conference—after e-commerce and digital trade played an indispensable role in maintaining some semblance of normalcy during the pandemic—members reaffirmed their commitment to negotiations on e-commerce.[147]

As of October 2023, 90 WTO members, accounting for 90 percent of global trade, had joined the JSI negotiations.[148] However, in a shocking turn of events, in November 2023, US Trade Representative Katherine Tai announced that the United States no longer supports WTO provisions that protect free cross-border data flows, safeguard source code, and prohibit forced data localization and discrimination against digital products.[149] In response, other WTO members recalibrated objectives so that some type of agreement on technical issues to deliver lower transaction costs and provide new market access could be met at the 13th Ministerial Conference in February 2024.[150] After five years of negotiations, 80 of the JSI participants circulated a communication on July 2024 announcing that they had reached a preliminary agreement.[151] Among the 11 countries absent from this list was the United States, which recognized the progress made in the negotiations but expressed that more work was needed on the text.[152]

WTO Information Technology Agreement

In 1996, WTO members signed the Information Technology Agreement (ITA) to eliminate tariffs on hundreds of information and communication technology products, which, while technically not digital trade, are essential to it. The ITA Expansion Agreement was endorsed in 2015, and as the name implies, expanded the ITA's product coverage to medical equipment and other information technology–enabled goods.[153]

The liberalization of trade on hundreds of ICT products has played an indispensable role in the development and diversification of global supply chains. The agreement and its expansion supported the integration of developing countries into ICT supply chains as removing tariffs on ICT parts, components, and equipment helped develop their telecommunications networks and stimulated their role in ICT goods production and assembly.[154]

Liberalization of ICT goods trade also boosted digital trade. By liberalizing trade in ICT products, thereby reducing prices, the ITA expedited the adoption of the ICT products at the core of the global digital economy, including the accessible and portable electronics many people take for granted today.[155] Figures 7 and 8 illustrate the decrease in prices of ICT goods in the United States since 2009 and the fall in prices of computer software (often bundled in ICT goods) and accessories since 1998. Furthermore, in the United States in 1991, Apple introduced its PowerBook 1000 priced at $2,500. At the same time, the average blue-collar worker made $14.93 an hour, so it took 168 hours to earn one of these laptops. Today, Apple's 13-inch MacBook Air costs $999, and the average blue-collar worker makes $36.50 an hour, so it only takes a little over 27 hours to earn enough to buy a laptop. In other words, the average blue-collar worker today can buy six MacBook Airs for the time price of one PowerBook 1000 in 1991.[156]

Tariff elimination also helped power the innovative and competitive downstream capacity of households, businesses, and industries. For example, cheaper electronic equipment and cloud services have created more location options for starting a business.[157] These innovations also enable remote work, allowing entrepreneurs to hire workers from anywhere in the world. The ITA engendered significant ICT capital stocks (i.e., accumulation of information and communications technologies), fortifying digital trade.[158] As people continue deploying these resources, a feedback loop of improved living standards, increased innovation, and higher economic growth will result—not only domestically but globally.

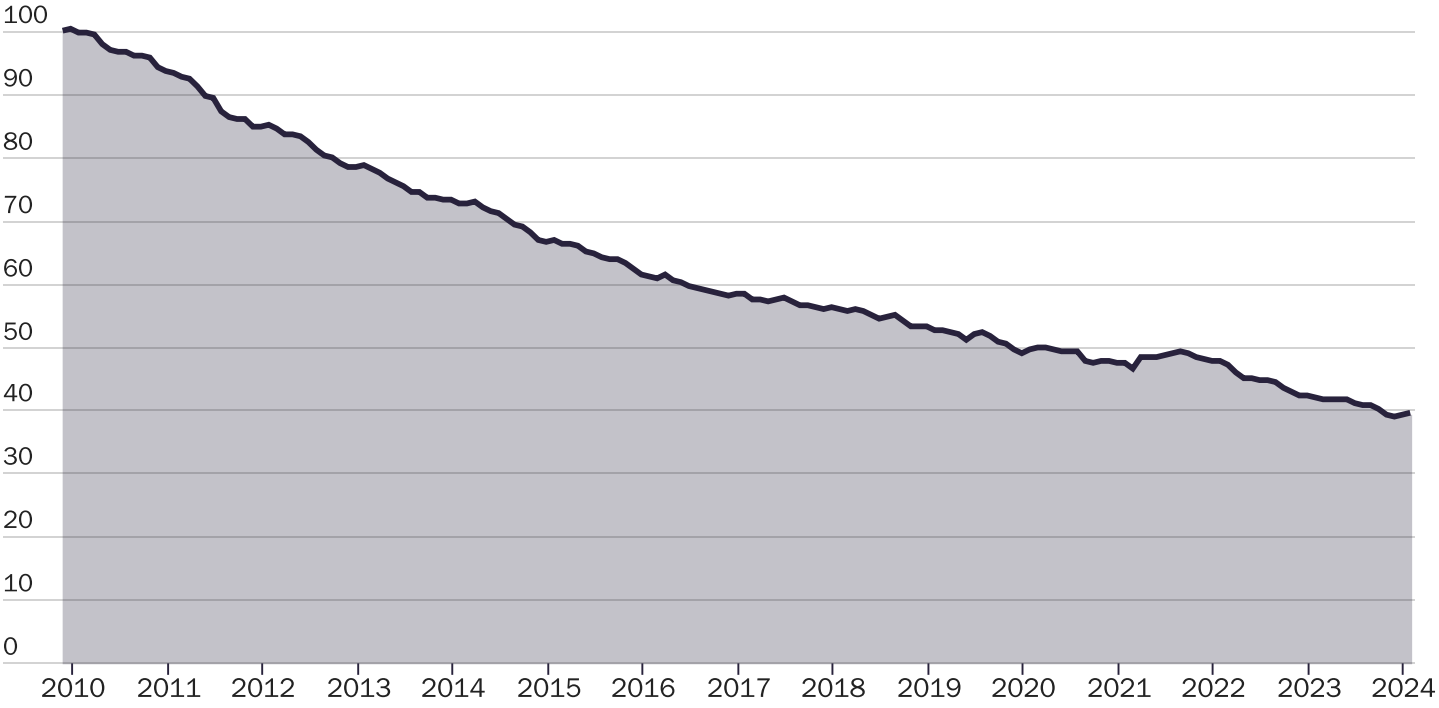
Other Trade Agreement Provisions

Since the WTO provided substantial coverage for digital transactions through the moratorium and ITA, digital

Figure 7

Prices of ICT goods in the United States have fallen over 60 percent since 2009

Consumer price index for all urban consumers, not seasonally adjusted



Source: "Information Technology Commodities in US City Average, All Urban Consumers, Not Seasonally Adjusted," Bureau of Labor Statistics, March 2024.
Notes: ICT = information and communications technology. ICT goods include computers; peripherals; smart home assistants; computer software and accessories; telephone hardware; calculators; other consumer information items; and smartphones.

Figure 8

Prices of computer software and accessories in the United States since 1998 have fallen over 75 percent

Consumer price index for all urban consumers, not seasonally adjusted

Source: "Computer Software and Accessories in US City Average, All Urban Consumers, Not Seasonally Adjusted," Bureau of Labor Statistics, March 2024.
Note: Computer software and accessories is a component of information and communication technology goods.

trade provisions did not start to enter trade negotiations until the proliferation of e-commerce. Partly because countries wanted to preempt foreign protectionist measures that took advantage of the gaps that remained in the rules of the WTO, almost two-thirds of regional trade agreements include e-commerce or digital trade provisions.[159]

The United States has typically pushed for the inclusion of enforceable digital trade rules in its trade agreements. Ten out of 12 free trade agreements signed between the United States and trading partners include e-commerce chapters, and two agreements include more comprehensive digital trade chapters.[160]

All the agreements that the United States is a party to include e-commerce and digital trade chapters that prohibit customs duties on e-commerce, such as e-books, videos, games, and software. The moratorium requires renewal every two years, so including these prohibitions maintains tariff-free treatment of digital goods with US trading partners. The US International Trade Commission estimates that digital trade provisions in US free trade agreements, particularly the prohibition of duties on electronic transmissions, have a significant positive effect on trade in numerous sectors, including financial services, telecommunications, computer and information services, and professional services, with the largest gains seen in the financial, telecommunications, computer, and information services sectors.[161]

The United States–Mexico–Canada Agreement (USMCA) and the United States–Japan Digital Trade Agreement have broader digital trade provisions than other US trade deals.[162] These agreements build on other US e-commerce chapters by including provisions on the validity of electronic signatures, data protection rules, and cross-border data flows.[163] The most important provisions in both of those agreements prohibit data localization requirements and prevent partners from requiring "the transfer of, or access to, source code of software owned by a person of another Party, or to an algorithm expressed in that source code, as a condition for the import, distribution, sale or use of that software, or of products containing that software, in its territory."[164]

Two significant non-US trade agreements that include digital trade provisions are the Comprehensive and Progressive Agreement for the Trans-Pacific Partnership (CPTPP) and the Singapore–Chile–New Zealand Digital Economy Partnership Agreement (DEPA).[165] The CPTPP includes an e-commerce chapter with a framework for the digital economy that includes provisions similar to those in the USMCA and US–Japan Digital Trade Agreement covering customs duties, consumer protection, and intellectual property rights.[166] The CPTPP, like the USMCA and US–Japan Agreement, prohibits data localization but adds an exception to allow regulatory measures "to achieve a legitimate public policy objective."[167] The DEPA aims to strengthen cooperation in digital trade similarly to the other agreements but differentiates itself by encouraging interoperability between digital systems.[168]

POLICY RECOMMENDATIONS

Although some policymakers claim that maintaining a free and open internet that supports free cross-border data flows jeopardizes a country's ability to impose certain laws and regulations, current rules demonstrate the opposite is true. The current rules are highly flexible to allow individual countries considerable freedom of action, and future rules should also allow for a comparable respect for sovereignty. Although it is difficult to design rules that will not stifle innovation, particularly when those rules target technology products, expanding the scope of the current rules is a good first step. The United States can play its part in strengthening current multilateral digital trade rules with opportunities for both the administration and Congress.

The administration should

- reengage in free trade agreements that continue the United States' liberal digital trade rules;
- support extending the WTO's moratorium on customs duties on electronic transmissions and commit to supporting efforts to make the moratorium permanent;
- support WTO measures to increase transparency and encourage the engagement of nongovernmental stakeholders, such as businesses in the JSI negotiating process;[169] and
- support a second expansion of the ITA—ITA-3—to

include products such as 3D printers, industrial robots, other medical devices, solar cells, and other information technology goods.[170]

Congress should

- refrain from adopting legislation to apply labeling requirements to online goods;
- define negotiating objectives for the JSI negotiations, outlining priorities that advance the long-standing US position on digital trade, using the provisions embedded in the USMCA, or enact legislation that prevents the imposition of data localization requirements and restricts cross-border data flows, matching provisions laid out in the USMCA; and
- remove tariffs on digital goods.

CONCLUSION

Digital trade is facilitating the global economy's integration, providing businesses with better resources and consumers with better products. Trade liberalization and digitalization increase business sales through access to new and larger markets, technological spillovers that spread innovation, and competition to increase variety for consumers and shift resources to more productive uses.

However, the digital economy's borderless nature has brought new policy challenges. While security, privacy, and law enforcement must be considered in international trade, digital protectionism is not the solution. Centuries of evidence demonstrate that trade improves people's lives by raising living standards around the world and enabling millions to rise out of poverty. Embracing free digital trade only serves to propel efforts for human flourishing.

APPENDIX

Table A1

Unilateral digital services taxes enacted or proposed across different countries

Country	Tax rate and base	Status
Austria	5% on online advertising applied to companies with global revenues of €750 million or more, of which at least €25 million comes from Austrian users	Enacted
Belgium	3% on sales of user data and targeted online advertising, applied to companies with global revenues of more than €750 million, of which more than €5 million comes from Belgian users	Proposed
Brazil	1–5% on targeted online advertising, transmission of user data, and provisions of online platforms that allow users to interact, applied to companies with global revenues of more than BRL 3 billion and revenue from Brazil exceeds BRL 100 million	Proposed
Canada	3% on gross revenue derived from the sale of Canadian user data, social media services, and online marketplace and advertising services, applied to companies with global revenues of more than €750 million and more than C$20 million is earned in Canada	Enacted
Croatia	7% on gross revenue from online advertising, multilateral digital interface services, and transmission of user data, applied to companies with global revenues of more 5.6 billion Croatian kuna, of which at least 1.1 million Croatian kuna is earned in Croatia	Proposed
Czech Republic	3% or 5% on targeted advertising, use of multilateral digital interfaces, or provision of user data, applied to companies with global revenues of €750 million or more, where at least CZK 100 million in revenue is made in the Czech Republic	Proposed
France	3% on sales of user data, targeted advertisements, and digital intermediation services, applied to companies with global revenues of more than €750 million, of which more than €25 million comes from French users	Enacted
Italy	3% on online advertising, multilateral digital interfaces that allows users to buy/sell goods and services, and the transmission of user data, applied to companies with global revenues exceeding €750 million, and more than €5.5 million comes from Italian users	Enacted

Table A1 (continued)

Unilateral digital services taxes enacted or proposed across different countries

Country	Tax rate and base	Status
Kenya	1.5% on the gross transaction value of streaming and downloadable services of digital content, transmission of user data, provision of a digital marketplace, website or other online applications that link buyers and sellers, subscription-based media, electronic data management, supply of search-engine and automated helpdesk services, tickets purchased online for live events, theaters, restaurants, etc., eLearning prerecorded or otherwise, and any other services provided or delivered through an online digital or electronic platform	Enacted
New Zealand	3% on revenues from services such as social media and content-sharing platforms, internet search engines, online advertising, and user data of New Zealand users, applied to companies with global revenues of at least €750 million and at least $3.5 million NZ in revenue comes from New Zealand users	Proposed
Nepal	2% on the transaction value of digital services, including online advertising, subscription-based media, data storage services, cloud services, gaming, mobile application services, online marketplace services, software maintenance, sale of user data, images, text and information downloading services, educational and training services, and online books and newspapers, provided by nonresidents to Nepali consumers exceeding 2 million Nepali rupees	Enacted
Nigeria	6% on nonresident businesses with revenue over ₦25 million from sales of digital content, user data, online provisions of goods and services, and intermediary services	Enacted
Poland	7% on the provision of digital services, including online advertising, transmission of user data, sales of goods and services through digital interfaces, the provision of digital content, online marketplaces, and communication services, and online payment services by companies with global revenues exceeding €750 million, where more than €4 million is earned in Poland	Proposed
Sierra Leone	1.5% on the turnover of all digital and electronic transactions and sales derived by a resident taxpayer	Enacted
Spain	3% on online advertising services, online advertising, and sale of user data, applied to companies with global revenues exceeding €750 million, where more than €3 million comes from Spanish users	Enacted
Tunisia	3% on revenue derived from sales of computer software and digital services to Tunisians by nonresident entities	Enacted
Turkey	7.5% on online advertising, digital content sales, and operation of a digital platform and intermediary services for online advertising and digital content, applied to companies with global revenues of €750 million or more and where at least TL 20 million comes from Turkish users	Enacted
United Kingdom	2% on social media platforms, internet search engines, and online marketplaces, applied to companies with global revenues exceeding £500 million and where more than £25 million comes from users in the UK	Enacted
Zimbabwe	5% on gross income made from providing Zimbabweans satellite broadcasting services by foreign companies based in Zimbabwe with digital revenues in Zimbabwe of $500,000 or more	Enacted

Sources: "Digital Service Taxes and Other Unilateral Measures Roadmap," Bloomberg Tax; "Digital Services Tax Bill," New Zealand Parliament, December 5, 2023; Richard Asquith, "Nigeria 6% Digital Services Tax," VAT Calc, August 4, 2022; and KPMG, "Taxation of the Digitalized Economy," updated October 21, 2024, pp. 12–27.

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